DDC Suite 2.5 / PG5 Building Advanced Basics

PG5 Building Advanced / DDC Suite 2.5

Overview developing DDC Suite

2000	Starting developing first FBoxes
…	… in lot of projects tested and always improved …
2004/April	FBoxes attained the core style and functionality
2004/November	DDC Suite became SBC product - version 1.0 Germany/Netherland
2005/March	Fupla editor adoption to improve mechanism – version 1.3
2006	Annual update with improved functionality – version 1.3.x
2007	Annual update with improved functionality – version 1.3.y
2008/June	Annual update with dramatic development – version 2.0
	- HDLog implemented
	- Alarming implemented
	- BACnet implemented
	PG5 license management
2013/Mai	New Version 2.5
	with Plant Coding System for BACnet and Alarming
	BACnet Fboxes for NC,Trendlog, Loop, Schedule

General Overview

Basics

SAIA BURGESS CONTROLS

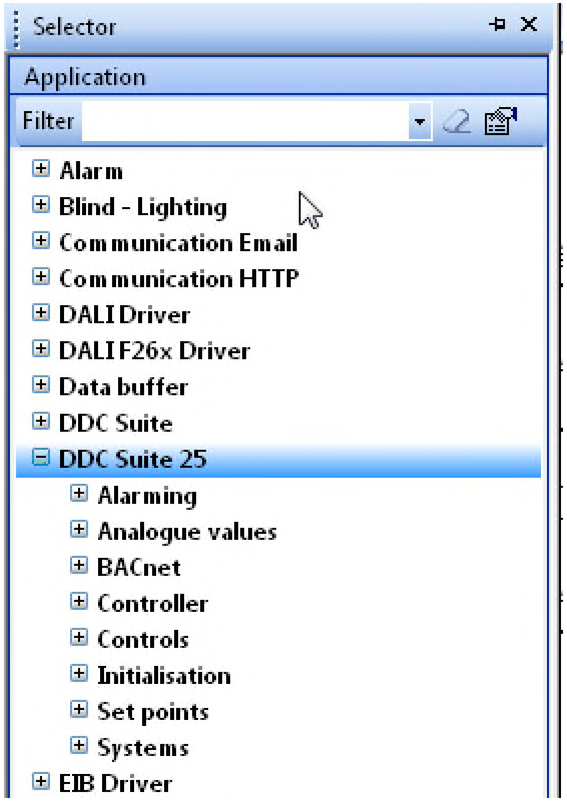
PG5 Building Advanced / DDC Suite 2.5

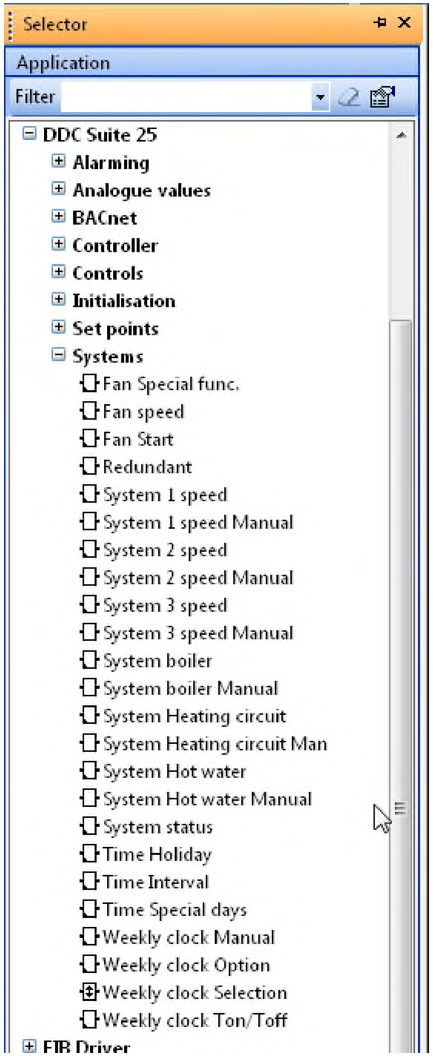
General

The DDC Suite 2.5 is a FBox library containing 8 FBox families.

In Comparison with the DDC Suite 2.0 there is one new family “BACnet”

The Family „General“ does not exist anymore


Selector
Application
Filter
- Alarm
- Blind - Lighting
- Communication Email
- Communication HTTP
- DALI Driver
- DALI F26x Driver
- Data buffer
- DDC Suite
- DDC Suite 25
  - Alarming
  - Analogue values
  - BACnet
  - Controller
  - Controls
  - Initialisation
  - Set points
  - Systems
- EIB Driver


Selector
Application
Filter
- DDC Suite 25
  - Alarming
  - Analogue values
  - BACnet
  - Controller
  - Controls
  - Initialisation
  - Set points
  - Systems
    - Fan Special func.
    - Fan speed
    - Fan Start
    - Redundant
    - System 1 speed
    - System 1 speed Manual
    - System 2 speed
    - System 2 speed Manual
    - System 3 speed
    - System 3 speed Manual
    - System boiler
    - System boiler Manual
    - System Heating circuit
    - System Heating circuit Man
    - System Hot water
    - System Hot water Manual
    - System status
    - Time Holiday
    - Time Interval
    - Time Special days
    - Weekly clock Manual
    - Weekly clock Option
    - Weekly clock Selection
    - Weekly clock Ton/Toff
- EIB Driver

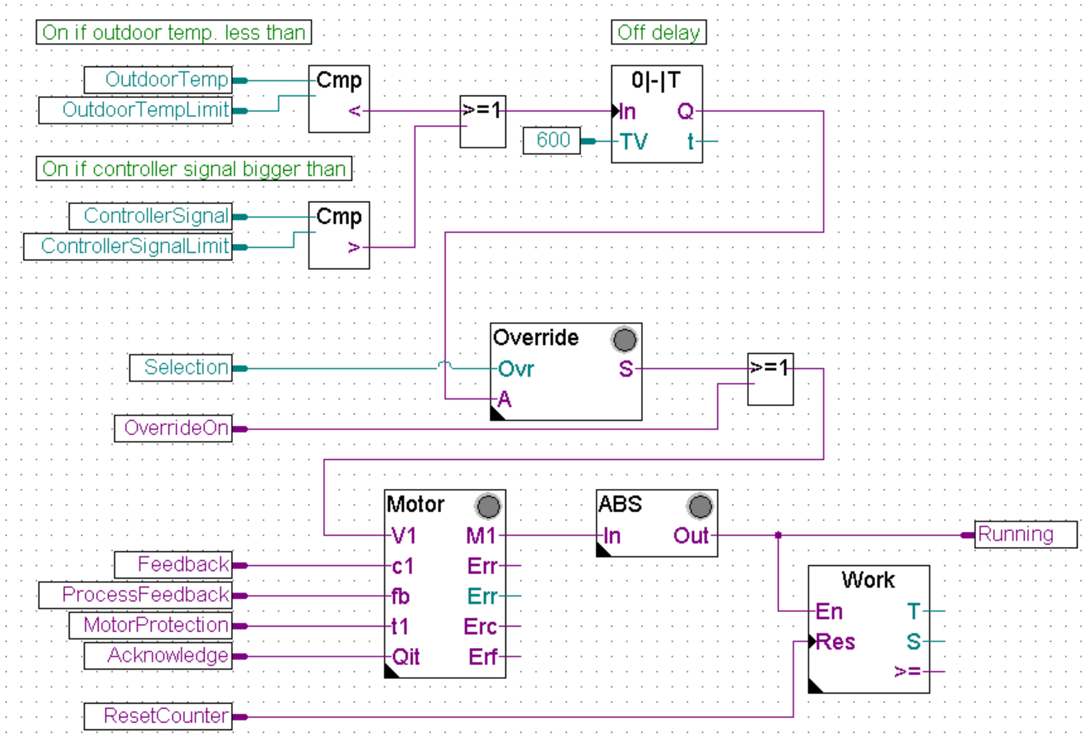
PG5 Building Advanced / DDC Suite 2.5

PG5 Building Standard (Heavac)

Let‘s have a look at a typical pump for a air heater. This pump should have at least this standard functionalities:

- switch on if outdoor temperature is less than x °C (e.g. forward-thinking frost protection)
- switch on if controller signal valve is greater than x %
- manual override e.g. for maintenance or commissioning
- switch on if forced e.g. frost protection
- counting working hours and feedback
- Anti blocking protection

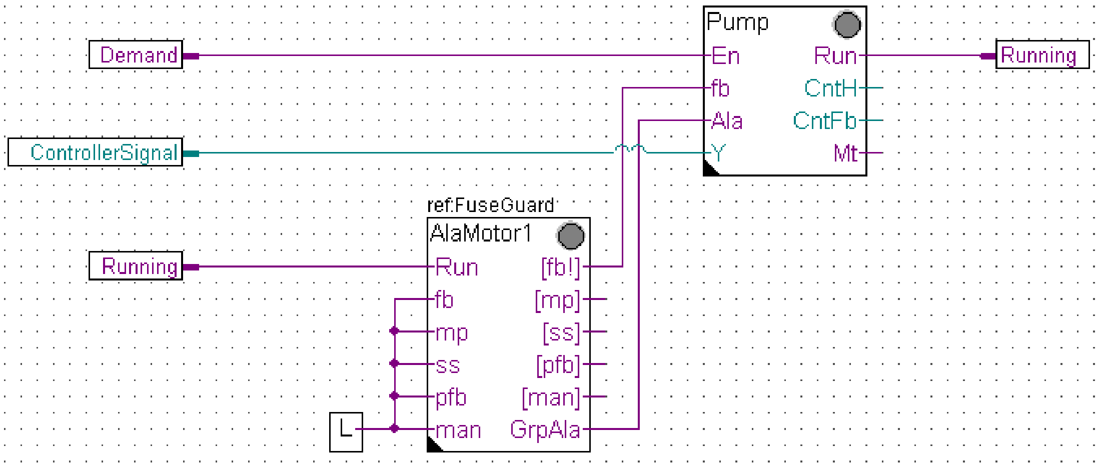
All this can be programmed with Heavac FBox library and may look like this example



PG5 Building Advanced / DDC Suite 2.5

PG5 Building Advanced (DDC Suite)

The same pump functionality programmed with DDC Suite looks much easier:



- all functionalities you have to program by yourself (e.g. frost protection, manual override, counting working hours …) are already implemented in the FBox

- the FBoxes are much more complex. Standard functionalities you have to think about (and first you have to know them – what makes sense …) are included

- and all this functionalities and features can be activated or changed in the FBox – online, without reprogramming, compiling and downloading. E.g. if you have to turn off the anti blocking function from a pump – just disable it online!

PG5 Building Advanced / DDC Suite 2.5

Summary 1

The first difference:

Higher integrated FBoxes. Know how and experiences from systems engineering has been moved into the library, families and FBoxes

If we compare both fupla pages (Heavac and DDC Suite) we can find additional advantages:

- reading and understanding the Fupla is easier – less FBoxes on 1 page, less connections
- clear and well arranged – easier to handle for e.g. a new member in programming or service team
- easy to maintain

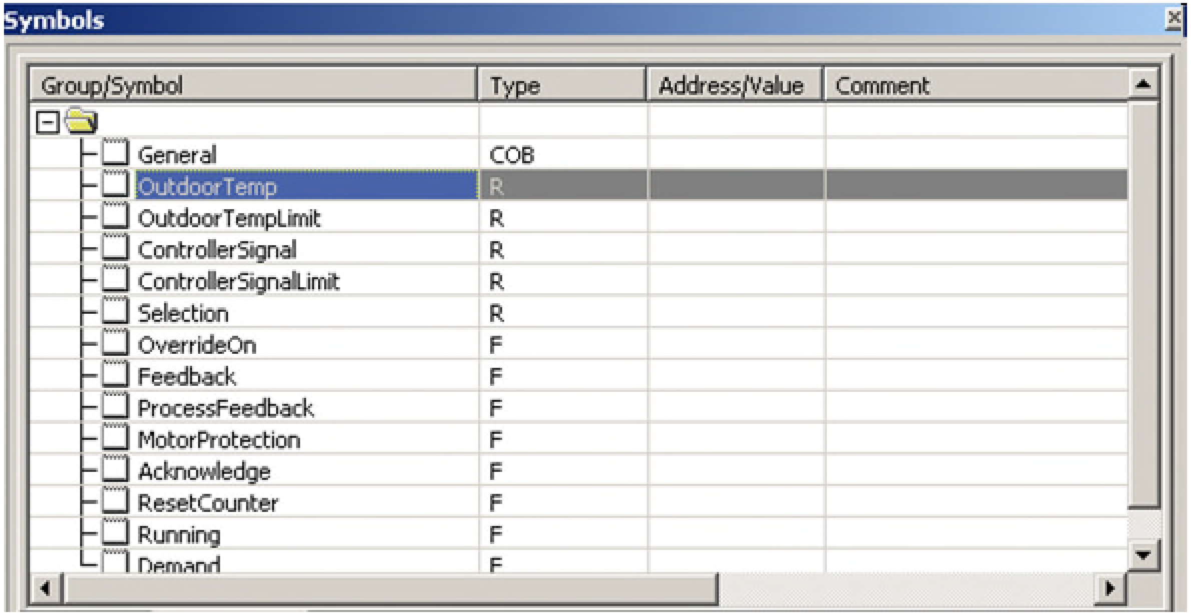
This is not the single difference – but this is the first impression.

Let‘s have a look at the data of this pump control.

PG5 Building Advanced / DDC Suite 2.5

PG5 Building Standard (Heavac)

Data for pump control programmed with Heavac must be defined by the SI himself. Only this data are available in symbol editor – no further information which FBox has been used ..



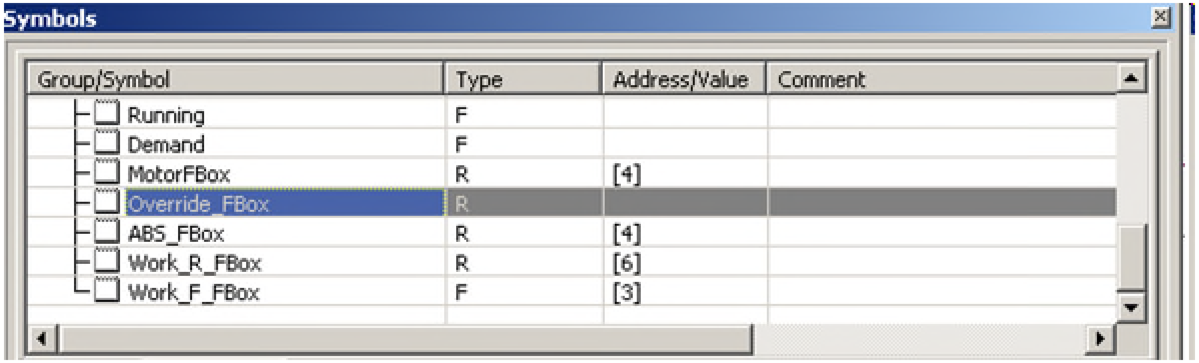
Symbols

Group/Symbol	Type	Address/Value	Comment
General	COB		
OutdoorTemp	R		
OutdoorTempLimit	R		
ControllerSignal	R		
ControllerSignalLimit	R		
Selection	R		
OverrideOn	F		
Feedback	F		
ProcessFeedback	F		
MotorProtection	F		
Acknowledge	F		
ResetCounter	F		
Running	F		
Demand	F		

PG5 Building Advanced / DDC Suite 2.5

PG5 Building Standard (Heavac)

Each FBox contains more or less data and they can get a symbolic definition in detailed adjust window to access them in symbol editor. Sometimes a FBox needs more than 1 symbolic definition (e.g. 1 for register and 1 for flag).



Symbols

Group/Symbol	Type	Address/Value	Comment
Running	F		
Demand	F		
MotorFBox	R	[4]	
Override_FBox	R		
ABS_FBox	R	[4]	
Work_R_FBox	R	[6]	
Work_F_FBox	F	[3]	

Per FBox at least 1 symbol must be defined – and this symbolic data contains more information, arranged in an array.

You can find some information in detail windows or in help file – but in this moment you can‘t use the symbols with sense.

If you have to give the data points to a SCADA system engineer (also Web or HMI) – he‘s not able to do anything with it. Too less information.

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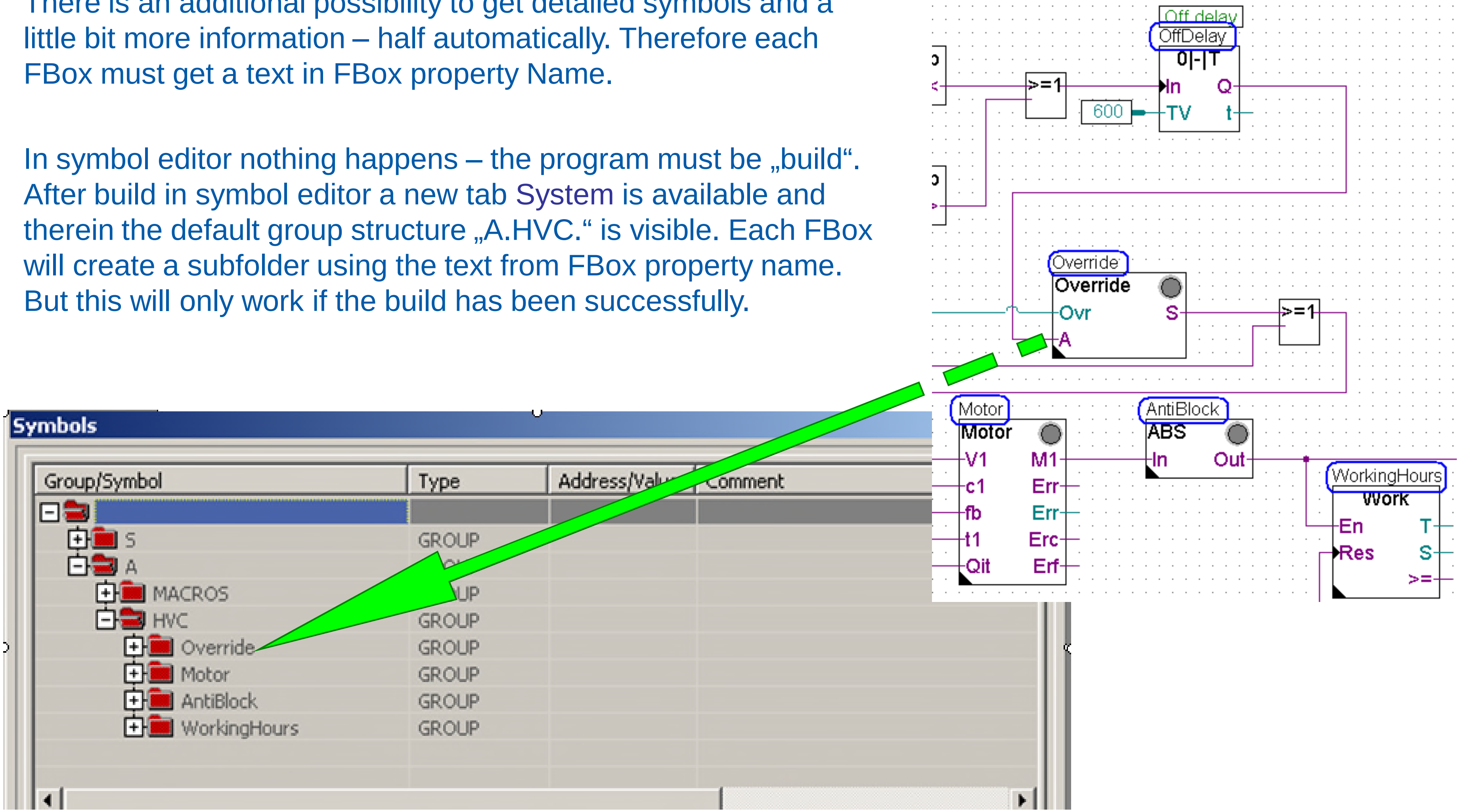
PG5 Building Standard (Heavac)

There is an additional possibility to get detailed symbols and a little bit more information – half automatically. Therefore each FBox must get a text in FBox property Name.

In symbol editor nothing happens – the program must be „build“. After build in symbol editor a new tab System is available and therein the default group structure „A.HVC.“ is visible. Each FBox will create a subfolder using the text from FBox property name. But this will only work if the build has been successfully.



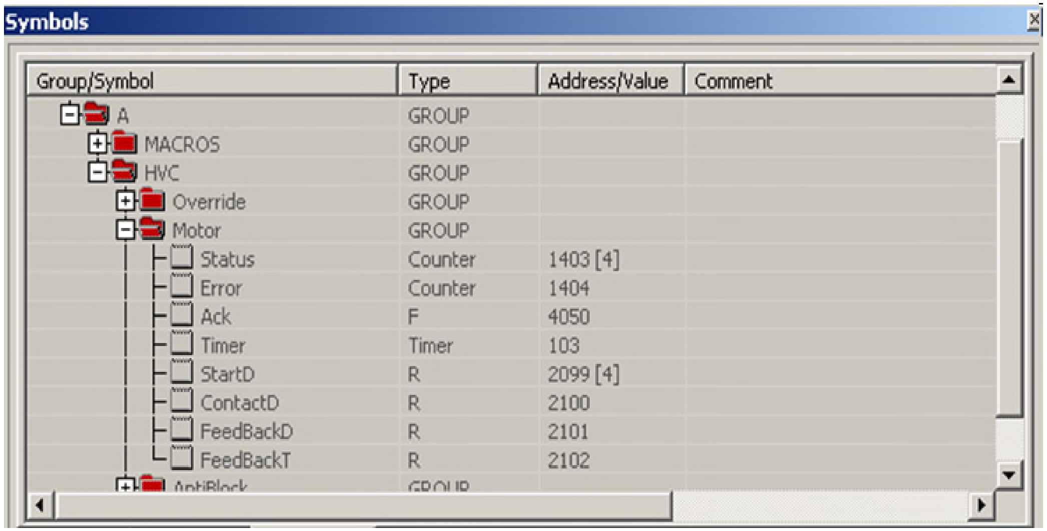
Symbols

Group/Symbol	Type	Address/Value	Comment
S	GROUP		
A	GROUP		
MACROS	GROUP		
HVC	GROUP		
Override	GROUP		
Motor	GROUP		
AntiBlock	GROUP		
WorkingHours	GROUP		

PG5 Building Advanced / DDC Suite 2.5

PG5 Building Standard (Heavac)

Each subfolder contains detailed information from the FBox, some are still marked as array – []-brackets – but no symbol supporting further information. E.g. whats the meaning of FeedBackT or FeedBackD?



Symbols

Group/Symbol	Type	Address/Value	Comment
A	GROUP		
MACROS	GROUP		
HVC	GROUP		
Override	GROUP		
Motor	GROUP		
Status	Counter	1403 [4]	
Error	Counter	1404	
Ack	F	4050	
Timer	Timer	103	
StartD	R	2099 [4]	
ContactD	R	2100	
FeedBackD	R	2101	
FeedBackT	R	2102	
AntiBlock	GROUP		

And the symbols are only available after a successful build – they are not immediately available when the FBox is set into Fupla page or FBox property name is set. Some FBoxes do not support this mechanism, at least only Heavac FBoxes – excluding the family Test.

PG5 Building Advanced / DDC Suite 2.5

PG5 Building Advanced (DDC Suite)

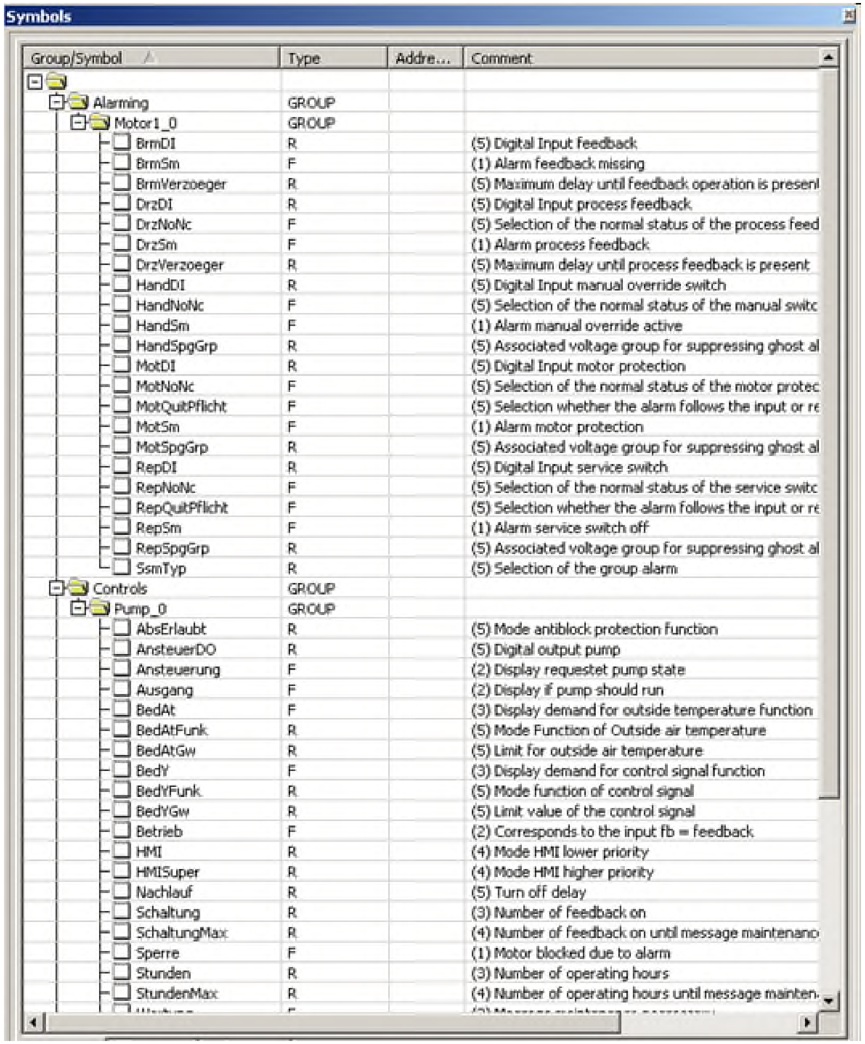
Pump data with DDC Suite are created fully automatically – just put the FBox into Fupla page!

DDC Suite FBoxes are not using arrays – always separate data points. The comment of each data point should explain the functionality and already prepared an indicator for SCADA systems to optimize the communication load (advice)

Simply by adding a FBox in Fupla page all symbols for each data point are available – immediately! The are generated in groups, the first group indicates the family, the second the FBox itself.

The symbols itself should not be renamed, changed or deleted – they are part of a unique data base name convention!

But the groups can be renamed or moved into other groups and maybe structured by location, systems or what ever.



Symbols

Group/Symbol	Type	Addre...	Comment
Alarming	GROUP		
Motor1_0	GROUP		
BrmDI	R		(5) Digital Input feedback
BrmSm	F		(1) Alarm feedback missing
BrmVerzoeger	R		(5) Maximum delay until feedback operation is present
DrzDI	R		(5) Digital Input process feedback
DrzNoNc	F		(5) Selection of the normal status of the process feed
DrzSm	F		(1) Alarm process feedback
DrzVerzoeger	R		(5) Maximum delay until process feedback is present
HandDI	R		(5) Digital Input manual override switch
HandNoNc	F		(5) Selection of the normal status of the manual switc
HandSm	F		(1) Alarm manual override active
HandSpgGrp	R		(5) Associated voltage group for suppressing ghost al
MotDI	R		(5) Digital Input motor protection
MotNoNc	F		(5) Selection of the normal status of the motor protec
MotQuitPflicht	F		(5) Selection whether the alarm follows the input or re
MotSm	F		(1) Alarm motor protection
MotSpgGrp	R		(5) Associated voltage group for suppressing ghost al
RepDI	R		(5) Digital Input service switch
RepNoNc	F		(5) Selection of the normal status of the service switc
RepQuitPflicht	F		(5) Selection whether the alarm follows the input or re
RepSm	F		(1) Alarm service switch off
RepSpgGrp	R		(5) Associated voltage group for suppressing ghost al
SsmTyp	R		(5) Selection of the group alarm
Controls	GROUP		
Pump_0	GROUP		
AbsErlaubt	R		(5) Mode antiblock protection function
AnsteuerDO	R		(5) Digital output pump
Ansteuerung	F		(2) Display requestet pump state
Ausgang	F		(2) Display if pump should run
BedAt	F		(3) Display demand for outside temperature function
BedAtFunk	R		(5) Mode Function of Outside air temperature
BedAtGw	R		(5) Limit for outside air temperature
BedY	F		(3) Display demand for control signal function
BedYFunk	R		(5) Mode function of control signal
BedYGw	R		(5) Limit value of the control signal
Betrieb	F		(2) Corresponds to the input fb = feedback
HMI	R		(4) Mode HMI lower priority
HMISuper	R		(4) Mode HMI higher priority
Nachlauf	R		(5) Turn off delay
Schaltung	R		(3) Number of feedback on
SchaltungMax	R		(4) Number of feedback on until message maintenanc
Sperre	F		(1) Motor blocked due to alarm
Stunden	R		(3) Number of operating hours
StundenMax	R		(4) Number of operating hours until message mainten.

PG5 Building Advanced / DDC Suite 2.5

Summary 2

The second difference:

Fully automatically generated symbols when FBox is put on Fupla page

In contrast to half automatically created symbols from Heavac FBoxes (half automatically because you have to edit FBox property name and start a build) to DDC Suite FBoxes the created symbols

- are immediately available
- movable, restructured during engineering can
- are single data points with own symbols and comment
- format of each data point listed in help file
- suitable to build up a object oriented, component and/or system data structure

This 2 operative differences (more compact/complex FBoxes – fully automatically created symbolic data points) are representing the core of DDC Suite – easier, faster and better engineering.

DDC Suite 2.5 / PG5 Building Advanced

General overview

DDC Suite is an extension of PG5 containing

1. FBox library – the DDC Suite base. This FBoxes are higher implemented, using single data points and creating groups and symbols fully automatically

2. Fupla templates – predefined systems e.g. heating circuit, hot water, air condition – to start up in an easy way

3. Template objects for SWeb application – for each FBox graphical objects and adjust objects are available. Also for the predefined systems we have predefined Sweb system templates

4. Template objects in ViSi.Plus. During import data from Fupla into ViSi.Plus the FBoxes are detected and handled in ViSi.Plus data base again like FBoxes. At least not only the data points are imported – additional predefined alarm settings and historical trend information are generated automatically during import.

5. DDC Suite is not a totally different thing in PG5 - some FBoxes, Fupla and Web templates – and of course the FBoxes itself can be used without Sweb or ViSi.Plus. And they are compatible with Heavac FBoxes.

The target of DDC Suite is

Reducing engineering time – safe money - easier programming
Improve software quality – having higher “minimum standard level” then competitors

PG5 Building Advanced / DDC Suite 2.5
Working with Fupla

sbc
SAIA BURGESS CONTROLS

Workshop Introduction
DDC Suite Basics

SBC
SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

Syntax and notes for actions in the workshop

Please follow the trainer's instructions.

Please

- use the same symbol names
- use the same group names
- place the FBoxes as close as possible to the same position
- do not work faster or differently, even if you are an experienced programmer

This workshop will show you some basic mechanisms, structured working methods and structured symbol organisation. Don't worry – you don't have to

- learn all FBoxes during the workshop
- be familiar with how to programme building automation applications
- be an 'old hand' in programming

When you have learned the mechanisms and philosophy, you will see the advantages
open to you, as a systems engineer, when using DDC Suite

DDC Suite 2.5 / PG5 Building Advanced

Syntax and notes for actions in the workshop

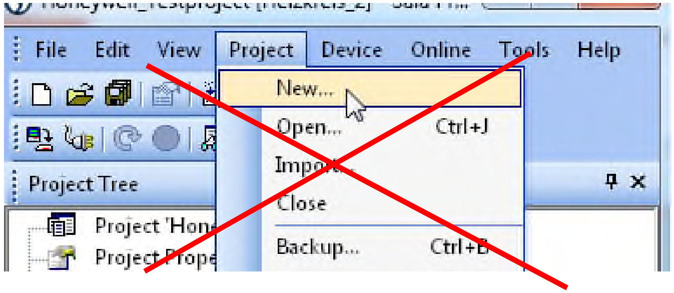
✸	Left-click here
✸✸	Double-click with the left mouse button here
✸	Right-click here
➔	Follow the green arrow to the next step
Example ➘ 🟩	Enter the blue text in the green highlighted text box
🟨	Watch the yellow area
⚠	Changes/different procedure than in previous versions

Creating a new project

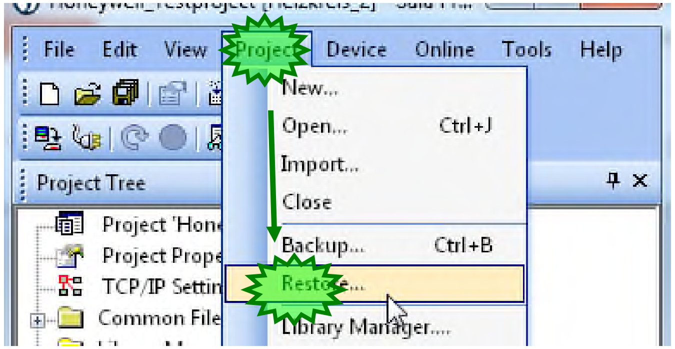
DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

You can start a new DDC Suite project in PG5 via “Project/New...”. But then the programmer has to manually create all the programme files that he needs, e.g. HMI, BACnet and so on.



We recommend starting a new project via “Project/Restore...”, i.e. we use a prepared DDC Suite template project in which a wide range of settings or pages and templates are already prepared.



These template projects contain everything that is needed in a project, e.g. pages with Fupla templates, SWeb template objects.

Therefore, a project backup is also slightly larger than for normal projects (e.g. >5 MB) but, as a result, there are no compatibility problems when changes are made to the project in future, e.g. if an SWeb template has been completely changed.
Of course, our template project can also be supplemented with your own templates/add-ons and saved as a separate template project using backup.

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

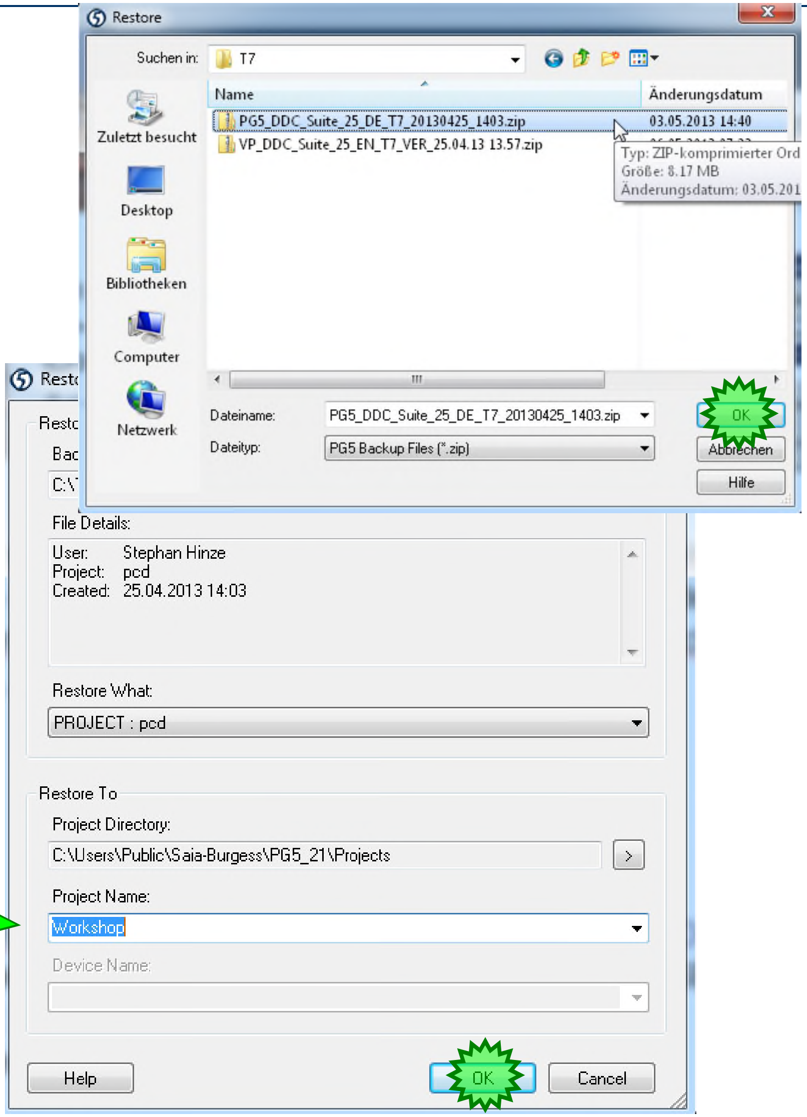
We will now start with “Project/Restore...” and select a template project. Depending on the version or storage location of the template, we navigate to the corresponding folder...

You can find project templates on the PG5 CD in the DDC Suite folder, and the latest templates are available on the SBC Support Homepage www.sbc-support.com under Software/PG5/DDC Suite 2.5.

When starting the Restore, you can enter a new project name. Please select

Workshop

Click on “OK” and the template project will be used as the basis for our workshop project.



Restore

Suchen in: T7

Name	Änderungsdatum
PG5_DDC_Suite_25_DE_T7_20130425_1403.zip	03.05.2013 14:40
VP_DDC_Suite_25_EN_T7_VER_25.04.13 13.57.zip	

Typ: ZIP-komprimierter Ord
Größe: 8.17 MB
Änderungsdatum: 03.05.201

Dateiname: PG5_DDC_Suite_25_DE_T7_20130425_1403.zip
Dateityp: PG5 Backup Files (*.zip)

File Details:
User: Stephan Hinze
Project: pcd
Created: 25.04.2013 14:03

Restore What: PROJECT : pcd

Restore To
Project Directory: C:\Users\Public\Saia-Burgess\PG5_21\Projects
Project Name: Workshop
Device Name:

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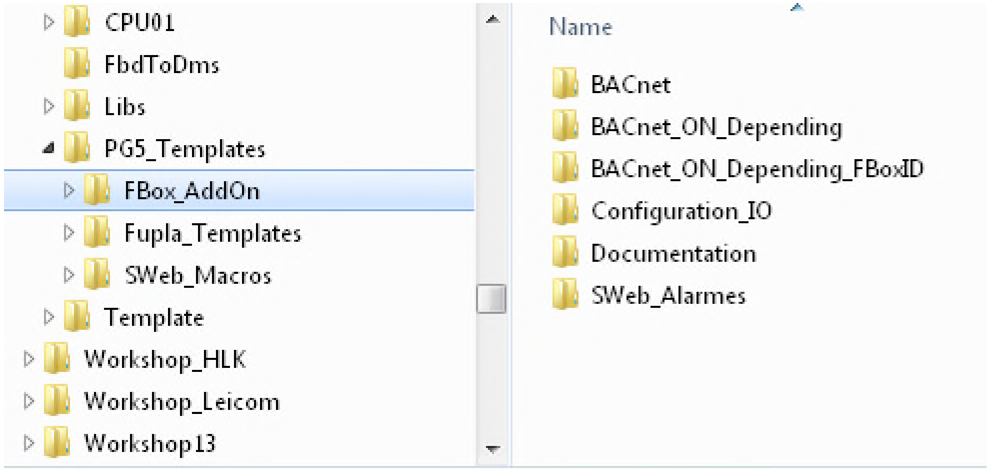
Working with Fupla

If we check the “Workshop” project using Windows Explorer, we can see that it already contains some folders.

- FbdToDms: This folder contains information that is required if a ViSi.Plus application has to be added later
- Libs: This folder is empty, can be used as the folder for libraries that belong to the template
- PG5_Templates: This is a template device that can be used as a basis for further devices in the project
- FBox_AddOns: This add-on contains elements which you can use to make linguistic adaptations for SWeb Alarming/BACnet/Documentation
- Fupla_Templates: Here you can find previously finished systems or functions that can be imported into Fupla
- SWeb_Templates: These are template objects/control objects for SWeb applications that are created with the SWebEditor.



Creating a new CPU in the project

SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

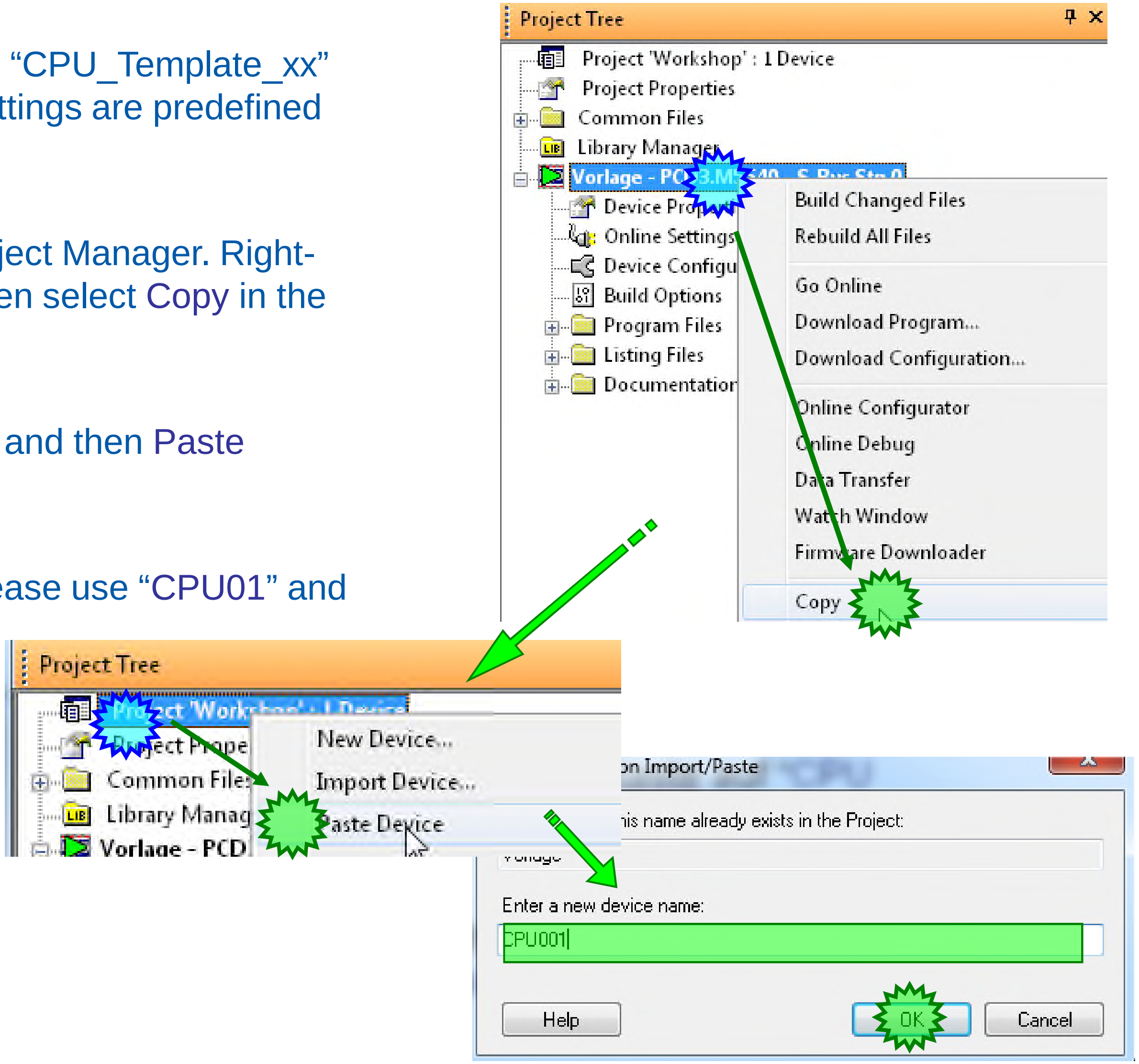
Working with Fupla

First, we create a new device – the “CPU_Template_xx” device should be kept, as some settings are predefined there.

To do this, copy and paste into Project Manager. Right-click on “CPU _Vorlage_xx” and then select Copy in the context menu.

Right-click on “Project ’Workshop’” and then Paste Device in the context menu.

We have to rename the device. Please use “CPU01” and confirm with “OK”.



his name already exists in the Project:

Vorlage

Enter a new device name:

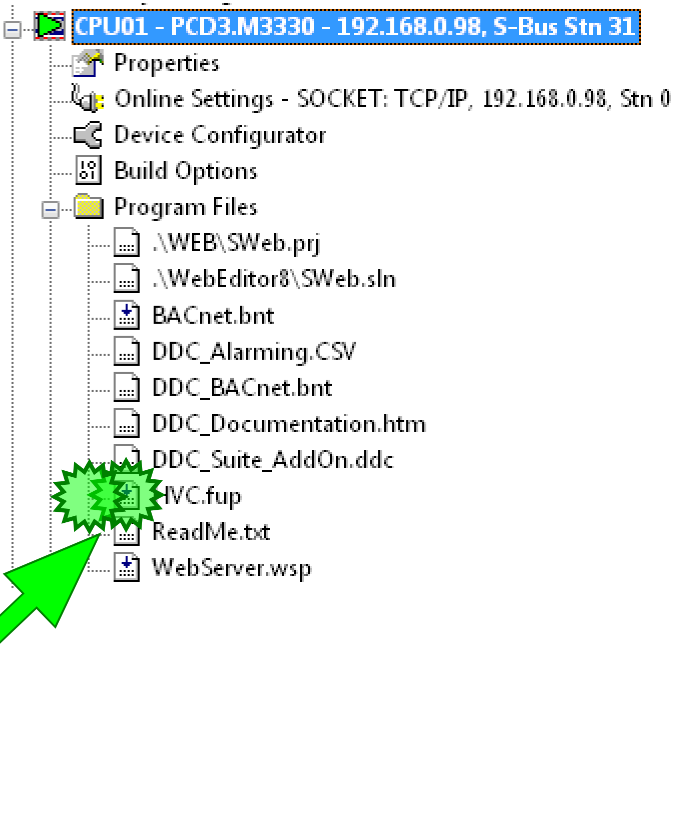
CPU001

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Let's look at the new "CPU01" – here we can also see predefined files:

- BACnet.bnt: BACnet user configuration file
- DDC_Alarming.CSV: This is an automatically generated text file that contains alarm texts for use with SWeb applications
- DDC_BACnet.bnt: This is an automatically generated BACnet configuration file
- DDC_Documentation.htm: This is an utomatically generated programme description
- DDC-Suite_AddOn.ddc: An addOn tool
- HKLS.fup: A prepared Fupla
- ReadMe.txt: This text contains a brief description of the files above



CPU01 - PCD3.M3330 - 192.168.0.98, S-Bus Stn 31
Properties
Online Settings - SOCKET: TCP/IP, 192.168.0.98, Stn 0
Device Configurator
Build Options
Program Files
.\WEB\SWeb.prj
.\WebEditor8\SWeb.sln
BACnet.bnt
DDC_Alarming.CSV
DDC_BACnet.bnt
DDC_Documentation.htm
DDC_Suite_AddOn.ddc
HVC.fup
ReadMe.txt
WebServer.wsp

Further details during the workshop.

We begin programming by double-clicking on the file HVC.fup

Note: DDC Suite FBoxes can only be used in one Fupla for each device

Basic settings in Fupla

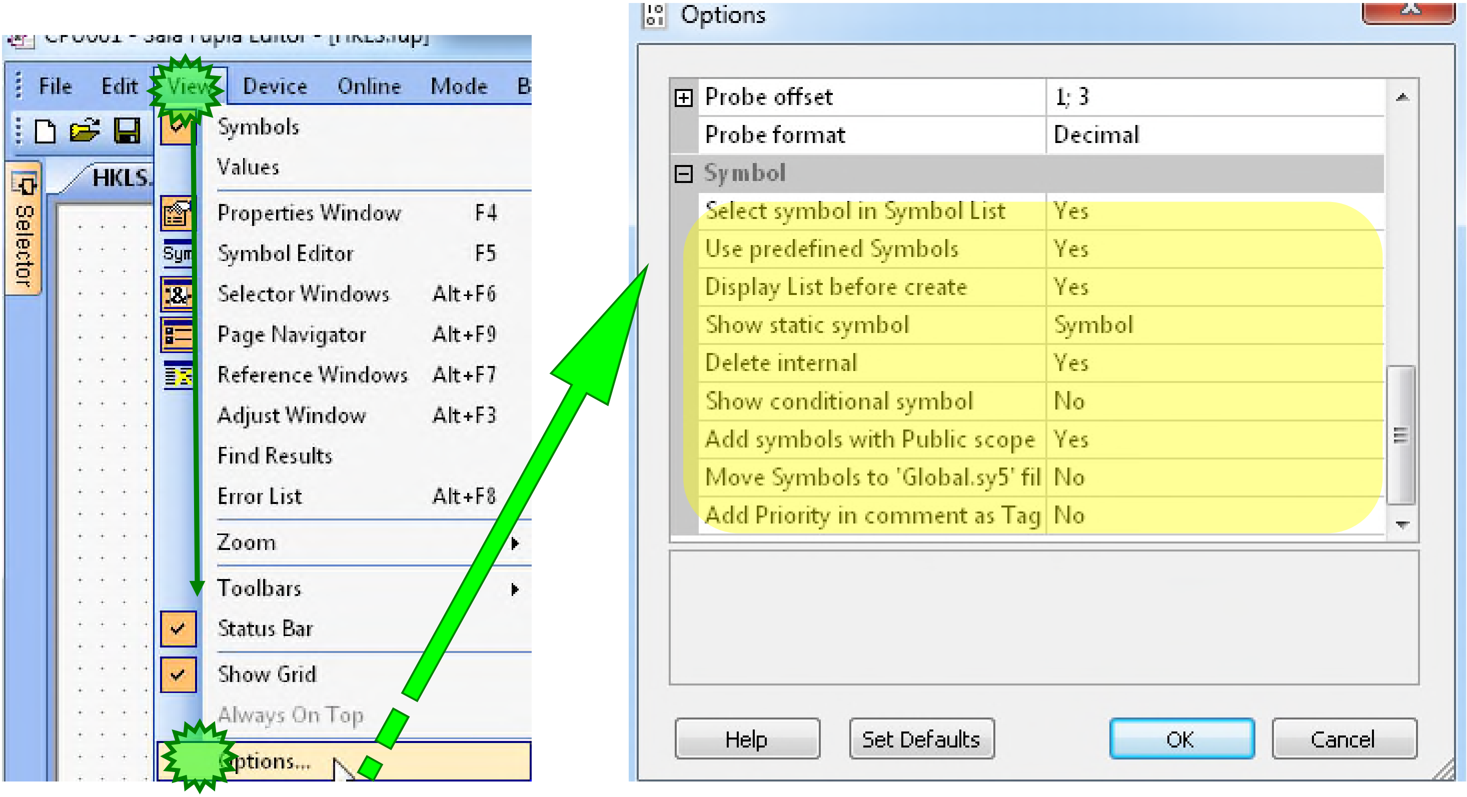
SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Different functions should be activated or deactivated in PG5 if you are working with the DDC Suite – this is only necessary once after installation of PG5.

Select the Fupla Editor “View” menu and, from the menu list, select “Options…”. In the “Options” dialogue, activate the “Symbols” tab – here we can see the new functions for easier and faster programming in Fupla.



⊞ Probe offset	1; 3
Probe format	Decimal
⊟ Symbol	
Select symbol in Symbol List	Yes
Use predefined Symbols	Yes
Display List before create	Yes
Show static symbol	Symbol
Delete internal	Yes
Show conditional symbol	No
Add symbols with Public scope	Yes
Move Symbols to 'Global.sy5' fil	No
Add Priority in comment as Tag	No

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

☑ **Use predefined Symbols:**
When inserting an FBox from DDC Suite, groups and symbol names are also inserted automatically. **Required**

☑ **Display List before created:**
When setting the FBox, a dialogue is displayed. The group and symbol names can be copied as specified or can be renamed straight away. **Required**

☑ **Show static symbol:**
When you click on an FBox in Fupla, the first symbol that is defined in the FBox is automatically selected in the symbol editor. This makes it easier to find the FBox symbols in the symbol editor. **Required**

☑ **Delete internal:**
If an FBox is deleted in Fupla, the associated symbols are also deleted automatically. **Required**

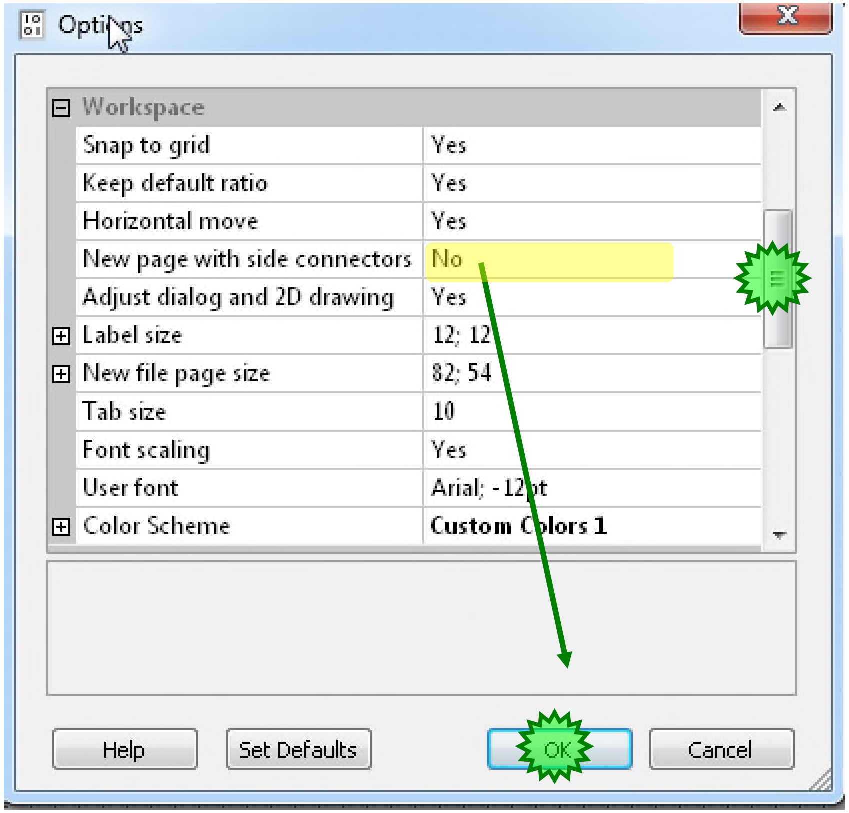
☑ **Add symbol with public scope:**
All symbols are automatically created with the scope “Public” which is advisable in any case. **Required**

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

We recommend that new Fupla pages be created without connectors to the pages.

To do this, activate the Layout tab and deactivate the New page with side connectors selection box.



Options

⊟ Workspace

Snap to grid	Yes
Keep default ratio	Yes
Horizontal move	Yes
New page with side connectors	No
Adjust dialog and 2D drawing	Yes
⊞ Label size	12; 12
⊞ New file page size	82; 54
Tab size	10
Font scaling	Yes
User font	Arial; -12 pt
⊞ Color Scheme	**Custom Colors 1**

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Comment:

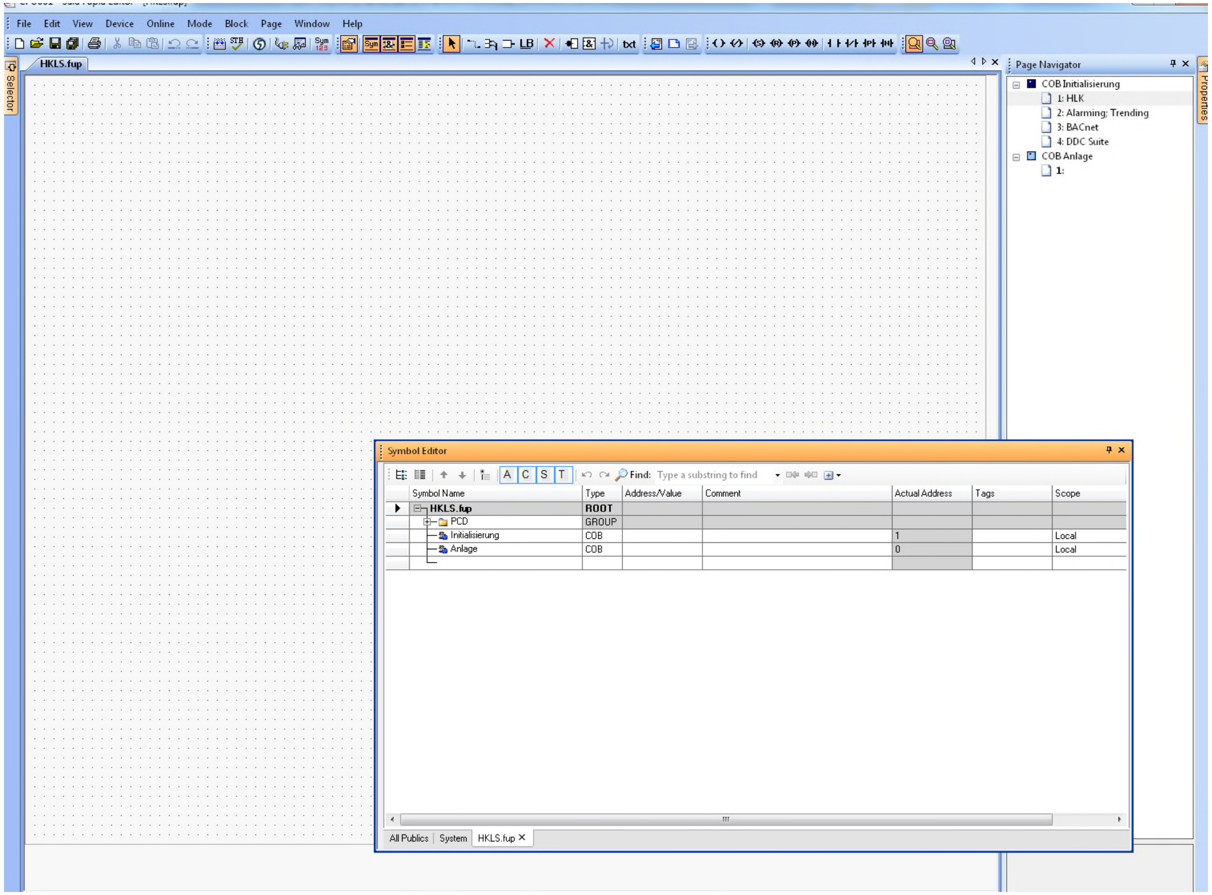
Working with DDC Suite requires long, structured tree structures in the Symbol Editor.

We therefore recommend “undocking” the Symbol Editor window and dragging it to a convenient size.

The Symbol Editor can be displayed and hidden with the “F5” key.

When creating the programme through positioning of FBoxes, the Symbol Editor is not required.

But, for a first impression, we will display the Symbol Editor.



Page Navigator

- COB Initialisierung
  - 1: HLK
  - 2: Alarming; Trending
  - 3: BACnet
  - 4: DDC Suite
- COB Anlage
  - 1:

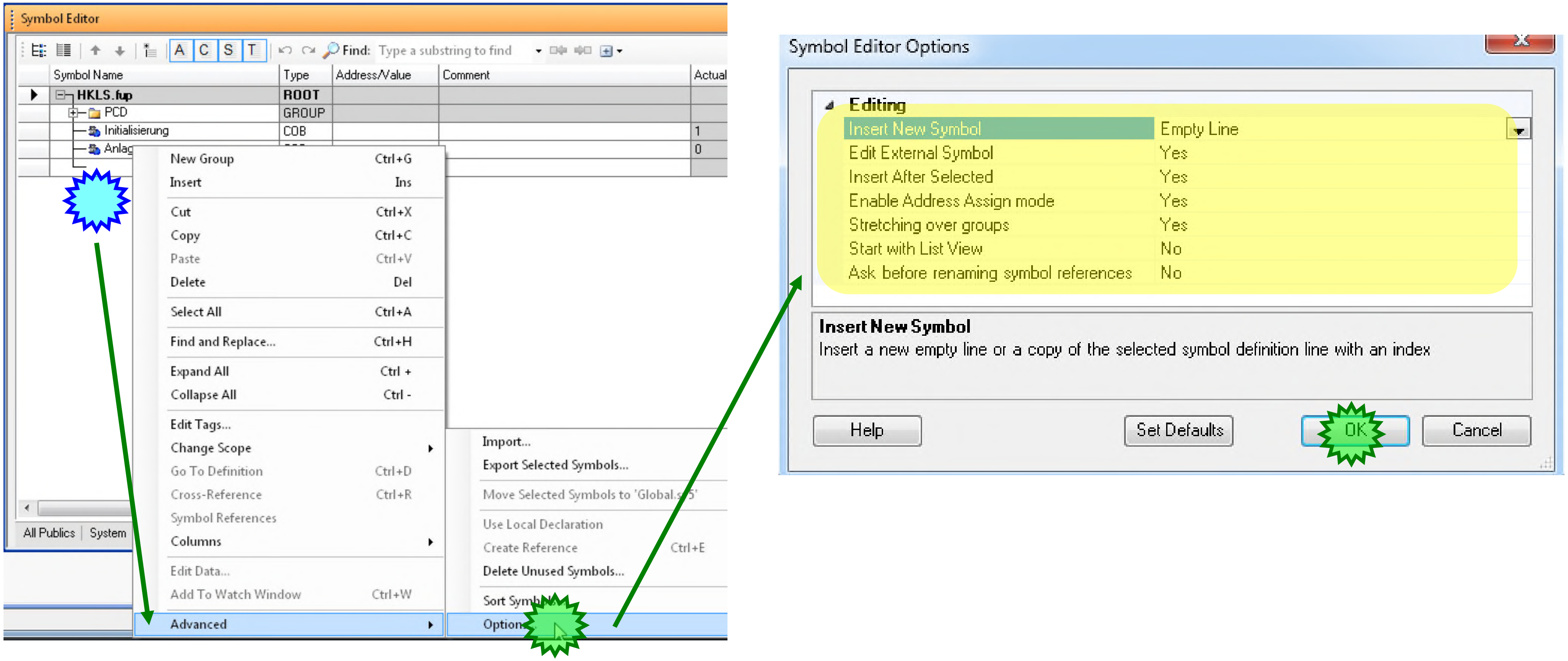
Symbol Name	Type	Address/Value	Comment	Actual Address	Tags	Scope
HKLS.fup	ROOT					
PCD	GROUP					
Initialisierung	COB			1		Local
Anlage	COB			0		Local

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Finally, we will check the settings again to ensure that the symbol editing works the same way everywhere. Right-click in the Symbol Editor, select the “Advanced” context menu and then the “Options” context menu

Please make all settings in the “Symbol Editor Options” as shown here.



Editing

Insert New Symbol	Empty Line
Edit External Symbol	Yes
Insert After Selected	Yes
Enable Address Assign mode	Yes
Stretching over groups	Yes
Start with List View	No
Ask before renaming symbol references	No

Insert New Symbol
Insert a new empty line or a copy of the selected symbol definition line with an index

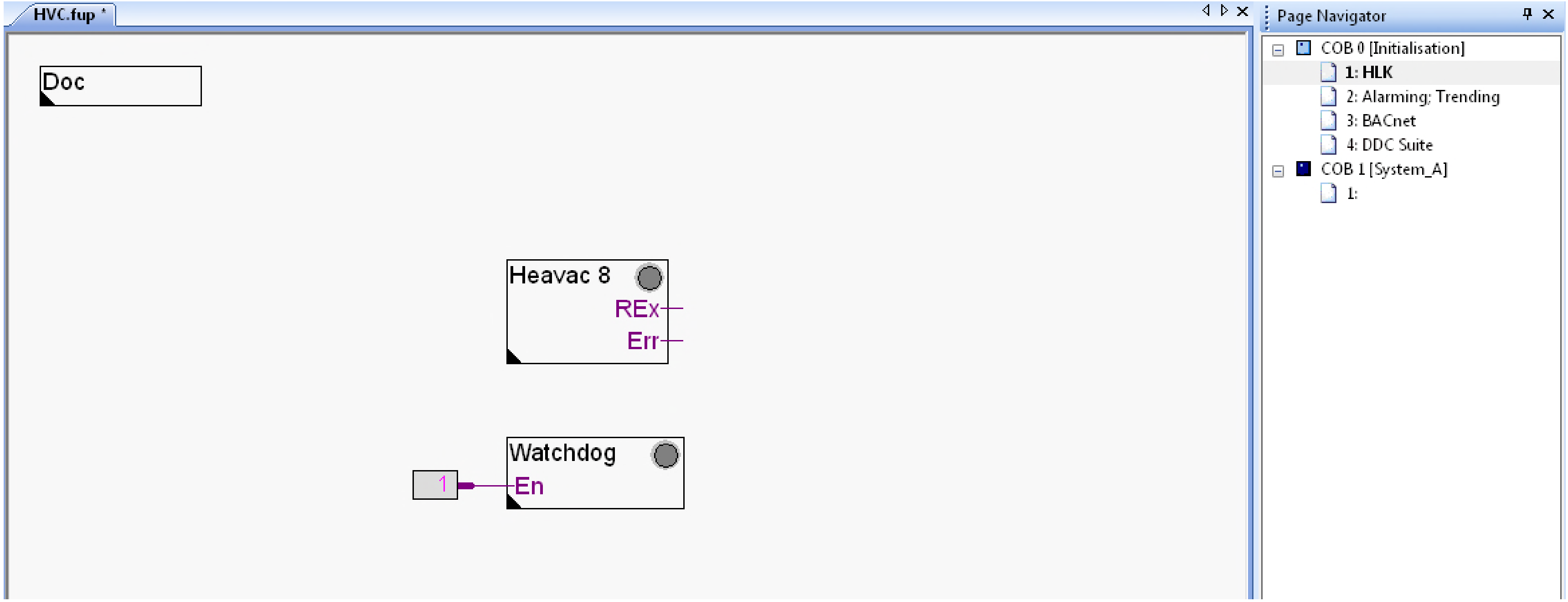
DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

The first 4 pages of the programme in COB Initialisation contain FBoxes that are required for initialisation of the libraries and functions.

This is page 1; HLK

-Documentation FBox (Doku)
-Initialisation of Heavac library (Heavac 8)
-Software watchdog for cycle time monitoring

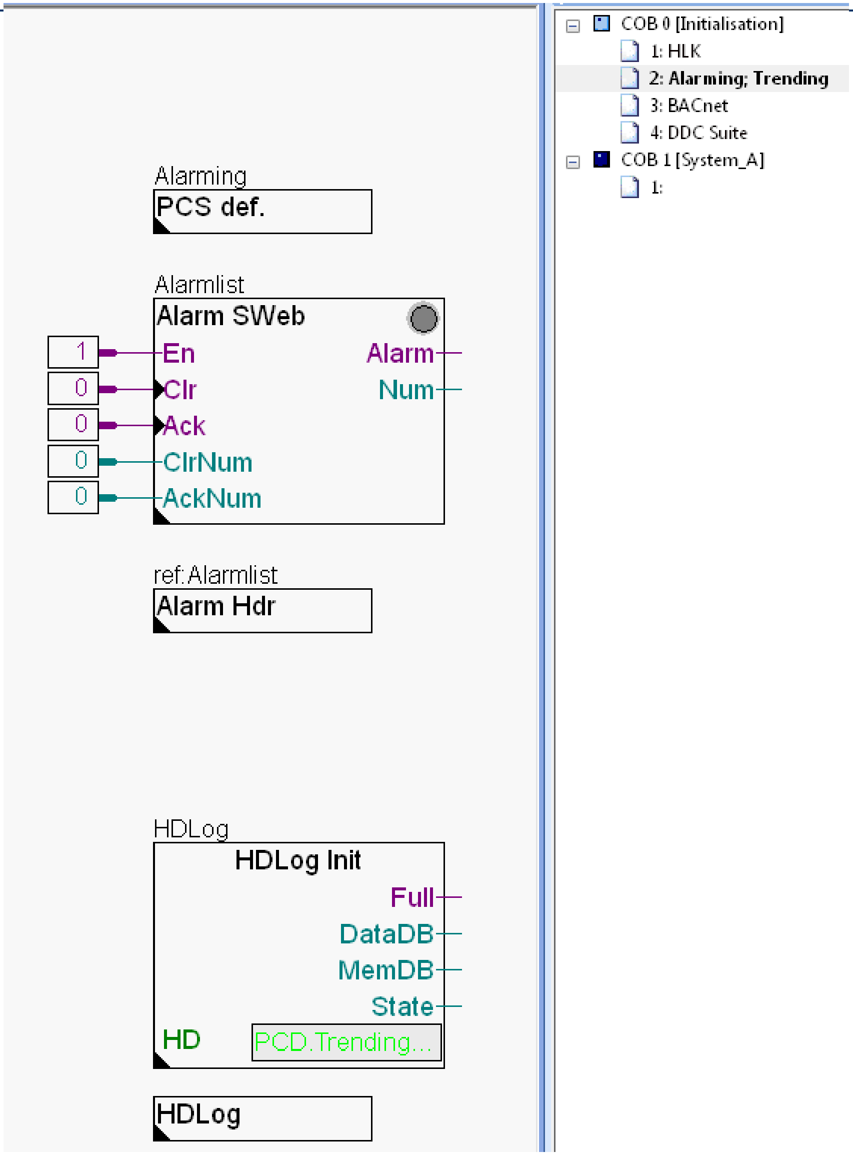


DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

This is the second page; Alarming; Trending

-PCS def. FBox for alarming (PCS)
-Alarm List FBox for the general alarm list, displayed in web projects (Alarm SWeb)
-AlarmHdr FBox – organises the alarm numbers for the DDC Suite 2.5 Fboxes (Alarm Hdr)
-HDLog Initialisation FBox – general offline trending for use in SWeb applications (HDLog Init)
-Additional HDLog FBox for DDC Suite 2.5 Fboxes (HDLog)

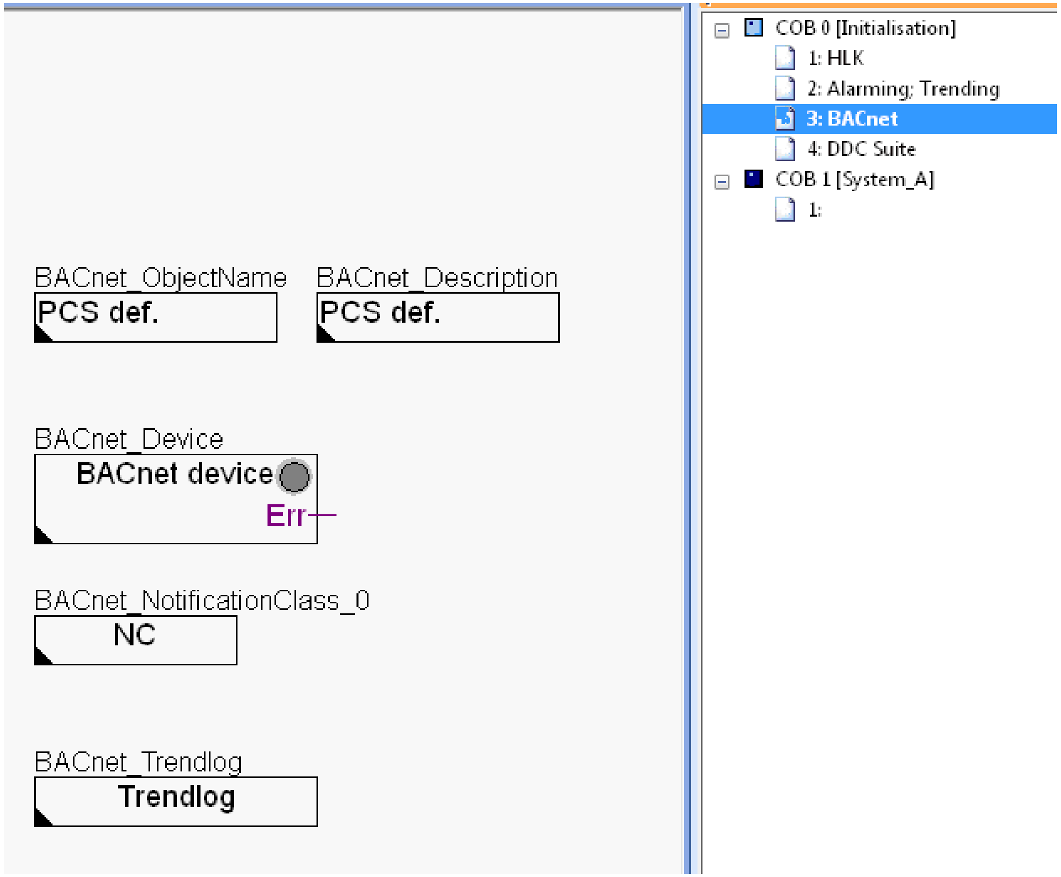


DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

This is the third page; BACnet

-PCS FBox for BACnet object names (PCS)
-PCS FBox for BACnet description (PCS)
-BACnet Device FBox for editing the device (BACnet Device)
-BACnet Notification Class FBox for creating alarm classes (NC)
-BACnet Trendlog FBox for defining trendlog options (Trendlog)

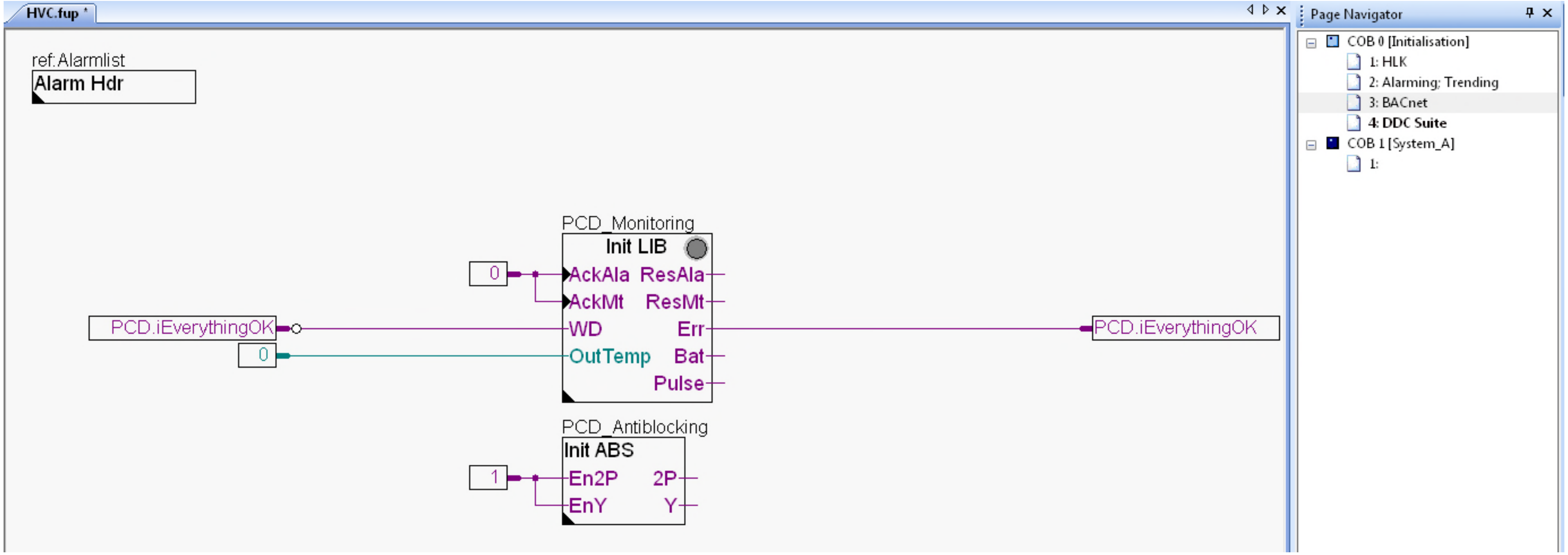


DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

This is the fourth page; DDC Suite

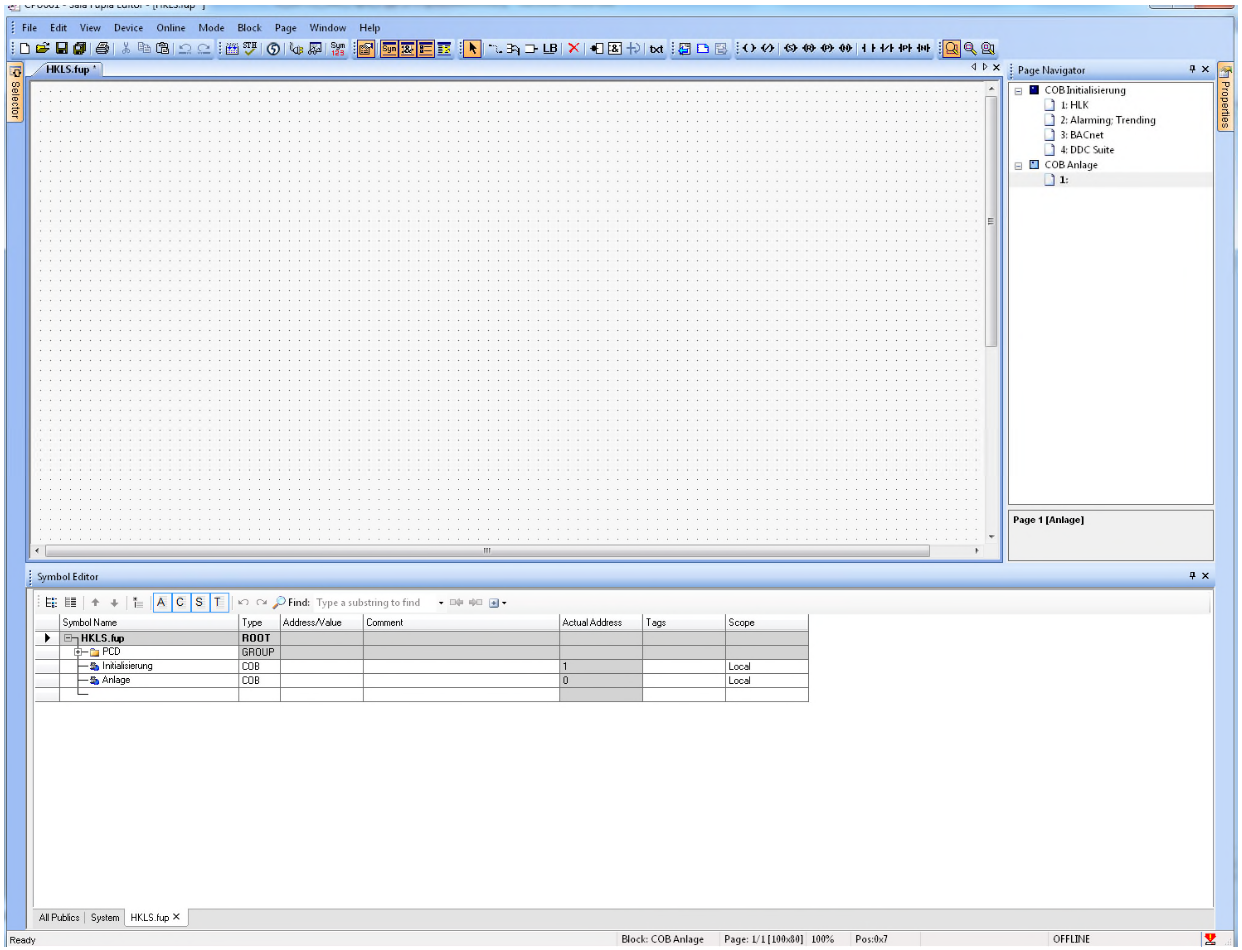
-AlarmHdr FBox – organises the alarm numbers for the DDC Suite 2.5 Fboxes (Alarm Hdr)
-Init FBox of the DDC Suite Library (DDC Suite
requires the Heavac Init FBox positioned before the first
DDC Suite FBox)
-Anti-block protection FBox – central management of the
anti-block types



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

For this, there is a further prepared COB system with an empty page. This is where we start the actual programming of the system.



- COB Initialisierung
  - 1: HLK
  - 2: Alarming; Trending
  - 3: BACnet
  - 4: DDC Suite
- COB Anlage
  - 1:

Page 1 [Anlage]

Symbol Name	Type	Address/Value	Comment	Actual Address	Tags	Scope
HKLS.fup	**ROOT**					
PCD	GROUP					
Initialisierung	COB			1		Local
Anlage	COB			0		Local

DDC Suite 2.5 / PG5 Building Advanced

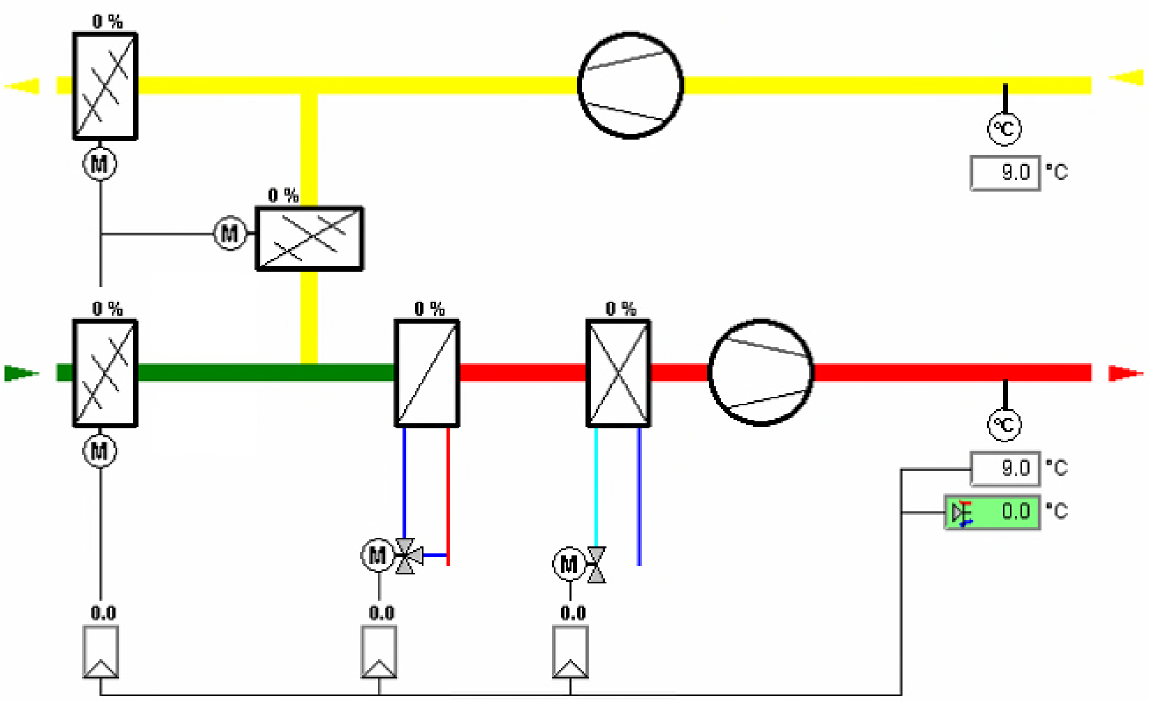
Working with Fupla

We will now create an application for a small ventilation system. The application contains some virtual functions:

- Weekly timer for time control of the ventilation system
- System switch for switching the ventilation system on/off
- System start function that ensures the ventilation system always starts up in a controlled manner

As well as some physical parameters:

- Supply air temperature sensor
- Exhaust air temperature sensor
- Supply Air Fan, 1 speed
- Exhaust Air Fan, 1 speed
- Flaps or valves for cooler, mixed air and heater, regulated

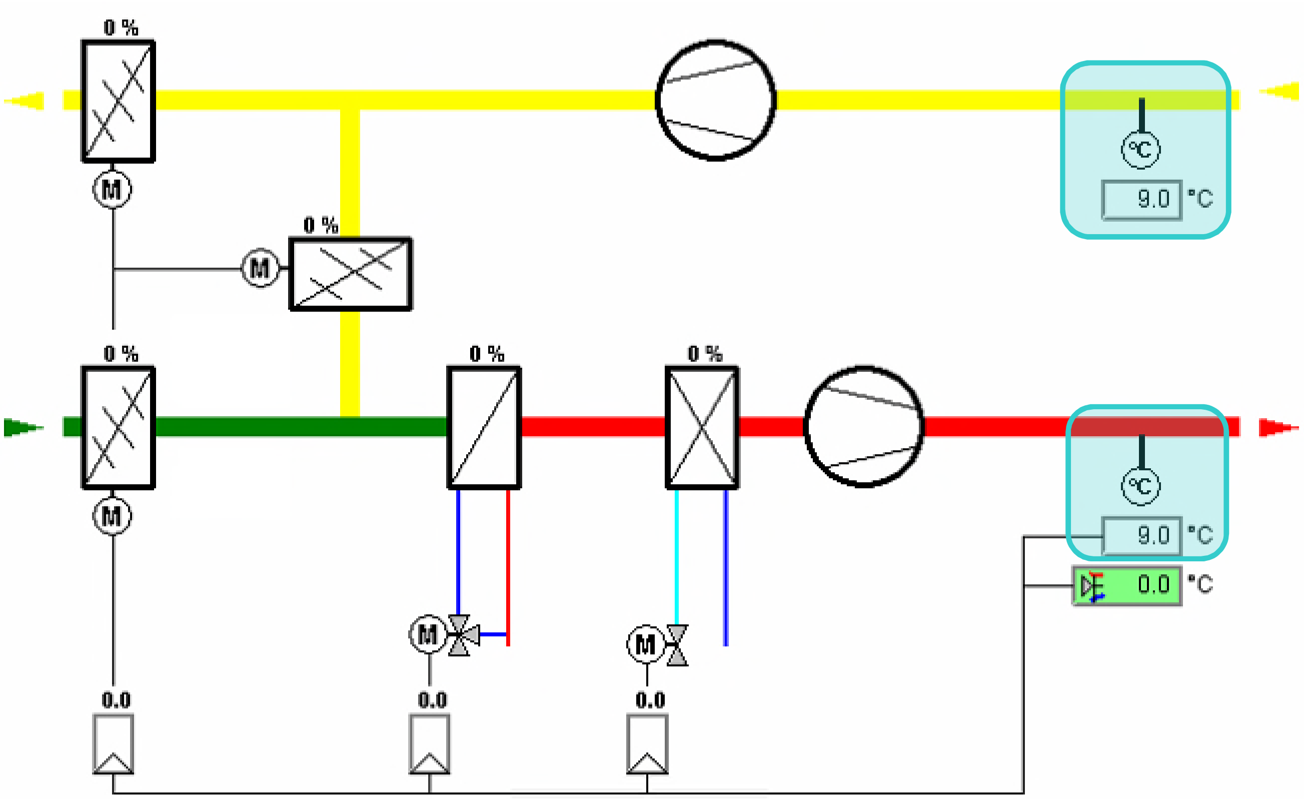


DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

The first Fupla page contains:

- the virtual functions: weekly timer, system switch, system start function
- the physical components of supply air and exhaust air temperature sensors



DDC Suite 2.5 / PG5 Building Advanced

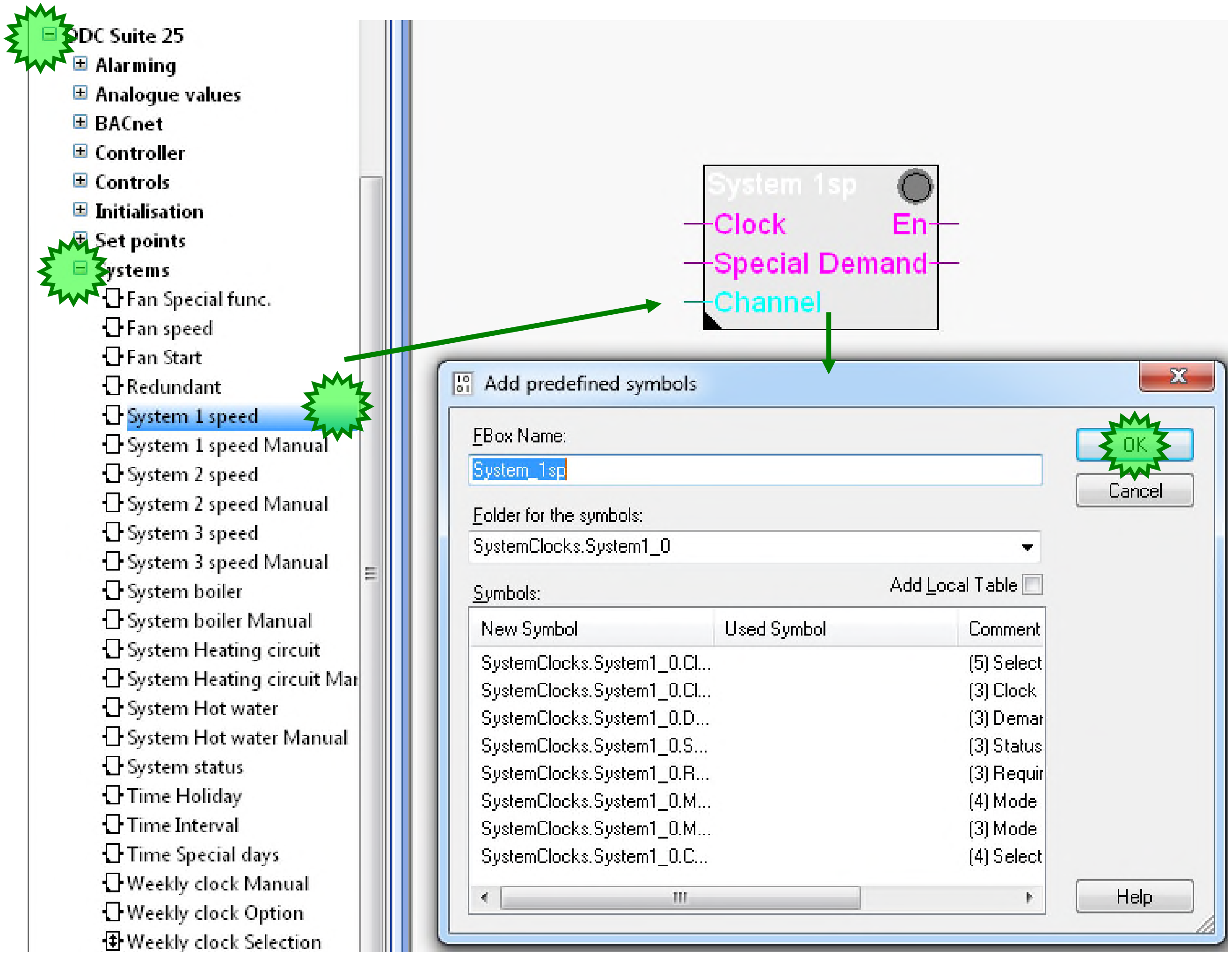
Working with Fupla

1. In the FBox Selector, select the Application tab and the DDC Suite 25 Systems family.

2. Click on FBox System 1 speed

3. Position the FBox as shown in the image (top/centred)

4. Confirm the window with the predefined symbols by clicking on OK.



FBox Name: System_1sp

Folder for the symbols: SystemClocks.System1_0

Add Local Table □

Symbols:

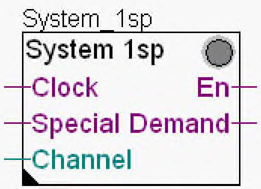
New Symbol	Used Symbol	Comment
SystemClocks.System1_0.Cl...		[5] Select
SystemClocks.System1_0.Cl...		[3] Clock
SystemClocks.System1_0.D...		[3] Demar
SystemClocks.System1_0.S...		[3] Status
SystemClocks.System1_0.R...		[3] Requir
SystemClocks.System1_0.M...		[4] Mode
SystemClocks.System1_0.M...		[3] Mode
SystemClocks.System1_0.C...		[4] Select

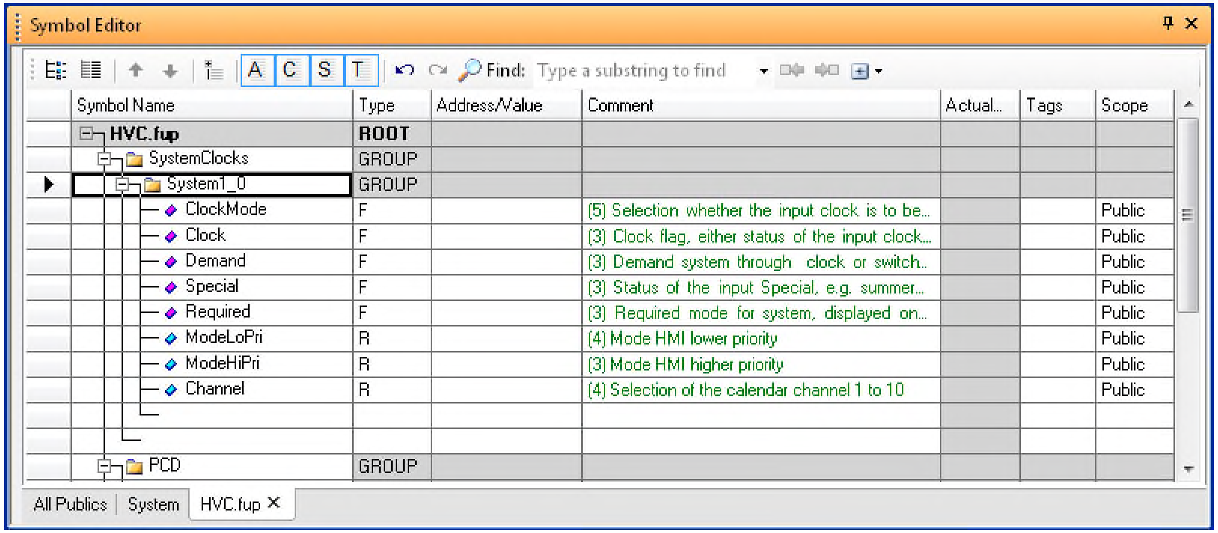
DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

During positioning of the DDC Suite FBox in Fupla, the FBox automatically creates

- a main SystemClocks group in order to indicate the family from which the FBox was selected
- a System1_0 sub-group where the part before the “_” represents the FBox name and the part after the “_” represents an index, starting with 0
- This group contains all FBox parameters, such as symbol, type and comment



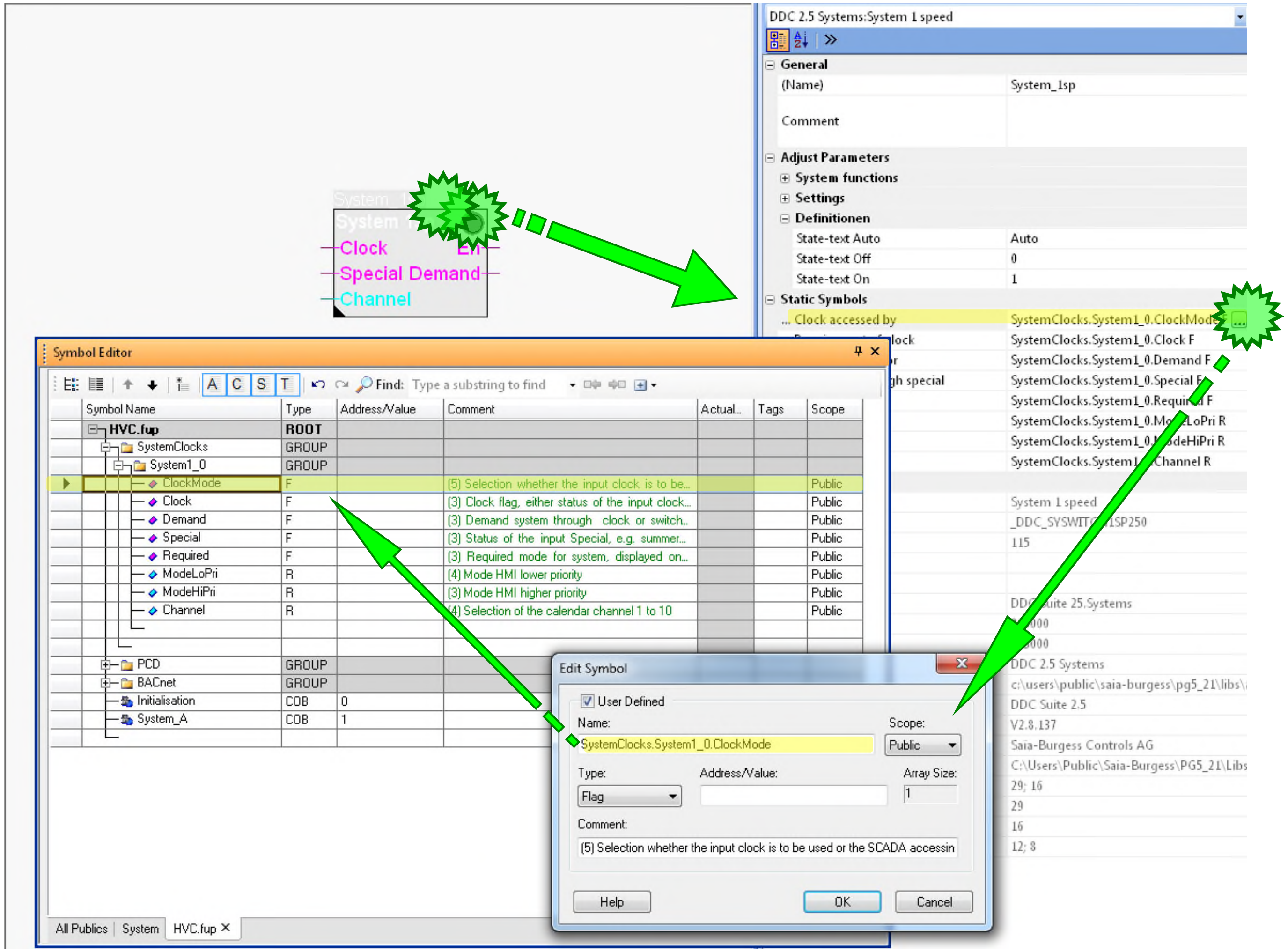


Symbol Name	Type	Address/Value	Comment	Actual...	Tags	Scope
HVC.fup	ROOT					
SystemClocks	GROUP					
System1_0	GROUP					
ClockMode	F		(5) Selection whether the input clock is to be...			Public
Clock	F		(3) Clock flag, either status of the input clock...			Public
Demand	F		(3) Demand system through clock or switch...			Public
Special	F		(3) Status of the input Special, e.g. summer...			Public
Required	F		(3) Required mode for system, displayed on...			Public
ModeLoPri	R		(4) Mode HMI lower priority			Public
ModeHiPri	R		(3) Mode HMI higher priority			Public
Channel	R		(4) Selection of the calendar channel 1 to 10			Public
PCD	GROUP					

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Let’s look at the FBox setting parameters. Double-click on the FBox to open the Adjust window. In the details window, you can see that the parameter already contains a predefined symbol which you can find in the Symbol Editor.



DDC 2.5 Systems:System 1 speed

General
(Name) System_1sp
Comment

Adjust Parameters
System functions
Settings
Definitionen
State-text Auto Auto
State-text Off 0
State-text On 1

Static Symbols
... Clock accessed by SystemClocks.System1_0.ClockMode F
lock SystemClocks.System1_0.Clock F
r SystemClocks.System1_0.Demand F
gh special SystemClocks.System1_0.Special F
SystemClocks.System1_0.Requi[illegible] F
SystemClocks.System1_0.Mo[illegible]LoPri R
SystemClocks.System1_0.[illegible]deHiPri R
SystemClocks.System1[illegible]Channel R

System 1 speed
_DDC_SYSWITCH1SP250
115
DDC Suite 25.Systems
000
000
DDC 2.5 Systems
c:\users\public\saia-burgess\pg5_21\libs\
DDC Suite 2.5
V2.8.137
Saia-Burgess Controls AG
C:\Users\Public\Saia-Burgess\PG5_21\Libs
29; 16
29
16
12; 8

Symbol Editor

Symbol Name	Type	Address/Value	Comment	Actual...	Tags	Scope
HVC.fup	ROOT					
SystemClocks	GROUP					
System1_0	GROUP					
ClockMode	F		(5) Selection whether the input clock is to be...			Public
Clock	F		(3) Clock flag, either status of the input clock...			Public
Demand	F		(3) Demand system through clock or switch...			Public
Special	F		(3) Status of the input Special, e.g. summer...			Public
Required	F		(3) Required mode for system, displayed on...			Public
ModeLoPri	R		(4) Mode HMI lower priority			Public
ModeHiPri	R		(3) Mode HMI higher priority			Public
Channel	R		(4) Selection of the calendar channel 1 to 10			Public
PCD	GROUP					
BACnet	GROUP					
Initialisation	COB	0				
System_A	COB	1				

Edit Symbol

☑ User Defined

Name: SystemClocks.System1_0.ClockMode

Scope: Public

Type: Flag

Address/Value:

Array Size: 1

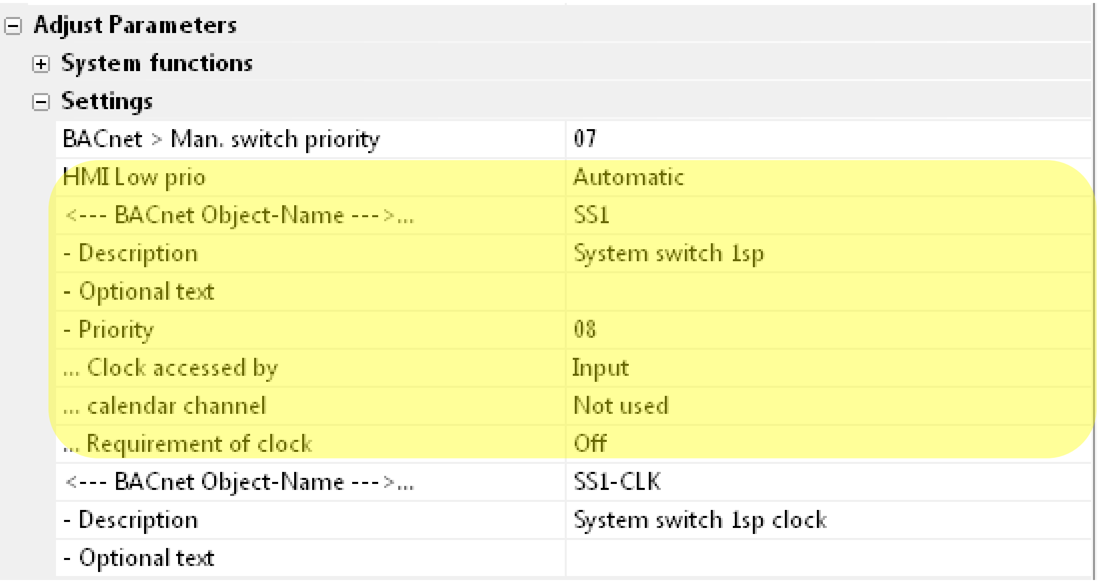
Comment: (5) Selection whether the input clock is to be used or the SCADA accessin

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

The FBox System 1 speed 2.5 allows us to start/stop, e.g. the ventilation system

- Manually by selecting the parameter HMI Low prio
- Optionally through Clock via FBox input or GLT
- Optionally through the calendar channel function
- In the Einstellungen area you can find the online parameters



⊟ Adjust Parameters	
⊞ System functions	
⊟ Settings	
BACnet > Man. switch priority	07
HMI Low prio	Automatic
<--- BACnet Object-Name --->...	SS1
- Description	System switch 1sp
- Optional text	
- Priority	08
... Clock accessed by	Input
... calendar channel	Not used
... Requirement of clock	Off
<--- BACnet Object-Name --->...	SS1-CLK
- Description	System switch 1sp clock
- Optional text	

DDC Suite FBoxes always use online parameters. Therefore, it is possible to use e.g. a Clock FBox to start/stop the ventilation system provided the GLT system is not installed.

If the GLT is online, you can easily activate the GLT Clock Manager to start/stop the ventilation. Only the parameter Clock accessed by needs to be changed from DDC to GLT . Now the GLT can write the start/stop clock command to the parameter Requirement of clock.

In the same way, you could automatically switch back to the FBox clock if you detect that the GLT is offline ...

DDC Suite 2.5 / PG5 Building Advanced

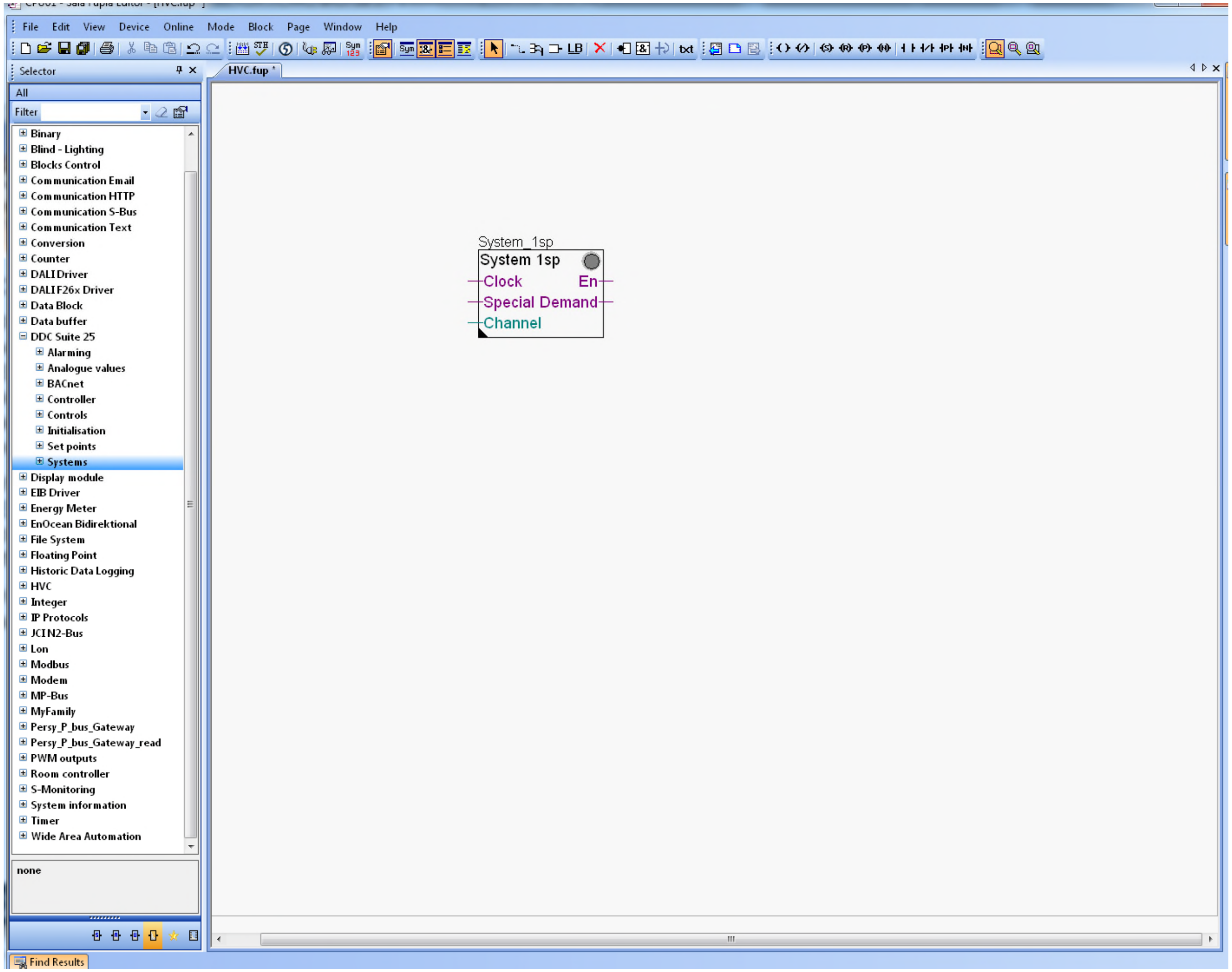
Working with Fupla

Close the Adjust window. For programming with

FBoxes we do not currently need the Symbol Editor. As we have seen, the FBoxes automatically generate all resources themselves.

With the “F5” key, the Symbol Editor can easily be hidden – press “F5” again to display the Symbol Editor again.

You should now see this screen:



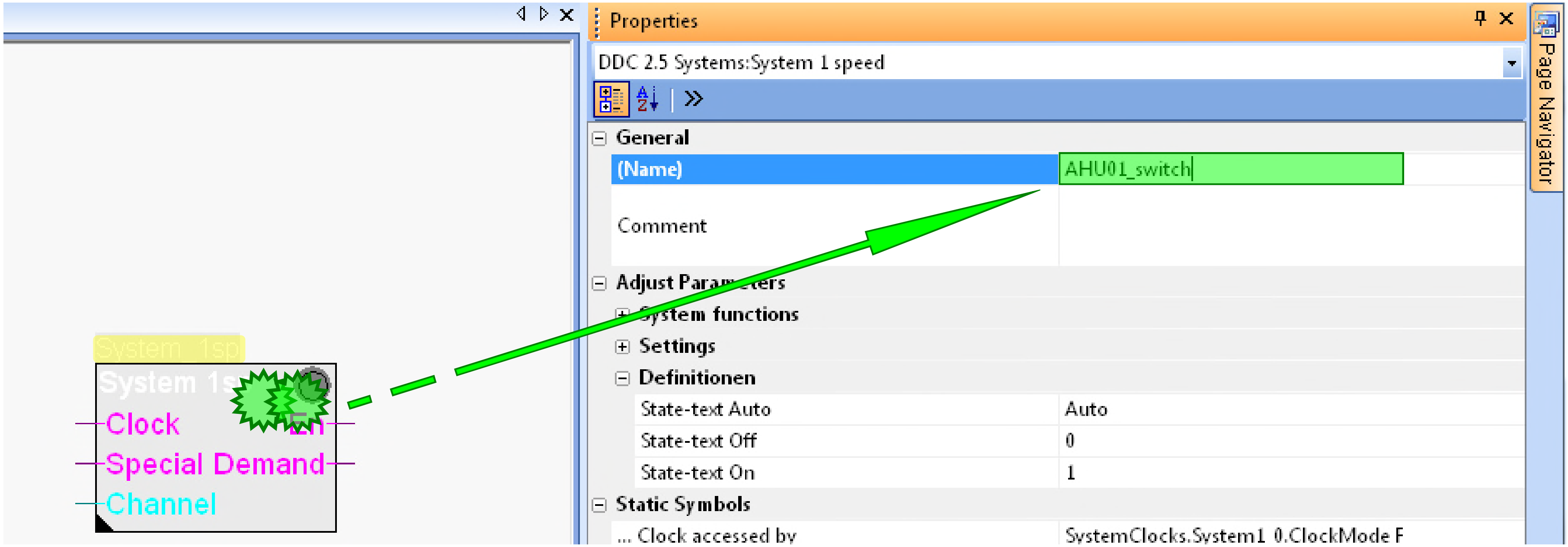
DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

As you can see, the FBox System 1Sp has a standard name System 1Sp. DDC Suite FBoxes use the FBox Property “Name” for some functionalities, therefore it is important to use a unique name.

Double-click on the FBox with the left mouse button and, in the Properties window go to the Name entry and change the name to AHU01_switch.

This FBox name is used for labelling of internal variables and for documentation headings.



Properties

DDC 2.5 Systems:System 1 speed

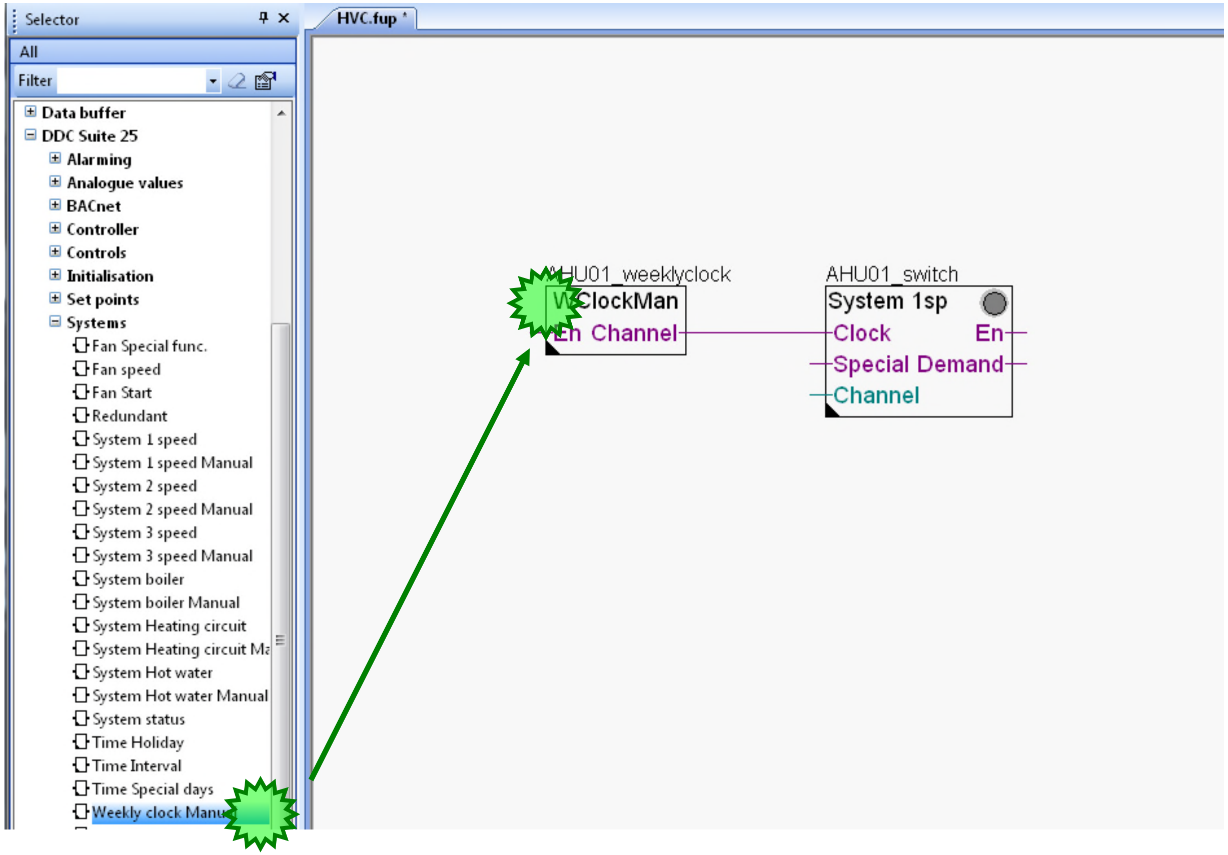
⊟ General	
(Name)	AHU01_switch
Comment	
⊟ Adjust Parameters	
⊞ System functions	
⊞ Settings	
⊟ Definitionen	
State-text Auto	Auto
State-text Off	0
State-text On	1
⊟ Static Symbols	
... Clock accessed by	SystemClocks.System1_0.ClockMode F

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

In this example, we use the clock function with the FBox Input Uhr. To do this, we need a clock FBox.

1. In the FBox selector Application tab, select the group DDC System.
2. Select the weekly clock manual
3. Position the weekly clock as shown in the image (top/centred)
4. Connect the FBox output Channel with the FBox input clock.
5. We name this AHU01_weeklyclock



DDC Suite 2.5 / PG5 Building Advanced

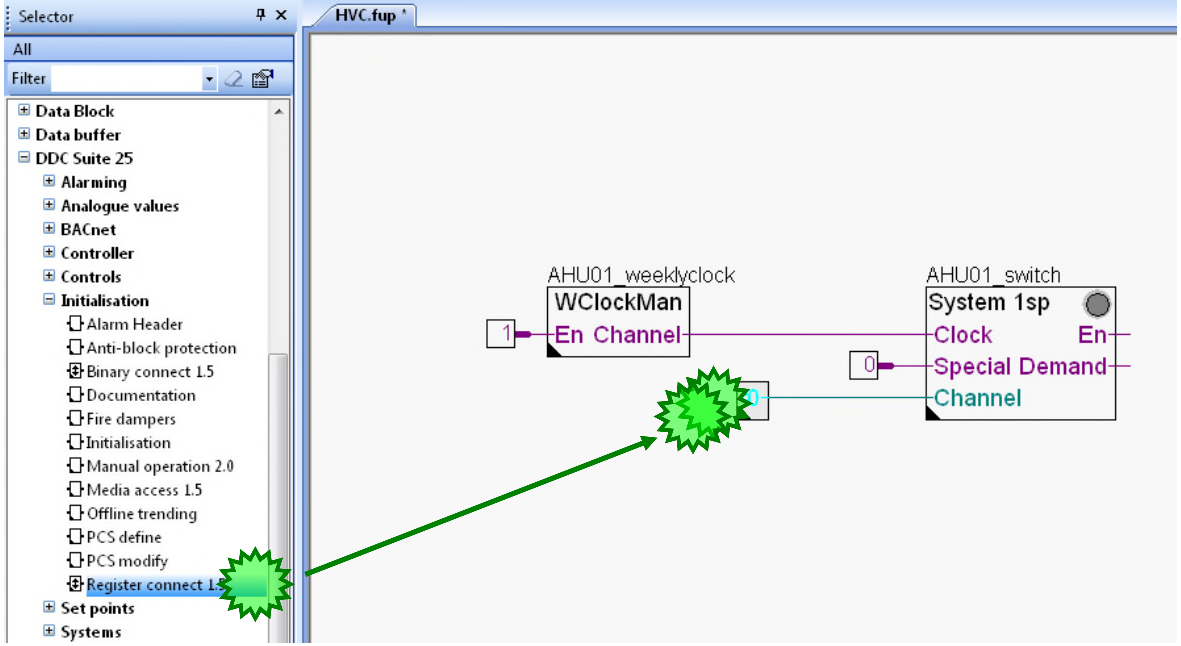
Working with Fupla

The connections on the input side must always all be assigned. To be able to enable the weeklyclock, the input must be described with a logical “1”. This is easiest using a connector with the value 1 in it. The Son input of the system switch is not used, therefore it has a logical “0”.

1. The input channel of the FBox System 1sp is not used (optional for use of the calendar functions). But this is an integer connection, which is why we need a special FBox to “complete” the connection.

2. In the FBox selector Application tab page, select the DDC Initialisation family.

3. Take the Register connect 1.5 FBox and connect it to the Channel connection



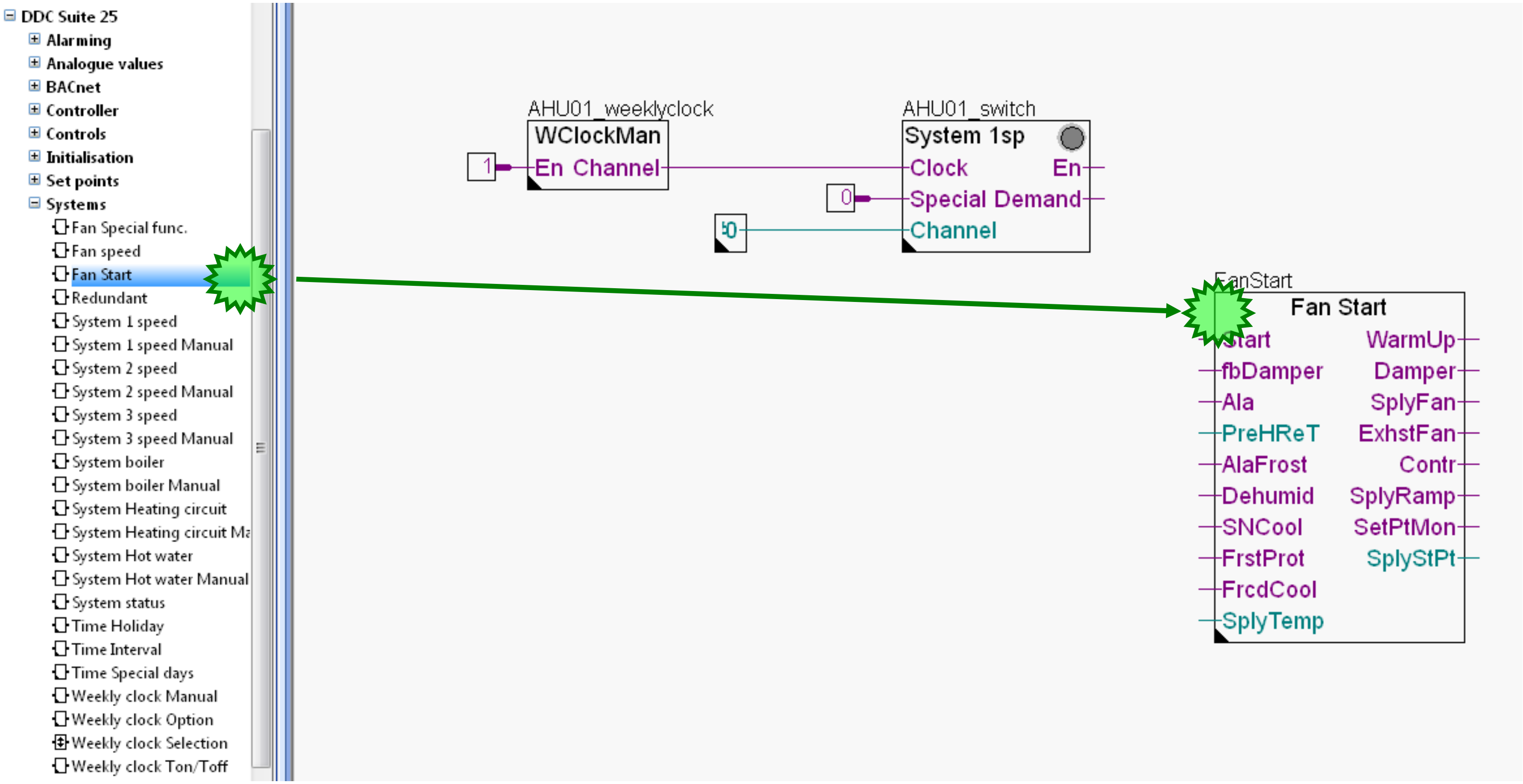
This FBox is also helpful in setting a constant value instead of a connector.

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Next we need the system start function

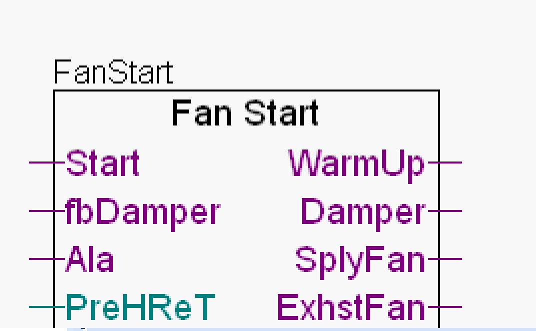
1. In the FBox selector Application tab, select the DDC Systems family.
2. Click on the Fan Start FBox
3. Position the FBox as shown in the image



DDC Suite 2.5 / PG5 Building Advanced

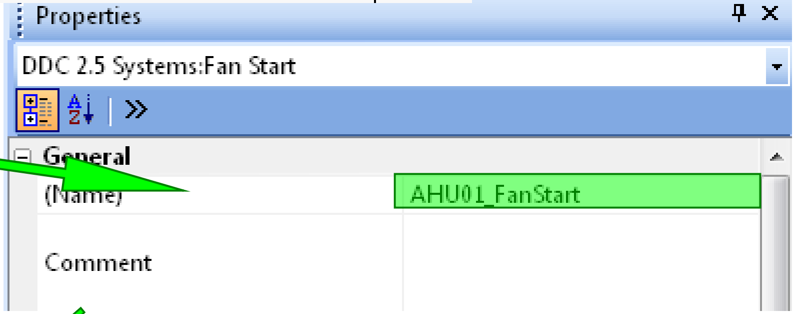
Working with Fupla

Remember - DDC Suite FBoxes use the “Name” FBox property for some functionalities therefore it is important to use a unique name.



Double-click on the FBox and, in the Properties window, select the Name

We will change the standard name into AHU01_FanStart

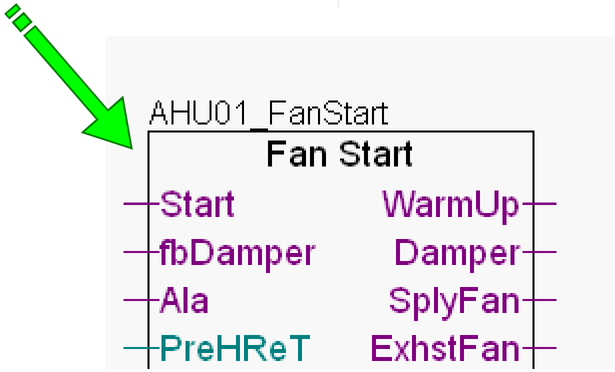


DDC 2.5 Systems:Fan Start

(Name) AHU01_FanStart

Comment

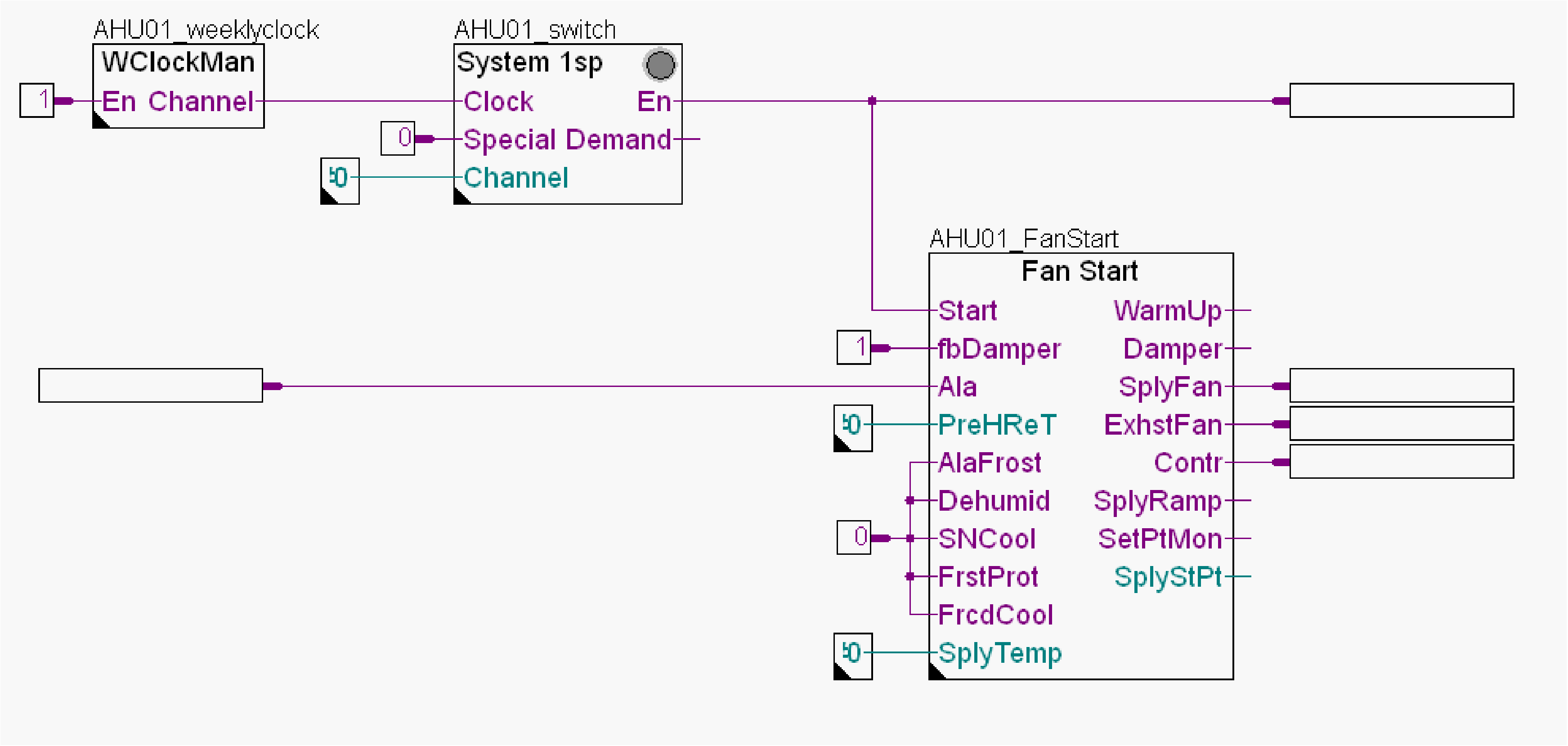
The result looks like this:



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

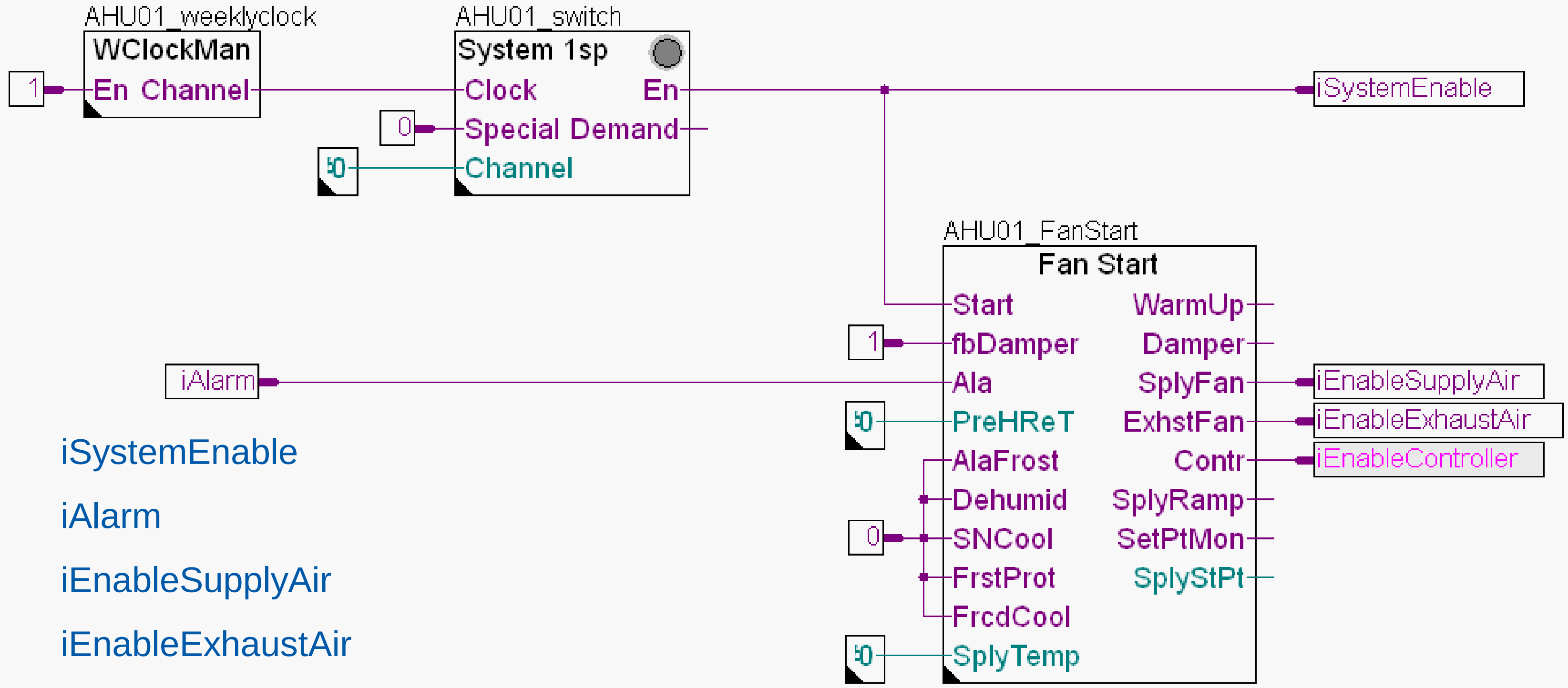
To complete this part, we connect a few connectors to the FBoxes and make the remaining connections.



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Then we label the five flags with the following texts:



iSystemEnable

iAlarm

iEnableSupplyAir

iEnableExhaustAir

iEnableController

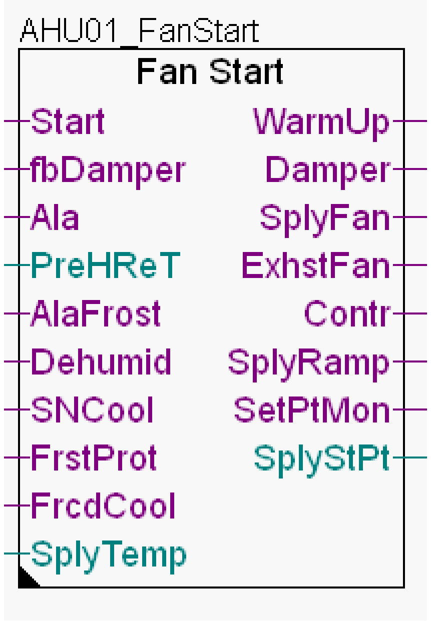
DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

The Fan Start FBox combines frequently used methods of starting up a ventilation system in one sequence, e.g.

1. pre-flushing the preheater in order to prevent a frost alarm during system start-up in winter. After successful completion:
2. Open the ventilation damper and wait for the damper open confirmation “fbDamper”
3. Enable the supply air fan, and after a few seconds
4. enable the exhaust air fan, and after a few seconds
5. activate the controller (PID) and after a few minutes
6. start the setpoint monitoring

   There is also a setpoint ramp for the supply air temperature in order to prevent overshooting when starting up the controller if the supply air temperature after pre-flushing is too high.



DDC Suite 2.5 / PG5 Building Advanced

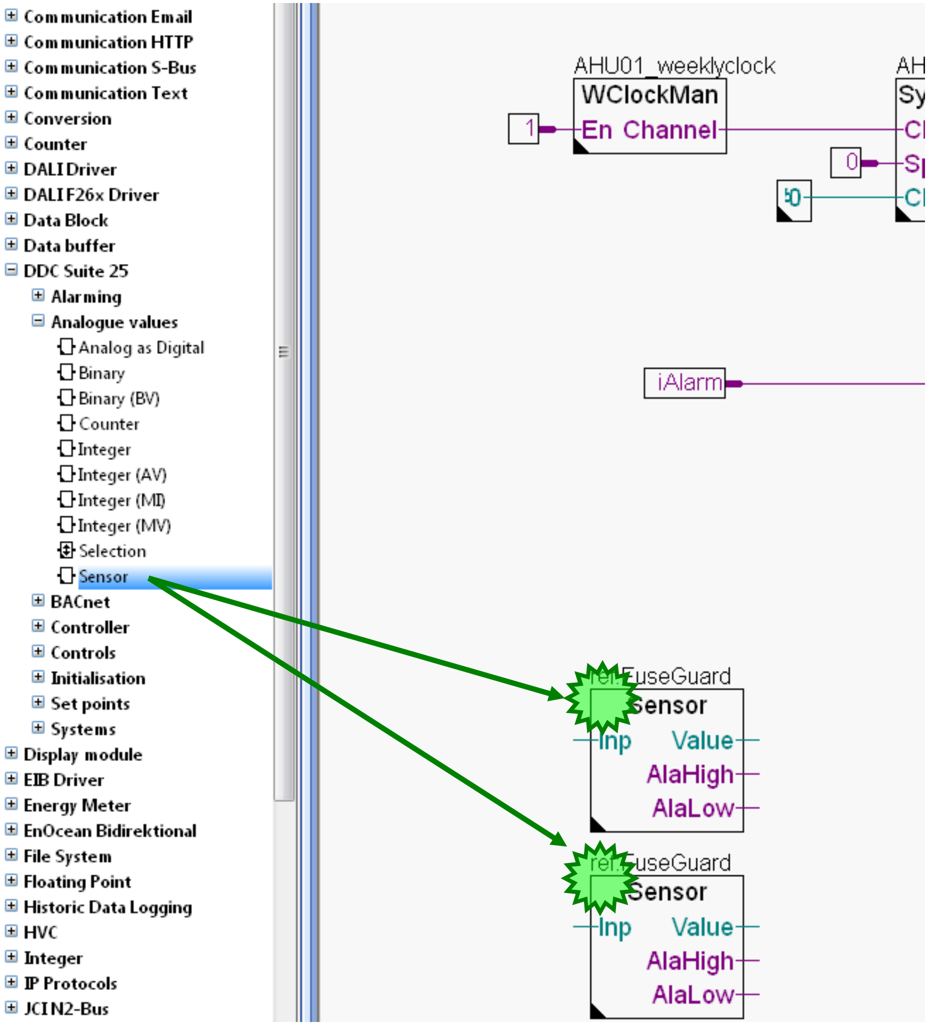
Working with Fupla

Now we add the two temperature sensors, the first for the supply air temperature and the second for the exhaust air temperature

1. On the FBox selector Application tab, select the DDC Analog values family.

2. Click on the Sensor FBox

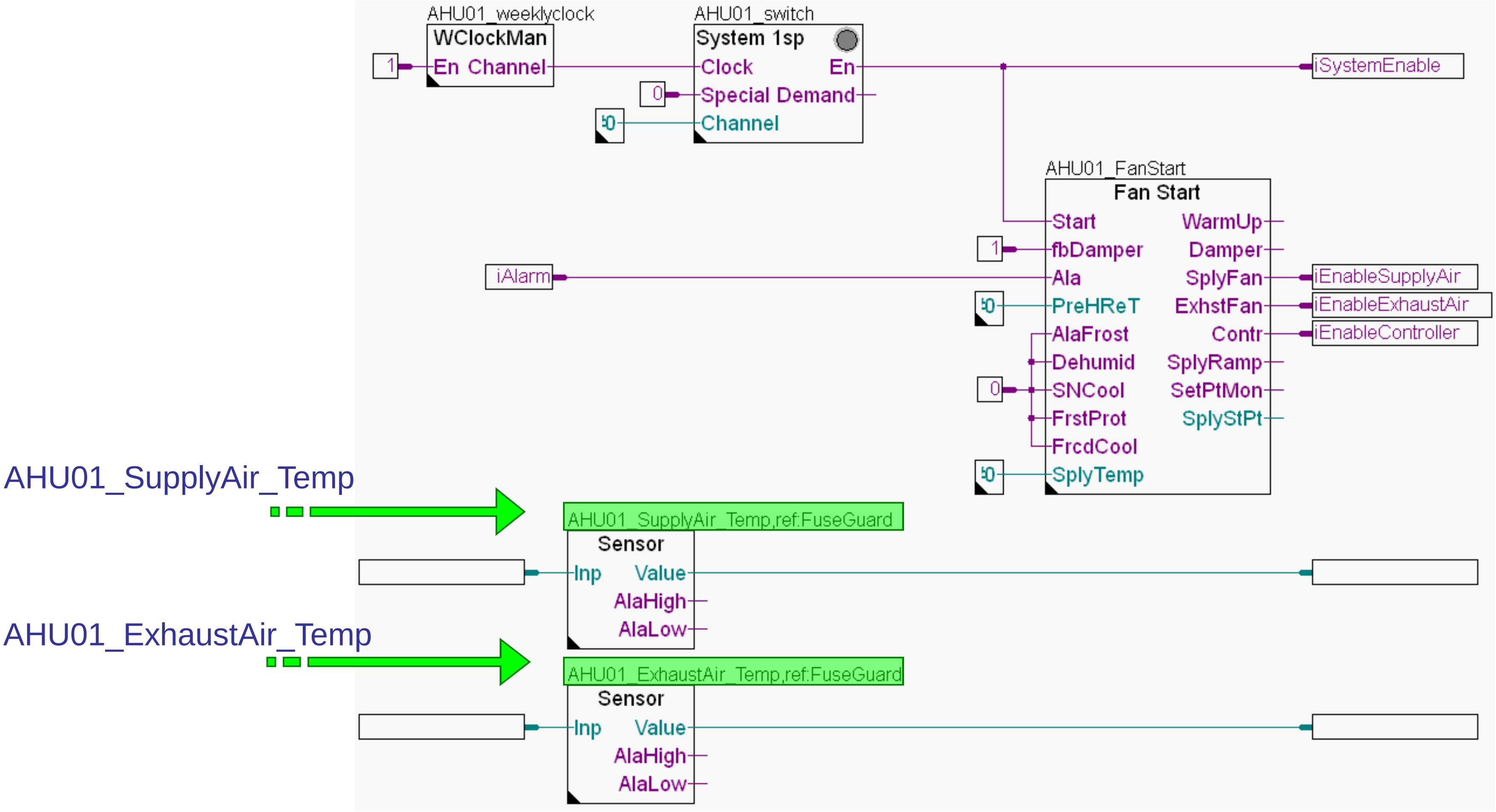
3. Position 2 FBoxes at the same position as shown in the screenshot



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

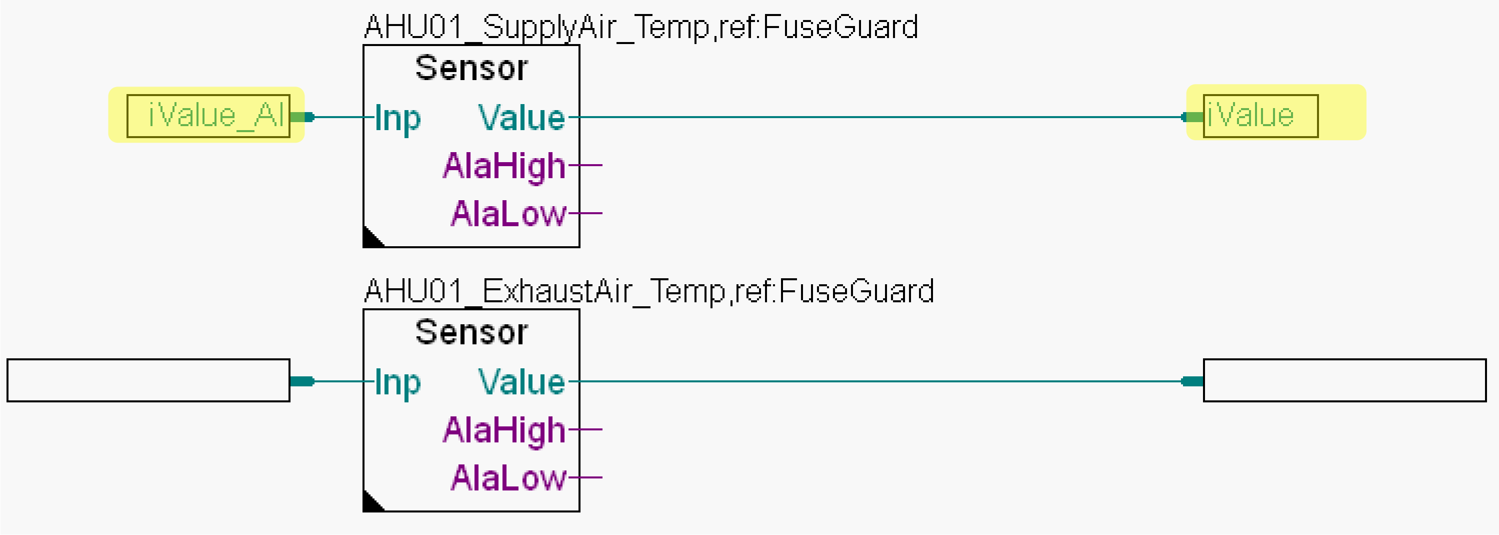
Let’s complete this section by inserting the input and output connectors and editing the “Name” FBox property. The Reference FBox property remains unchanged.



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

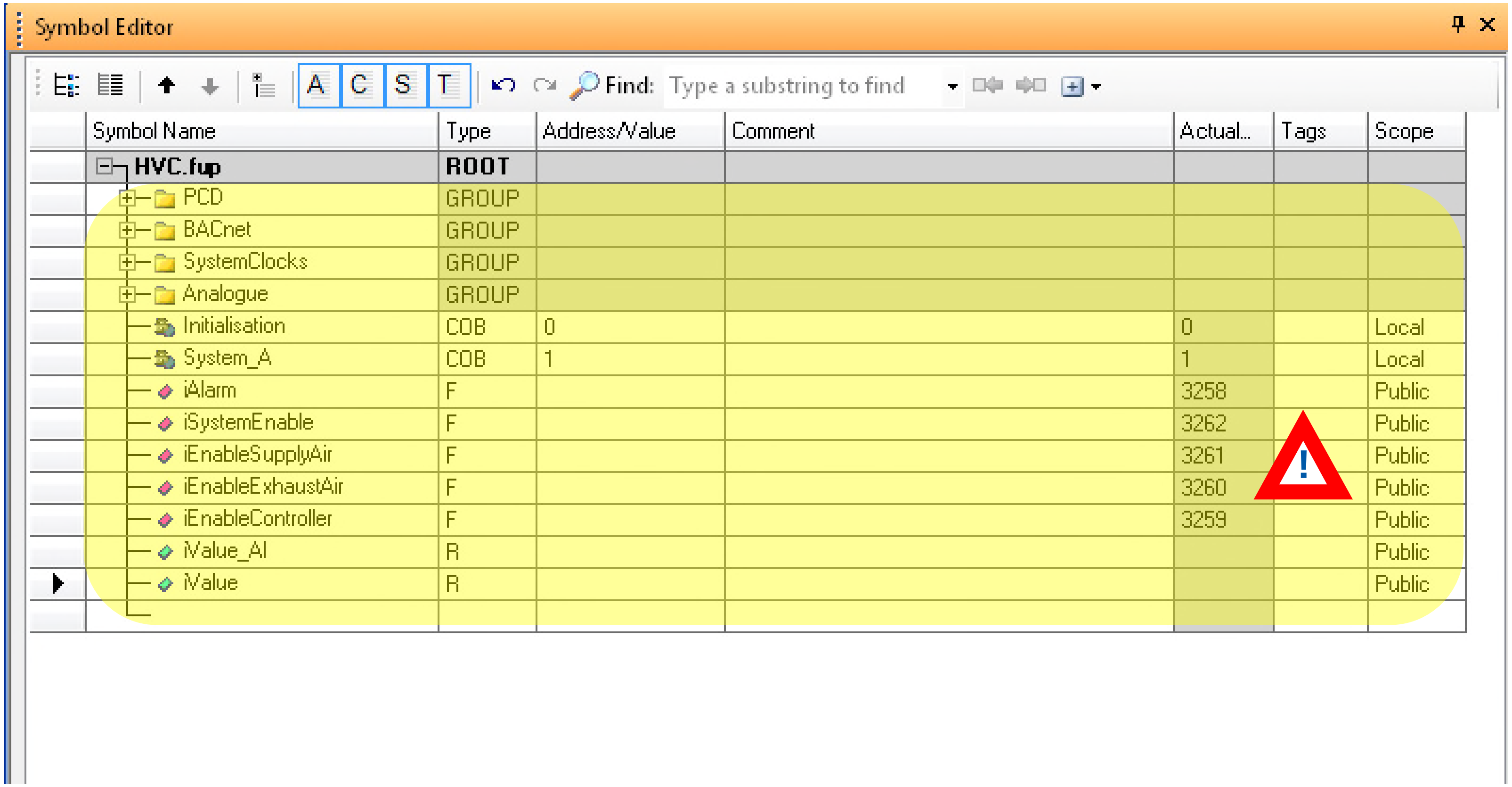
Enter the symbol names in the FBox connectors as shown below.


AHU01_SupplyAir_Temp,ref:FuseGuard
Sensor
iValue_AI
Inp
Value
AlaHigh
AlaLow
iValue
AHU01_ExhaustAir_Temp,ref:FuseGuard
Sensor
Inp
Value
AlaHigh
AlaLow

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

In the Symbol Editor (remember, you can hide/display the Symbol Editor with the “F5” key) check that your structure and symbols look exactly the same. The scope of the symbols must be Public.



Symbol Name	Type	Address/Value	Comment	Actual...	Tags	Scope
HVC.fup	ROOT					
PCD	GROUP					
BACnet	GROUP					
SystemClocks	GROUP					
Analogue	GROUP					
Initialisation	COB	0		0		Local
System_A	COB	1		1		Local
iAlarm	F			3258		Public
iSystemEnable	F			3262		Public
iEnableSupplyAir	F			3261		Public
iEnableExhaustAir	F			3260		Public
iEnableController	F			3259		Public
iValue_AI	R					Public
iValue	R					Public

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

The measured value FBox with the name “AHU_SupplyAir_Temp” is connected with the “iValue_AI” and “iValue” symbols, as the input of the raw value comes from the analogue input card and the output is converted, filtered and aligned with the current value.

The measured value FBox with the name “AHU_ExhaustAir_Temp” should be connected with the same symbols, but then we would have used the “iValue_AI” symbol, for example, for two different variables.

Therefore, we will now begin to structure the symbols received from the FBoxes and created by us.

Structuring of the data is advisable for

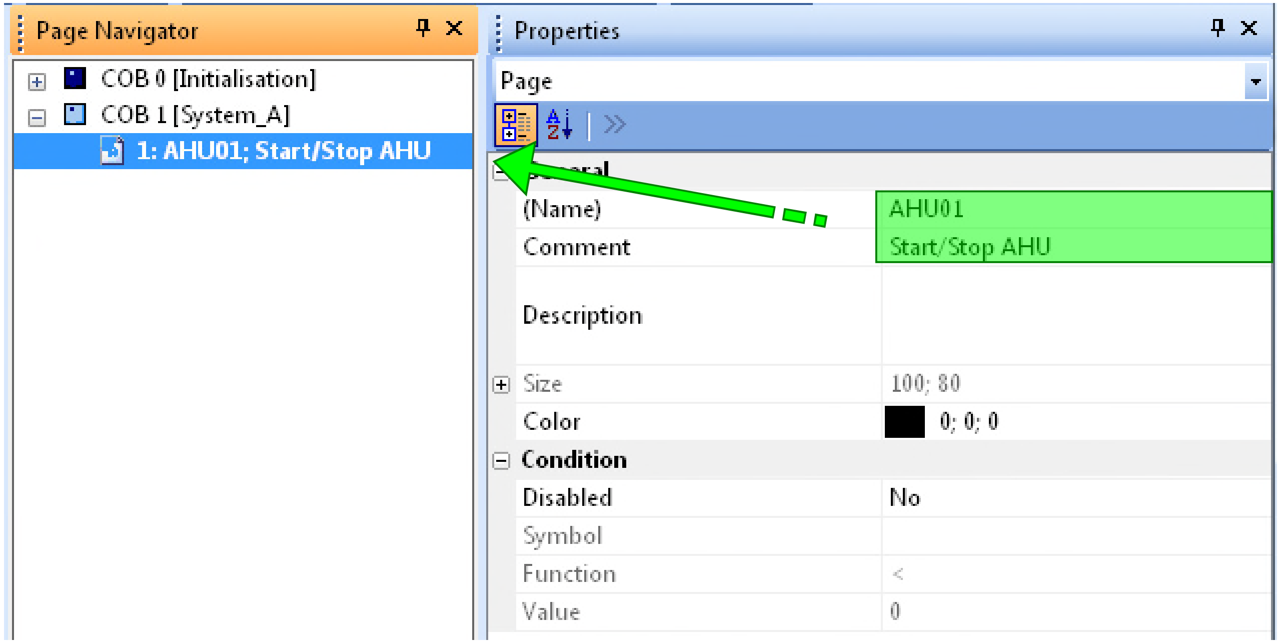
- easier finding of data in large lists
- more information about the data that you enter yourself
- reducing spelling errors through reuse of the same symbol name
- creating reusable programmes

Layout of the data structure

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Let’s edit the page property “Name”. Double-click in a free area of the Fupla page and enter AHU01 in the “Name“ text field and State in the “Comment“ text field.



(Name)	AHU01
Comment	Start/Stop AHU
Description	
Size	100; 80
Color	0; 0; 0
Condition	
Disabled	No
Symbol	
Function	<
Value	0

DDC Suite 2.5 / PG5 Building Advanced

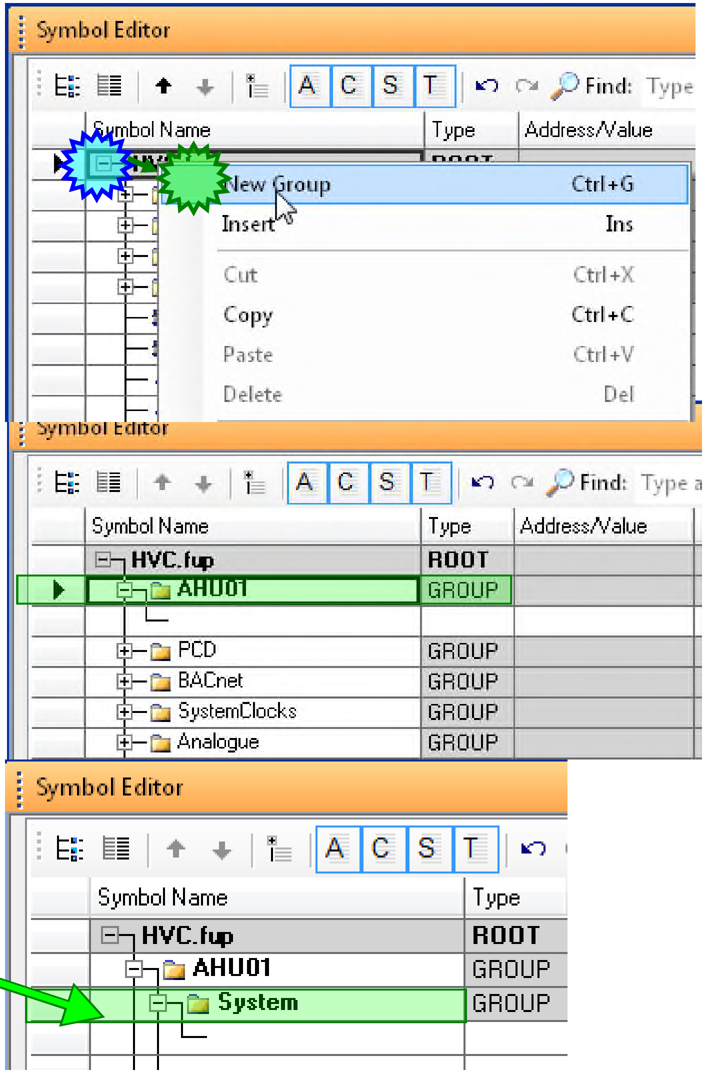
Working with Fupla

Now let’s organise the data in the Symbol Editor – All the symbols from the FBoxes and those created by us that are used in the ventilation system. To do this, the symbols should be grouped into a “Main group AHU01” (=Air Handling Unit 01).

AHU01

On this page, we have 3 virtual functions, the weekly timer, the system switch and the system start sequence. These are found in the “System” subfolder of the “AHU01” group. So let’s create this subfolder with a right-mouse click on AHU01 and “New Group”.

System



Symbol Name	Type	Address/Value
HVC.fup	ROOT	
AHU01	GROUP	
PCD	GROUP	
BACnet	GROUP	
SystemClocks	GROUP	
Analogue	GROUP	

Symbol Name	Type
HVC.fup	ROOT
AHU01	GROUP
System	GROUP

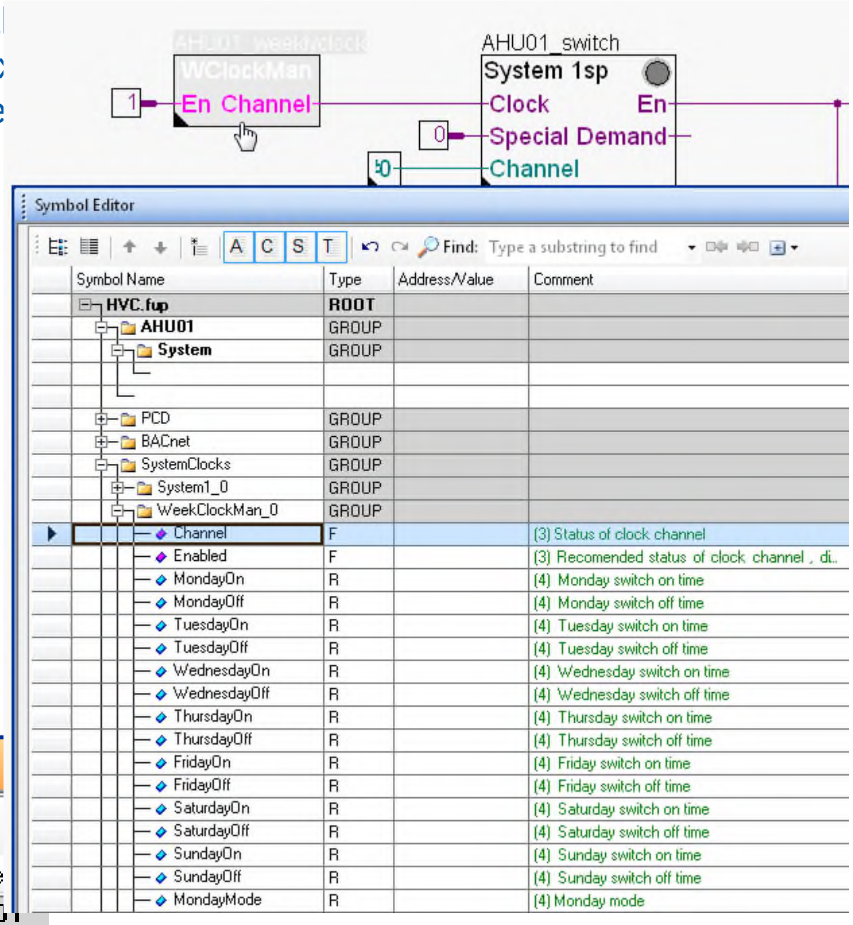
DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

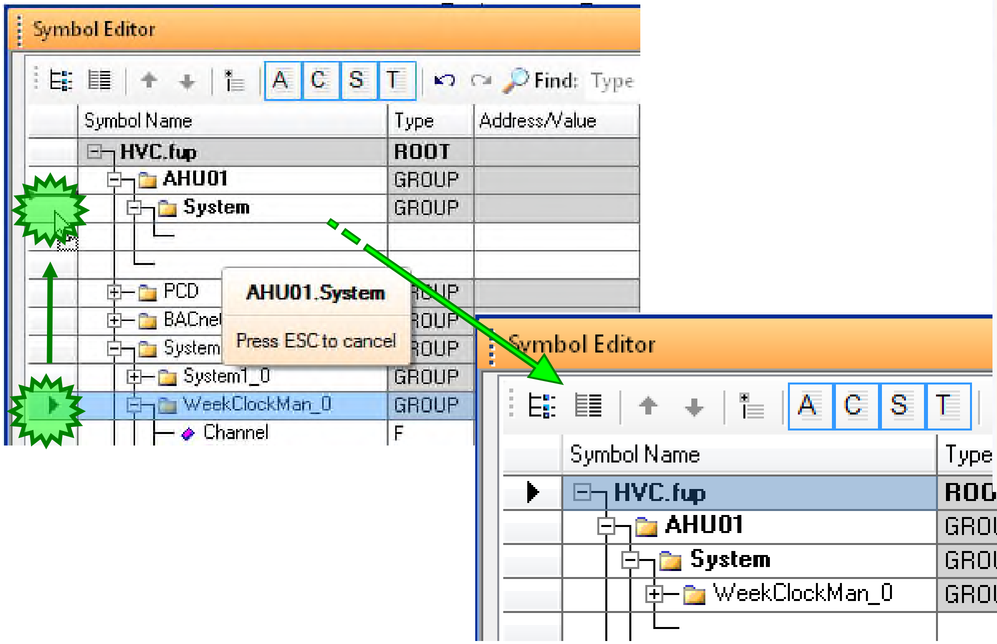
Now we move the data from the weeklyclock FBox into t AHU01.System group. To find the data, click on the FBo The Symbol Editor automatically jumps to the first define data point of this FBox in the group.

As you can see, the data is found in SystemClocks.WeekClockMan_0

Now we use drag&drop to move the WeekClockMan_0 group into the AHU01.System group



Symbol Name	Type	Address/Value	Comment
HVC.fup	ROOT		
AHU01	GROUP		
System	GROUP		
PCD	GROUP		
BACnet	GROUP		
SystemClocks	GROUP		
System1_0	GROUP		
WeekClockMan_0	GROUP		
Channel	F		(3) Status of clock channel
Enabled	F		(3) Recomended status of clock channel , di..
MondayOn	R		(4) Monday switch on time
MondayOff	R		(4) Monday switch off time
TuesdayOn	R		(4) Tuesday switch on time
TuesdayOff	R		(4) Tuesday switch off time
WednesdayOn	R		(4) Wednesday switch on time
WednesdayOff	R		(4) Wednesday switch off time
ThursdayOn	R		(4) Thursday switch on time
ThursdayOff	R		(4) Thursday switch off time
FridayOn	R		(4) Friday switch on time
FridayOff	R		(4) Friday switch off time
SaturdayOn	R		(4) Saturday switch on time
SaturdayOff	R		(4) Saturday switch off time
SundayOn	R		(4) Sunday switch on time
SundayOff	R		(4) Sunday switch off time
MondayMode	R		(4) Monday mode



Symbol Name	Type	Address/Value
HVC.fup	ROOT	
AHU01	GROUP	
System	GROUP	
PCD	GROUP	
BACnet	ROUP	
System	ROUP	
System1_0	GROUP	
WeekClockMan_0	GROUP	
Channel	F	

AHU01.System

Press ESC to cancel

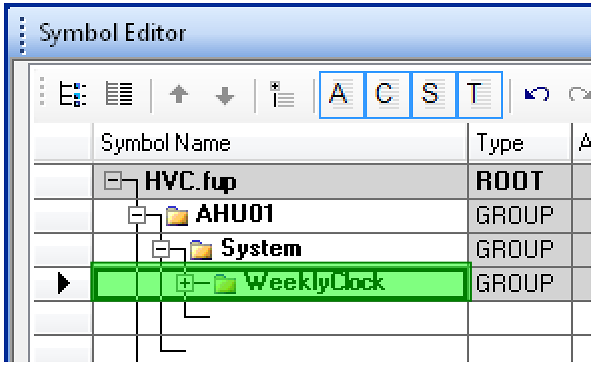
Symbol Name	Type
HVC.fup	ROOT
AHU01	GROUP
System	GROUP
WeekClockMan_0	GROUP

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Change the group name WeekClockMan_0 to

WeeklyClock



Symbol Name	Type
HVC.fup	ROOT
AHU01	GROUP
System	GROUP
WeeklyClock	GROUP

You can move and rename the groups. This makes it possible to create a clear structure with unique names. This means you can find data quickly in the Symbol Editor – and the group names are used in SWeb and ViSi.Plus to connect the data of an FBox with a display object.

Creating a clear data structure is a must! The structure used in this workshop is just an example of what it could look like.

The individual symbols that have been created automatically in a group by an FBox must never be renamed or moved. They are part of a database naming system. If they are renamed, the SWeb and ViSi.Plus display objects can no longer communicate with the FBox data.

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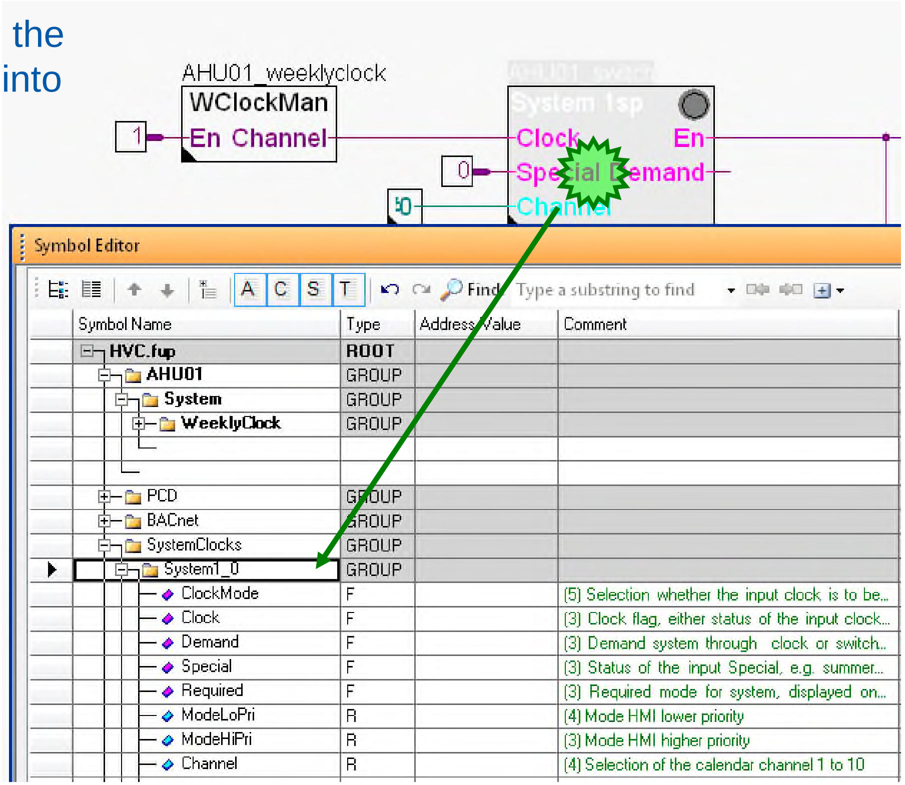
Working with Fupla

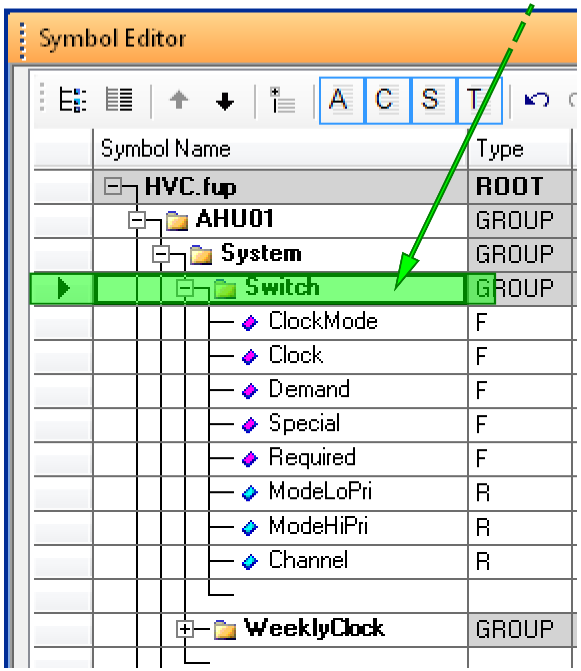
Repeat the steps for the System 1sp FBox. Click on the FBox, use drag&drop to drag the System1_0 group into the AHU01.System group.



Symbol Name	Type	Address Value	Comment
HVC.fup	ROOT		
AHU01	GROUP		
System	GROUP		
WeeklyClock	GROUP		
PCD	GROUP		
BACnet	GROUP		
SystemClocks	GROUP		
System1_0	GROUP		
ClockMode	F		(5) Selection whether the input clock is to be...
Clock	F		(3) Clock flag, either status of the input clock...
Demand	F		(3) Demand system through clock or switch..
Special	F		(3) Status of the input Special, e.g. summer...
Required	F		(3) Required mode for system, displayed on...
ModeLoPri	R		(4) Mode HMI lower priority
ModeHiPri	R		(3) Mode HMI higher priority
Channel	R		(4) Selection of the calendar channel 1 to 10

Rename the group System1_0 to

Switch



Symbol Name	Type
HVC.fup	ROOT
AHU01	GROUP
System	GROUP
Switch	GROUP
ClockMode	F
Clock	F
Demand	F
Special	F
Required	F
ModeLoPri	R
ModeHiPri	R
Channel	R
WeeklyClock	GROUP

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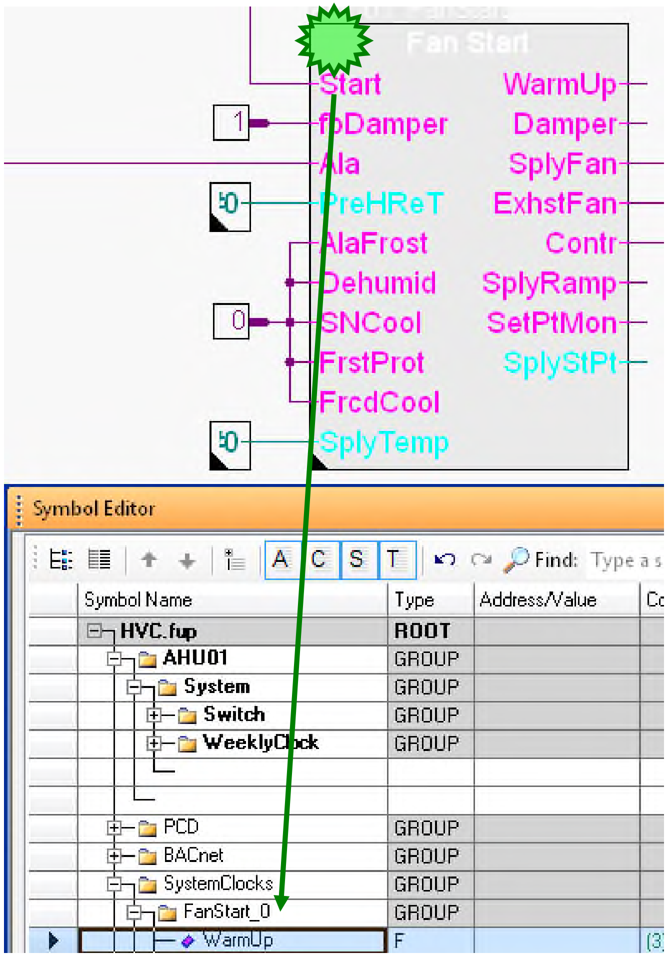
Working with Fupla

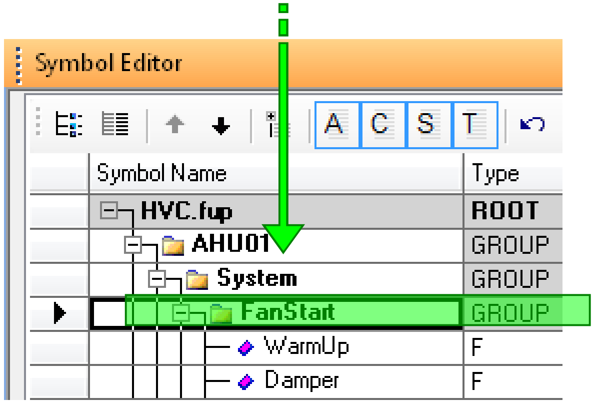
Repeat the steps for the Fan Start FBox. Click on the FBox, use drag&drop to drag the FanStart_0 group into the AHU01.System group.



Symbol Name	Type	Address/Value	Co
HVC.fup	ROOT		
AHU01	GROUP		
System	GROUP		
Switch	GROUP		
WeeklyClock	GROUP		
PCD	GROUP		
BACnet	GROUP		
SystemClocks	GROUP		
FanStart_0	GROUP		
WarmUp	F		(3

Rename the group FanStart_0 to

FanStart



Symbol Name	Type
HVC.fup	ROOT
AHU01	GROUP
System	GROUP
FanStart	GROUP
WarmUp	F
Damper	F

DDC Suite 2.5 / PG5 Building Advanced

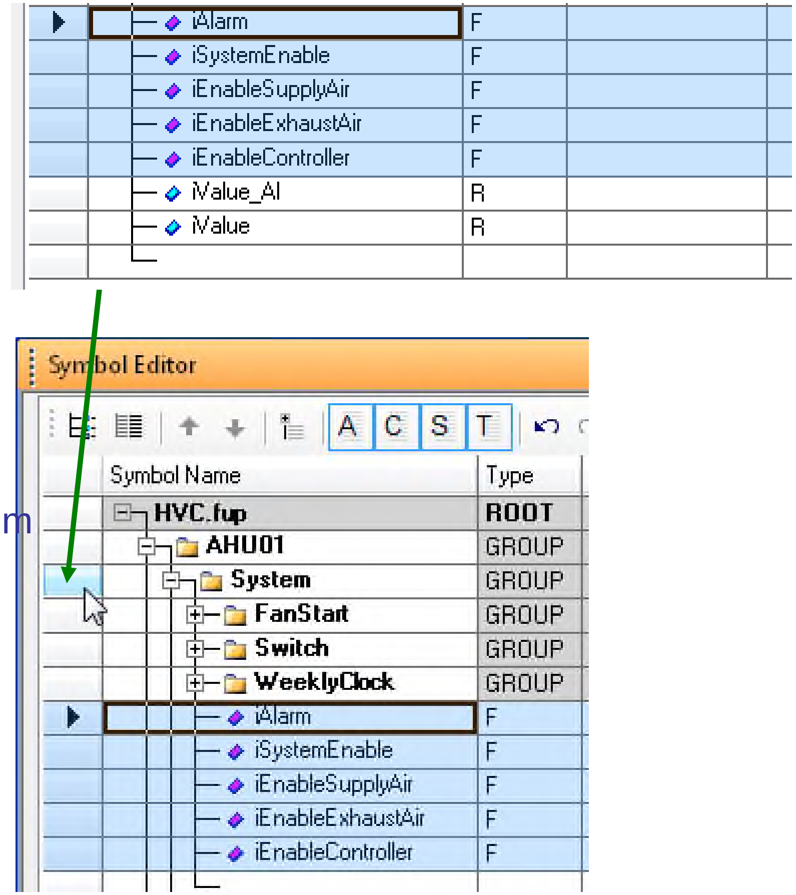
Working with Fupla

In the next step, the symbols in the connectors that are connected to the FBox inputs and outputs of the 3 FBoxes are moved into the AHU01.System group.

Highlight the symbols:

- iSystemEnable
- iAlarm
- iEnableSupplyAir
- iEnableExhaustAir
- iEnableController

and use drag&drop to move them into the AHU01.System group



iAlarm	F
iSystemEnable	F
iEnableSupplyAir	F
iEnableExhaustAir	F
iEnableController	F
iValue_AI	R
iValue	R

Symbol Editor

Symbol Name	Type
HVC.fup	ROOT
AHU01	GROUP
System	GROUP
FanStart	GROUP
Switch	GROUP
WeeklyClock	GROUP
iAlarm	F
iSystemEnable	F
iEnableSupplyAir	F
iEnableExhaustAir	F
iEnableController	F

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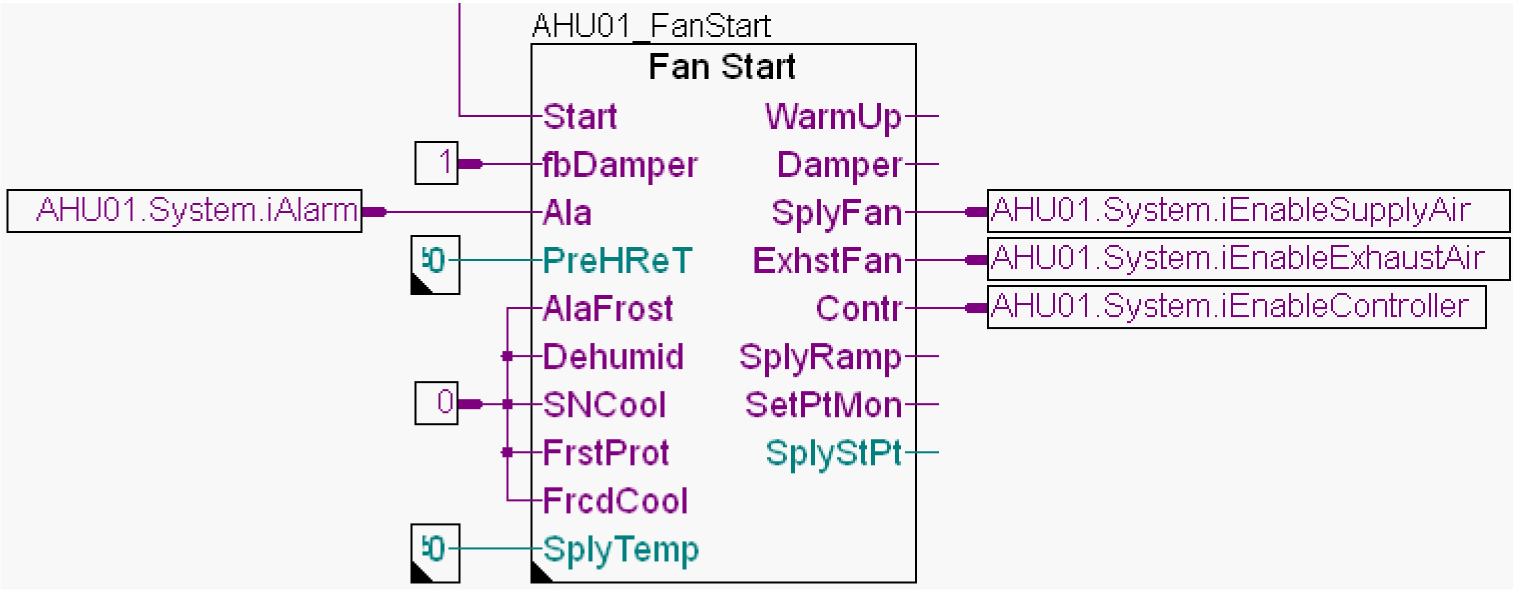
Working with Fupla

By renaming the symbols in the Symbol Editor, the symbol names are automatically updated in the input and output connectors.

This means you have a better allocation when reading the symbols in the programme.



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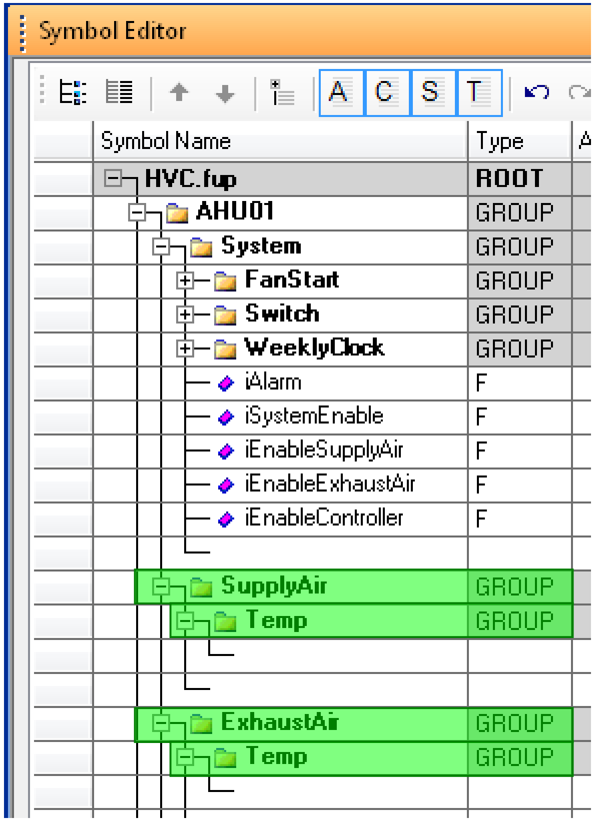
Working with Fupla

The two Sensor FBoxes on this page are left. One is for the supply air temperature sensor and the other is for the exhaust air temperature sensor.

There may also be more sensors in the supply air, e.g. the feed monitoring of the fan or a humidity sensor – which is why we create a SupplyAir subgroup in the AHU01 group and another Temp sub-group in the SupplyAir subgroup.

The same applies to the exhaust air ...

We recommend creating 4 groups:
1st group = the system, e.g. AHU01 (=Air Handling Unit 01)
2nd group = assembly location, e.g. supply air
3rd group = type of signal, e.g. temperature
4th group = function or device, e.g. sensor



Symbol Editor

Symbol Name	Type	A
HVC.fup	ROOT	
AHU01	GROUP	
System	GROUP	
FanStart	GROUP	
Switch	GROUP	
WeeklyClock	GROUP	
iAlarm	F	
iSystemEnable	F	
iEnableSupplyAir	F	
iEnableExhaustAir	F	
iEnableController	F	
SupplyAir	GROUP	
Temp	GROUP	
ExhaustAir	GROUP	
Temp	GROUP	

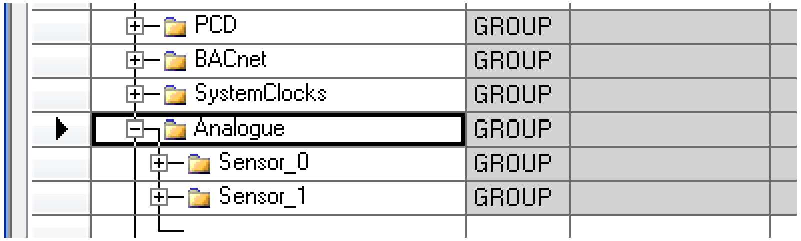
When reading the group structure AHU01.ExhaustAir.Humidity.Sensor, you can immediately tell the location of the system and can find all information on this sensor in the Symbol Editor.

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Repeat these steps for the Sensor FBox with the name AHU01_SupplyAir_Temp. Click on the FBox, use drag&drop to drag the Sensor_0 group into the AHU01.SupplyAir.Temp group.

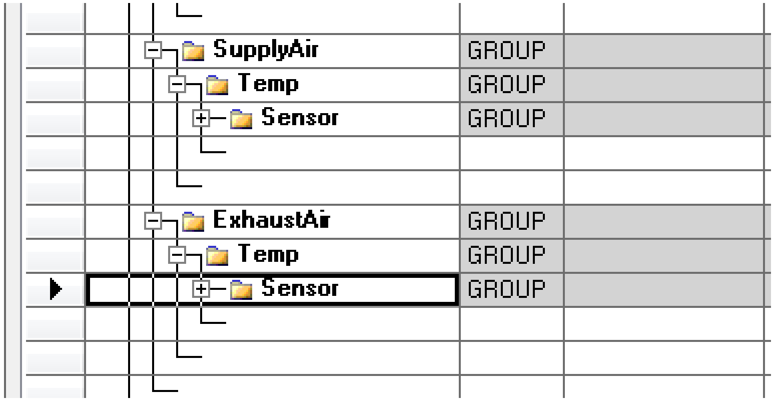
Rename the Sensor_0 group to Sensor.



PCD	GROUP
BACnet	GROUP
SystemClocks	GROUP
Analogue	GROUP
Sensor_0	GROUP
Sensor_1	GROUP

Repeat this step for the Sensor FBox with the name AHU01_ExhaustAir_Temp. Click on the FBox, use drag&drop to drag the Sensor_1 group into the AHU01.ExhaustAir.Temp group.

Rename the Sensor_1 group to Sensor.



SupplyAir	GROUP
Temp	GROUP
Sensor	GROUP
ExhaustAir	GROUP
Temp	GROUP
Sensor	GROUP

DDC Suite 2.5 / PG5 Building Advanced

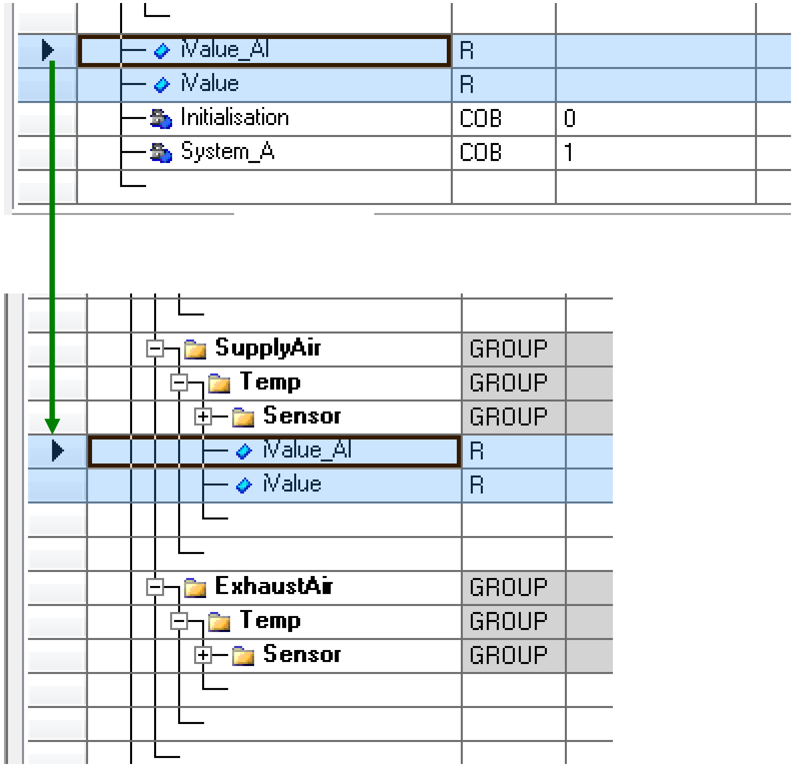
Working with Fupla

Now the symbols in the connectors that are connected to the FBox inputs and outputs of the first FBox are moved into the AHU01.SupplyAir.Temp group.

Highlight the symbols:

- iValue_AI (card value)
- iValue (actual value)

And drag them into the AHU01.SupplyAir.Temp group



iValue_AI	R	
iValue	R	
Initialisation	COB	0
System_A	COB	1

SupplyAir	GROUP
Temp	GROUP
Sensor	GROUP
iValue_AI	R
iValue	R
ExhaustAir	GROUP
Temp	GROUP
Sensor	GROUP

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

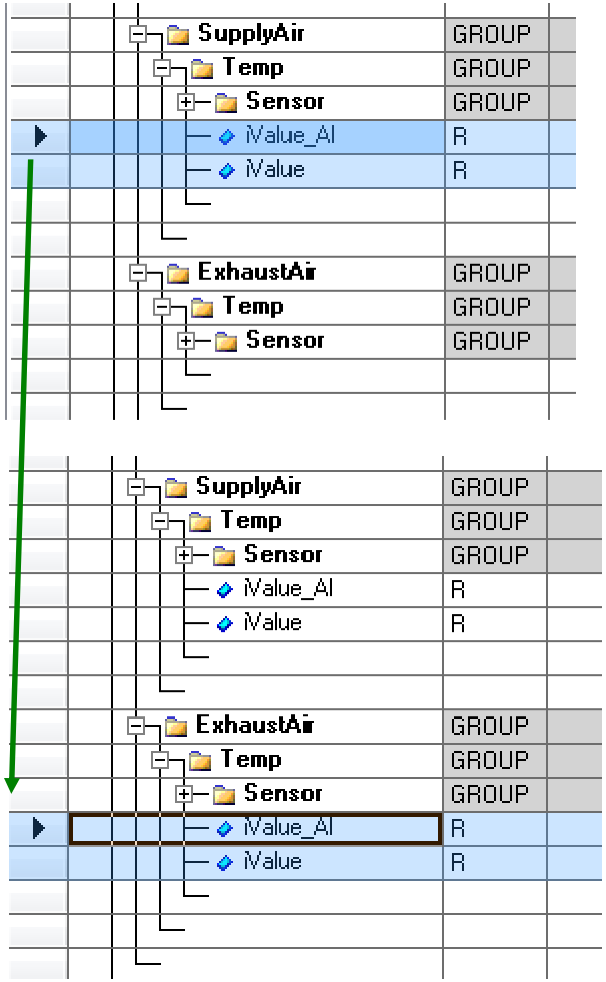
The second FBox requires the same symbols in the AHU01.ExhaustAir.Temp group.

But we have not yet defined them in order to avoid having the same symbols with different uses.

Instead of creating the symbols manually, we copy them into the Symbol Editor.

- Highlight the two symbols in the AHU01.SupplyAir.Temp group
- Press the “Ctrl” key and click on the AHU01.ExhaustAir.Temp group

Drag the symbols to the correct position, i.e. to ExhaustAir/Temp and release the left mouse button.



```
SupplyAir        GROUP
  Temp           GROUP
    Sensor       GROUP
    Value_AI     R
    Value        R
ExhaustAir       GROUP
  Temp           GROUP
    Sensor       GROUP
```

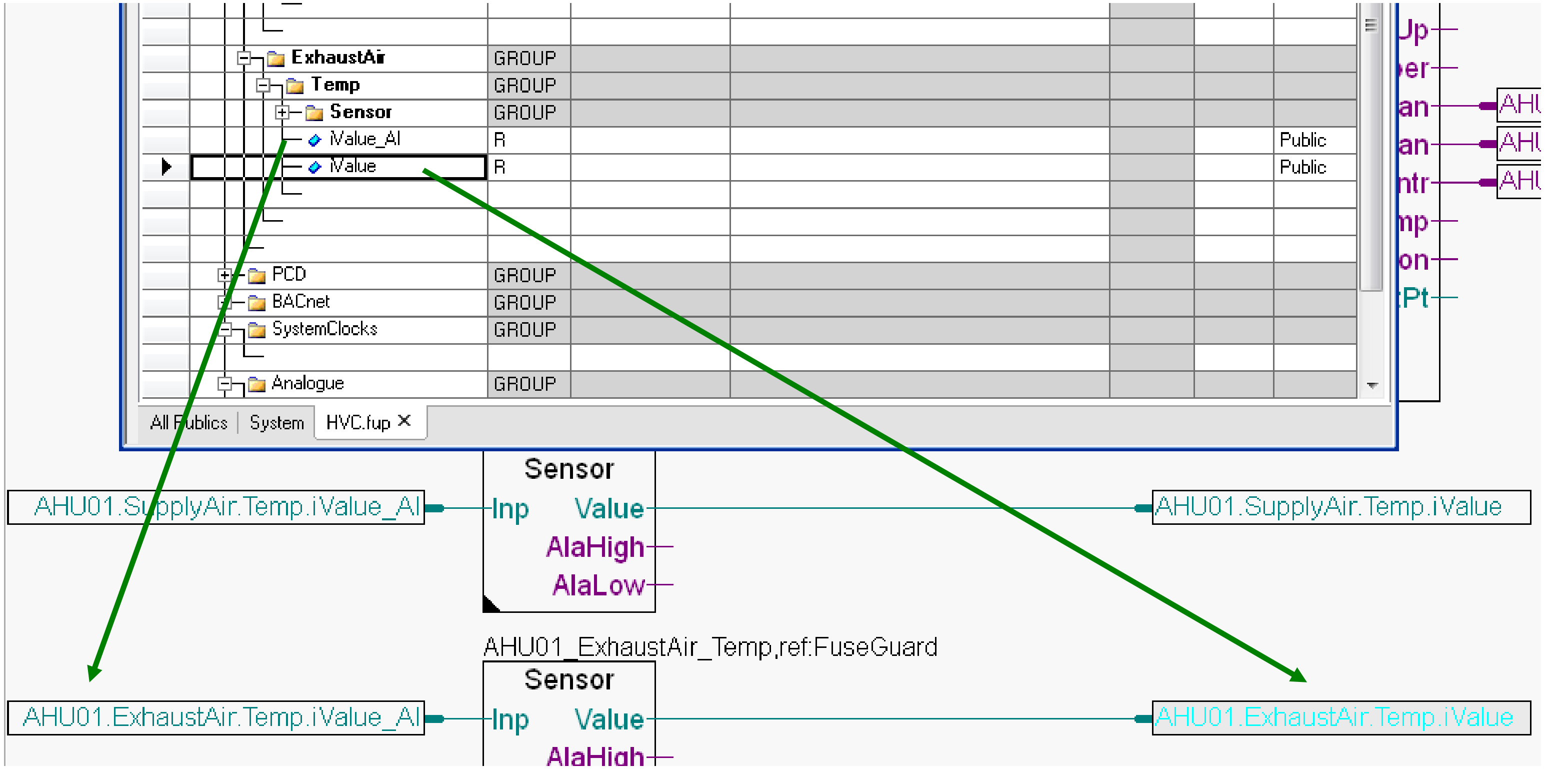
```
SupplyAir        GROUP
  Temp           GROUP
    Sensor       GROUP
    Value_AI     R
    Value        R
ExhaustAir       GROUP
  Temp           GROUP
    Sensor       GROUP
    Value_AI     R
    Value        R
```

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Now we still have to move the symbols to the connectors on the Fupla page using drag&drop.

If we work in this way, we will always have the same naming conventions for the same functions.



ExhaustAir	GROUP	
Temp	GROUP	
Sensor	GROUP	
Value_AI	R	Public
Value	R	Public
PCD	GROUP	
BACnet	GROUP	
SystemClocks	GROUP	
Analogue	GROUP	

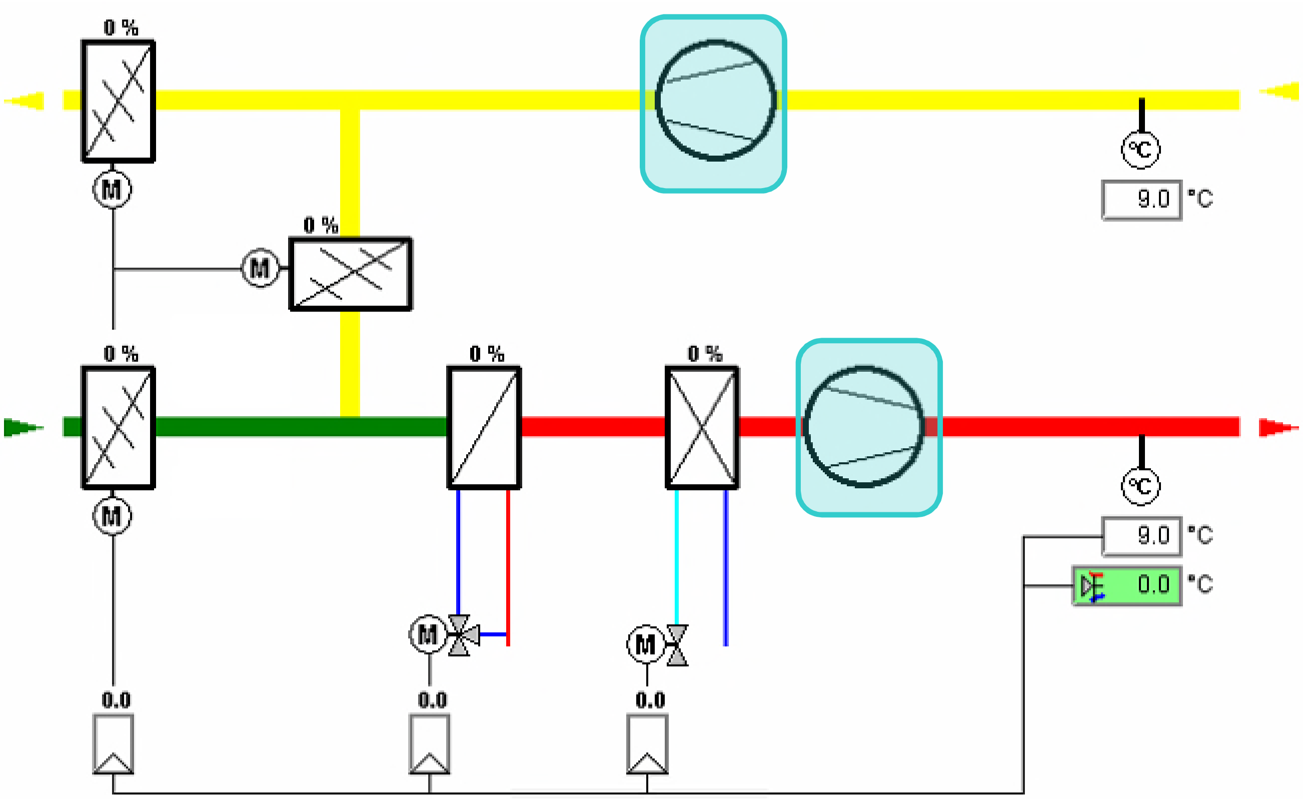
All Publics
System
HVC.fup ✕
Up
er
an
an
ntr
mp
on
Pt
AHU
AHU
AHU
AHU01.SupplyAir.Temp.iValue_AI
Sensor
Inp
Value
AlaHigh
AlaLow
AHU01.SupplyAir.Temp.iValue
AHU01_ExhaustAir_Temp,ref:FuseGuard
Sensor
AHU01.ExhaustAir.Temp.iValue_AI
Inp
Value
AlaHigh
AHU01.ExhaustAir.Temp.iValue

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

The second Fupla page contains:

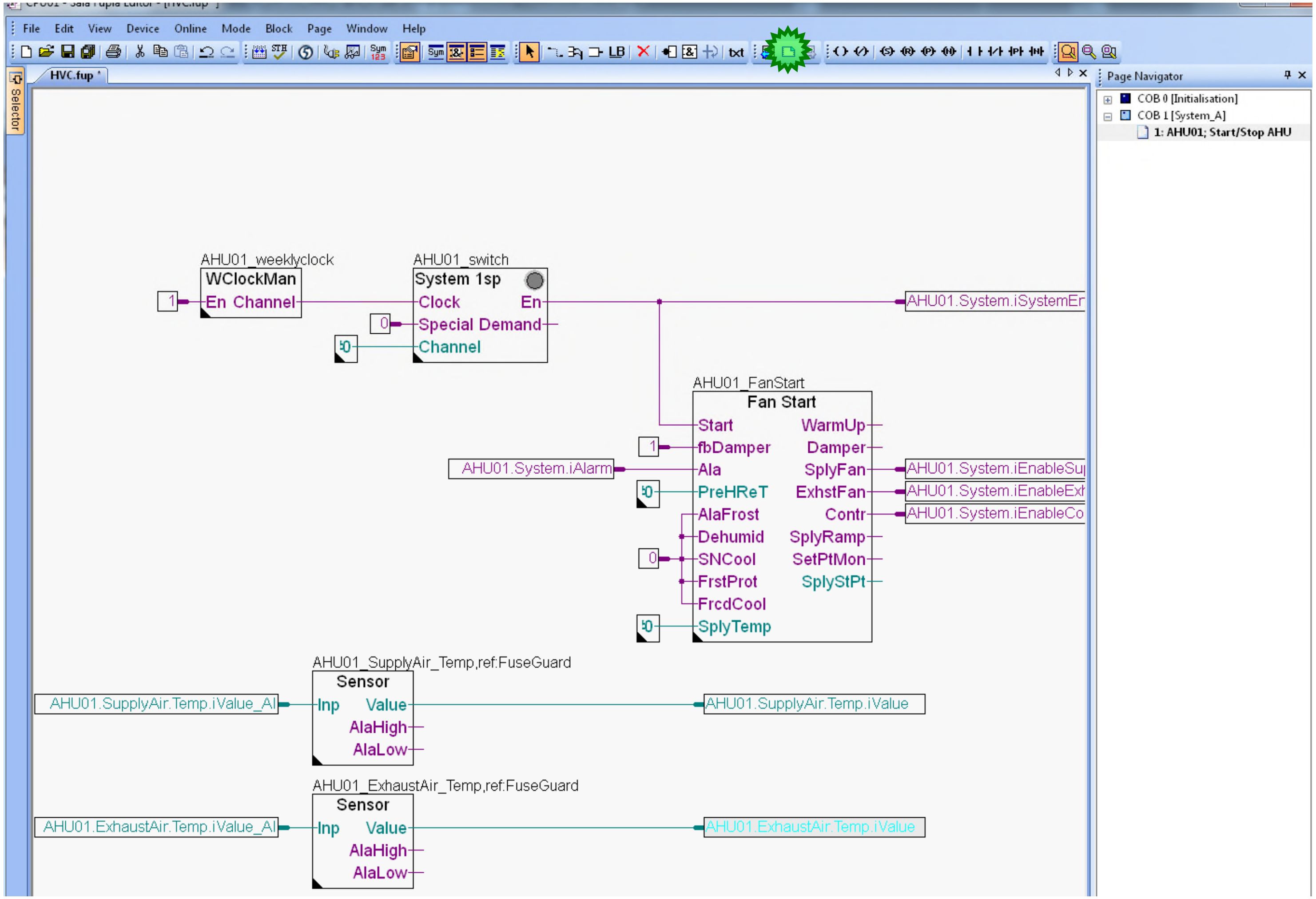
- the physical components supply air fan and exhaust air fan



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Insert a new page after the current page .



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

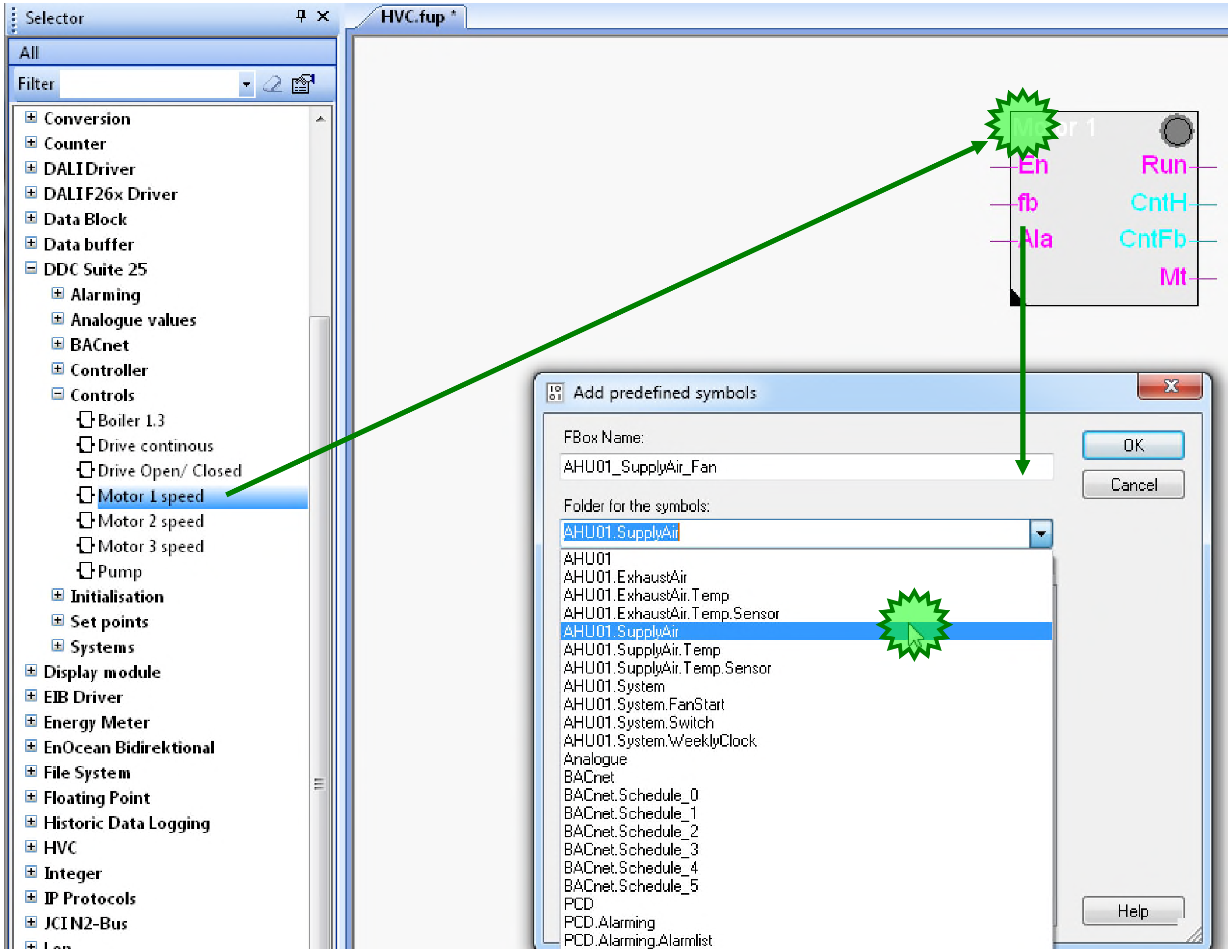
First, we use two controller FBoxes

1. On the FBox selector Application tab, select the DDC Controls family.

2. Click on FBox Motor 1 speed and put it in the fup

3. In the Add predefined symbols window, we assign the FBox name AHU01_SupplyAir_Fan

4. Below this, we also define where the symbols of the FBox should be created, which is under AHU01.SupplyAir from the dropdown menu



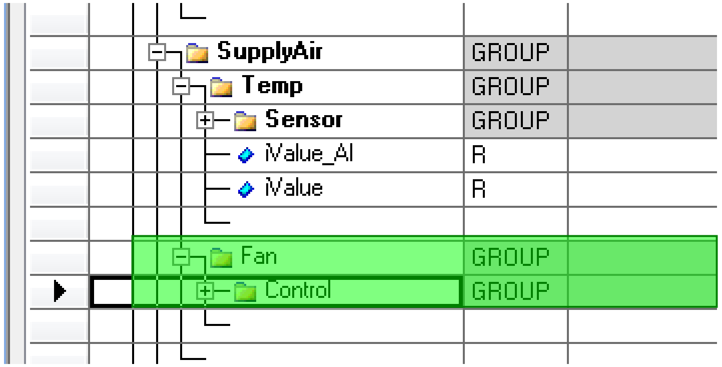
FBox Name: AHU01_SupplyAir_Fan

Folder for the symbols: AHU01.SupplyAir

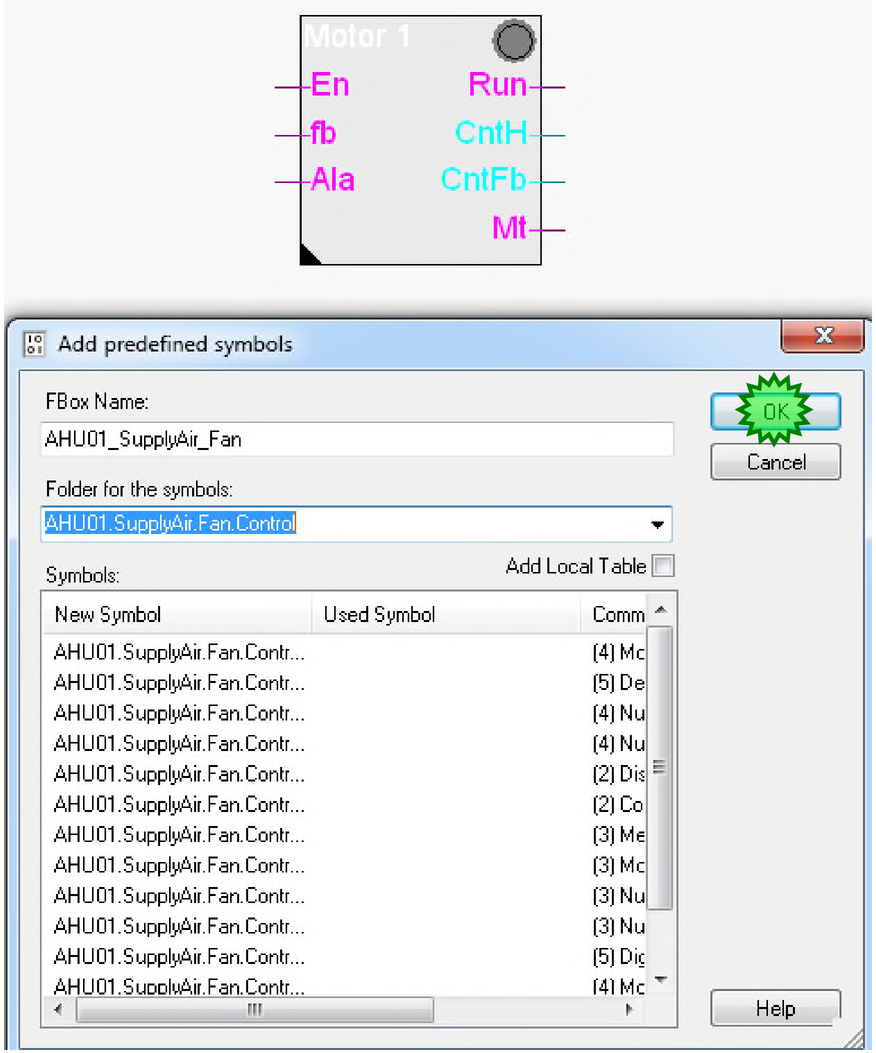
DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

1. This structure AHU01.SupplyAir is supplemented with .Fan.Control. This results in an additional sub-folder in the Symbol Editor with the name Ventilator.



SupplyAir	GROUP
Temp	GROUP
Sensor	GROUP
Value_AI	R
Value	R
Fan	GROUP
Control	GROUP



Add predefined symbols

FBox Name: AHU01_SupplyAir_Fan

Folder for the symbols: AHU01.SupplyAir.Fan.Control

Symbols: Add Local Table □

New Symbol	Used Symbol	Comm
AHU01.SupplyAir.Fan.Contr...		(4) Mc
AHU01.SupplyAir.Fan.Contr...		(5) De
AHU01.SupplyAir.Fan.Contr...		(4) Nu
AHU01.SupplyAir.Fan.Contr...		(4) Nu
AHU01.SupplyAir.Fan.Contr...		(2) Dis
AHU01.SupplyAir.Fan.Contr...		(2) Co
AHU01.SupplyAir.Fan.Contr...		(3) Me
AHU01.SupplyAir.Fan.Contr...		(3) Mc
AHU01.SupplyAir.Fan.Contr...		(3) Nu
AHU01.SupplyAir.Fan.Contr...		(3) Nu
AHU01.SupplyAir.Fan.Contr...		(5) Dig
AHU01.SupplyAir.Fan.Contr...		(4) Mc

DDC Suite 2.5 / PG5 Building Advanced

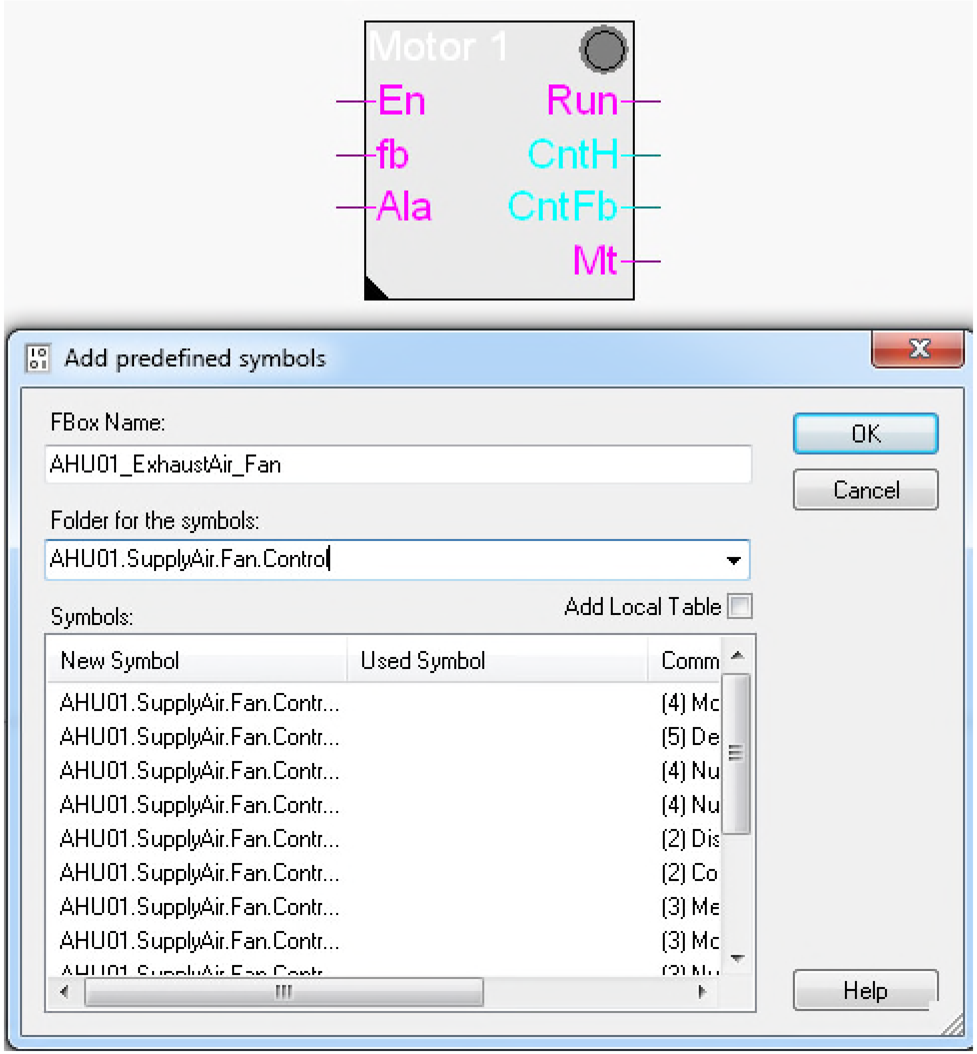
Working with Fupla

We need the Motor 1-stufig FBox twice

1. Click on the Motor Fbox we have already, the Selector shows you where it is from, take it once again into the fup.

2. In the Add predefined symbols window, we assign the FBox name AHU01_ExhaustAir_Fan

3. And as the folder, we set AHU01.ExhaustAir from the dropdown menu and also add .Fan.Control.



Add predefined symbols

FBox Name: AHU01_ExhaustAir_Fan

Folder for the symbols: AHU01.SupplyAir.Fan.Control

Symbols: Add Local Table □

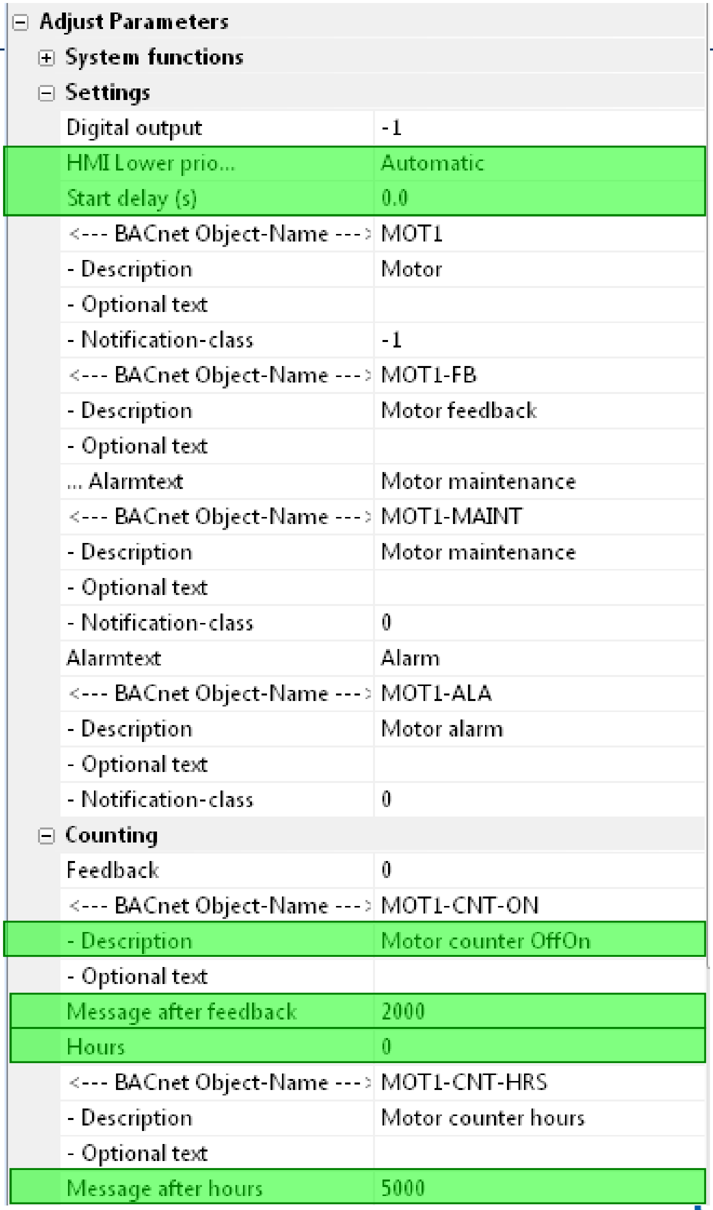
New Symbol	Used Symbol	Comm
AHU01.SupplyAir.Fan.Contr...		(4) Mc
AHU01.SupplyAir.Fan.Contr...		(5) De
AHU01.SupplyAir.Fan.Contr...		(4) Nu
AHU01.SupplyAir.Fan.Contr...		(4) Nu
AHU01.SupplyAir.Fan.Contr...		(2) Dis
AHU01.SupplyAir.Fan.Contr...		(2) Co
AHU01.SupplyAir.Fan.Contr...		(3) Me
AHU01.SupplyAir.Fan.Contr...		(3) Mc

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

The Motor 1 speed FBox controls every drive via a digital output. The functions are

- Software switch for start/stop during commissioning or maintenance
- Start-up delay
- Operating hours counter
- Counting of the switch-on processes via feedback input
- Monitoring of the meters in order to issue a “maintenance message” after 2000 operating hours, for example
- Recording of all motor information in order to show clearly why the engine is operating/malfunctioning



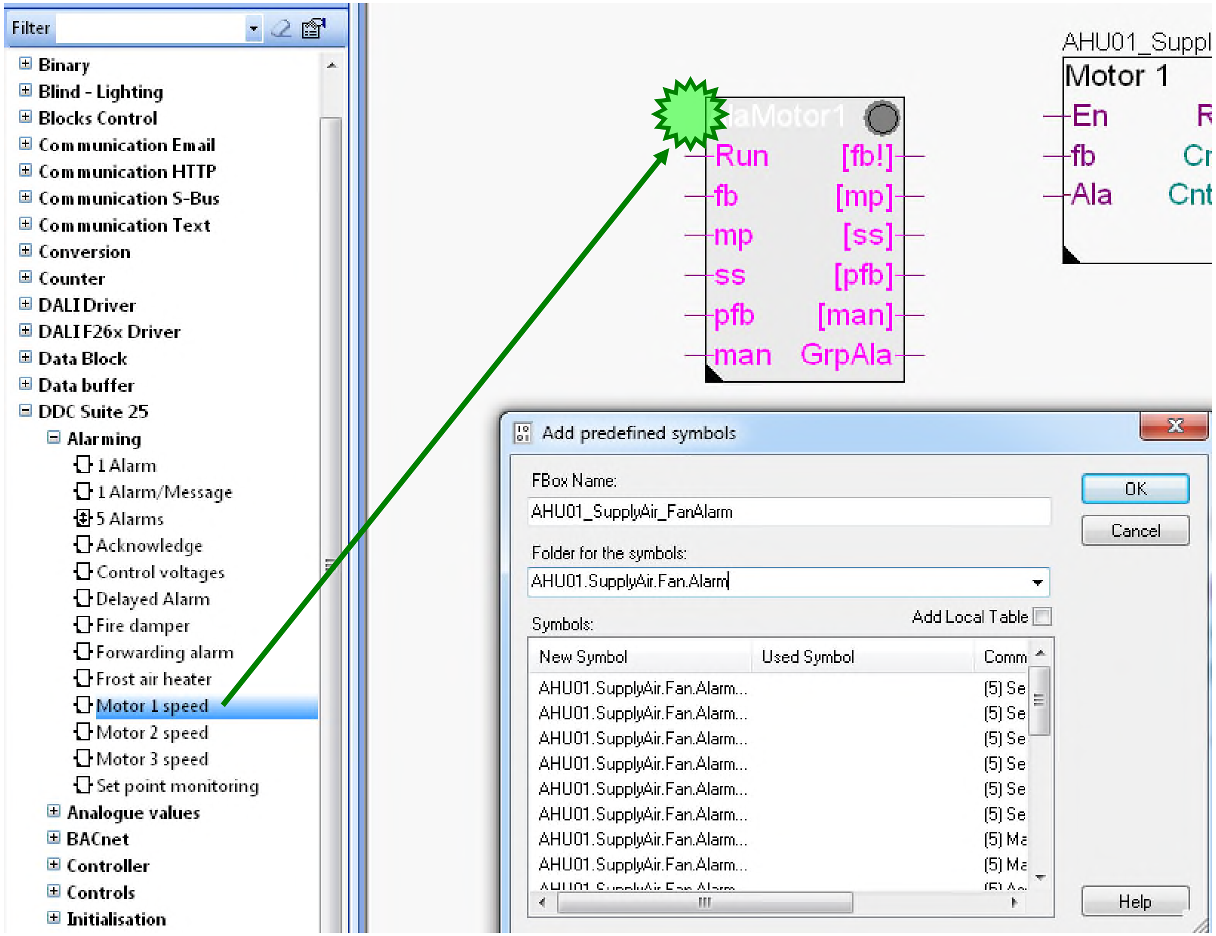
⊟ Adjust Parameters	
⊞ System functions	
⊟ Settings	
Digital output	-1
HMI Lower prio...	Automatic
Start delay (s)	0.0
<--- BACnet Object-Name --->	MOT1
- Description	Motor
- Optional text	
- Notification-class	-1
<--- BACnet Object-Name --->	MOT1-FB
- Description	Motor feedback
- Optional text	
... Alarmtext	Motor maintenance
<--- BACnet Object-Name --->	MOT1-MAINT
- Description	Motor maintenance
- Optional text	
- Notification-class	0
Alarmtext	Alarm
<--- BACnet Object-Name --->	MOT1-ALA
- Description	Motor alarm
- Optional text	
- Notification-class	0
⊟ Counting	
Feedback	0
<--- BACnet Object-Name --->	MOT1-CNT-ON
- Description	Motor counter OffOn
- Optional text	
Message after feedback	2000
Hours	0
<--- BACnet Object-Name --->	MOT1-CNT-HRS
- Description	Motor counter hours
- Optional text	
Message after hours	5000

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Now we add the Alarm Fbox for the motor

1. On the FBox selector Application tab, select the DDC Alarming family.
2. Click on FBox Motor 1 speed
3. Position the FBox at the same position as shown in the illustration
4. The FBox name is AHU01_SupplyAir_FanAlarm
5. The symbol path should be AHU01.SuppyAir.Fan.Alarm.



Add predefined symbols

FBox Name: AHU01_SupplyAir_FanAlarm

Folder for the symbols: AHU01.SupplyAir.Fan.Alarm

Add Local Table □

Symbols:

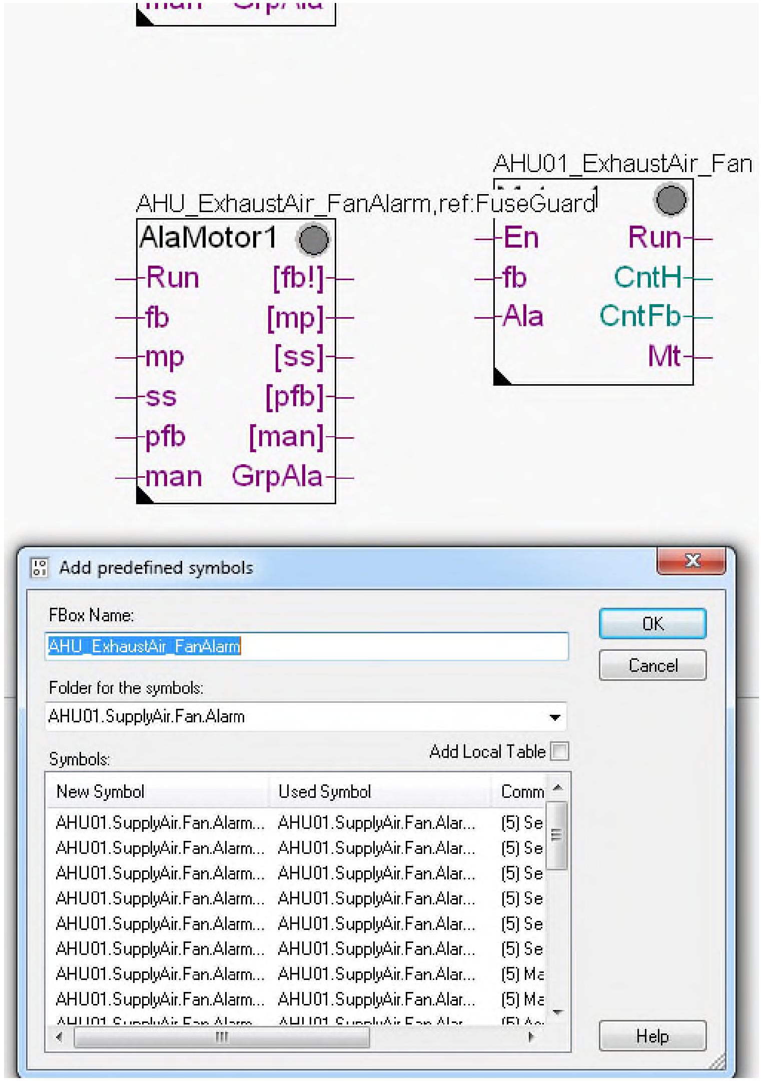
New Symbol	Used Symbol	Comm
AHU01.SupplyAir.Fan.Alarm...		(5) Se
AHU01.SupplyAir.Fan.Alarm...		(5) Se
AHU01.SupplyAir.Fan.Alarm...		(5) Se
AHU01.SupplyAir.Fan.Alarm...		(5) Se
AHU01.SupplyAir.Fan.Alarm...		(5) Se
AHU01.SupplyAir.Fan.Alarm...		(5) Se
AHU01.SupplyAir.Fan.Alarm...		(5) Ma
AHU01.SupplyAir.Fan.Alarm...		(5) Ma

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

The second fault monitoring FBox:

1. Put the FBox Motor 1 speed also in front of the other Motor 1 speed Fbox
2. The FBox name is AHU01_ExhaustAir_FanAlarm
3. The symbol path should be AHU01.ExhaustAir.Fan.Alarm.



Add predefined symbols

FBox Name: AHU_ExhaustAir_FanAlarm

Folder for the symbols: AHU01.SupplyAir.Fan.Alarm

Add Local Table □

Symbols:

New Symbol	Used Symbol	Comm
AHU01.SupplyAir.Fan.Alarm...	AHU01.SupplyAir.Fan.Alar...	(5) Se
AHU01.SupplyAir.Fan.Alarm...	AHU01.SupplyAir.Fan.Alar...	(5) Se
AHU01.SupplyAir.Fan.Alarm...	AHU01.SupplyAir.Fan.Alar...	(5) Se
AHU01.SupplyAir.Fan.Alarm...	AHU01.SupplyAir.Fan.Alar...	(5) Se
AHU01.SupplyAir.Fan.Alarm...	AHU01.SupplyAir.Fan.Alar...	(5) Se
AHU01.SupplyAir.Fan.Alarm...	AHU01.SupplyAir.Fan.Alar...	(5) Se
AHU01.SupplyAir.Fan.Alarm...	AHU01.SupplyAir.Fan.Alar...	(5) Ma
AHU01.SupplyAir.Fan.Alarm...	AHU01.SupplyAir.Fan.Alar...	(5) Ma

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

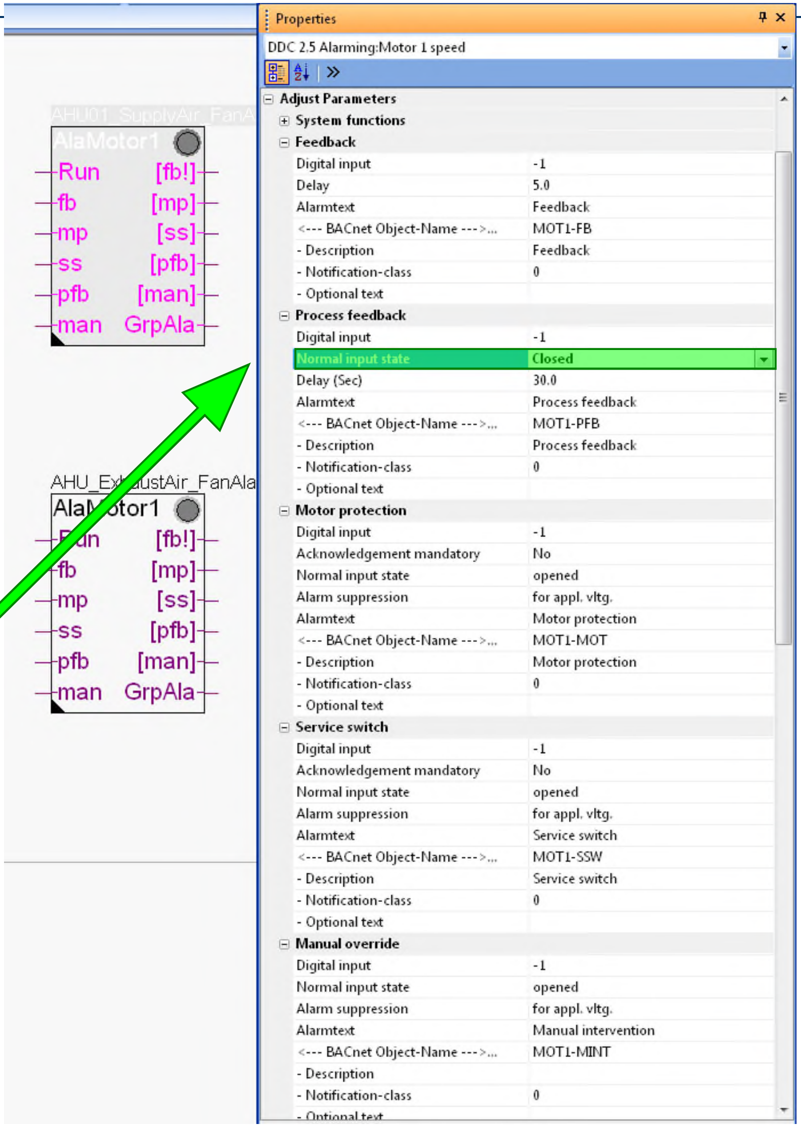
The Alarming Motor FBox monitors 5 typical alarms that can occur in a motor. These are

- Feedback
- Process Feedback
- Motor protection
- Service switch
- Manual override

We must adapt the “Normal Input state” parameter in the “[--- Process feedback---]” group. The default is “open” – change it to

closed

Please also change this parameter in the second Sm Motor FBox.



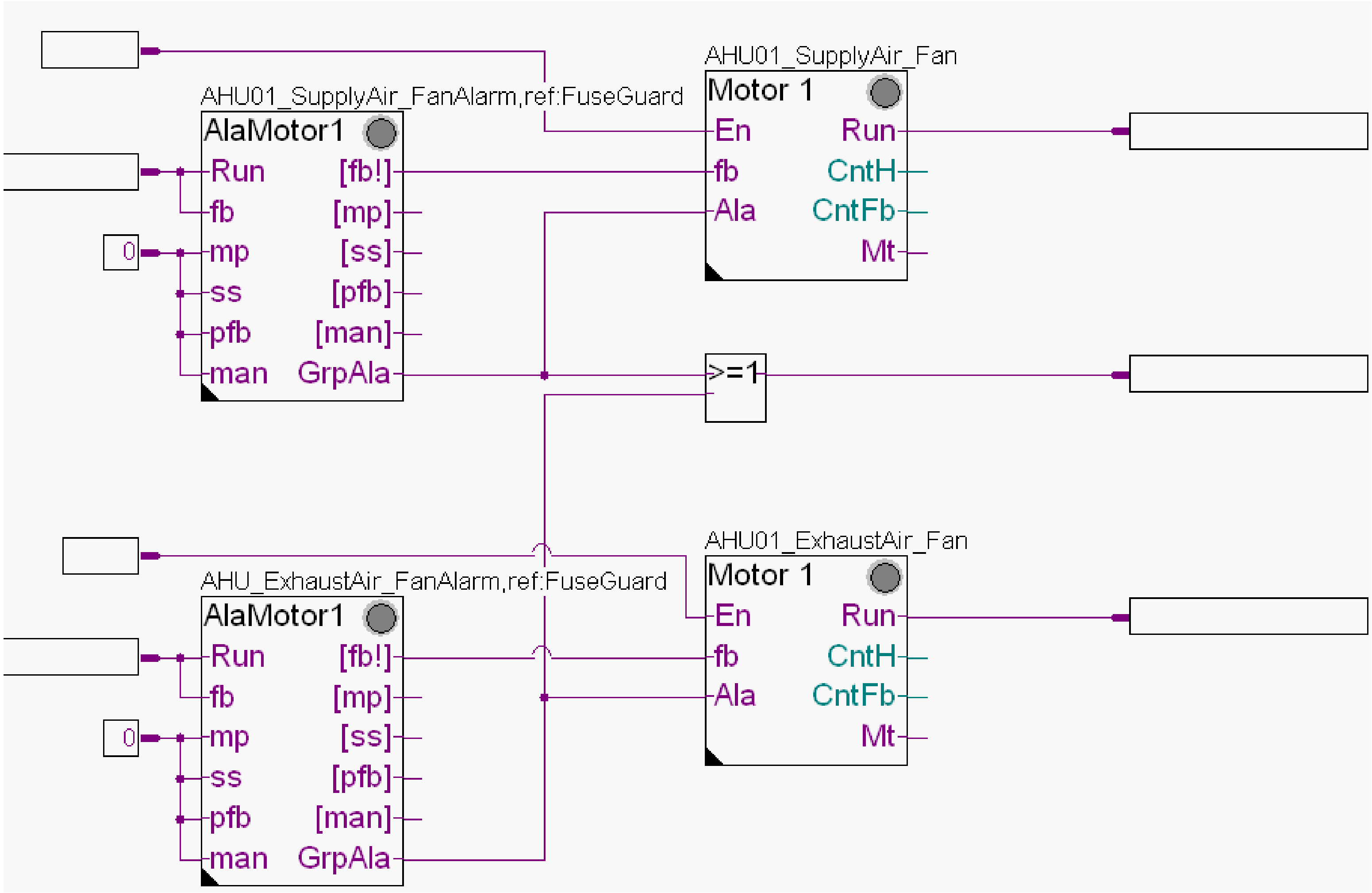
DDC 2.5 Alarming:Motor 1 speed

Adjust Parameters	
System functions	
Feedback	
Digital input	-1
Delay	5.0
Alarmtext	Feedback
<--- BACnet Object-Name --->...	MOT1-FB
- Description	Feedback
- Notification-class	0
- Optional text	
Process feedback	
Digital input	-1
Normal input state	Closed
Delay (Sec)	30.0
Alarmtext	Process feedback
<--- BACnet Object-Name --->...	MOT1-PFB
- Description	Process feedback
- Notification-class	0
- Optional text	
Motor protection	
Digital input	-1
Acknowledgement mandatory	No
Normal input state	opened
Alarm suppression	for appl. vltg.
Alarmtext	Motor protection
<--- BACnet Object-Name --->...	MOT1-MOT
- Description	Motor protection
- Notification-class	0
- Optional text	
Service switch	
Digital input	-1
Acknowledgement mandatory	No
Normal input state	opened
Alarm suppression	for appl. vltg.
Alarmtext	Service switch
<--- BACnet Object-Name --->...	MOT1-SSW
- Description	Service switch
- Notification-class	0
- Optional text	
Manual override	
Digital input	-1
Normal input state	opened
Alarm suppression	for appl. vltg.
Alarmtext	Manual intervention
<--- BACnet Object-Name --->...	MOT1-MINT
- Description	
- Notification-class	0
- Optional text	

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

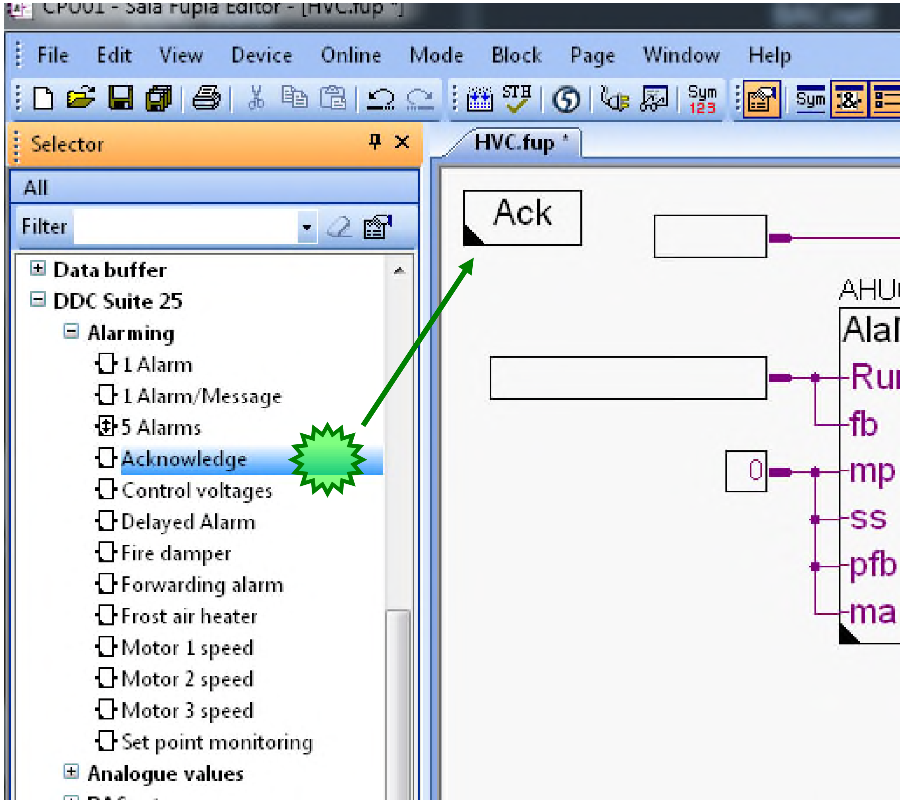
To finish, we require a few more connectors.



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

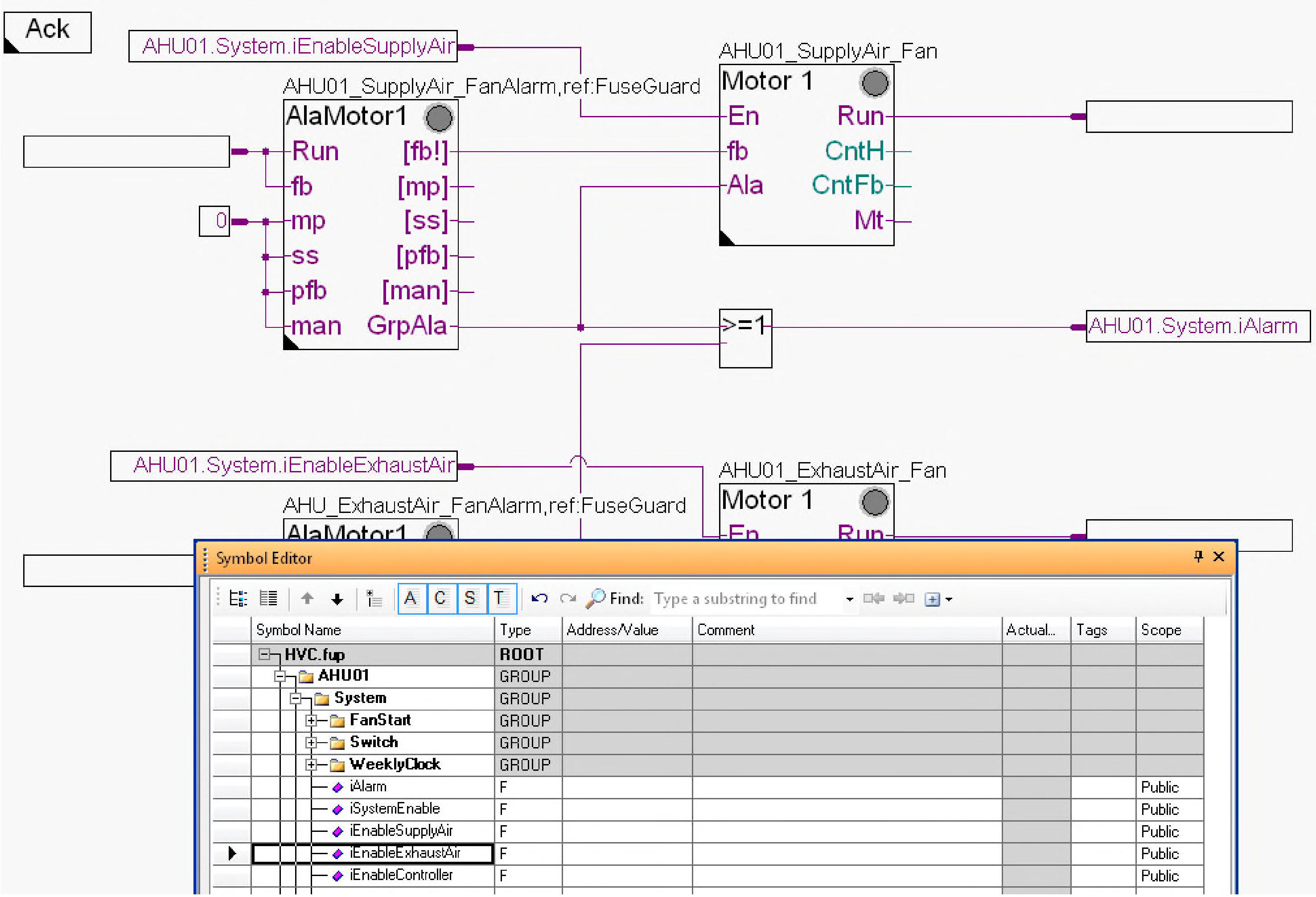
Finally, from the FBox selector Application tab, DDC Alarming family, locate the Acknowledge Fbox in the left upper corner.
With this FBox, we can acknowledge saved alarms from this position until the end of the programme. This is much easier than always having to jump back to the initialisation page to acknowledge in the settings window of the InitLib FBox.



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

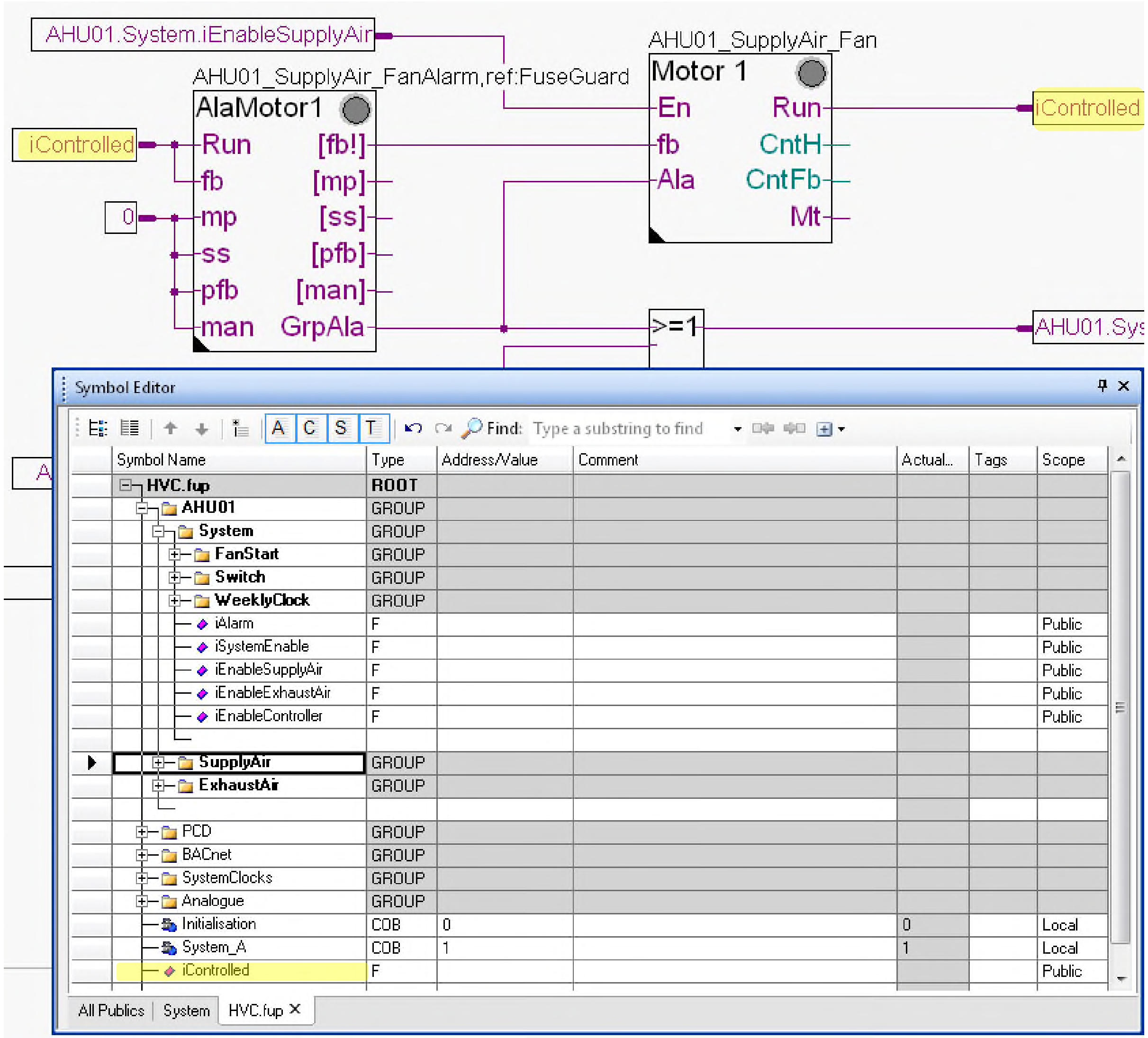
Display the Symbol Editor (“F5” key) and use drag&drop to drag some symbols into the connectors



	Symbol Name	Type	Address/Value	Comment	Actual...	Tags	Scope
	HVC.fup	ROOT					
	AHU01	GROUP					
	System	GROUP					
	FanStart	GROUP					
	Switch	GROUP					
	WeeklyClock	GROUP					
	iAlarm	F					Public
	iSystemEnable	F					Public
	iEnableSupplyAir	F					Public
▶	iEnableExhaustAir	F					Public
	iEnableController	F					Public

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla



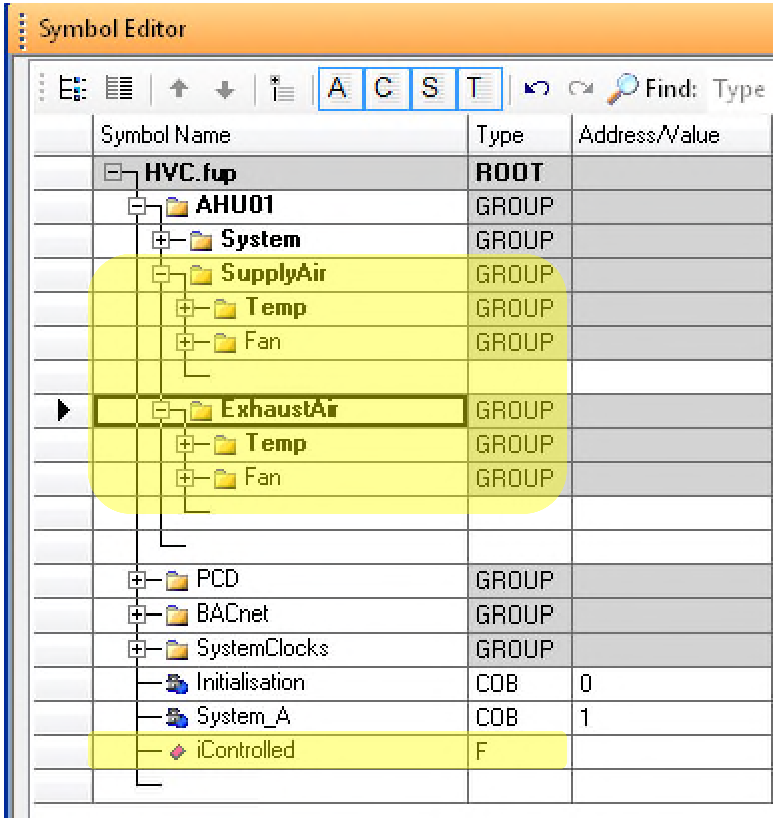
Symbol Name	Type	Address/Value	Comment	Actual...	Tags	Scope
HVC.fup	ROOT					
AHU01	GROUP					
System	GROUP					
FanStart	GROUP					
Switch	GROUP					
WeeklyClock	GROUP					
iAlarm	F					Public
iSystemEnable	F					Public
iEnableSupplyAir	F					Public
iEnableExhaustAir	F					Public
iEnableController	F					Public
SupplyAir	GROUP					
ExhaustAir	GROUP					
PCD	GROUP					
BACnet	GROUP					
SystemClocks	GROUP					
Analogue	GROUP					
Initialisation	COB	0		0		Local
System_A	COB	1		1		Local
iControlled	F					Public

All Publics | System | HVC.fup ×

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

In the symbol editor (remember, you can hide/display the symbol editor with the “F5” key) check that your structure and symbols look exactly the same. The symbols must be on the Global tab!



Symbol Name	Type	Address/Value
HVC.fup	ROOT	
AHU01	GROUP	
System	GROUP	
SupplyAir	GROUP	
Temp	GROUP	
Fan	GROUP	
ExhaustAir	GROUP	
Temp	GROUP	
Fan	GROUP	
PCD	GROUP	
BACnet	GROUP	
SystemClocks	GROUP	
Initialisation	COB	0
System_A	COB	1
iControlled	F	

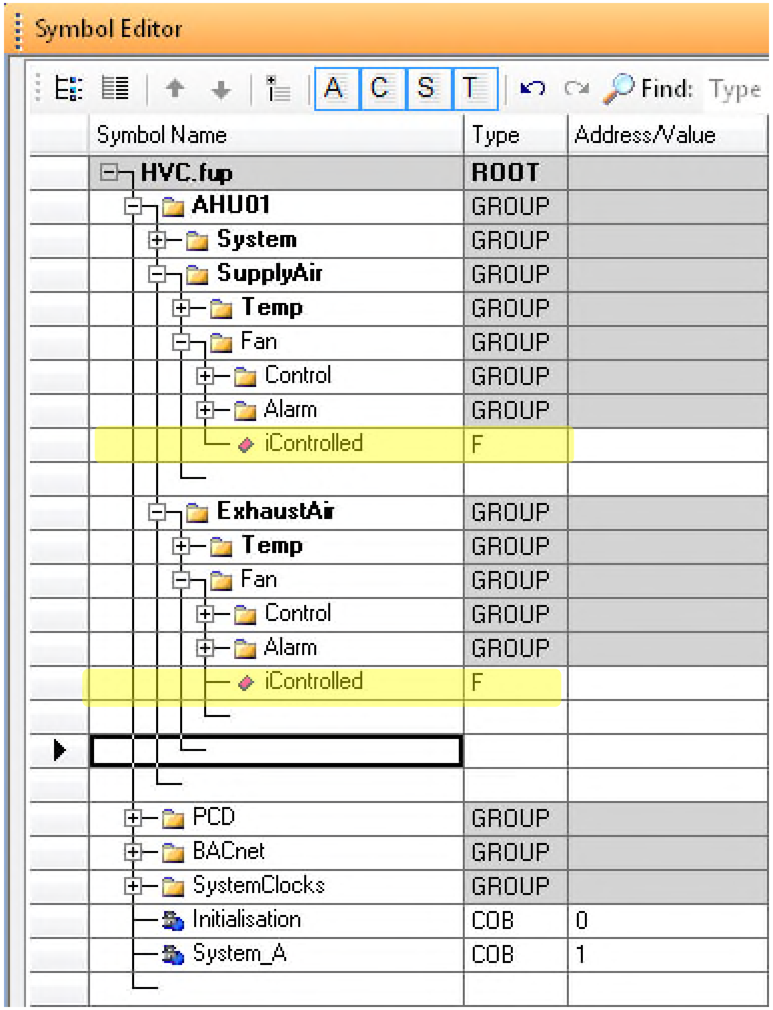
DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

The operating signal of the supply air fan should also be moved into the AHU01.SupplyAir.Fan group.

Highlight the iContolled symbol and drag it into the AHU01.SupplyAir.Fan group.

Copy the symbol into the same path for the exhaust air fan.



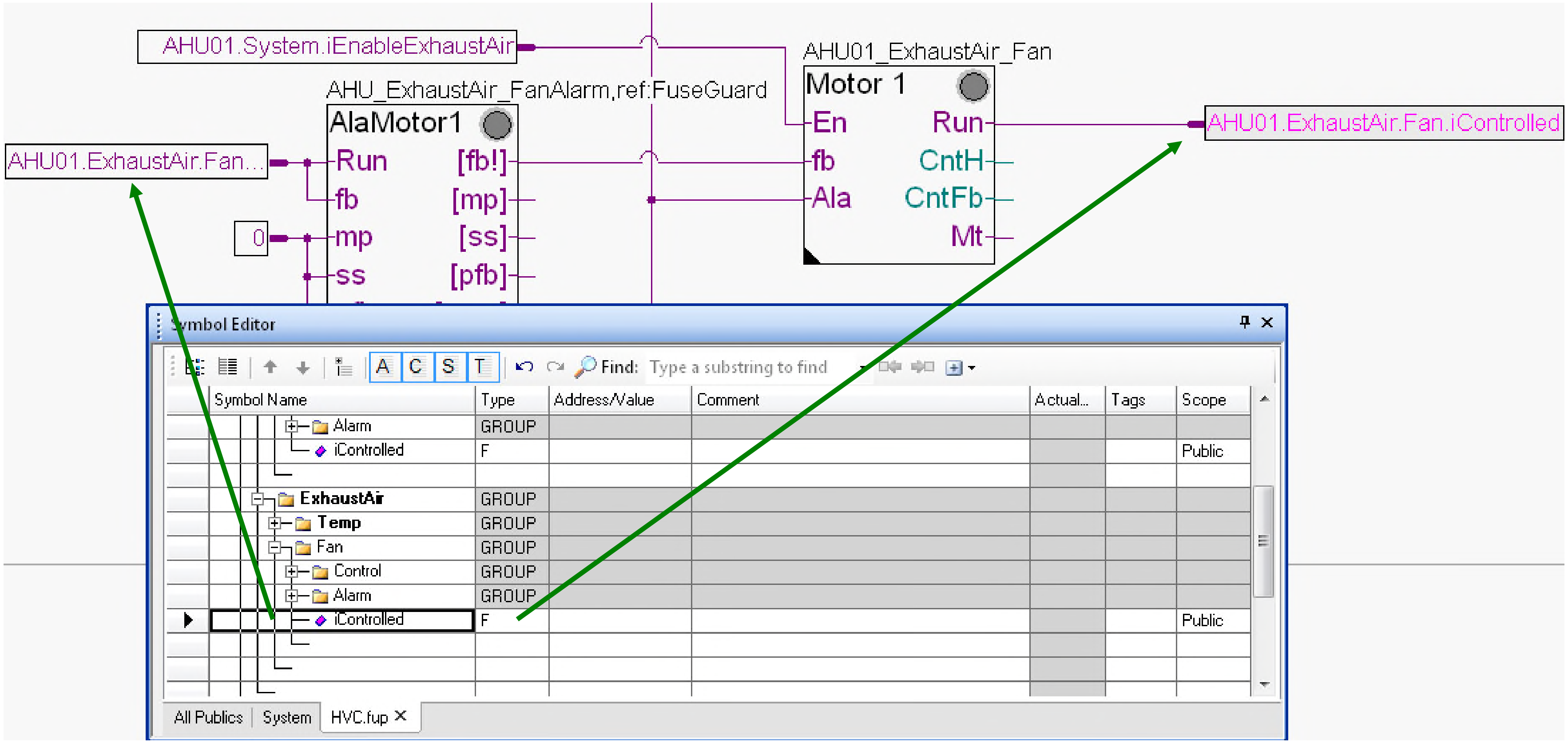
Symbol Editor

Symbol Name	Type	Address/Value
HVC.fup	ROOT	
AHU01	GROUP	
System	GROUP	
SupplyAir	GROUP	
Temp	GROUP	
Fan	GROUP	
Control	GROUP	
Alarm	GROUP	
iControlled	F	
ExhaustAir	GROUP	
Temp	GROUP	
Fan	GROUP	
Control	GROUP	
Alarm	GROUP	
iControlled	F	
PCD	GROUP	
BACnet	GROUP	
SystemClocks	GROUP	
Initialisation	COB	0
System_A	COB	1

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Now we still have to move the symbols to the connectors on the Fupla page via drag&drop.
If we work in this way, we will always have the same naming conventions for the same functions

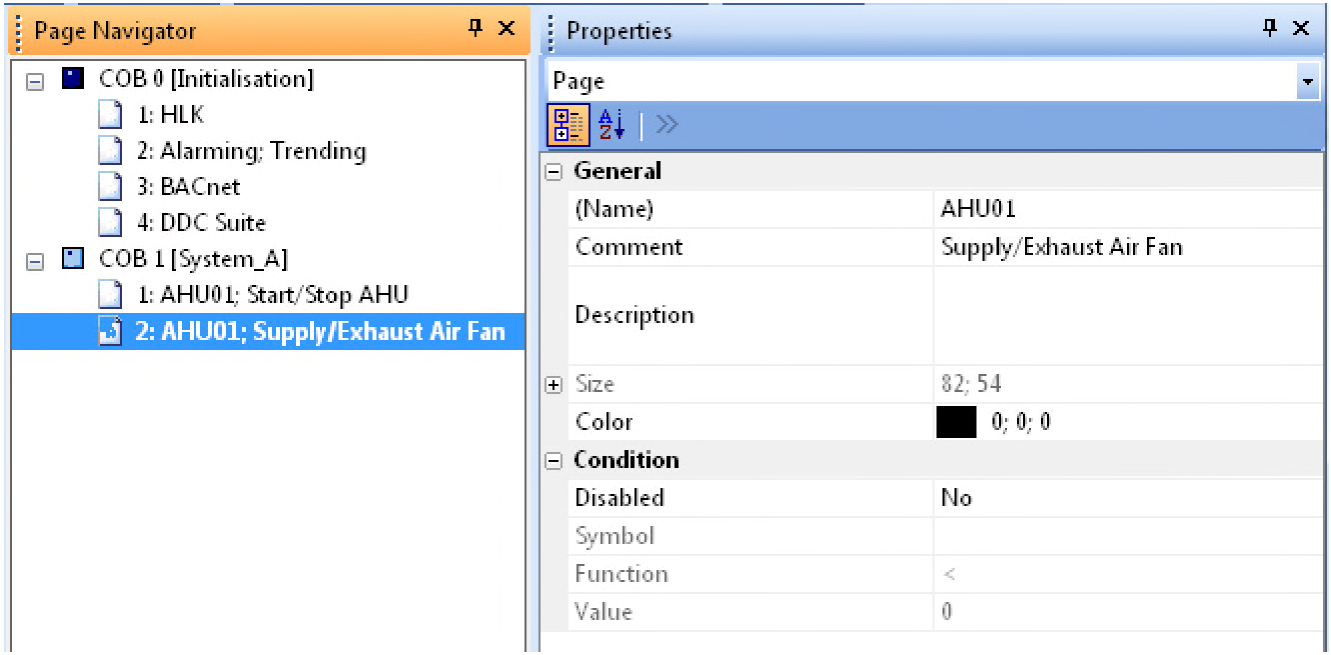


Symbol Name	Type	Address/Value	Comment	Actual...	Tags	Scope
Alarm	GROUP					
iControlled	F					Public
ExhaustAir	GROUP					
Temp	GROUP					
Fan	GROUP					
Control	GROUP					
Alarm	GROUP					
iControlled	F					Public

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Right-click anywhere on the Fupla page to select Properties.
In the text field, enter AHU01 as the “Name” and Supply/Exhaust Air Fan as the “Comment”



Page Navigator

- COB 0 [Initialisation]
  - 1: HLK
  - 2: Alarming; Trending
  - 3: BACnet
  - 4: DDC Suite
- COB 1 [System_A]
  - 1: AHU01; Start/Stop AHU
  - 2: AHU01; Supply/Exhaust Air Fan

Properties

Page

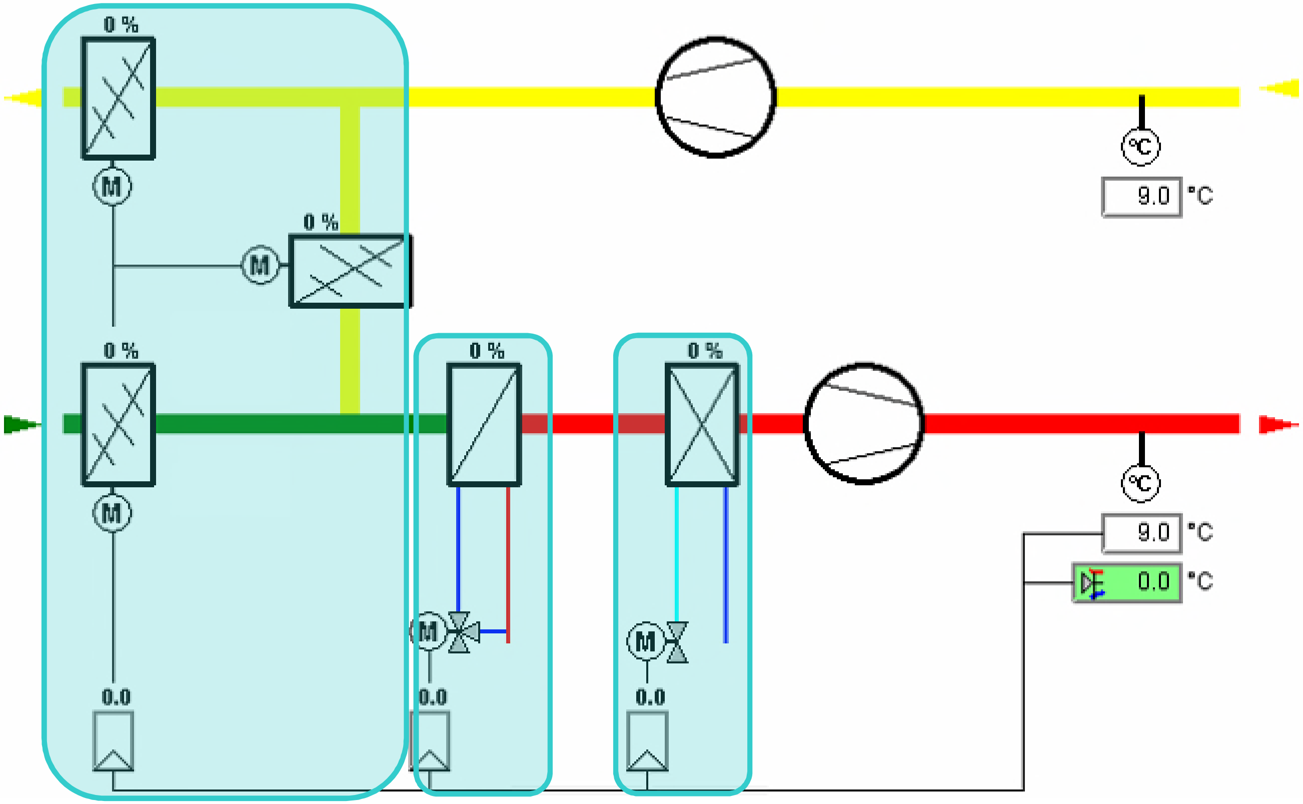
General	
(Name)	AHU01
Comment	Supply/Exhaust Air Fan
Description	
Size	82; 54
Color	■ 0; 0; 0
Condition	
Disabled	No
Symbol	
Function	<
Value	0

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

The third Fupla page contains

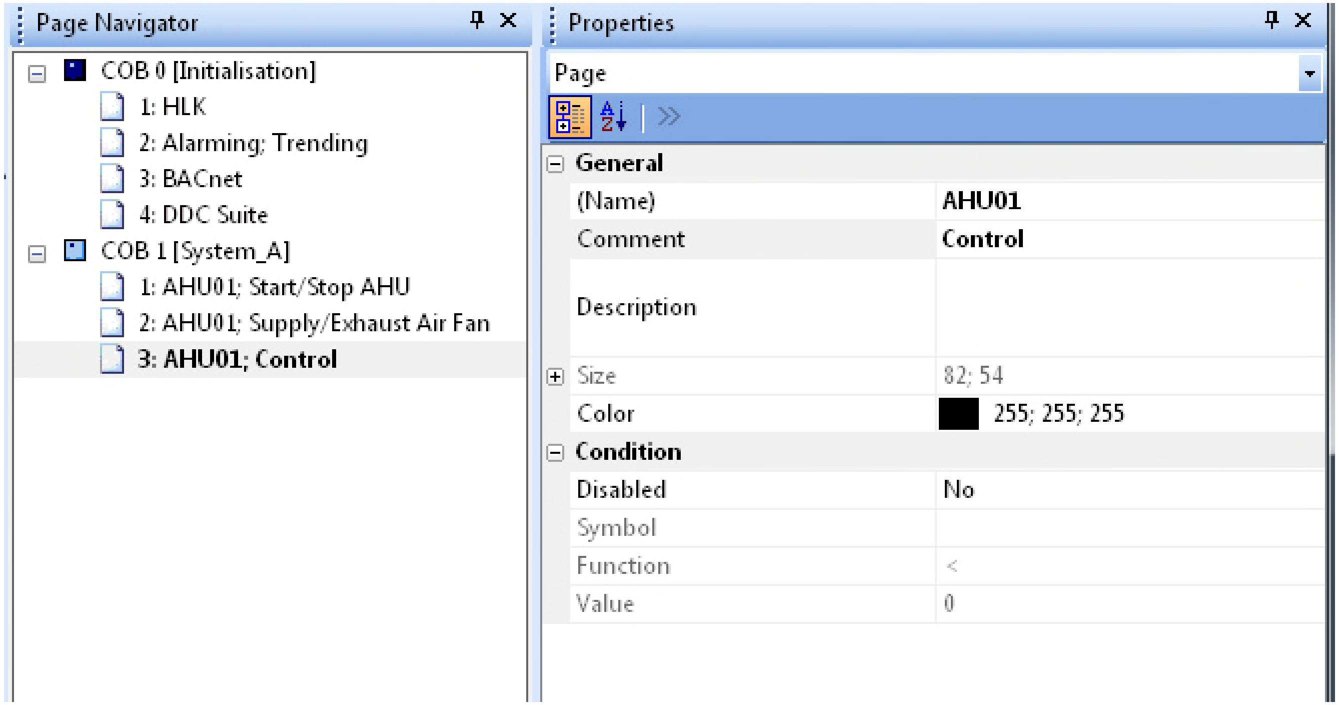
- the controller for the cooler, heater and mixed air



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Insert a new page after the current page and label it AHU01; Control



Page Navigator

- COB 0 [Initialisation]
  - 1: HLK
  - 2: Alarming; Trending
  - 3: BACnet
  - 4: DDC Suite
- COB 1 [System_A]
  - 1: AHU01; Start/Stop AHU
  - 2: AHU01; Supply/Exhaust Air Fan
  - 3: AHU01; Control

Properties

Page

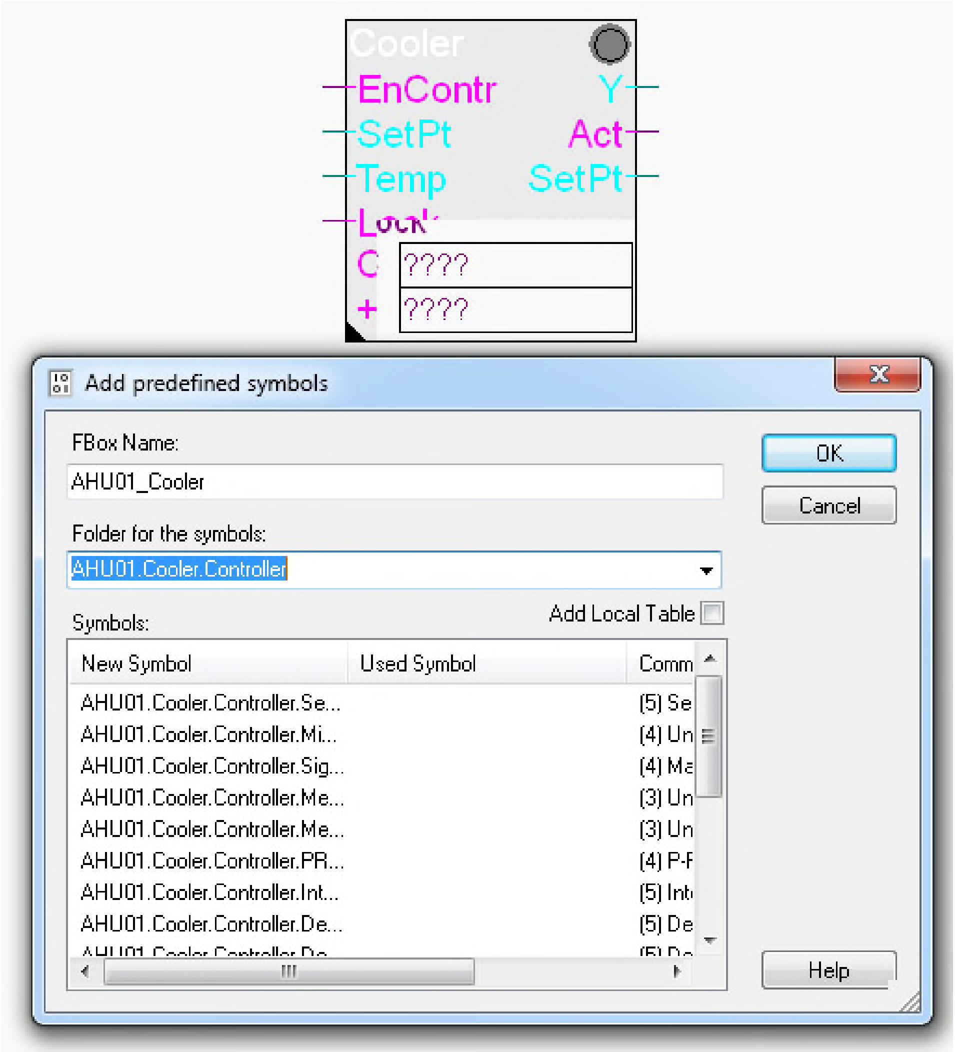
General	
(Name)	AHU01
Comment	Control
Description	
Size	82; 54
Color	■ 255; 255; 255
Condition	
Disabled	No
Symbol	
Function	<
Value	0

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

First, we need a few controller FBoxes

1. On the FBox selector Application tab, select the DDC Controller family.
2. Position FBox Cooler
3. Name the Fbox AHU01_Cooler
4. As the folder for the symbols, enter the path AHU01.Cooler.Controller.



FBox Name: AHU01_Cooler

Folder for the symbols: AHU01.Cooler.Controller

Add Local Table □

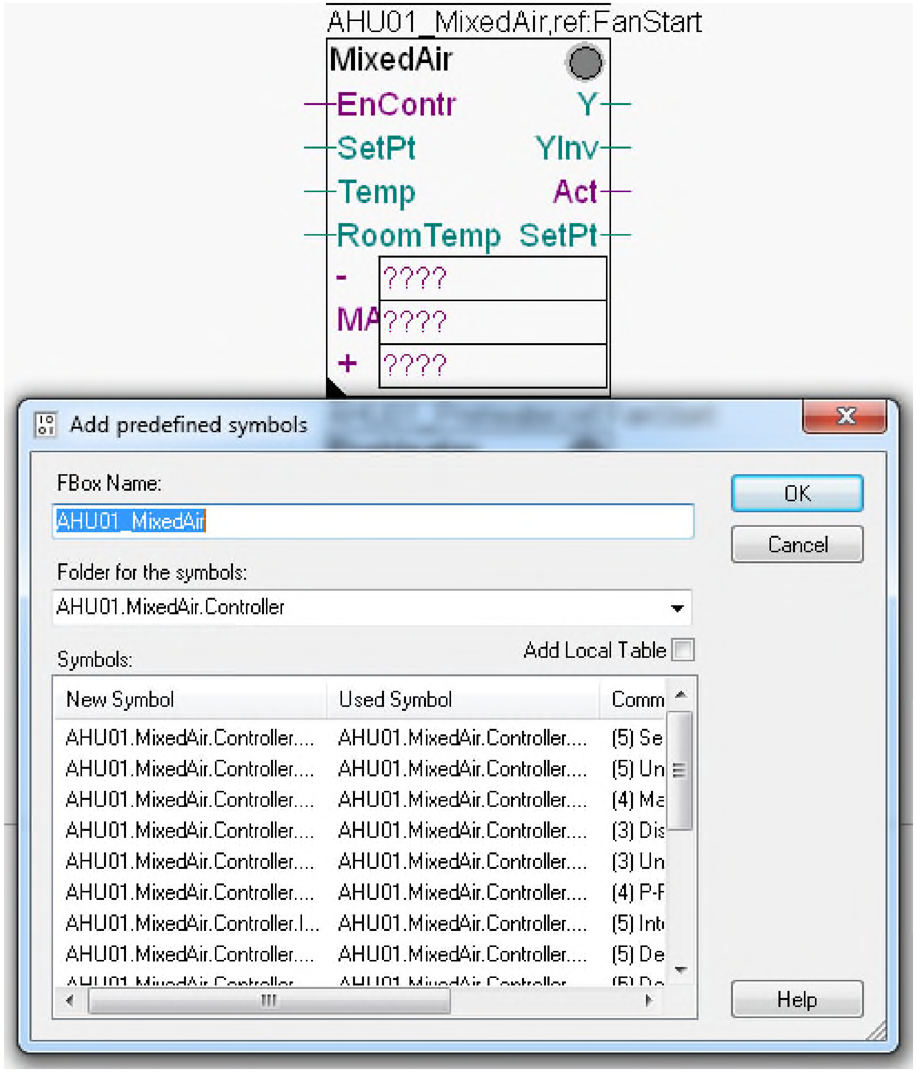
Symbols:

New Symbol	Used Symbol	Comm
AHU01.Cooler.Controller.Se...		(5) Se
AHU01.Cooler.Controller.Mi...		(4) Un
AHU01.Cooler.Controller.Sig...		(4) Ma
AHU01.Cooler.Controller.Me...		(3) Un
AHU01.Cooler.Controller.Me...		(3) Un
AHU01.Cooler.Controller.PR...		(4) P-F
AHU01.Cooler.Controller.Int...		(5) Int
AHU01.Cooler.Controller.De...		(5) De

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

1. The next controller is the FBox Mixed Air
2. We name the Fbox AHU01_MixedAir
3. As the folder for the symbols, enter the path AHU01.MixedAir.Controller.



AHU01_MixedAir,ref:FanStart

MixedAir

Add predefined symbols

FBox Name: AHU01_MixedAir

Folder for the symbols: AHU01.MixedAir.Controller

Add Local Table □

Symbols:

New Symbol	Used Symbol	Comm
AHU01.MixedAir.Controller....	AHU01.MixedAir.Controller....	(5) Se
AHU01.MixedAir.Controller....	AHU01.MixedAir.Controller....	(5) Un
AHU01.MixedAir.Controller....	AHU01.MixedAir.Controller....	(4) Ma
AHU01.MixedAir.Controller....	AHU01.MixedAir.Controller....	(3) Dis
AHU01.MixedAir.Controller....	AHU01.MixedAir.Controller....	(3) Un
AHU01.MixedAir.Controller....	AHU01.MixedAir.Controller....	(4) P-F
AHU01.MixedAir.Controller.I...	AHU01.MixedAir.Controller....	(5) Int
AHU01.MixedAir.Controller....	AHU01.MixedAir.Controller....	(5) De

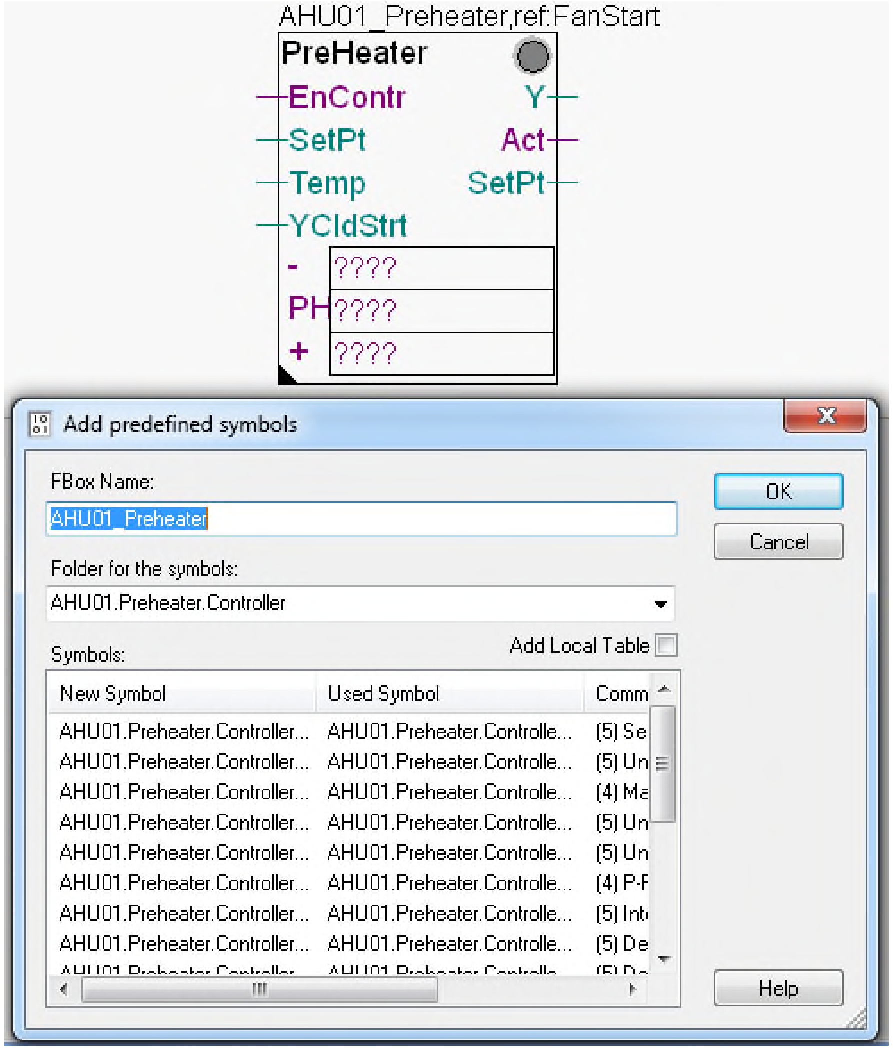
DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

1. The next controller is the FBox Preheater

2. We name the Fbox AHU01_Preheater

3. As the folder for the symbols, enter the path AHU01.Preheater.Controller.



AHU01_Preheater,ref:FanStart

Add predefined symbols

FBox Name: AHU01_Preheater

Folder for the symbols: AHU01.Preheater.Controller

Add Local Table □

Symbols:

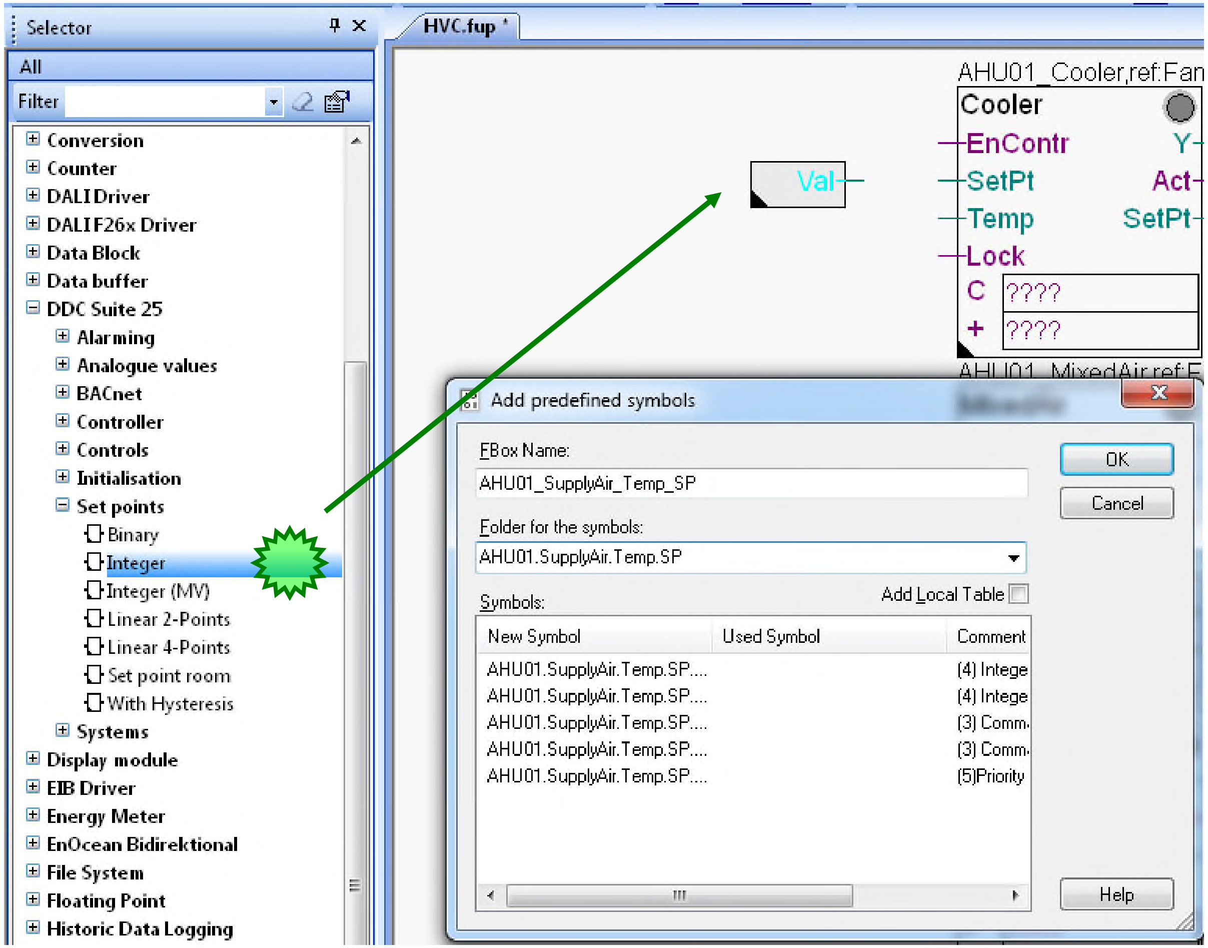
New Symbol	Used Symbol	Comm
AHU01.Preheater.Controller...	AHU01.Preheater.Controlle...	(5) Se
AHU01.Preheater.Controller...	AHU01.Preheater.Controlle...	(5) Un
AHU01.Preheater.Controller...	AHU01.Preheater.Controlle...	(4) Ma
AHU01.Preheater.Controller...	AHU01.Preheater.Controlle...	(5) Un
AHU01.Preheater.Controller...	AHU01.Preheater.Controlle...	(5) Un
AHU01.Preheater.Controller...	AHU01.Preheater.Controlle...	(4) P-F
AHU01.Preheater.Controller...	AHU01.Preheater.Controlle...	(5) Int
AHU01.Preheater.Controller...	AHU01.Preheater.Controlle...	(5) De
AHU01.Preheater.Controller...	AHU01.Preheater.Controlle...	(5) De

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

To complete this part, we position connectors and Value FBoxes.

1. On the FBox selector Application tab, select the DDC Set points family.
2. Position the Integer FBox
3. Enter the FBox name AHU01_SupplyAir_Temp_SP
4. As the path, we enter AHU01.SupplyAir.Temp.SP



FBox Name: AHU01_SupplyAir_Temp_SP

Folder for the symbols: AHU01.SupplyAir.Temp.SP

Symbols: Add Local Table □

New Symbol	Used Symbol	Comment
AHU01.SupplyAir.Temp.SP....		(4) Intege
AHU01.SupplyAir.Temp.SP....		(4) Intege
AHU01.SupplyAir.Temp.SP....		(3) Comm.
AHU01.SupplyAir.Temp.SP....		(3) Comm.
AHU01.SupplyAir.Temp.SP....		(5)Priority

DDC Suite 2.5 / PG5 Building Advanced

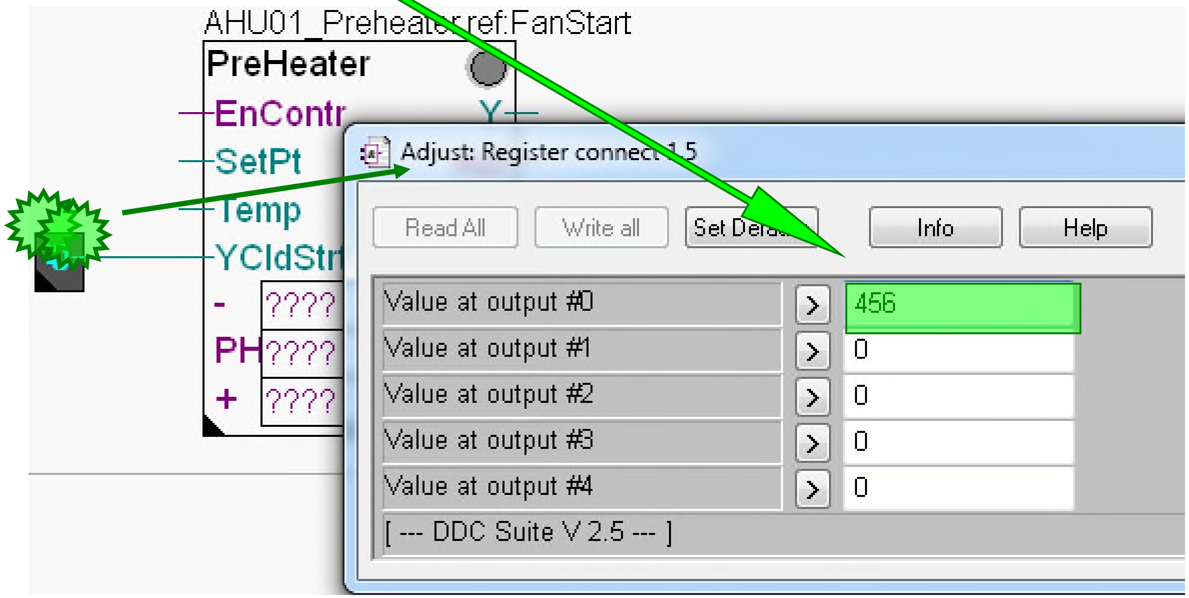
Working with Fupla

In the Register connect 1.5 FBox from the Initialisation group which is connected with the input YKs, a value must be entered:

1. Open the Adjust window by double-clicking on the FBox

2. Enter the value 456

This corresponds to the value 45.6 and is used as the valve signal during the starting phase. We will find out more during the later testing of the programm.



Adjust: Register connect 1.5

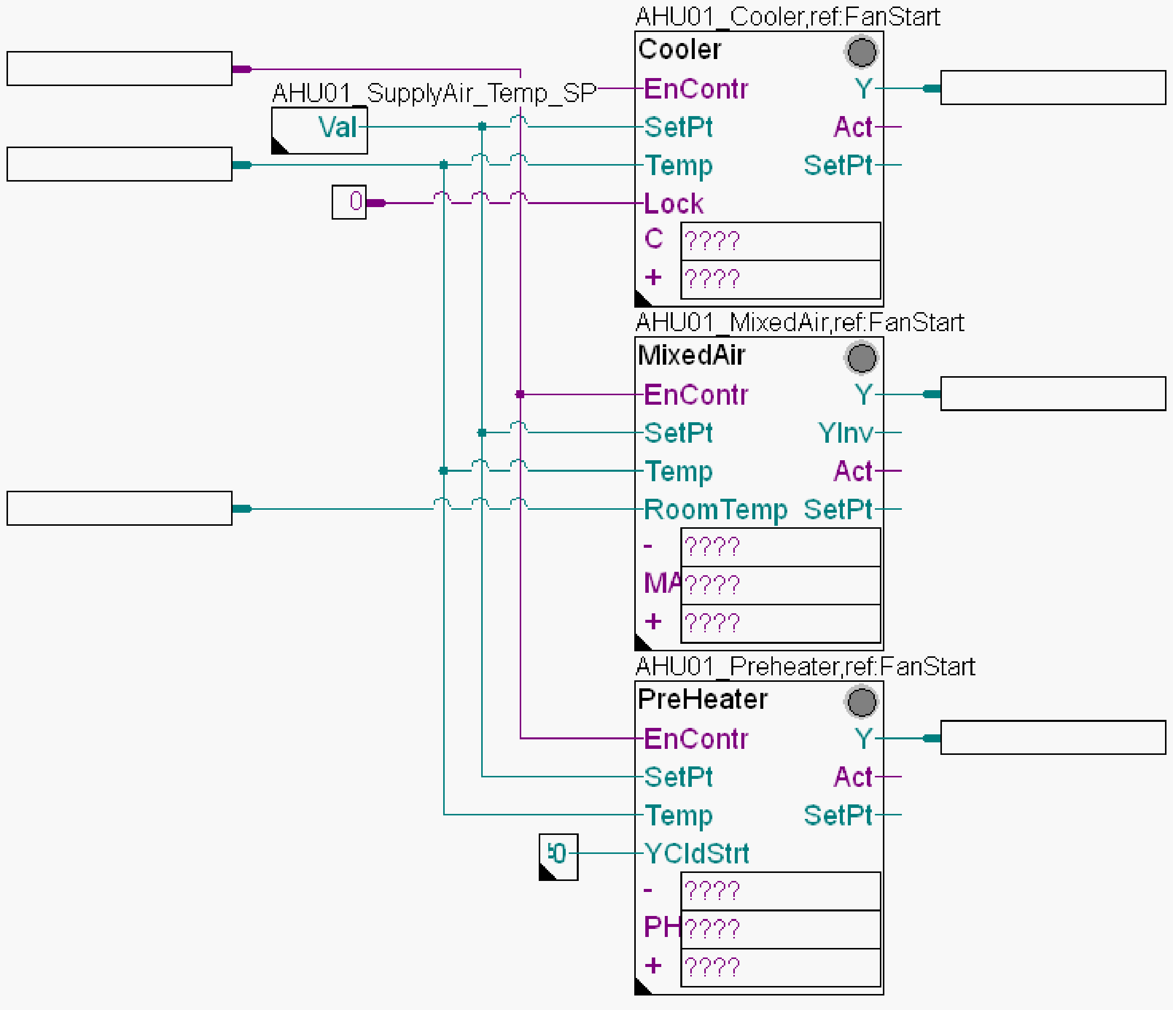
Value at output #0	>	456
Value at output #1	>	0
Value at output #2	>	0
Value at output #3	>	0
Value at output #4	>	0

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

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

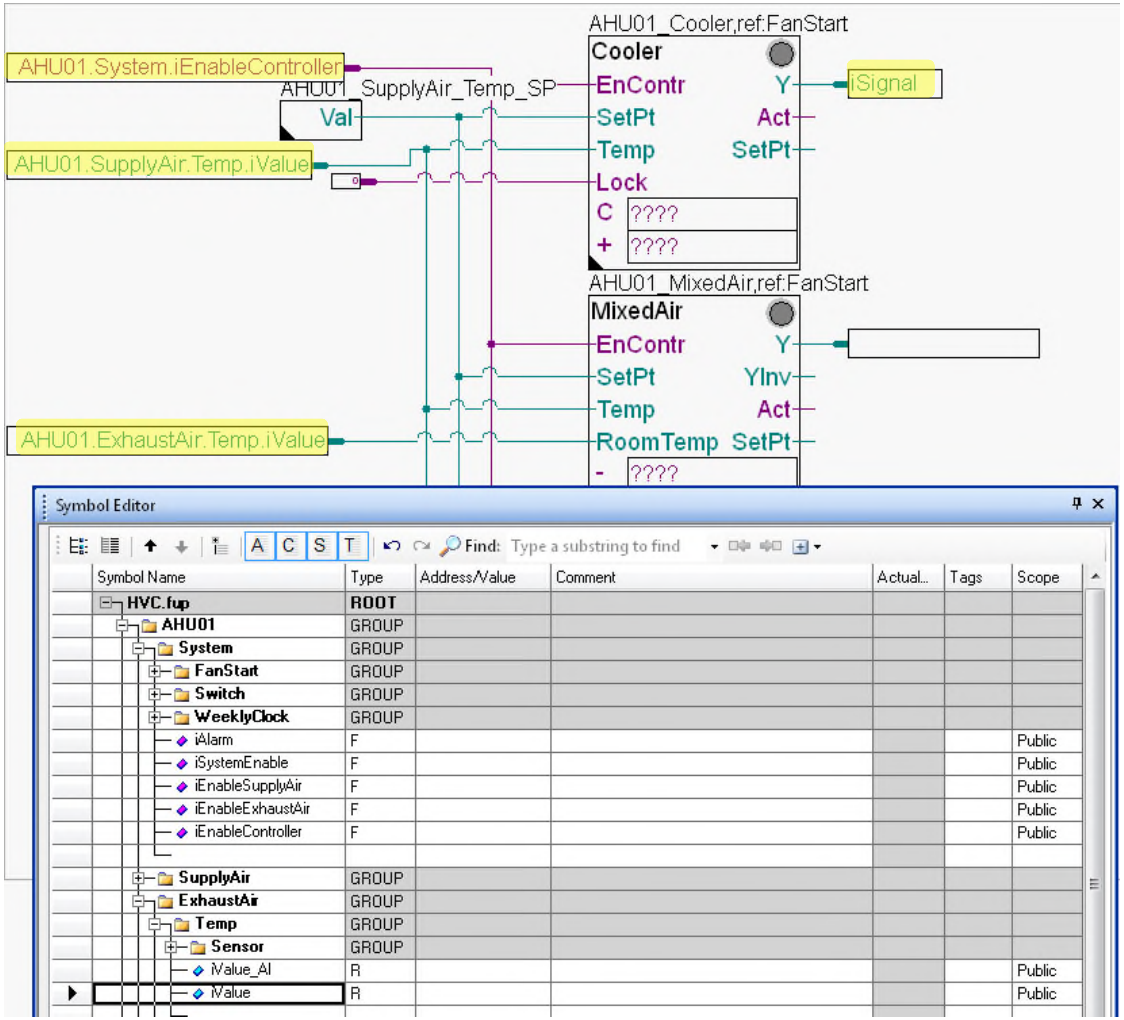
Complete the page by connecting the inputs and outputs of the FBoxes to the connectors.



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Display the Symbol Editor (“F5” key) and use drag&drop to drag some symbols into the connectors



Symbol Name	Type	Address/Value	Comment	Actual...	Tags	Scope
HVC.fup	ROOT					
AHU01	GROUP					
System	GROUP					
FanStart	GROUP					
Switch	GROUP					
WeeklyClock	GROUP					
iAlarm	F					Public
iSystemEnable	F					Public
iEnableSupplyAir	F					Public
iEnableExhaustAir	F					Public
iEnableController	F					Public
SupplyAir	GROUP					
ExhaustAir	GROUP					
Temp	GROUP					
Sensor	GROUP					
iValue_AI	R					Public
iValue	R					Public

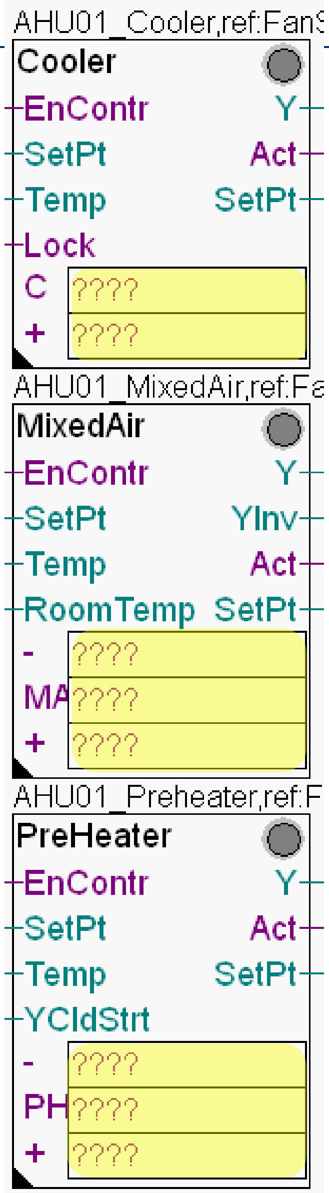
DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Some connectors are still unnamed, as can be seen from "????". In DDC Suite, the control sequence is not realised with 1 FBox (e.g. like the HMC FBox sequence of the HLK library).

The sequence is created by creating a "Chain" (communicative) between the controller FBoxes. To do this, each FBox has 2 or 3 connectors to define flags for "linking".

- The connector with the abbreviation of the FBox name, e.g. Kh = cooler, MI = mixed air Ve = preheater identifies the flag which is being monitored by the respective FBox itself. If this flag is High (like the input Reg), the controller is working.
- The connector with a "-" (minus) has the flag of the controller that is to be activated when the active controller FBox calculates an output signal of less than 2% (let's say "less energy is needed in the air")
- The connector with a "+" (plus) has the flag of the controller that is to be activated when the active controller FBox calculates an output signal of more than 98% (here we know that "more energy is needed in the air")



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Let’s start with the Cooler Fbox:

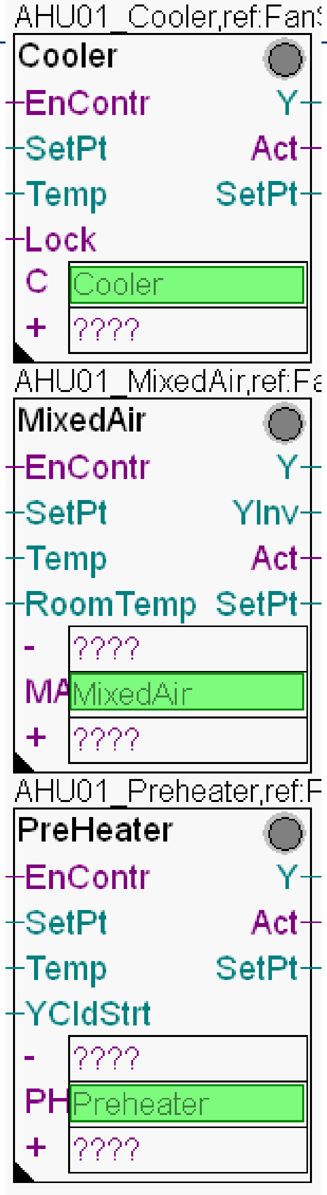
- C connector = Cooler. This flag is monitored by the FBox itself.

FBox MixedAir:

- MA connector = MixedAir. This flag is monitored by the FBox itself.

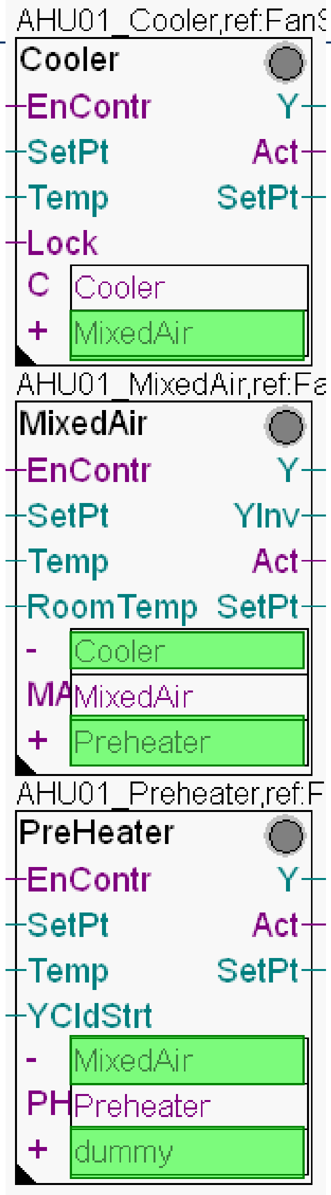
FBox PreHeater:

- PH connector = Preheater. This flag is monitored by the FBox itself.



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla



We begin the second step with the Cooler Fbox:

- C connector is already defined (own flag)
- "+" connector = MixedAir – as the signal of the cooler is less than 2% here, the MixedAir should be activated

FBox MixedAir:

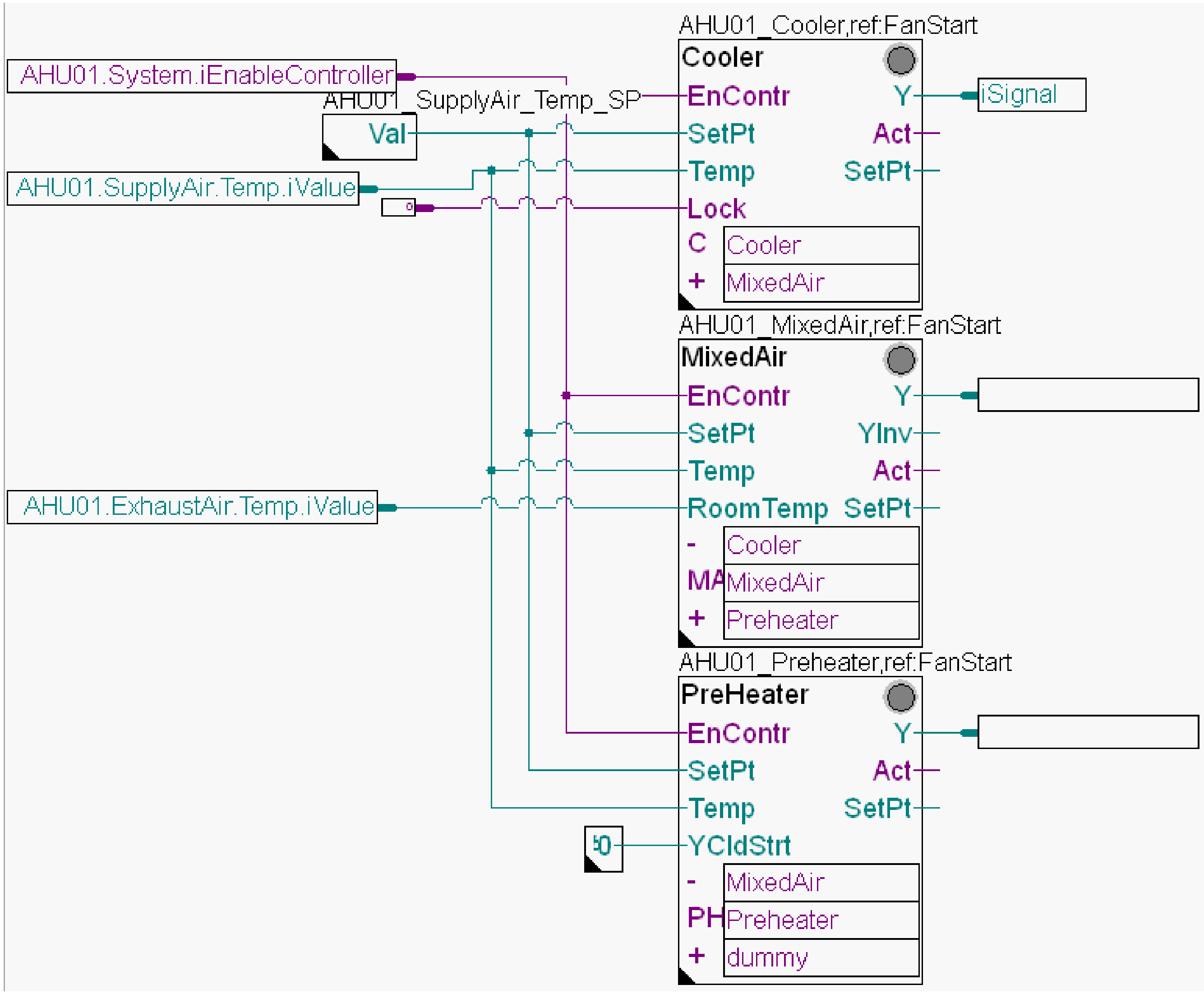
- MA connector is also already defined here (own flag)
- "-" connector = Cooler – if the signal of the mixed air is less than 2%, the Cooler should be reactivated
- "+" connector = Preheater – if the signal of the mixed air is greater than 98%, the Preheater should be activated

FBox PreHeater:

- PH connector is also already defined here (own flag)
- "-" connector = MixedAir – if the signal of the preheater is less than 2%, the MixedAir should be reactivated
- "+" connector = dummy – if the signal of the preheater is greater than 98%, the dummy should be activated. (This can be a Reheater if it exists!)

DDC Suite 2.5 / PG5 Building Advanced

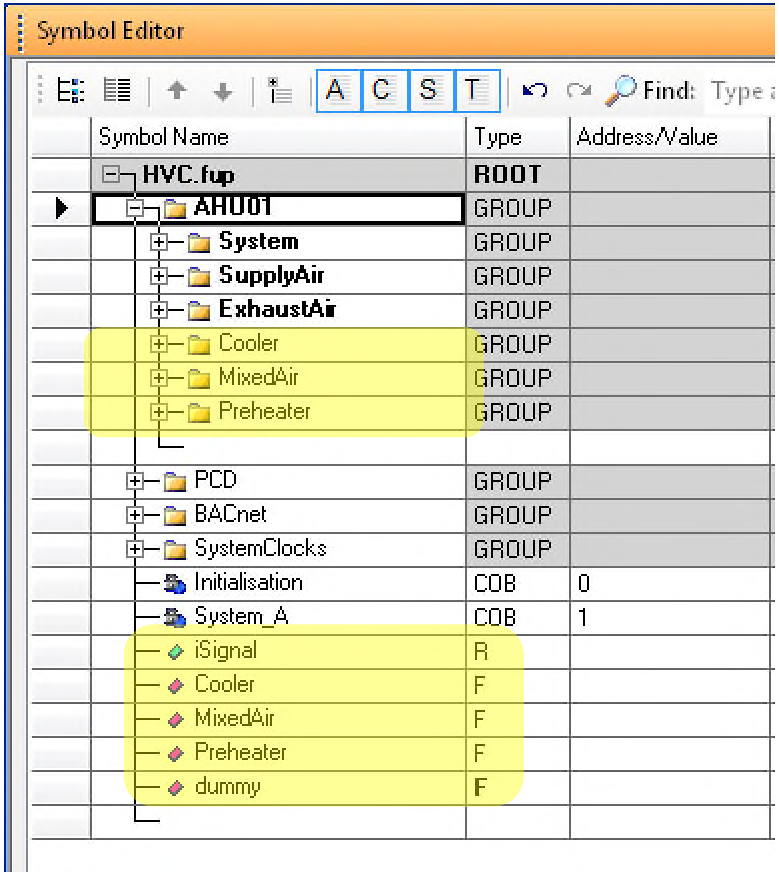
Working with Fupla



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

In the Symbol Editor (remember, you can hide/display the symbol editor with the “F5” key) check that your structure and symbols look exactly the same. The symbols must be on the Global tab.



Symbol Name	Type	Address/Value
HVC.fup	ROOT	
AHU01	GROUP	
System	GROUP	
SupplyAir	GROUP	
ExhaustAir	GROUP	
Cooler	GROUP	
MixedAir	GROUP	
Preheater	GROUP	
PCD	GROUP	
BACnet	GROUP	
SystemClocks	GROUP	
Initialisation	COB	0
System_A	COB	1
iSignal	R	
Cooler	F	
MixedAir	F	
Preheater	F	
dummy	F	

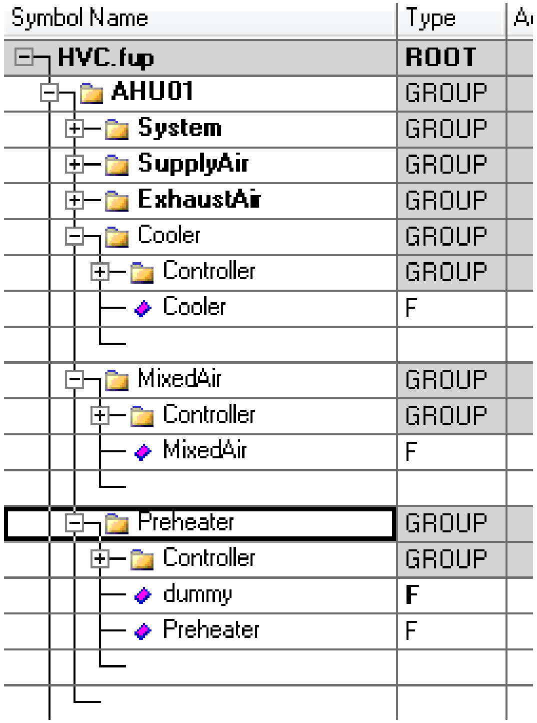
DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

1. Highlight the Cooler symbol and drag it to the AHU01.Cooler group

2. Highlight the MixedAir symbol and drag it to the AHU01.MixedAir group

3. Highlight the Preheater and dummy symbols and drag them to the AHU01.preheater group



Symbol Name	Type	A
HVC.fup	ROOT	
AHU01	GROUP	
System	GROUP	
SupplyAir	GROUP	
ExhaustAir	GROUP	
Cooler	GROUP	
Controller	GROUP	
Cooler	F	
MixedAir	GROUP	
Controller	GROUP	
MixedAir	F	
Preheater	GROUP	
Controller	GROUP	
dummy	F	
Preheater	F	

DDC Suite 2.5 / PG5 Building Advanced

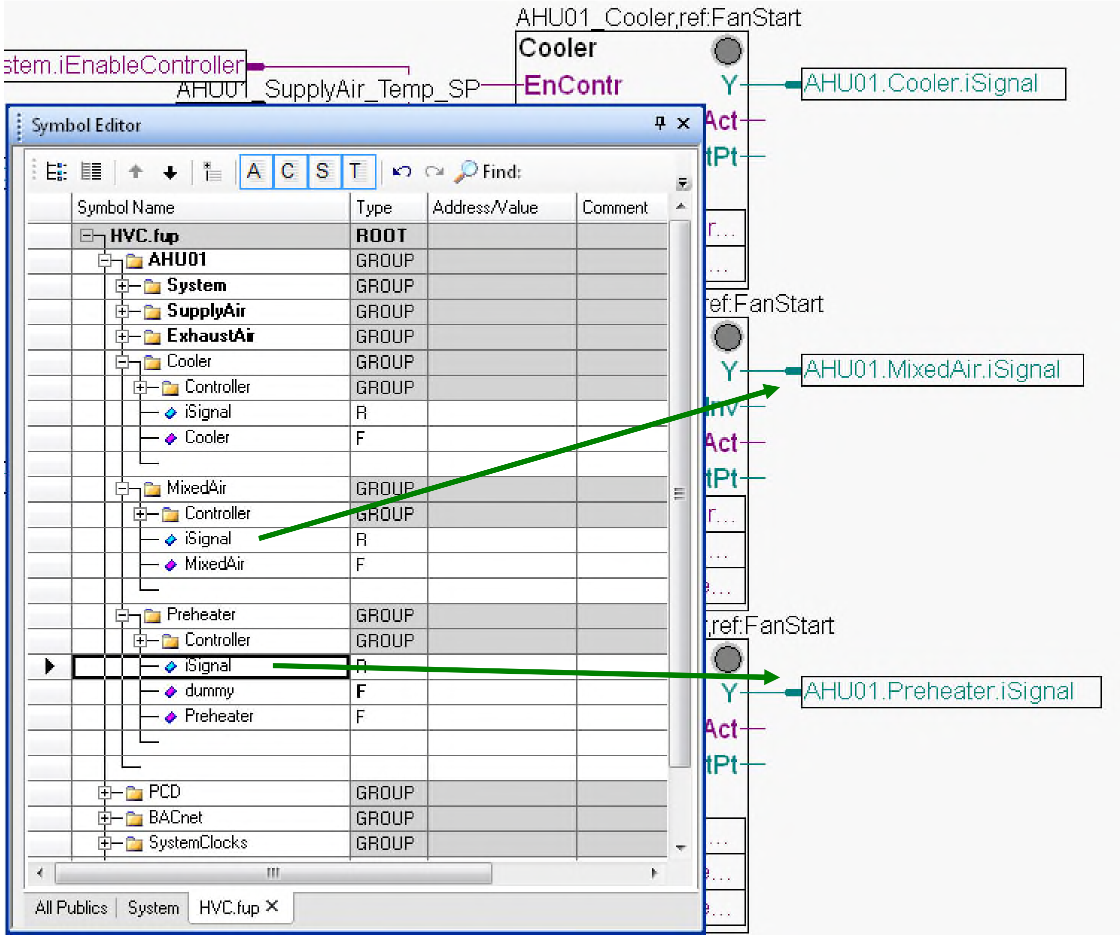
Working with Fupla

The symbols in the connectors for the Cooler must also be moved to the AHU01.Cooler group.

Highlight the iSignal symbol and drag it to the AHU01.Cooler group

Then also copy this iSignal into the folder for the mixed air and preheater.

These two signals are then linked with the corresponding controller outputs.



Symbol Name	Type	Address/Value	Comment
HVC.fup	ROOT		
AHU01	GROUP		
System	GROUP		
SupplyAir	GROUP		
ExhaustAir	GROUP		
Cooler	GROUP		
Controller	GROUP		
iSignal	R		
Cooler	F		
MixedAir	GROUP		
Controller	GROUP		
iSignal	R		
MixedAir	F		
Preheater	GROUP		
Controller	GROUP		
iSignal	R		
dummy	F		
Preheater	F		
PCD	GROUP		
BACnet	GROUP		
SystemClocks	GROUP		

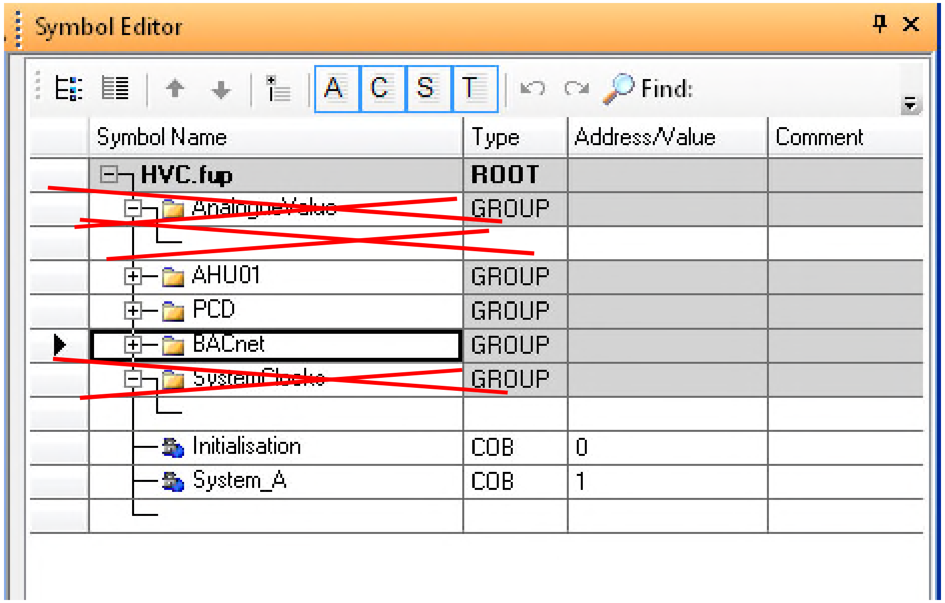
DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

All data should now be moved into the AHU01 group (or one of its sub-groups) and there should be no symbol in the Root

The groups AnalogValue and SystemClocks should now be empty and can be deleted.

We have now brought all data into a clear structure.

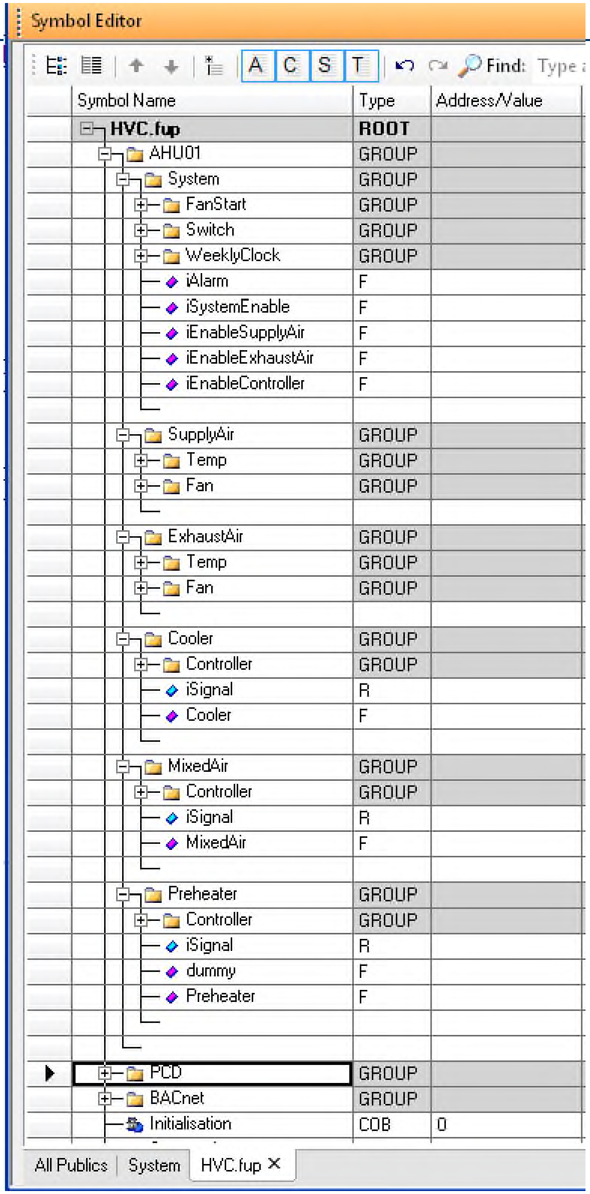


Symbol Name	Type	Address/Value	Comment
HVC.fup	ROOT		
~~AnalogueValue~~	GROUP		
AHU01	GROUP		
PCD	GROUP		
BACnet	GROUP		
~~SystemClocks~~	GROUP		
Initialisation	COB	0	
System_A	COB	1	

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

After we have unlinked the WebServer and the BACnet .bnt file, we can execute a “Build” with the F2 key and check that everything is OK.

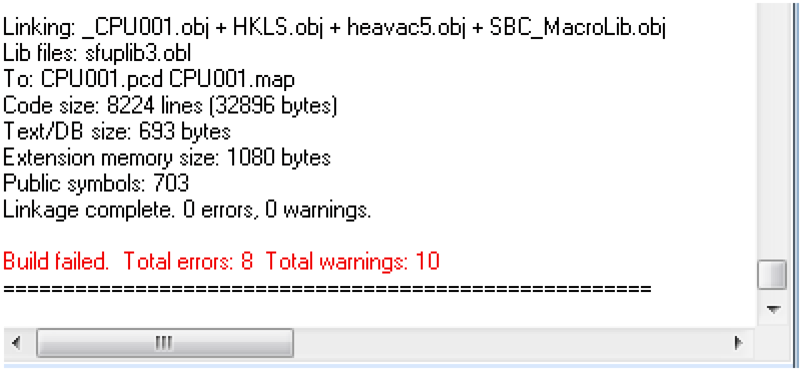


Symbol Name	Type	Address/Value
HVC.fup	ROOT	
AHU01	GROUP	
System	GROUP	
FanStart	GROUP	
Switch	GROUP	
WeeklyClock	GROUP	
iAlarm	F	
iSystemEnable	F	
iEnableSupplyAir	F	
iEnableExhaustAir	F	
iEnableController	F	
SupplyAir	GROUP	
Temp	GROUP	
Fan	GROUP	
ExhaustAir	GROUP	
Temp	GROUP	
Fan	GROUP	
Cooler	GROUP	
Controller	GROUP	
iSignal	R	
Cooler	F	
MixedAir	GROUP	
Controller	GROUP	
iSignal	R	
MixedAir	F	
Preheater	GROUP	
Controller	GROUP	
iSignal	R	
dummy	F	
Preheater	F	
PCD	GROUP	
BACnet	GROUP	
Initialisation	COB	0

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

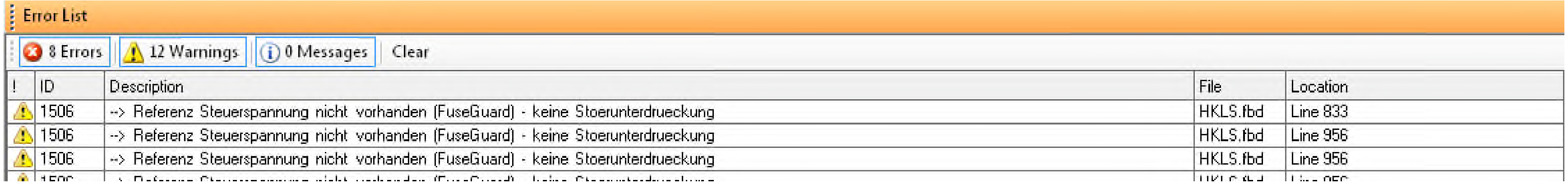
Well, 8 errors and 10 warnings is a poor result.



```
Linking: _CPU001.obj + HKLS.obj + heavac5.obj + SBC_MacroLib.obj
Lib files: sfuplib3.obl
To: CPU001.pcd CPU001.map
Code size: 8224 lines (32896 bytes)
Text/DB size: 693 bytes
Extension memory size: 1080 bytes
Public symbols: 703
Linkage complete. 0 errors, 0 warnings.

Build failed.  Total errors: 8  Total warnings: 10
=========================================================
```

First, let's look at the warnings:



!	ID	Description	File	Location
⚠	1506	--> Referenz Steuerspannung nicht vorhanden (FuseGuard) - keine Stoerunterdrueckung	HKLS.fbd	Line 833
⚠	1506	--> Referenz Steuerspannung nicht vorhanden (FuseGuard) - keine Stoerunterdrueckung	HKLS.fbd	Line 956
⚠	1506	--> Referenz Steuerspannung nicht vorhanden (FuseGuard) - keine Stoerunterdrueckung	HKLS.fbd	Line 956

The reference control voltage is missing... That means we have forgotten an FBox...

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

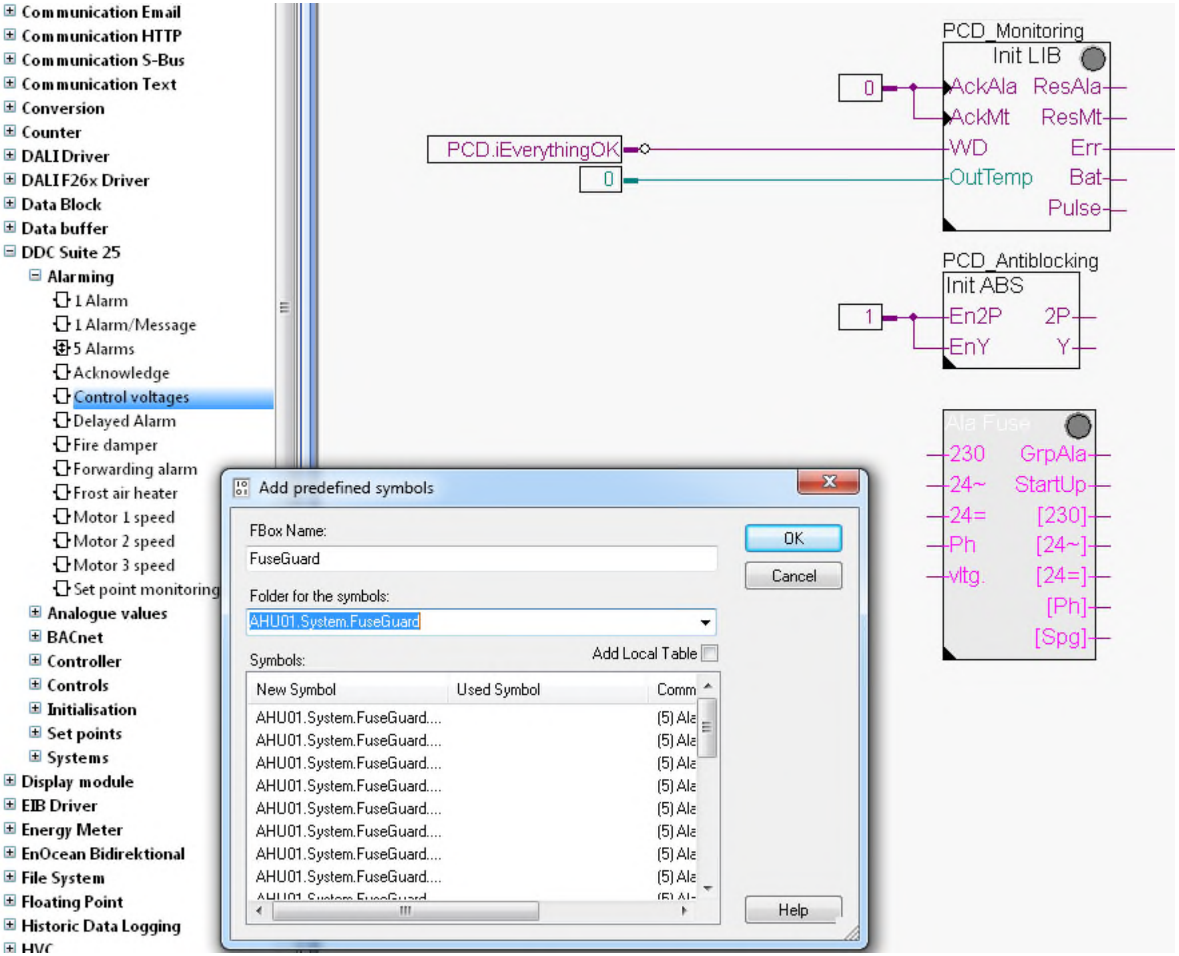
We then select the fourth page of the COB initialisation.

1. On the FBox selector Application tab, select the DDC Alarming family.

2. Locate FBox Control Voltages

3. We let the Fbox name, like it is, FuseGuard.

4. As the folder for the symbols, enter the path AHU01.System.FuseGuard.



Add predefined symbols

FBox Name: FuseGuard

Folder for the symbols: AHU01.System.FuseGuard

Symbols: Add Local Table □

New Symbol	Used Symbol	Comm
AHU01.System.FuseGuard....		(5) Ala
AHU01.System.FuseGuard....		(5) Ala
AHU01.System.FuseGuard....		(5) Ala
AHU01.System.FuseGuard....		(5) Ala
AHU01.System.FuseGuard....		(5) Ala
AHU01.System.FuseGuard....		(5) Ala
AHU01.System.FuseGuard....		(5) Ala
AHU01.System.FuseGuard....		(5) Ala
AHU01.System.FuseGuard		(5) Ala

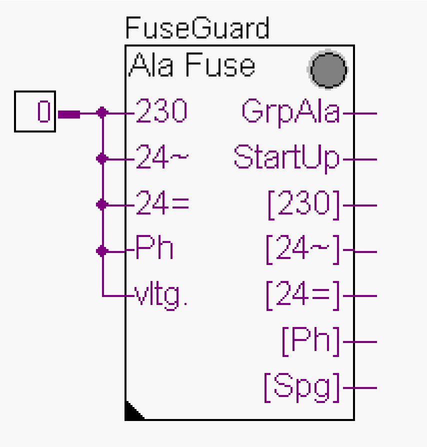
DDC Suite 2.5 / PG5 Building Advanced

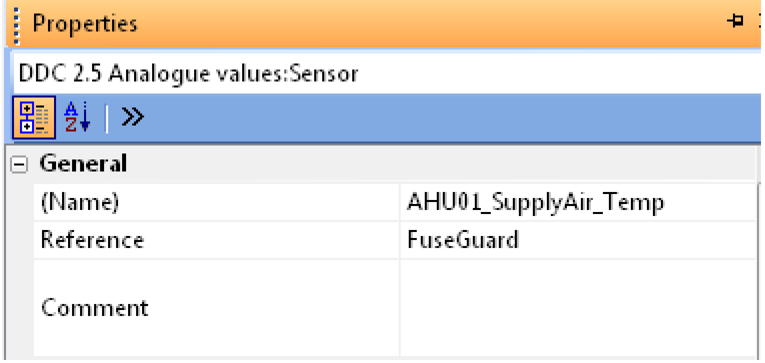
Working with Fupla

This FBox is used to monitor the control voltages of the system. The auxiliary contacts of the fuses/circuit breakers are linked to the inputs.

All FBoxes that can generate alarms should now reference this FBox. This way, you can ensure that a missing process alarm for a fan is not reported if only the 24 VDC for the differential pressure monitor of the process alarm are missing.

Thus, we must now check the reference texts of the Sensor and Alarm Motor FBoxes.

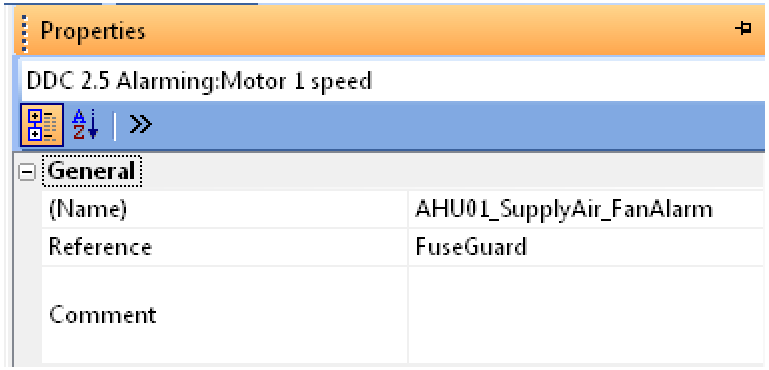




DDC 2.5 Analogue values:Sensor

General

(Name)	AHU01_SupplyAir_Temp
Reference	FuseGuard
Comment	



DDC 2.5 Alarming:Motor 1 speed

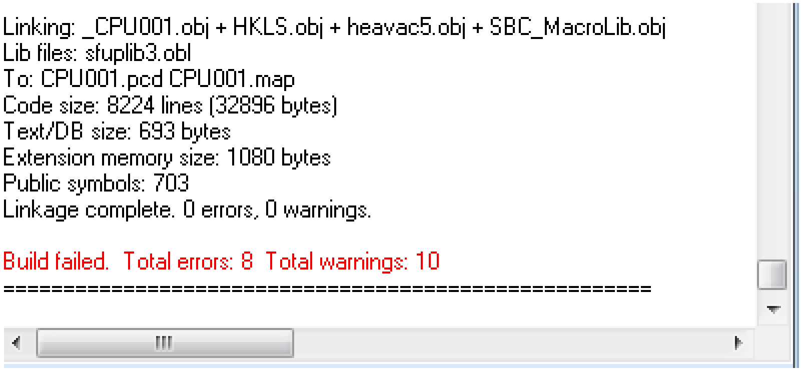
General

(Name)	AHU01_SupplyAir_FanAlarm
Reference	FuseGuard
Comment	

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

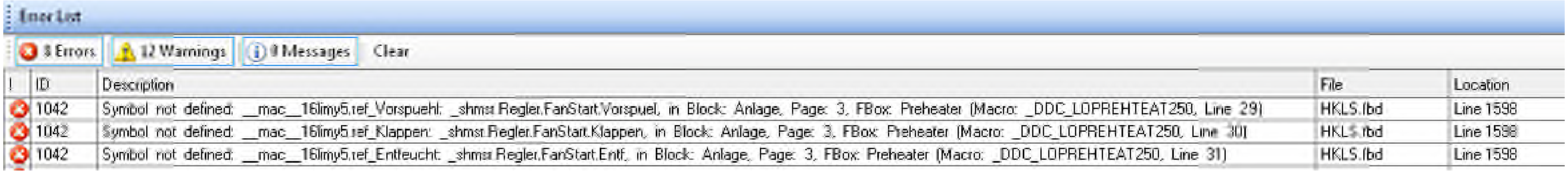
Well, 8 errors and 10 warnings is a poor result.



```
Linking: _CPU001.obj + HKLS.obj + heavac5.obj + SBC_MacroLib.obj
Lib files: sfuplib3.obl
To: CPU001.pcd CPU001.map
Code size: 8224 lines (32896 bytes)
Text/DB size: 693 bytes
Extension memory size: 1080 bytes
Public symbols: 703
Linkage complete. 0 errors, 0 warnings.

Build failed.  Total errors: 8  Total warnings: 10
=========================================================
```

Now the errors:



!	ID	Description	File	Location
⊗	1042	Symbol not defined: __mac__16limy5.ref_Vorspuehl: _shmsr.Regler.FanStart.Vorspuel, in Block: Anlage, Page: 3, FBox: Preheater (Macro: _DDC_LOPREHTEAT250, Line 29)	HKLS.fbd	Line 1598
⊗	1042	Symbol not defined: __mac__16limy5.ref_Klappen: _shmsr.Regler.FanStart.Klappen, in Block: Anlage, Page: 3, FBox: Preheater (Macro: _DDC_LOPREHTEAT250, Line 30)	HKLS.fbd	Line 1598
⊗	1042	Symbol not defined: __mac__16limy5.ref_Entfeucht: _shmsr.Regler.FanStart.Entf, in Block: Anlage, Page: 3, FBox: Preheater (Macro: _DDC_LOPREHTEAT250, Line 31)	HKLS.fbd	Line 1598

One symbol is not defined and in every line there is something about FanStart...

This is also a reference problem!!!!

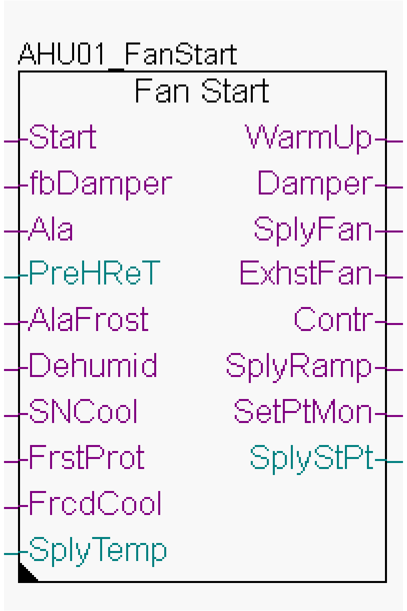
DDC Suite 2.5 / PG5 Building Advanced

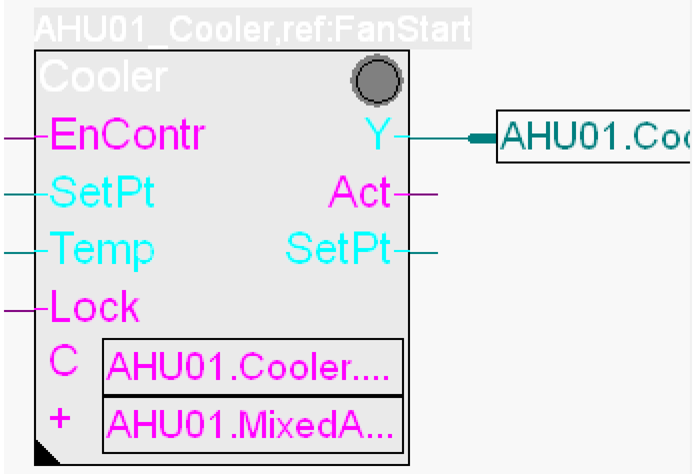
Working with Fupla

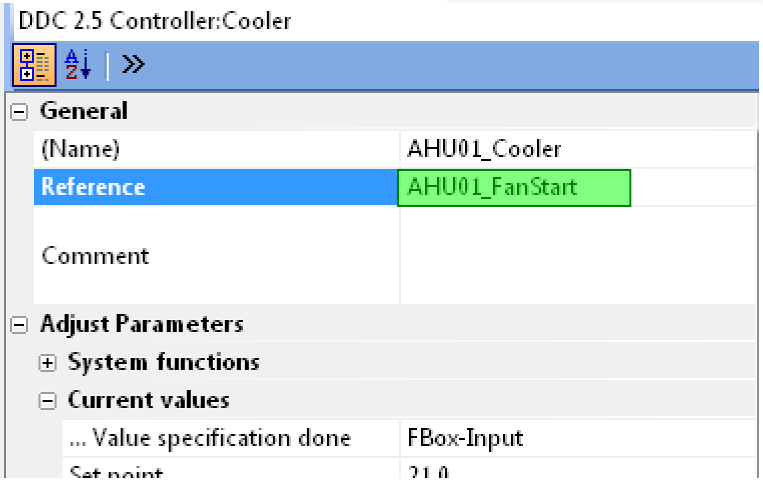
All controllers must refer to the Start RLT Fbox because they must receive signals from it in the background

Therefore, we have to adapt the reference there.

In our case, this applies to the Regler Fboxes Cooler, MixedAir and Preheater.






DDC 2.5 Controller:Cooler

⊟ General

(Name)	AHU01_Cooler
Reference	AHU01_FanStart
Comment	

⊟ Adjust Parameters

⊞ System functions

⊟ Current values

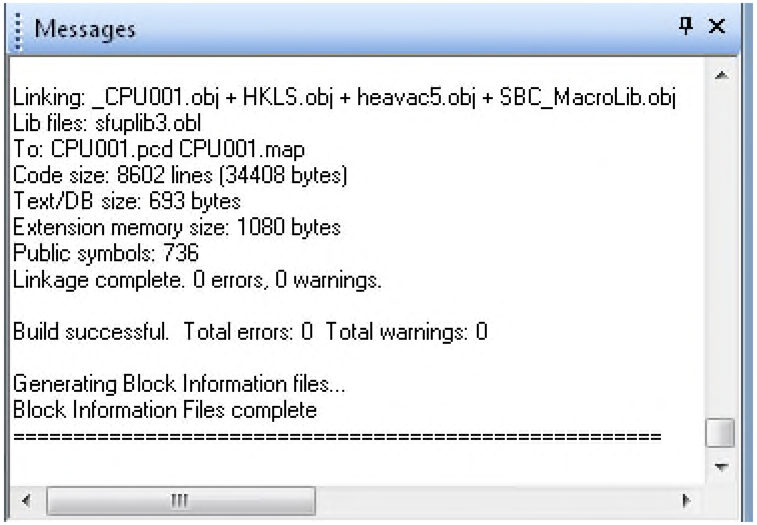
... Value specification done	FBox-Input
Set point	21.0

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

No we have added or corrected all missing references.

Now the “Build” works!



```
Linking: _CPU001.obj + HKLS.obj + heavac5.obj + SBC_MacroLib.obj
Lib files: sfuplib3.obl
To: CPU001.pcd CPU001.map
Code size: 8602 lines (34408 bytes)
Text/DB size: 693 bytes
Extension memory size: 1080 bytes
Public symbols: 736
Linkage complete. 0 errors, 0 warnings.

Build successful.  Total errors: 0  Total warnings: 0

Generating Block Information files...
Block Information Files complete
==========================================================
```

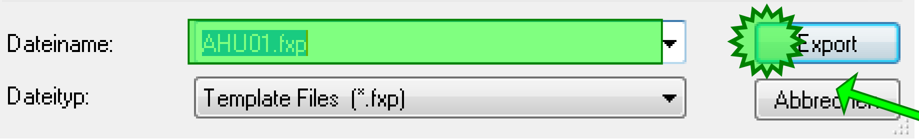
DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

At this point, we have programmed a good little application for a ventilation system. In daily business, this application would probably be bigger with more FBoxes and symbols – but we can reuse the application if we save it as a template.

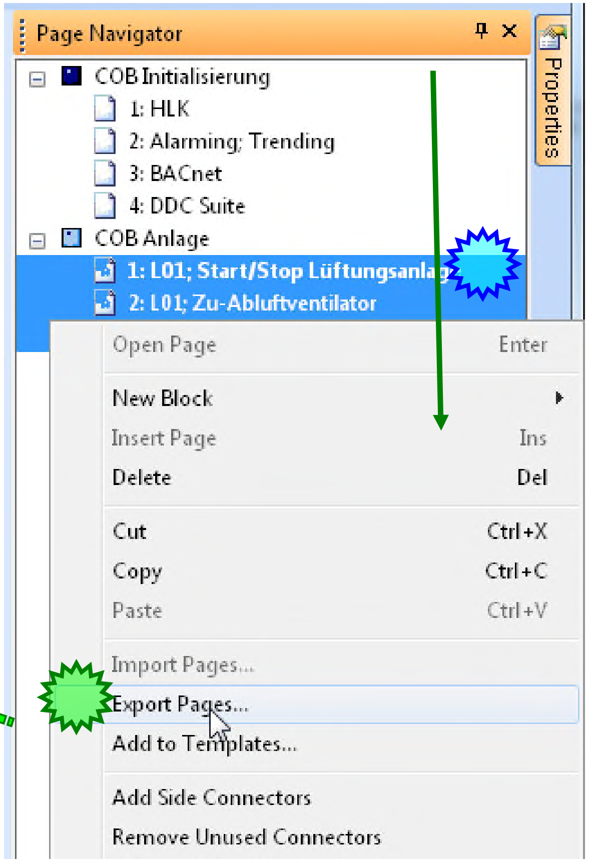
To do this, we must export this application as a template. Highlight pages 1-3 in the COB system and right-click on Export Pages…

Give the template a file name, let's say AHU01, and press the Export button



Dateiname: AHU01.fxp

Dateityp: Template Files (*.fxp)

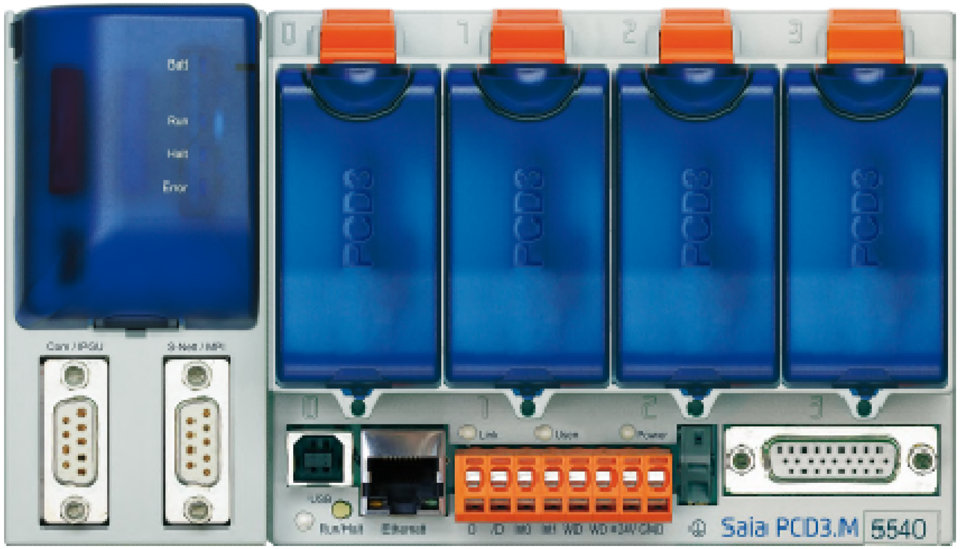


DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

The fourth Fupla page (and the last page …) contains

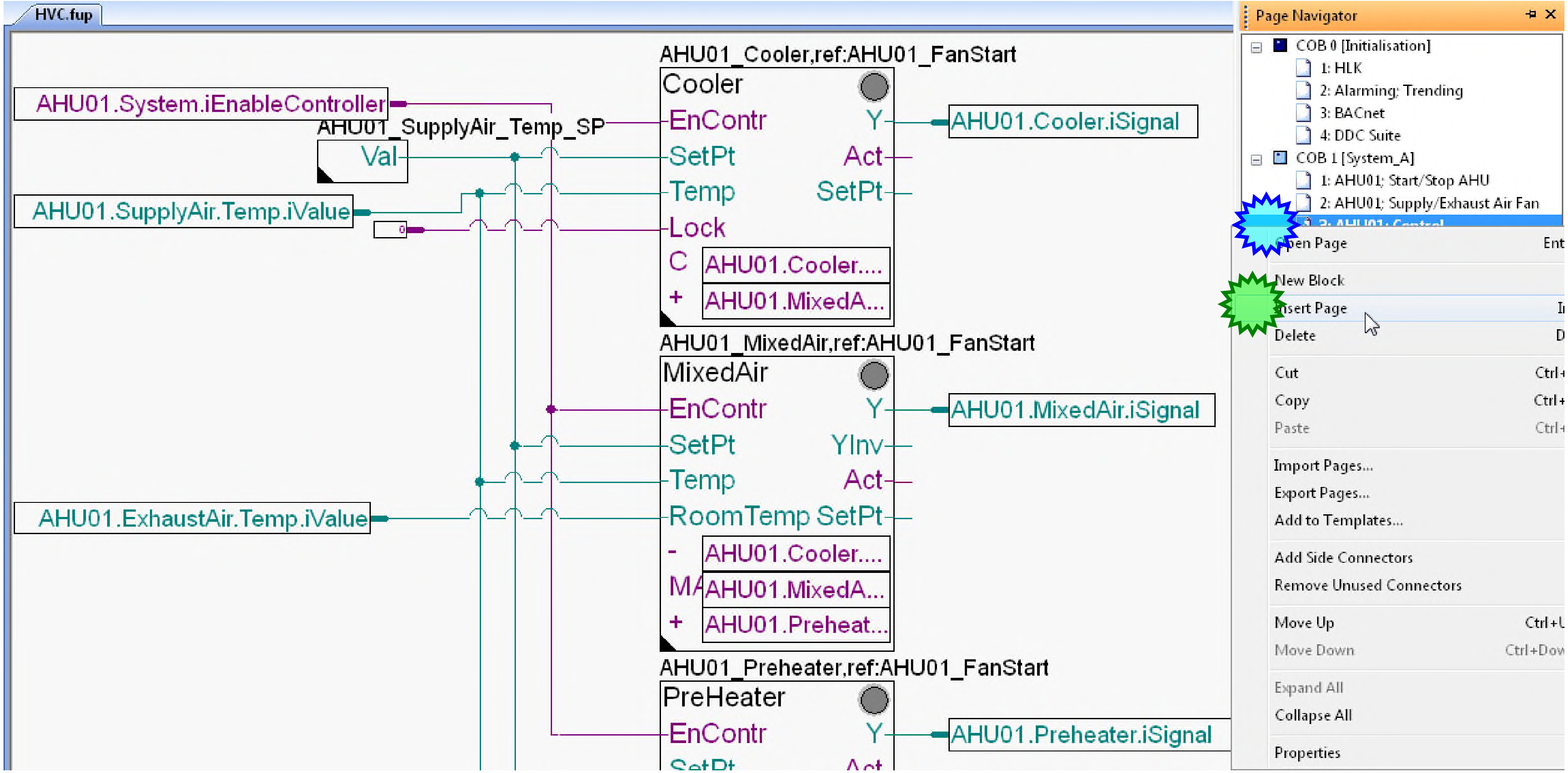
-physical inputs and outputs for the test



DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Add a new page after the current page and name it I/O



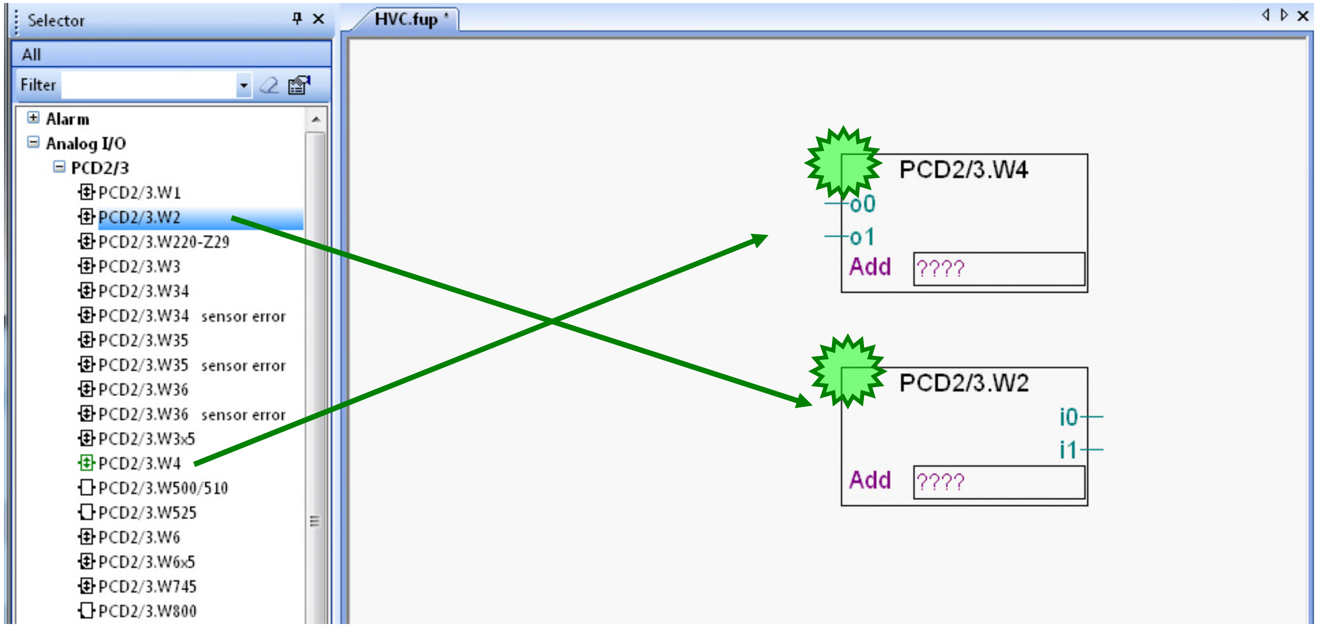
DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

1. On the FBox selector Application tab, select the HLK Analog family.

2. Position the FBox PCD2.W4 and drag it to 2 inputs

3. Position the FBox PCD2.W2 and drag it to 2 outputs



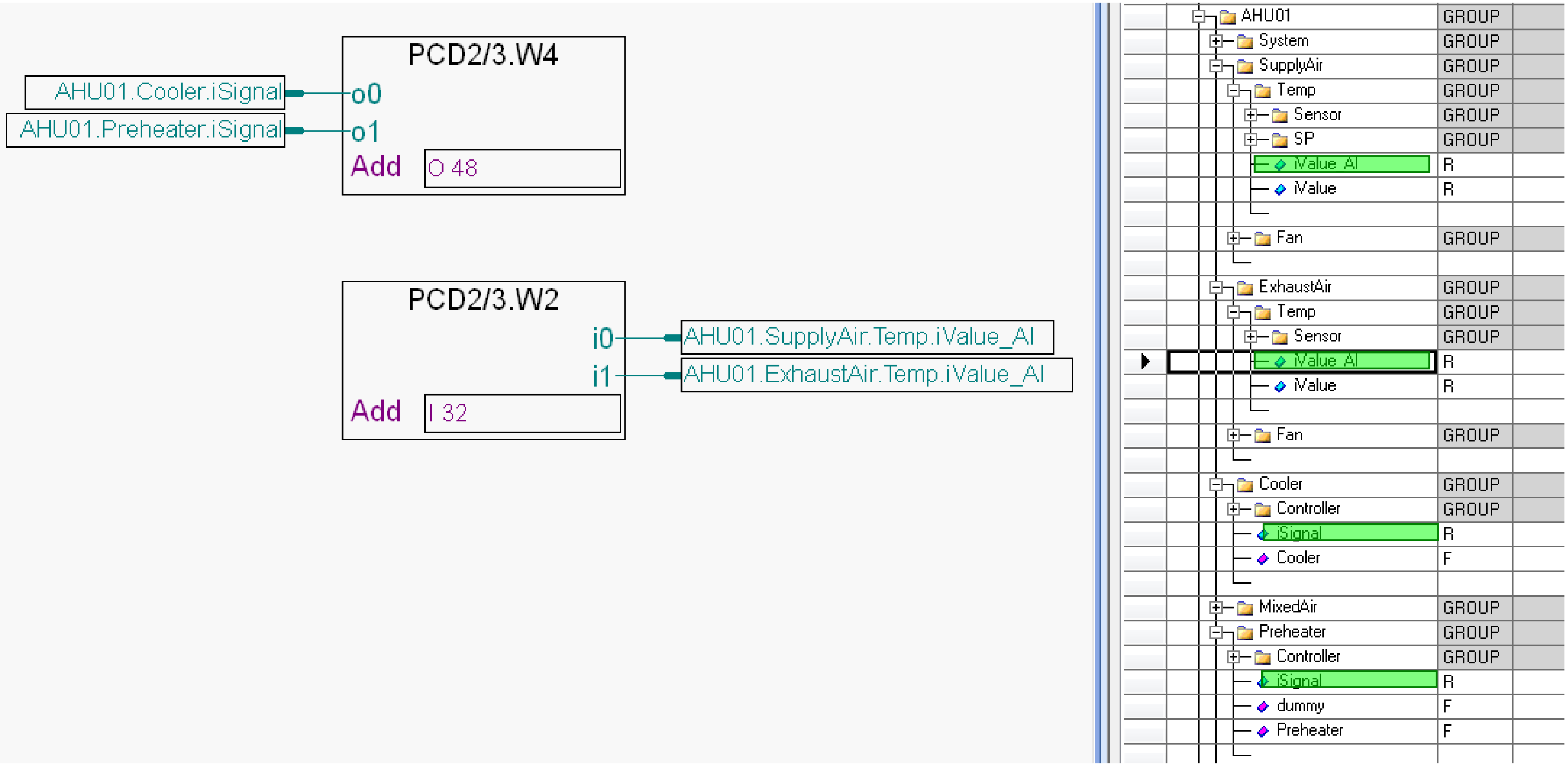
Connect all FBox inputs or outputs with connectors (click on FBox, then Ctrl+Alt+L)

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

1. Enter O 48 in the PCD2.W4 FBox connector
2. Enter I 32 in the PCD2.W2 FBox connector

3. Drag the associated symbols from the Symbol Editor to the FBox connectors using drag&drop



AHU01	GROUP
System	GROUP
SupplyAir	GROUP
Temp	GROUP
Sensor	GROUP
SP	GROUP
iValue_AI	R
iValue	R
Fan	GROUP
ExhaustAir	GROUP
Temp	GROUP
Sensor	GROUP
iValue_AI	R
iValue	R
Fan	GROUP
Cooler	GROUP
Controller	GROUP
iSignal	R
Cooler	F
MixedAir	GROUP
Preheater	GROUP
Controller	GROUP
iSignal	R
dummy	F
Preheater	F

DDC Suite 2.5 / PG5 Building Advanced

Working with Fupla

Now press the “F2” button to execute a Build of the programme.

Any error messages?

Yes: Go to the first slide of the exercise and repeat all steps …

Everything OK: Download the programme

PG5 Building Advanced / DDC Suite 2.5 Online Functions

SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

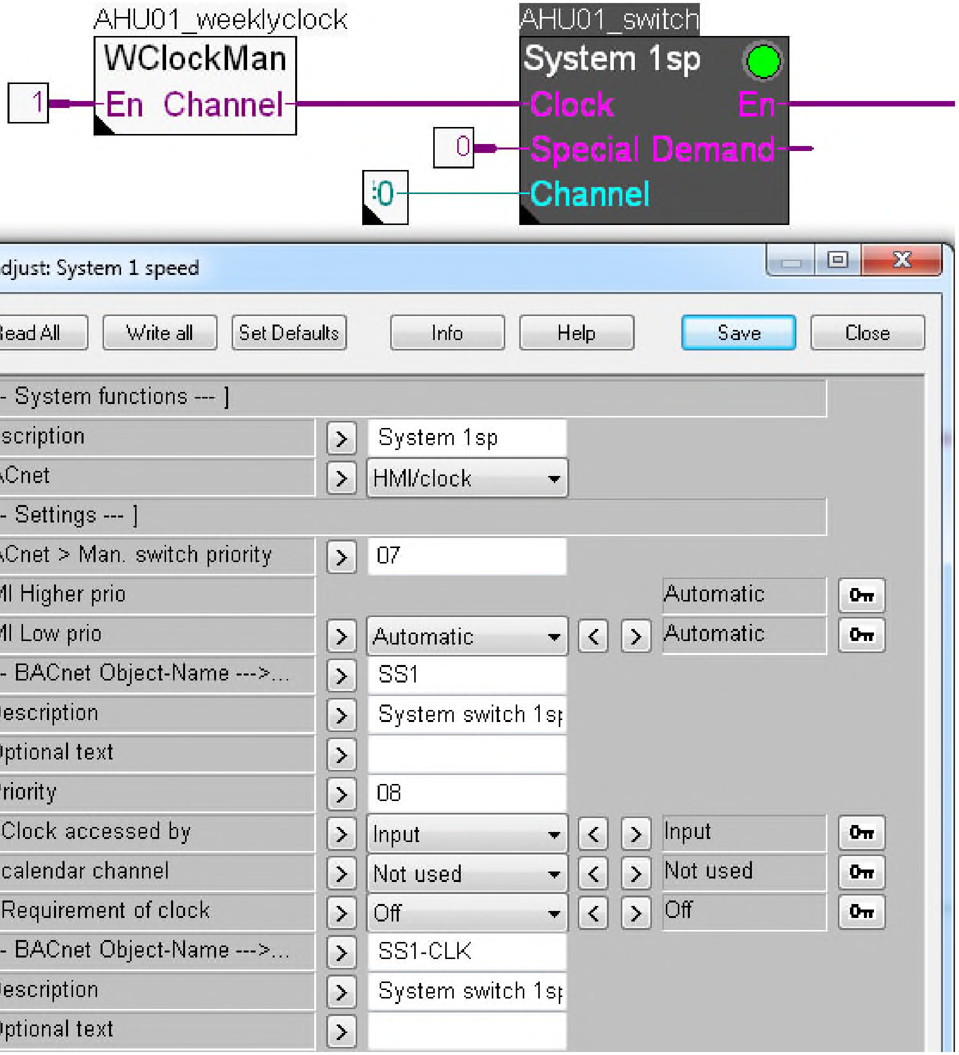
Online Functions

After downloading and starting the application, we now want to look at the online functions of DDC Suite.

All parameters in the DDC Suite FBoxes are online parameters, which means that even basic settings can be made online without

- going offline
- changing parameters
- compiling
- executing a download

This reduces the commissioning time



[--- System functions ---]		
Description	System 1sp	
BACnet	HMI/clock	
[--- Settings ---]		
BACnet > Man. switch priority	07	
HMI Higher prio		Automatic
HMI Low prio	Automatic	Automatic
<--- BACnet Object-Name --->...	SS1	
- Description	System switch 1sp	
- Optional text		
- Priority	08	
... Clock accessed by	Input	Input
... calendar channel	Not used	Not used
... Requirement of clock	Off	Off
<--- BACnet Object-Name --->...	SS1-CLK	
- Description	System switch 1sp	
- Optional text		

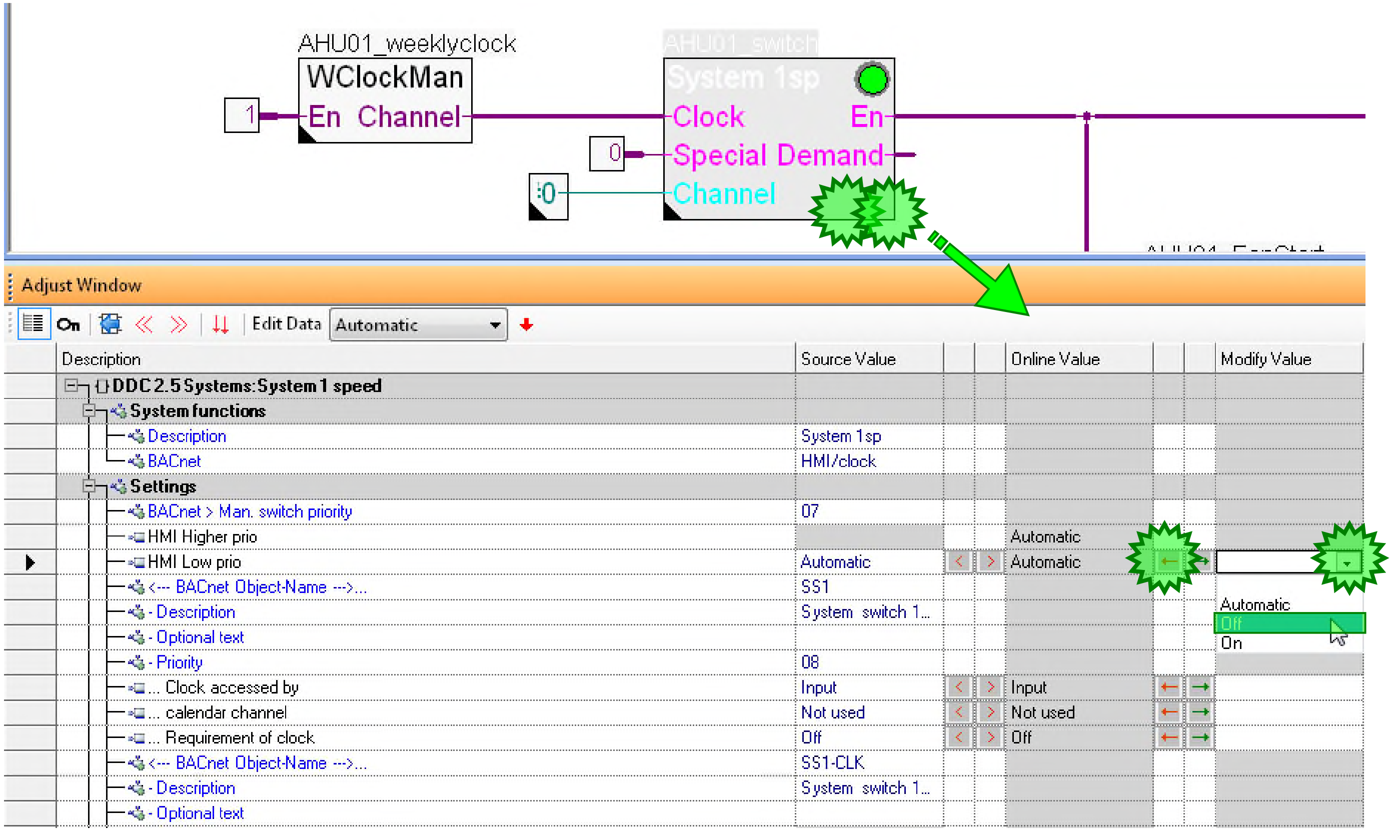
DDC Suite 2.5 / PG5 Building Advanced

Online Functions

If the PCD clock is on, the System 1sp FBox will activate the ventilation system in accordance with the timer programme.

We want to switch the ventilation system off until all settings are made. To do this, open the Adjust window and set the “HMI Low prio” parameter to Off and write the status into the PCD.

As you can see, the LED for the FBox changes to red, indicating that the system is being controlled manually.



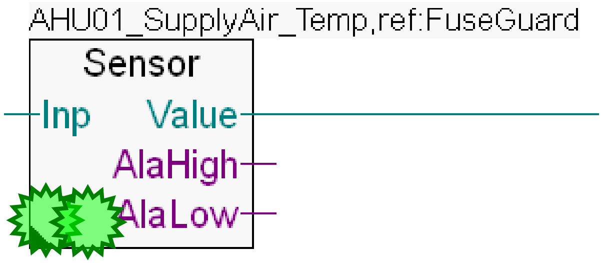
Description	Source Value	Online Value	Modify Value
DDC 2.5 Systems:System 1 speed			
System functions			
Description	System 1sp		
BACnet	HMI/clock		
Settings			
BACnet > Man. switch priority	07		
HMI Higher prio		Automatic	
HMI Low prio	Automatic	Automatic	Automatic Off On
<--- BACnet Object-Name --->...	SS1		
- Description	System switch 1...		
- Optional text			
- Priority	08		
... Clock accessed by	Input	Input	
... calendar channel	Not used	Not used	
... Requirement of clock	Off	Off	
<--- BACnet Object-Name --->...	SS1-CLK		
- Description	System switch 1...		
- Optional text			

DDC Suite 2.5 / PG5 Building Advanced

Online Functions

Let’s look at the Sensor FBox –
Open the Adjust window of the FBox with the name

AHU01_SupplyAir_Temp

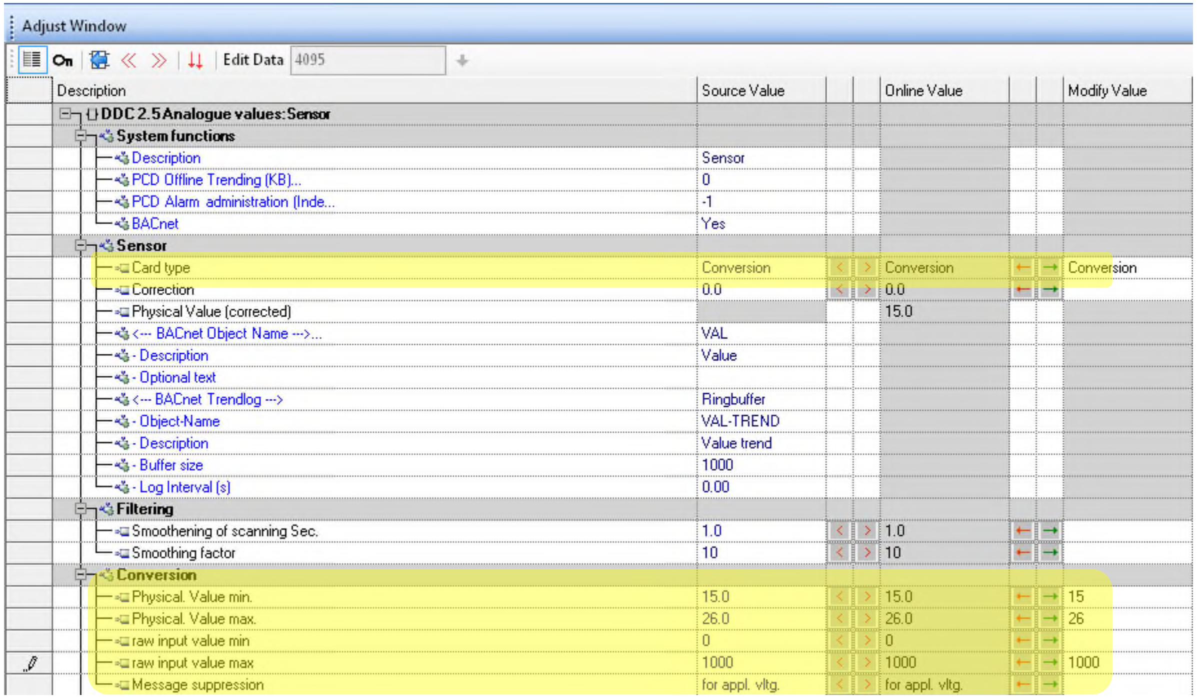


The default setting for this FBox is a physical value on the input In. But the PCD workshop model has active linear analogue signals – therefore we must convert the values.

To do this

- Select Conversion for parameter Card Type
- Set Physical. Value min to 15.0
- Set Physical. Value max to 26.0
- Set raw input value min to 0
- Set raw input value max to 1000

And write the settings
to the PCD.



Description	Source Value	Online Value	Modify Value
DDC 2.5 Analogue values: Sensor			
System functions			
Description	Sensor		
PCD Offline Trending (KB)...	0		
PCD Alarm administration (Inde...	-1		
BACnet	Yes		
Sensor			
Card type	Conversion	Conversion	Conversion
Correction	0.0	0.0	
Physical Value (corrected)		15.0	
<--- BACnet Object Name --->...	VAL		
- Description	Value		
- Optional text			
<--- BACnet Trendlog --->	Ringbuffer		
- Object-Name	VAL-TREND		
- Description	Value trend		
- Buffer size	1000		
- Log Interval (s)	0.00		
Filtering			
Smoothening of scanning Sec.	1.0	1.0	
Smoothing factor	10	10	
Conversion			
Physical. Value min.	15.0	15.0	15
Physical. Value max.	26.0	26.0	26
raw input value min	0	0	
raw input value max	1000	1000	1000
Message suppression	for appl. vltg.	for appl. vltg.	

DDC Suite 2.5 / PG5 Building Advanced

Online Functions

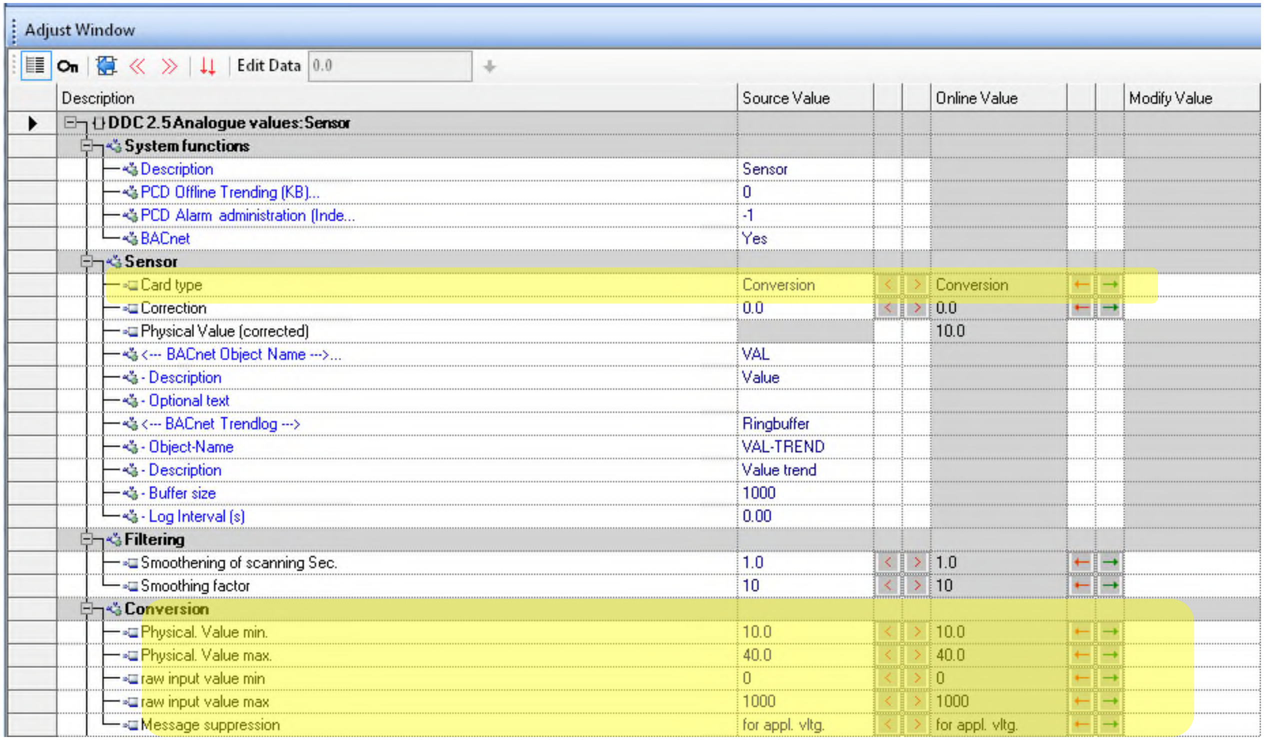
The exhaust air temperature sensor must also be parameterised. Open the Adjust window of the FBox with the name

AHU01_ExhaustAir_Temp

This sensor requires a different linearization.

To do this

- Select Conversion for parameter
  Card Type
- Set Physical. Value min to 10.0
- Set Physical. Value max to 40.0
- Set raw input value min to 0
- Set raw input value max to 1000



Description	Source Value	Online Value	Modify Value
DDC 2.5 Analogue values:Sensor			
System functions			
Description	Sensor		
PCD Offline Trending (KB)...	0		
PCD Alarm administration (Inde...	-1		
BACnet	Yes		
Sensor			
Card type	Conversion	Conversion	
Correction	0.0	0.0	
Physical Value (corrected)		10.0	
<--- BACnet Object Name --->...	VAL		
- Description	Value		
- Optional text			
<--- BACnet Trendlog --->	Ringbuffer		
- Object-Name	VAL-TREND		
- Description	Value trend		
- Buffer size	1000		
- Log Interval (s)	0.00		
Filtering			
Smoothening of scanning Sec.	1.0	1.0	
Smoothing factor	10	10	
Conversion			
Physical. Value min.	10.0	10.0	
Physical. Value max.	40.0	40.0	
raw input value min	0	0	
raw input value max	1000	1000	
Message suppression	for appl. vltg.	for appl. vltg.	

As you can see, you can very quickly adapt the linearisation for a sensor, e.g. if the sensor is replaced and the measuring range and/or the card values change.

A comparison can also be made, a filter set and, finally, the top and bottom limits can be monitored, e.g. for the supply air sensor, you can set 5.0 as the bottom limit and 70.0 as the top limit and, thus, detect “short circuit” or “line break”.

DDC Suite 2.5 / PG5 Building Advanced

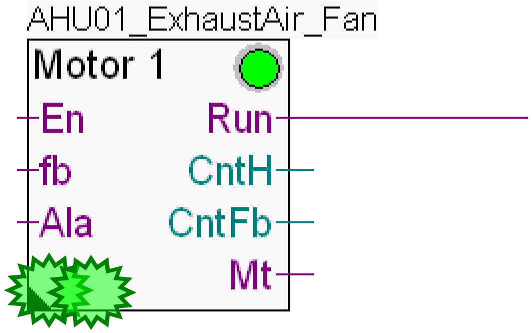
Online Functions

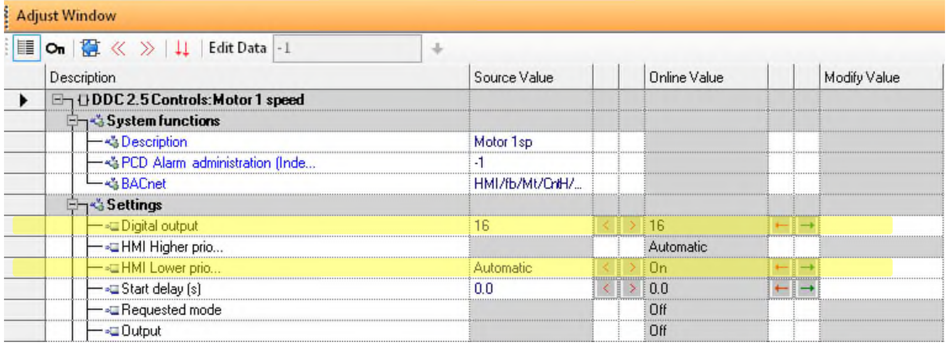
On page AHU01 Supply/Exhaust Air Fan we can parameterise the fans. Open the Adjust window of the

AHU01_ExhaustAir_Fan FBox.

You can see that the parameter Digital Output is set to -1 – this means that no hardware output is actuated by this FBox. We can access every digital output by entering the output address – enter 16 and write this to the PCD.

Now we can activate/deactivate the fan manually, just by setting the parameter “HMI Low Prio” to ON or Off. The FBox will set the Output FBox Run to the required status – just like the assigned hardware output.





	Description	Source Value			Online Value			Modify Value
▶	DDC 2.5 Controls:Motor 1 speed							
	System functions							
	Description	Motor 1sp						
	PCD Alarm administration (Inde...	-1						
	BACnet	HMI/fb/Mt/CntH/...						
	Settings							
	Digital output	16	<	>	16	←	→	
	HMI Higher prio...				Automatic			
	HMI Lower prio...	Automatic	<	>	On	←	→	
	Start delay (s)	0.0	<	>	0.0	←	→	
	Requested mode				Off			
	Output				Off			

All FBoxes that normally actuate a digital output are able to write this directly. If no output is to be assigned, you must enter -1 – then no hardware address is assigned and this function is deactivated.

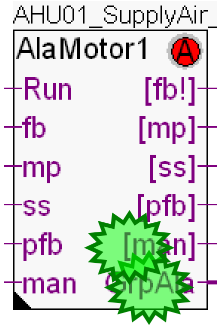
Please set the HMI Low prio parameter back to Auto and write this to the PCD.

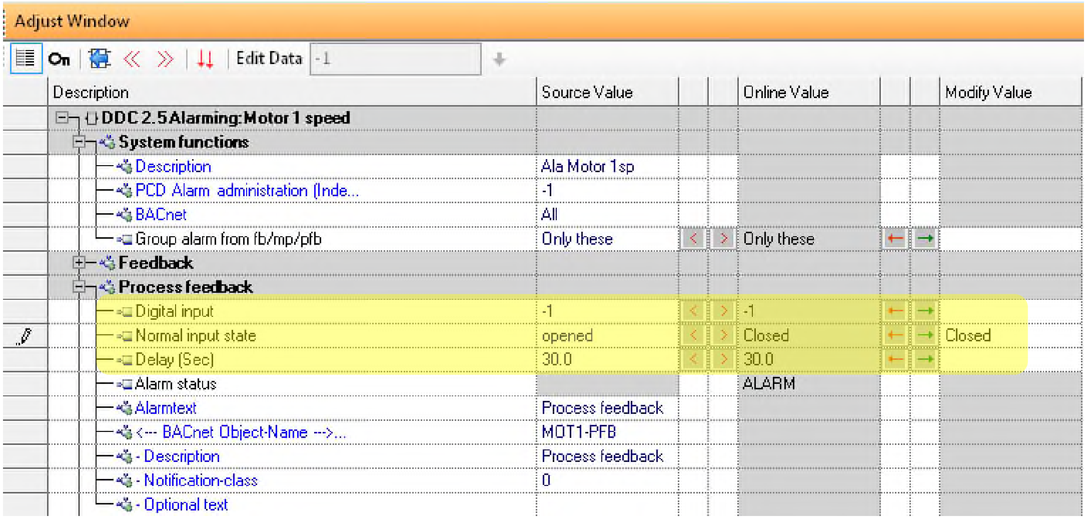
DDC Suite 2.5 / PG5 Building Advanced

Online Functions

Open the Adjust window of the FBox with the name

AHU01_SupplyAir_FanAlarm





Description	Source Value	Online Value	Modify Value
DDC 2.5 Alarming:Motor 1 speed			
System functions			
Description	Ala Motor 1sp		
PCD Alarm administration (Inde...	-1		
BACnet	All		
Group alarm from fb/mp/pfb	Only these	Only these	
Feedback			
Process feedback			
Digital input	-1	-1	
Normal input state	opened	Closed	Closed
Delay (Sec)	30.0	30.0	
Alarm status		ALARM	
Alarmtext	Process feedback		
<--- BACnet Object-Name --->...	MOT1-PFB		
- Description	Process feedback		
- Notification-class	0		
- Optional text			

Now we can define the use of the inputs for typical motor faults. If the Digital Input parameter is set to -1 , the FBox input is used until the value is set to the address of a real input.

In addition, it is possible to select whether the alarm has to be acknowledged – i.e. the alarm remains on, even after the reason for the alarm has been remedied – until it is acknowledged (e.g. use the Quit FBox in the top left corner of the page)

The normal status of the input can also be defined – open or closed.

DDC Suite 2.5 / PG5 Building Advanced

Online Functions

All FBoxes that monitor a digital input are able to do this directly with a hardware input. If no input is to be used directly, -1 must be entered – i.e. no hardware address is defined and the function is deactivated – thus it is always possible to choose between FBox input and physical input.

If a physical input is defined in the FBox, commissioning – in particular the hardware test on the inputs – can be difficult (e.g. activation/deactivation of the maintenance switch).

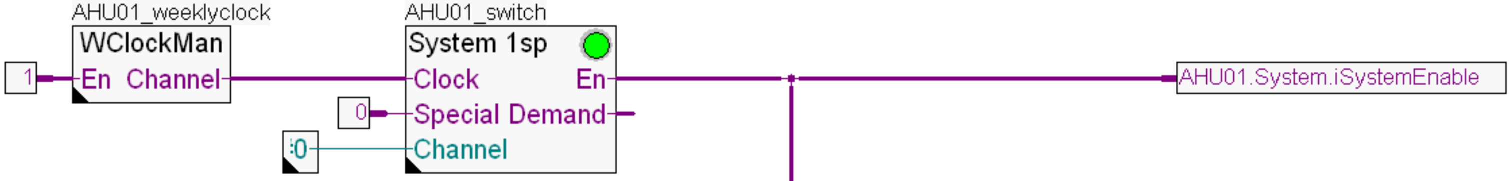
Therefore, these FBoxes show the input status on the corresponding output. This information appears in brackets […]. Here you can see the original input status. If the output
also has an exclamation mark - ! – such as [fb!], this indicates that this is the direct input status for connection and further use with other FBoxes. For example: Operating feedback as this input is normally On when the motor is running and is always Off when the motor is stationary.

Thus, it is very easy to define which fault should be monitored for each motor and you do not need to worry during programming about whether or not feedback, motor protection or the maintenance switch are available. We can activate this parameter if the input is available.

DDC Suite 2.5 / PG5 Building Advanced

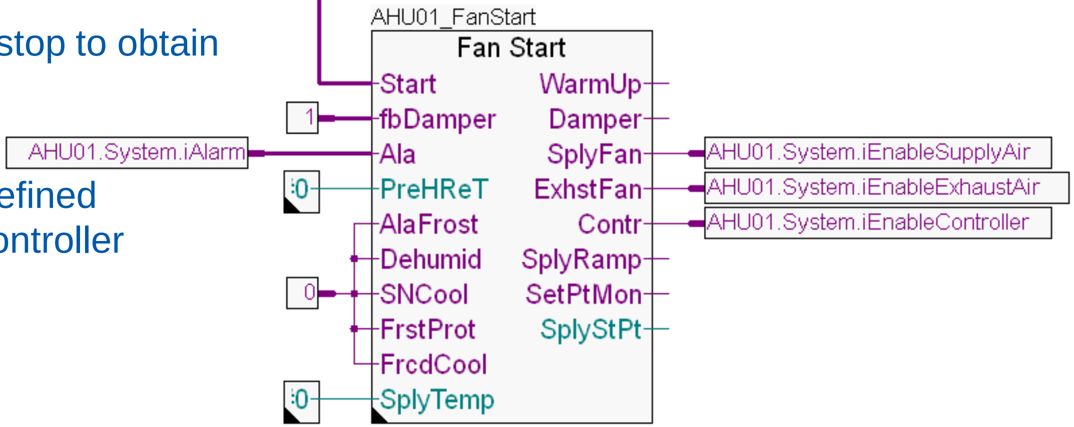
Syntax and remarks of actions during workshop

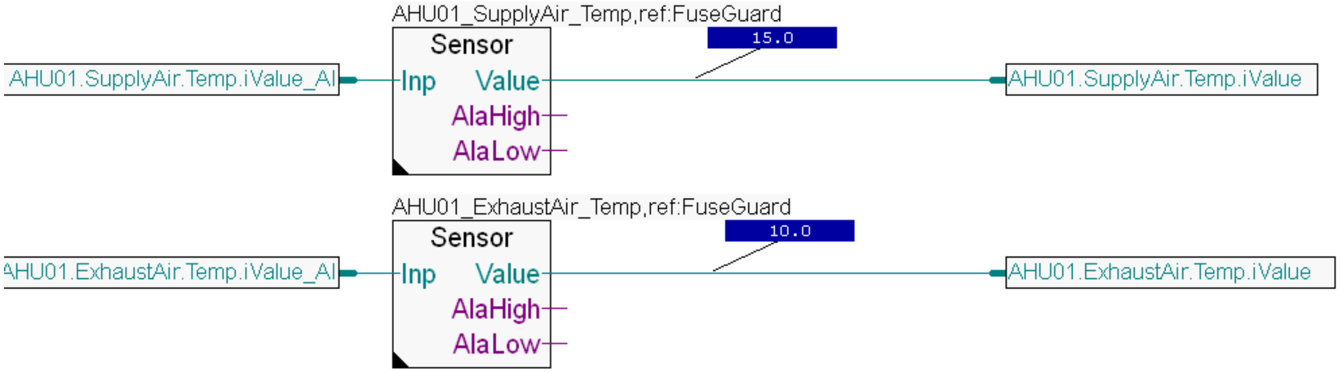
Back to page AHU01 Start/Stop AHU.



Turn the potentiometer to the left-hand stop to obtain the minimum values of 15.0 and 10.0.

This is the start point in order to have defined controller behaviour when testing the controller functions.





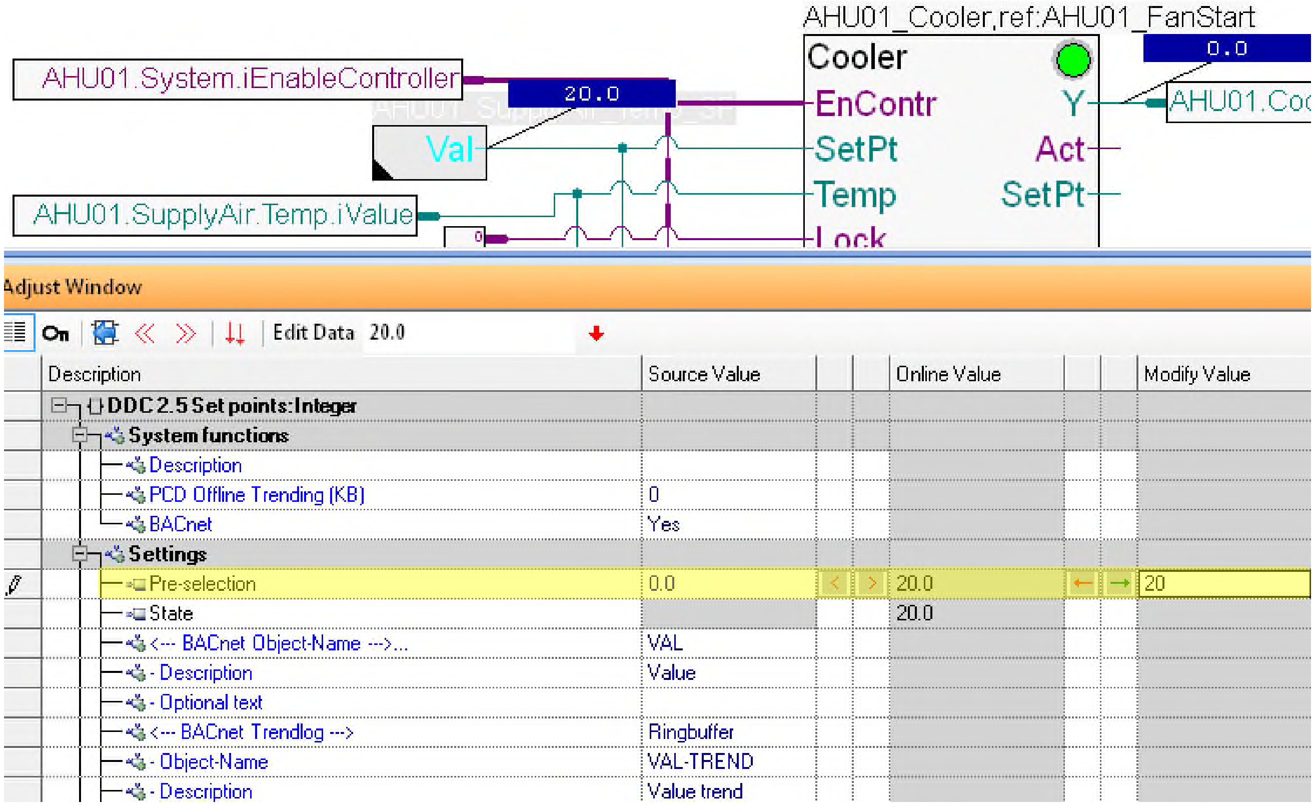
AHU01_SupplyAir_Temp,ref:FuseGuard
Sensor
AHU01.SupplyAir.Temp.iValue_AI
Inp
Value
AlaHigh
AlaLow
15.0
AHU01.SupplyAir.Temp.iValue
AHU01_ExhaustAir_Temp,ref:FuseGuard
Sensor
AHU01.ExhaustAir.Temp.iValue_AI
Inp
Value
AlaHigh
AlaLow
10.0
AHU01.ExhaustAir.Temp.iValue

DDC Suite 2.5 / PG5 Building Advanced

Syntax and remarks of actions during workshop

Change to the page AHU01 Controller.

We set the Setpoint for the controllers to 20. This is the Pre-selection value we have to change. Write it to the Online Value.


AHU01_Cooler,ref:AHU01_FanStart
Cooler
0.0
AHU01.System.iEnableController
20.0
AHU01_SupplyAir_Temp_SP
Val
EnContr
Y
AHU01.Coo
SetPt
Act
AHU01.SupplyAir.Temp.iValue
Temp
SetPt
0
Lock

Adjust Window

On | Edit Data 20.0

Description	Source Value			Online Value			Modify Value
DDC 2.5 Set points:Integer							
System functions							
Description							
PCD Offline Trending (KB)	0						
BACnet	Yes						
Settings							
Pre-selection	0.0	<	>	20.0	←	→	20
State				20.0			
<--- BACnet Object-Name --->...	VAL						
- Description	Value						
- Optional text							
<--- BACnet Trendlog --->	Ringbuffer						
- Object-Name	VAL-TREND						
- Description	Value trend						

PG5 Building Advanced / DDC Suite 2.5 HDLog – Offline Trending

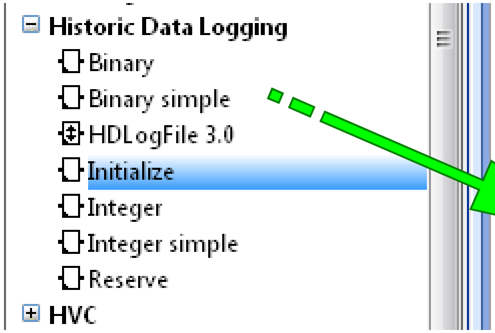
SAIA BURGESS CONTROLS

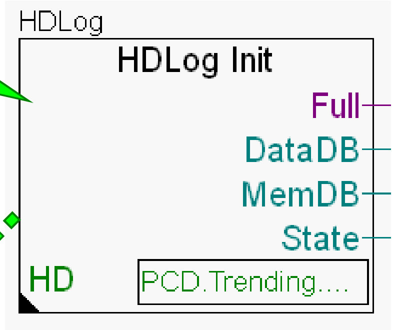
DDC Suite 2.5 / PG5 Building Advanced

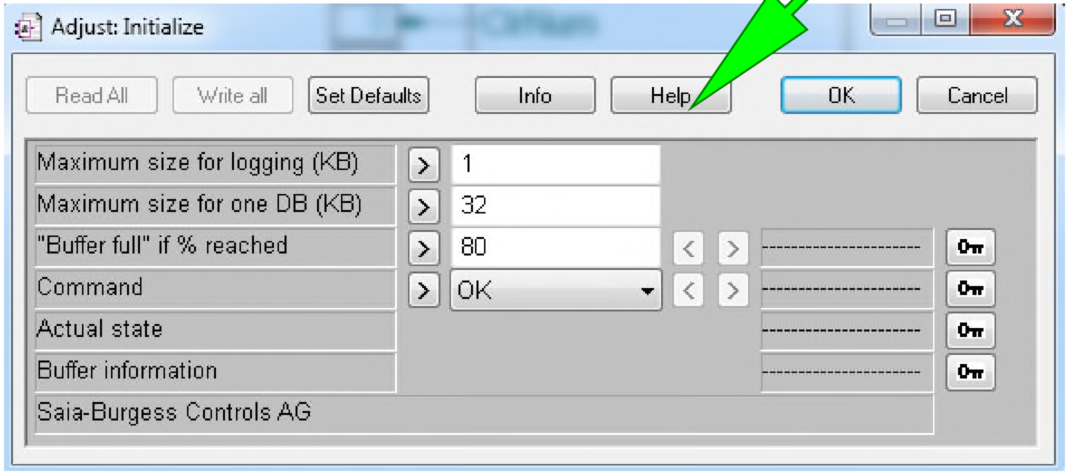
HDLog – Offline Trending

To use the offline trend functions in a PCD, we need the Historic Data Logging FBox family.

The HDLog Init FBox executes the basic functionalities, defines the memory and provides an interface to the SWeb or ViSi.Plus (or any other GLT system).







Maximum size for logging (KB)	1
Maximum size for one DB (KB)	32
"Buffer full" if % reached	80
Command	OK
Actual state	
Buffer information	
Saia-Burgess Controls AG	

DDC Suite 2.5 / PG5 Building Advanced

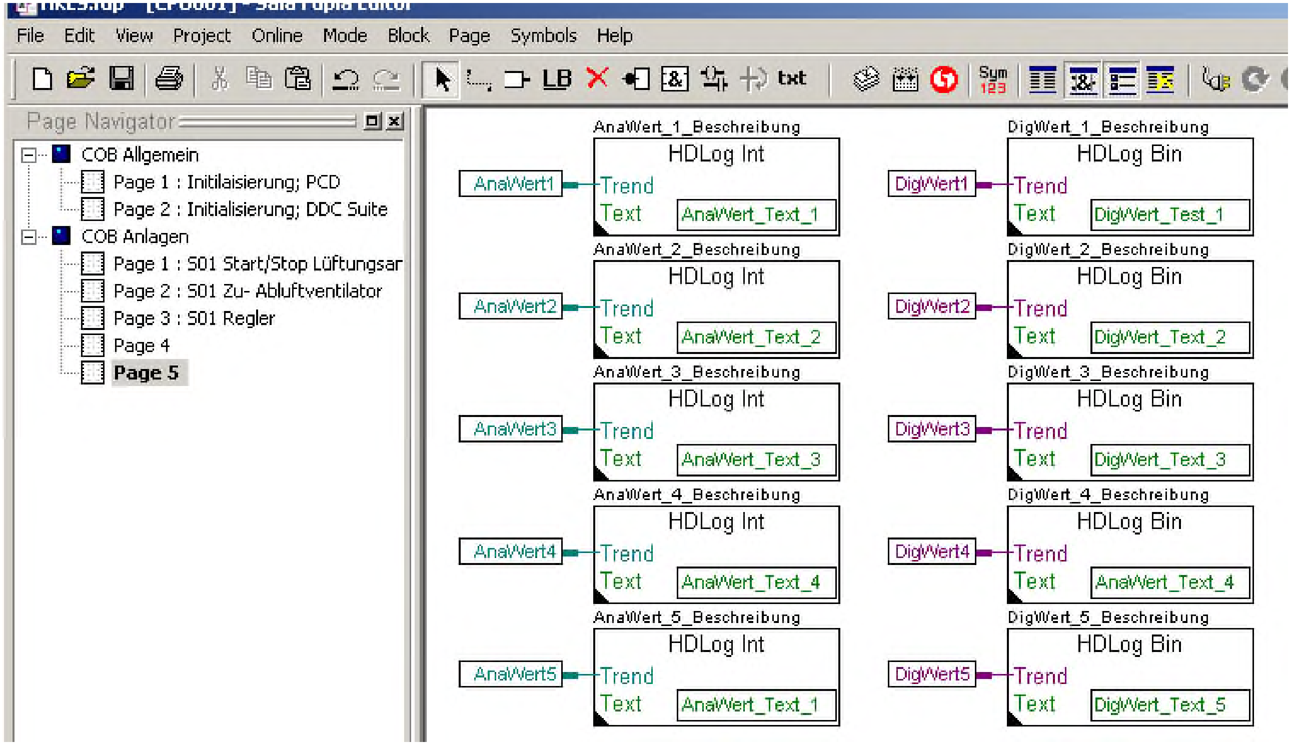
HDLog – Offline Trending

In addition, you must locate an FBox for every data point that you wish to write to the PCD as an offline trend. This often results in “Trend collection pages”.

In addition, you have to

- connect the symbol
- enter a text as a description
- enter an FBox name
- set the parameters in the Adjust window

This means additional work during which some errors may be made – especially if you want to make the record the same for all data, e.g. setpoints.



HDLog with DDC Suite
Basics

SAIA BURGESS CONTROLS

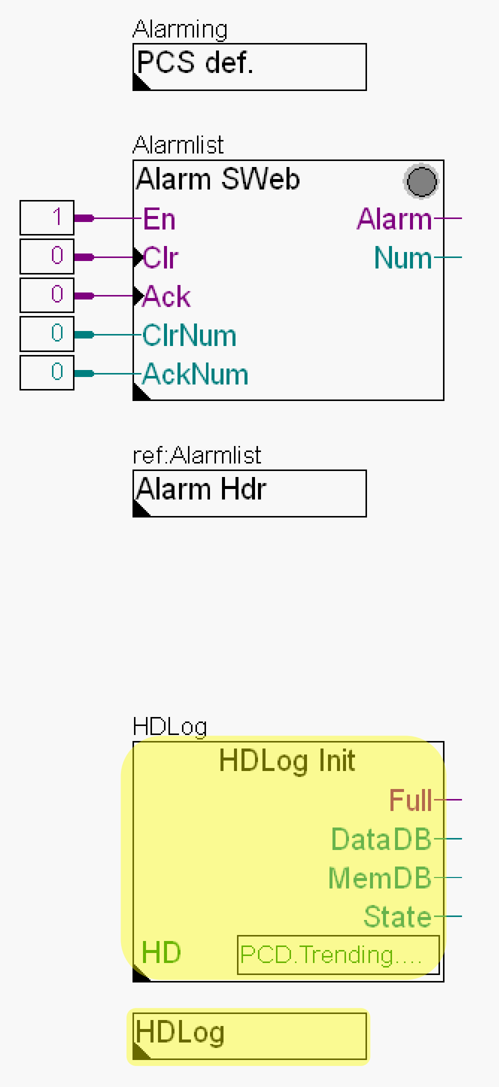
DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

If we want to use the Offline Trending function in the PCD with DDC Suite, we must also use the Historic Data Logging FBox family – i.e. this DDC Suite functionality is based on the original HDLog FBox function.

We have to use the HDLog Init FBox at least – but this is already prepared on the second page Alarming; Trending in the COB Initialisation block.

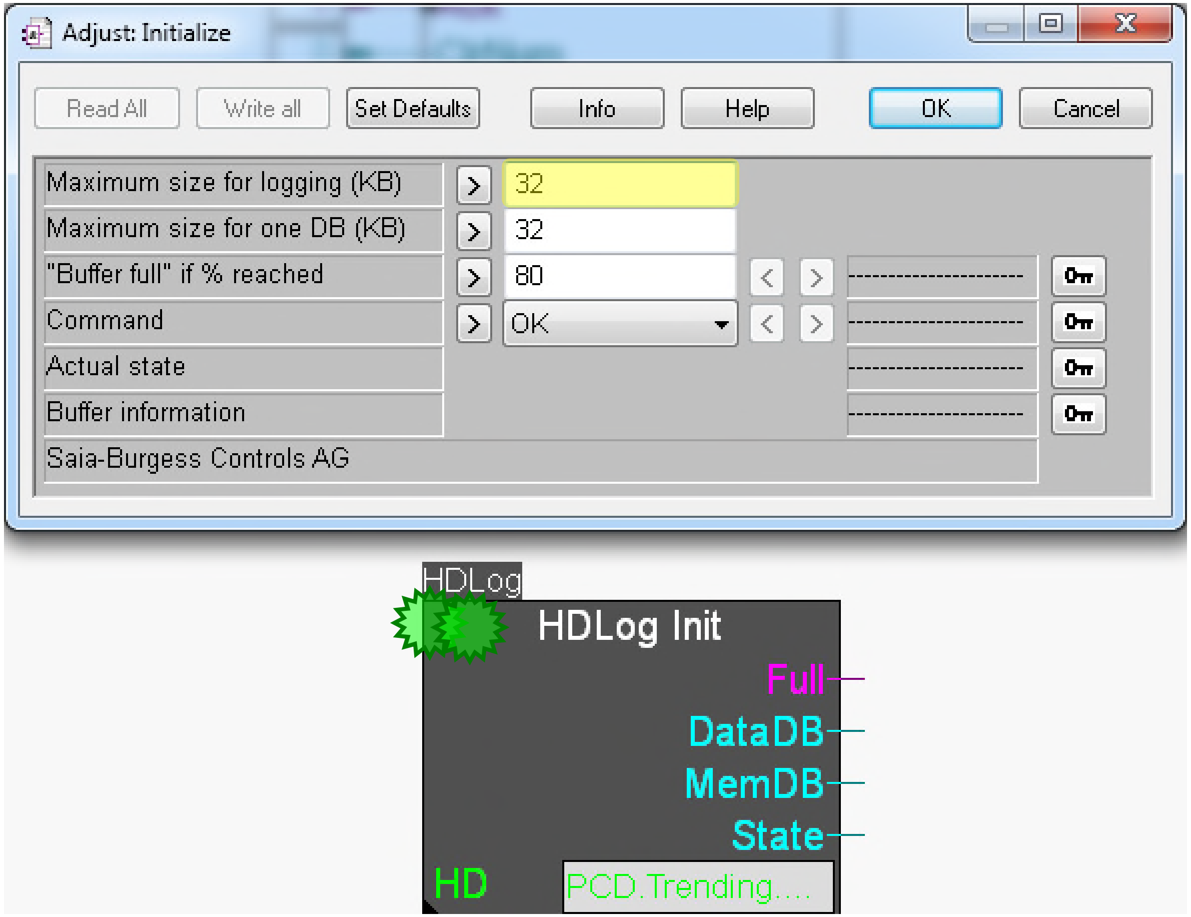
As you can see, there is an additional HDLog FBox there below the HDLog Init FBox.



DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

First, we set the storage location that we want to provide for this function in the HDLog Init FBox. We allocate 32 KB from the Extended Memory in order to save the DBs of our Trendlog function.



Maximum size for logging (KB)	32
Maximum size for one DB (KB)	32
"Buffer full" if % reached	80
Command	OK
Actual state	---------------------
Buffer information	---------------------

Saia-Burgess Controls AG

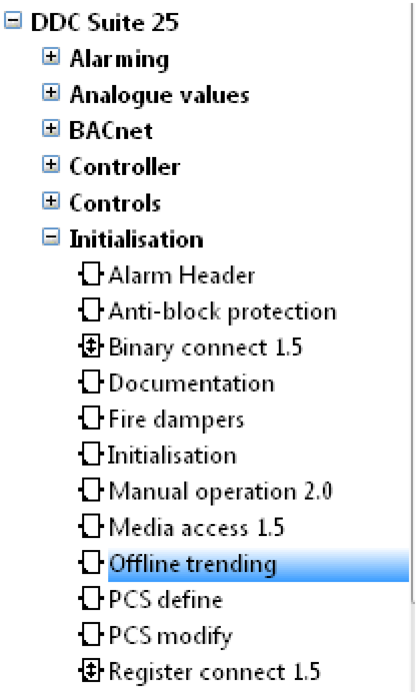
DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

This new HDLog FBox, which only works with the DDC Suite FBoxes, can be found in the DDC Initialisation FBox family.

The FBox has no inputs and outputs, there are merely some setting parameters available in the Adjust window.

DDC Suite FBoxes are intended for use in Heavac applications so that, in normal cases, we have some typical data that is of interest for an offline trend. These are setpoints, actual values, signals and operating states.

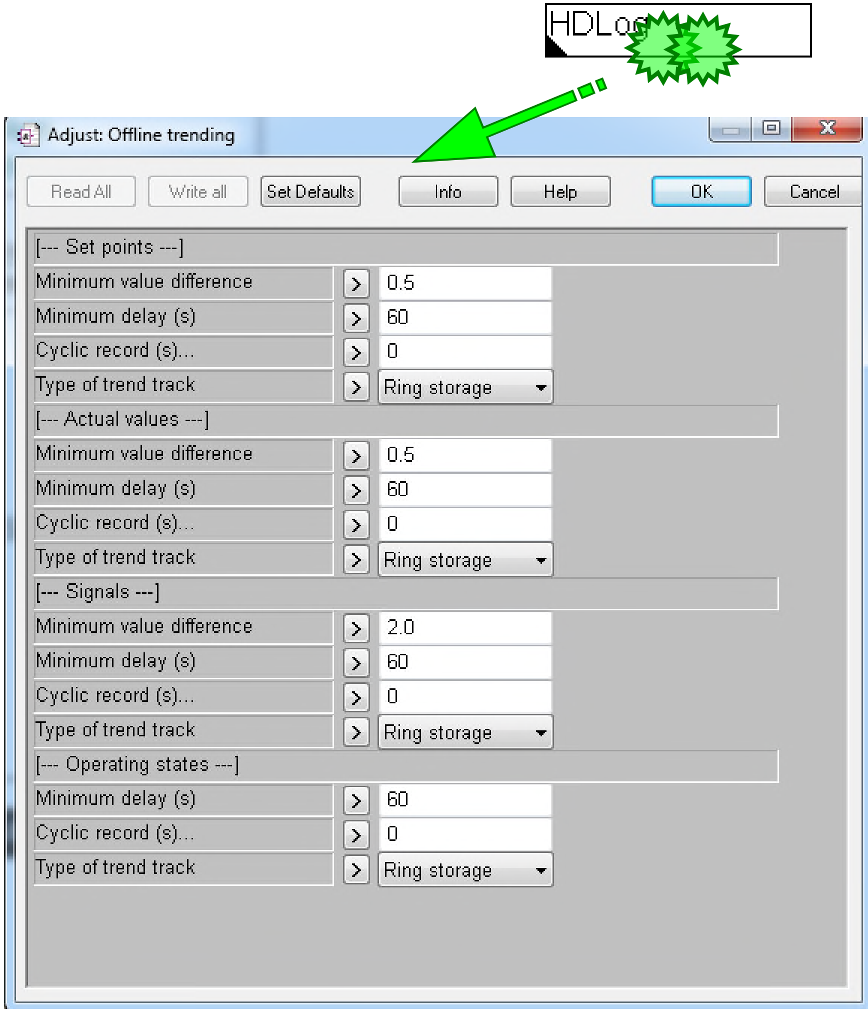


- DDC Suite 25
  - Alarming
  - Analogue values
  - BACnet
  - Controller
  - Controls
  - Initialisation
    - Alarm Header
    - Anti-block protection
    - Binary connect 1.5
    - Documentation
    - Fire dampers
    - Initialisation
    - Manual operation 2.0
    - Media access 1.5
    - Offline trending
    - PCS define
    - PCS modify
    - Register connect 1.5

DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

In this FBox, typical recording methods for each of these data types are set, e.g. recording of all setpoints in the event of a value change with a difference of +/- 0.5 – but with a minimum delay in order to avoid rapid filling of the database if the setpoint changes very quickly (e.g. poor design). Cyclic recording is not set (saves storage space) and the historical data is saved in a ring memory.



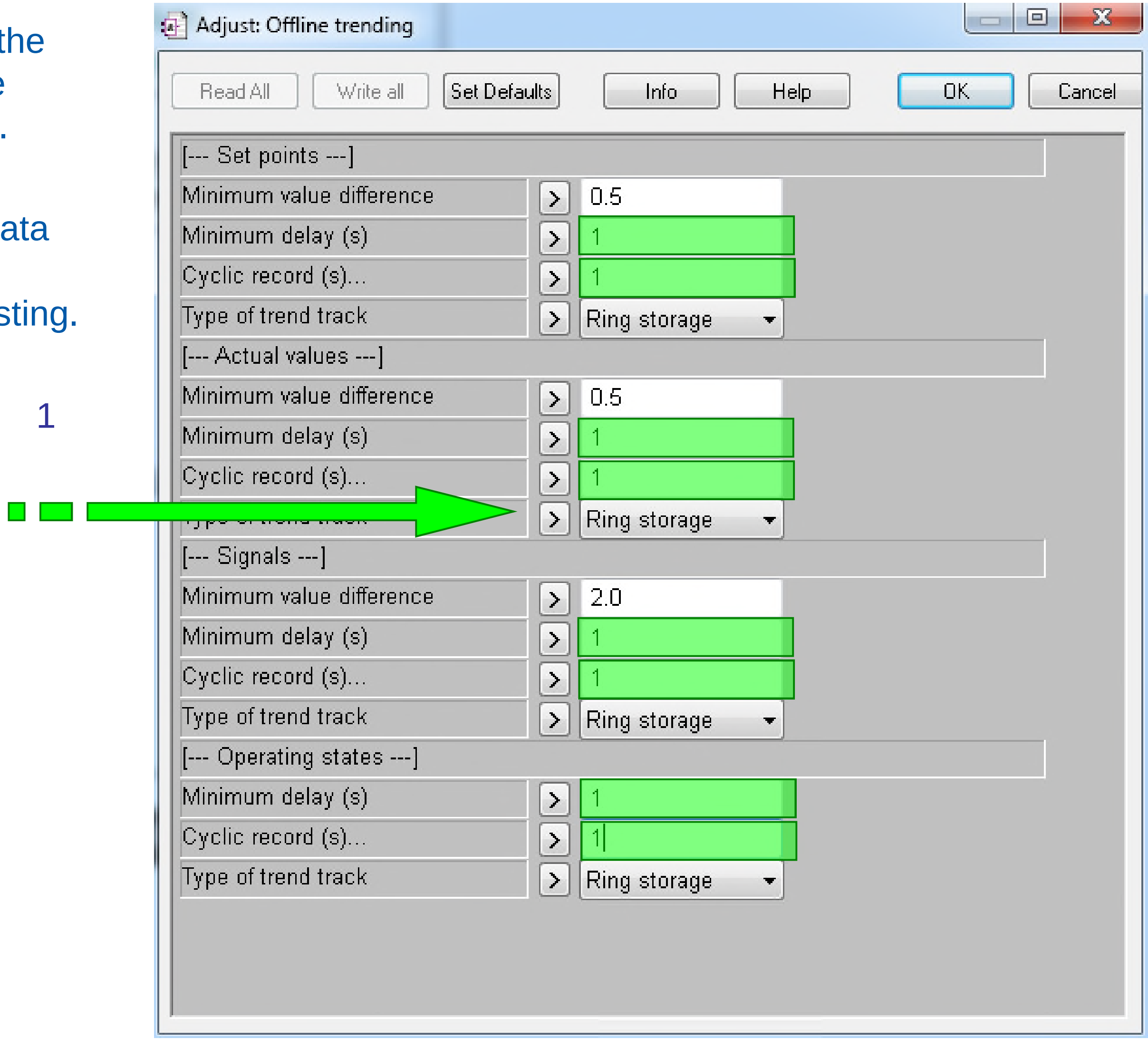
[--- Set points ---]	
Minimum value difference	0.5
Minimum delay (s)	60
Cyclic record (s)...	0
Type of trend track	Ring storage
[--- Actual values ---]	
Minimum value difference	0.5
Minimum delay (s)	60
Cyclic record (s)...	0
Type of trend track	Ring storage
[--- Signals ---]	
Minimum value difference	2.0
Minimum delay (s)	60
Cyclic record (s)...	0
Type of trend track	Ring storage
[--- Operating states ---]	
Minimum delay (s)	60
Cyclic record (s)...	0
Type of trend track	Ring storage

DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

In this workshop, we will reduce the delay to one second and activate cyclic recording with one second.

These settings fill the historical data memory very quickly, but we recommend these settings for testing.



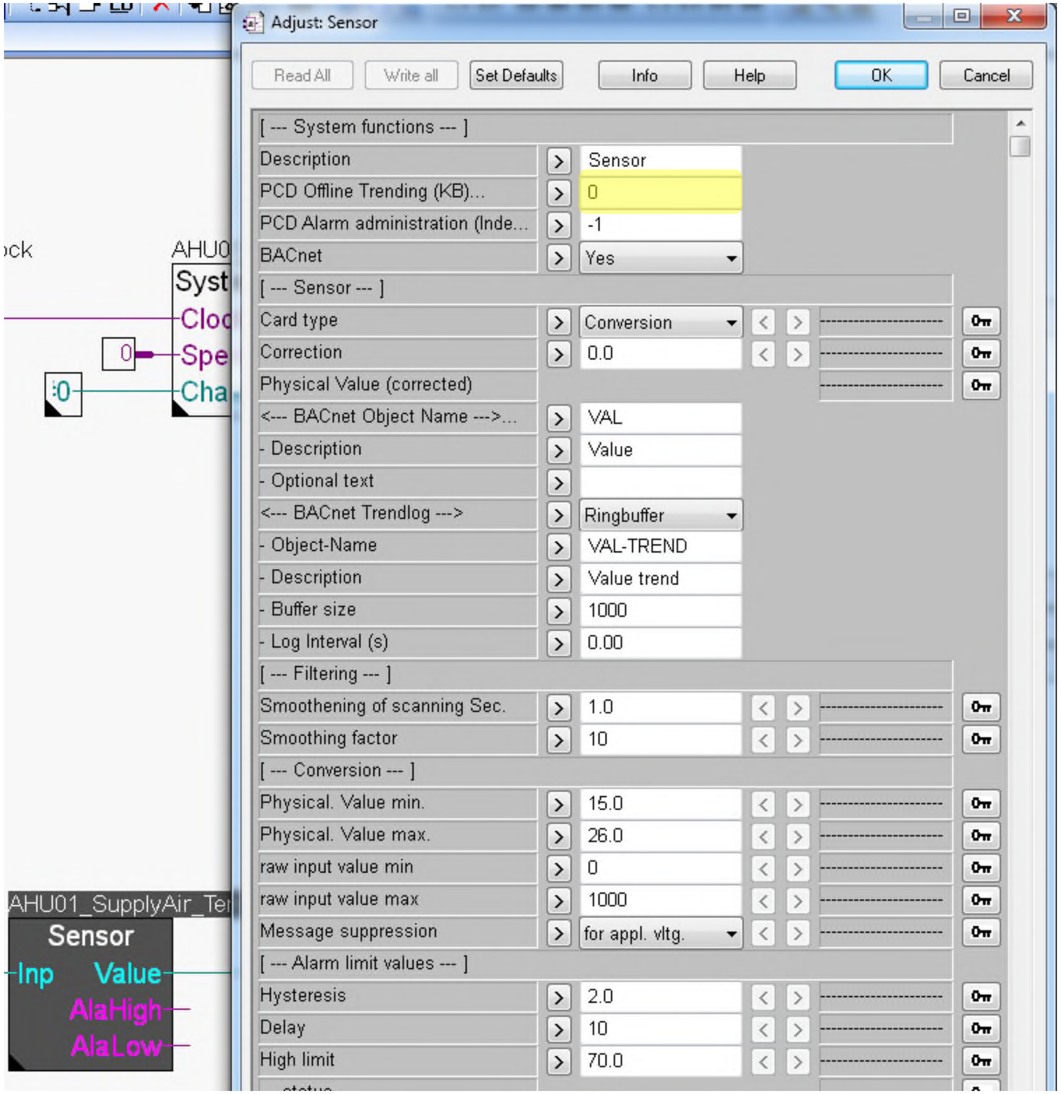
[--- Set points ---]	
Minimum value difference	0.5
Minimum delay (s)	1
Cyclic record (s)...	1
Type of trend track	Ring storage
[--- Actual values ---]	
Minimum value difference	0.5
Minimum delay (s)	1
Cyclic record (s)...	1
Type of trend track	Ring storage
[--- Signals ---]	
Minimum value difference	2.0
Minimum delay (s)	1
Cyclic record (s)...	1
Type of trend track	Ring storage
[--- Operating states ---]	
Minimum delay (s)	1
Cyclic record (s)...	1
Type of trend track	Ring storage

DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

In Fupla, go to COB 1; System and there to the AHU01 Start/Stop AHU page.

To activate offline trending for DDC Suite FBoxes, we do not need an additional FBox – all DDC Suite FBoxes support offline trending and we simply have to make one setting in the Adjust window.



[--- System functions ---]	
Description	Sensor
PCD Offline Trending (KB)...	0
PCD Alarm administration (Inde...	-1
BACnet	Yes
[--- Sensor ---]	
Card type	Conversion
Correction	0.0
Physical Value (corrected)	
<--- BACnet Object Name --->...	VAL
- Description	Value
- Optional text	
<--- BACnet Trendlog --->	Ringbuffer
- Object-Name	VAL-TREND
- Description	Value trend
- Buffer size	1000
- Log Interval (s)	0.00
[--- Filtering ---]	
Smoothening of scanning Sec.	1.0
Smoothing factor	10
[--- Conversion ---]	
Physical. Value min.	15.0
Physical. Value max.	26.0
raw input value min	0
raw input value max	1000
Message suppression	for appl. vltg.
[--- Alarm limit values ---]	
Hysteresis	2.0
Delay	10
High limit	70.0

DDC Suite 2.5 / PG5 Building Advanced

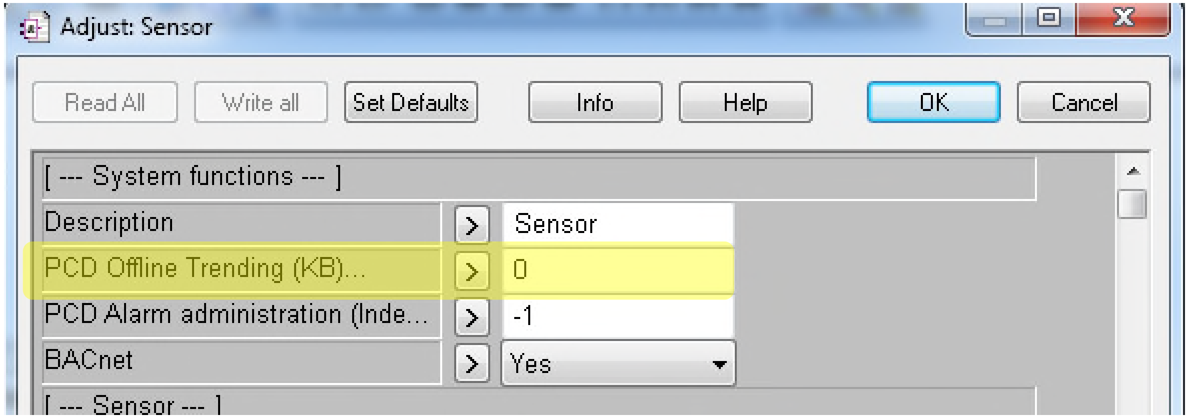
HDLog – Offline Trending

DDC Suite FBoxes always have a group at the top of the Adjust window called [--- Systemfunktionen ---] .

This contains various options depending on the function of the FBox.

To activate offline trending, the parameter PCD Offline Trending (KB)… must be set.

The value 0 deactivates offline trending in the FBox, any other value reserves the area in kB that you have entered. This is the same as in the original HDLog FBoxes.



[--- System functions ---]

Description > Sensor

PCD Offline Trending (KB)... > 0

PCD Alarm administration (Inde... > -1

BACnet > Yes

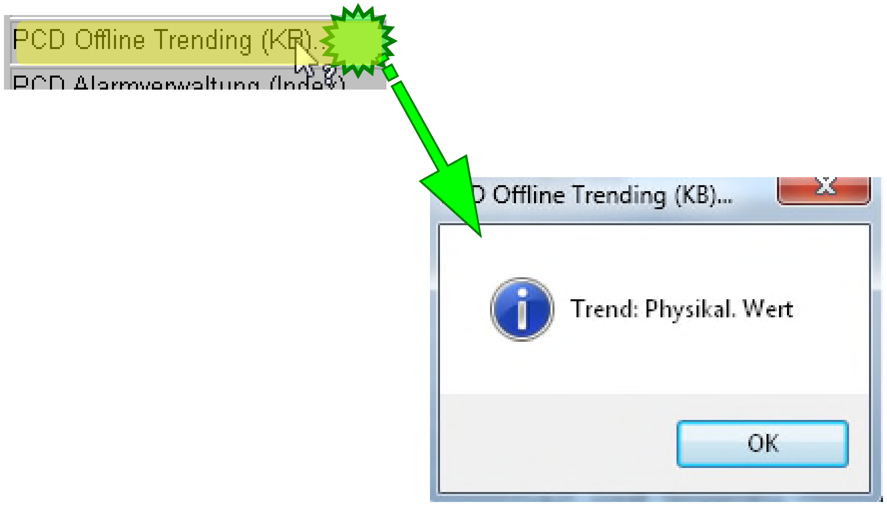
[--- Sensor ---]

DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

The FBoxes, however, have many data points, one of which is used for offline trending.

If you do not know which data point this is, click on the text “PCD Offline Trending (KB)...”
and you will see which value is recorded.


PCD Offline Trending (KB)...
PCD Alarmverwaltung (Index)
D Offline Trending (KB)...
OK

Trend: Physikal. Wert

HDLog with DDC Suite
Use

SAIA BURGESS CONTROLS

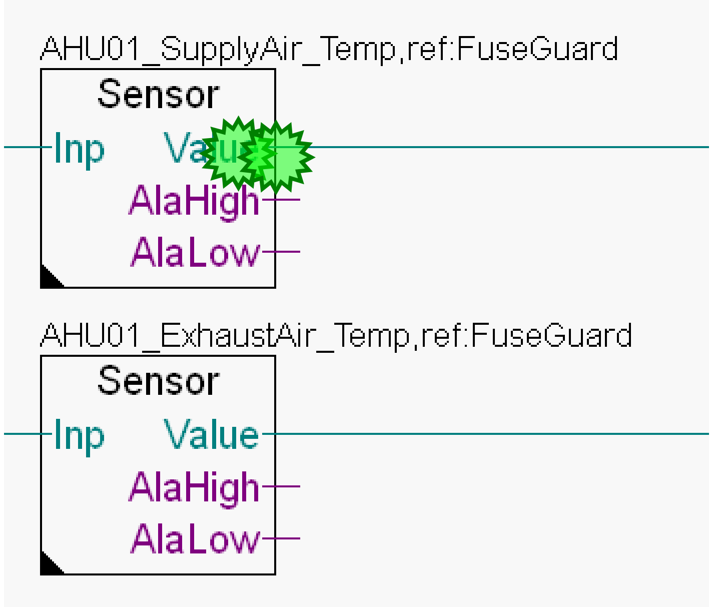
DDC Suite 2.5 / PG5 Building Advanced

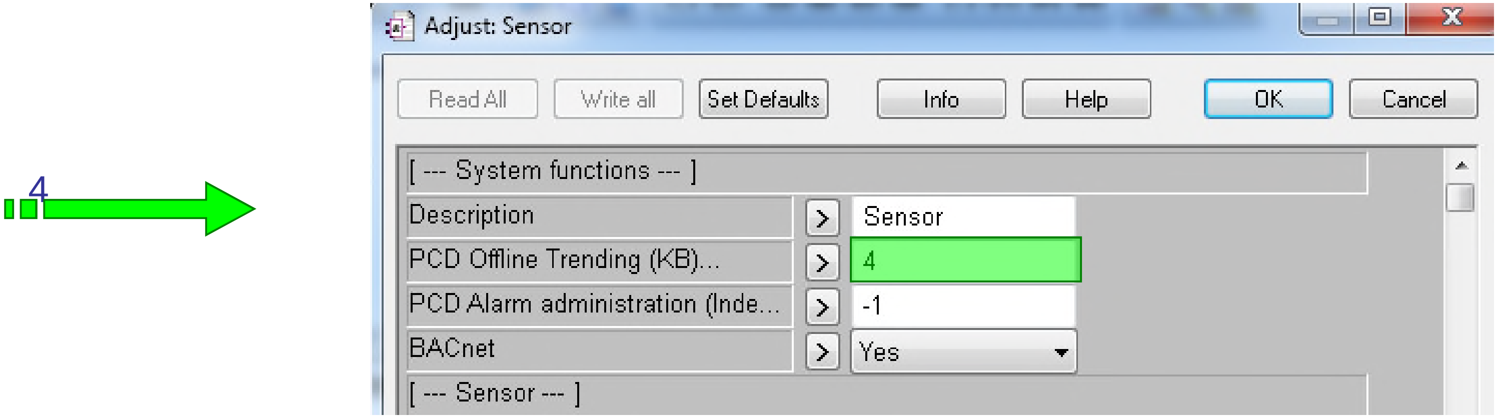
HDLog – Offline Trending

Now let's begin offline trending for our small ventilation system.

On the first page, we have the 2 Sensor FBoxes. Open the Adjust window of the first FBox with the name AHU01_SupplyAir_Temp.

Set 4 kB for this data point.


AHU01_SupplyAir_Temp,ref:FuseGuard
Sensor
Inp
Value
AlaHigh
AlaLow
AHU01_ExhaustAir_Temp,ref:FuseGuard
Sensor
Inp
Value
AlaHigh
AlaLow

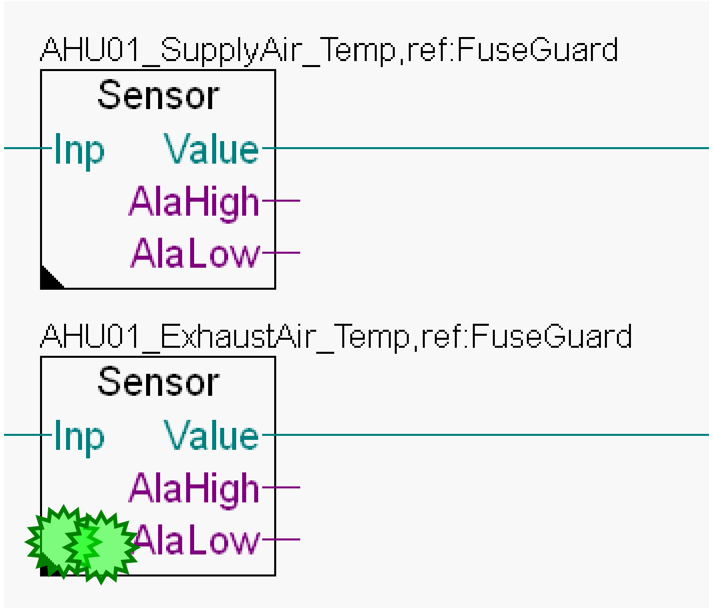


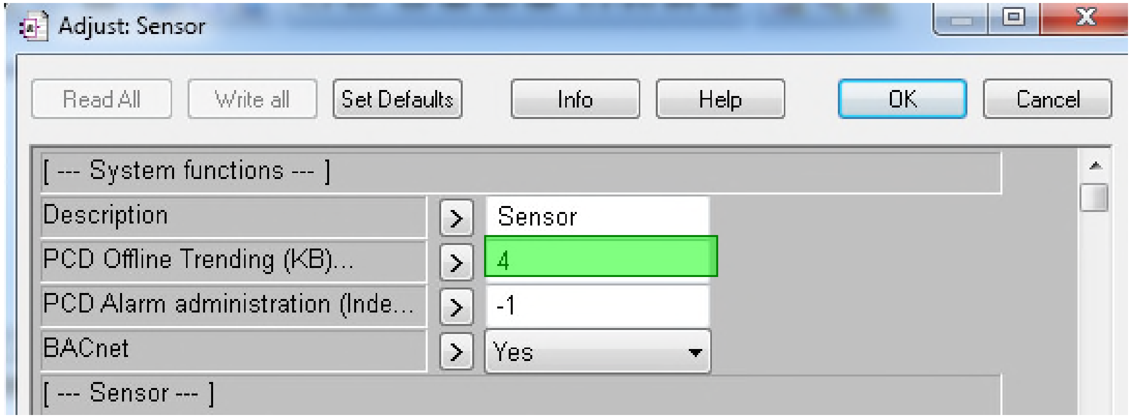
[--- System functions ---]
Description > Sensor
PCD Offline Trending (KB)... > 4
PCD Alarm administration (Inde... > -1
BACnet > Yes
[--- Sensor ---]

DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

Repeat this for the second Sensor FBox. Open the Adjust window of the first FBox with the name AHU01_ExhaustAir_Temp.


AHU01_SupplyAir_Temp,ref:FuseGuard
Sensor
Inp
Value
AlaHigh
AlaLow
AHU01_ExhaustAir_Temp,ref:FuseGuard
Sensor
Inp
Value
AlaHigh
AlaLow



[--- System functions ---]

Description	Sensor
PCD Offline Trending (KB)...	4
PCD Alarm administration (Inde...	-1
BACnet	Yes

[--- Sensor ---]

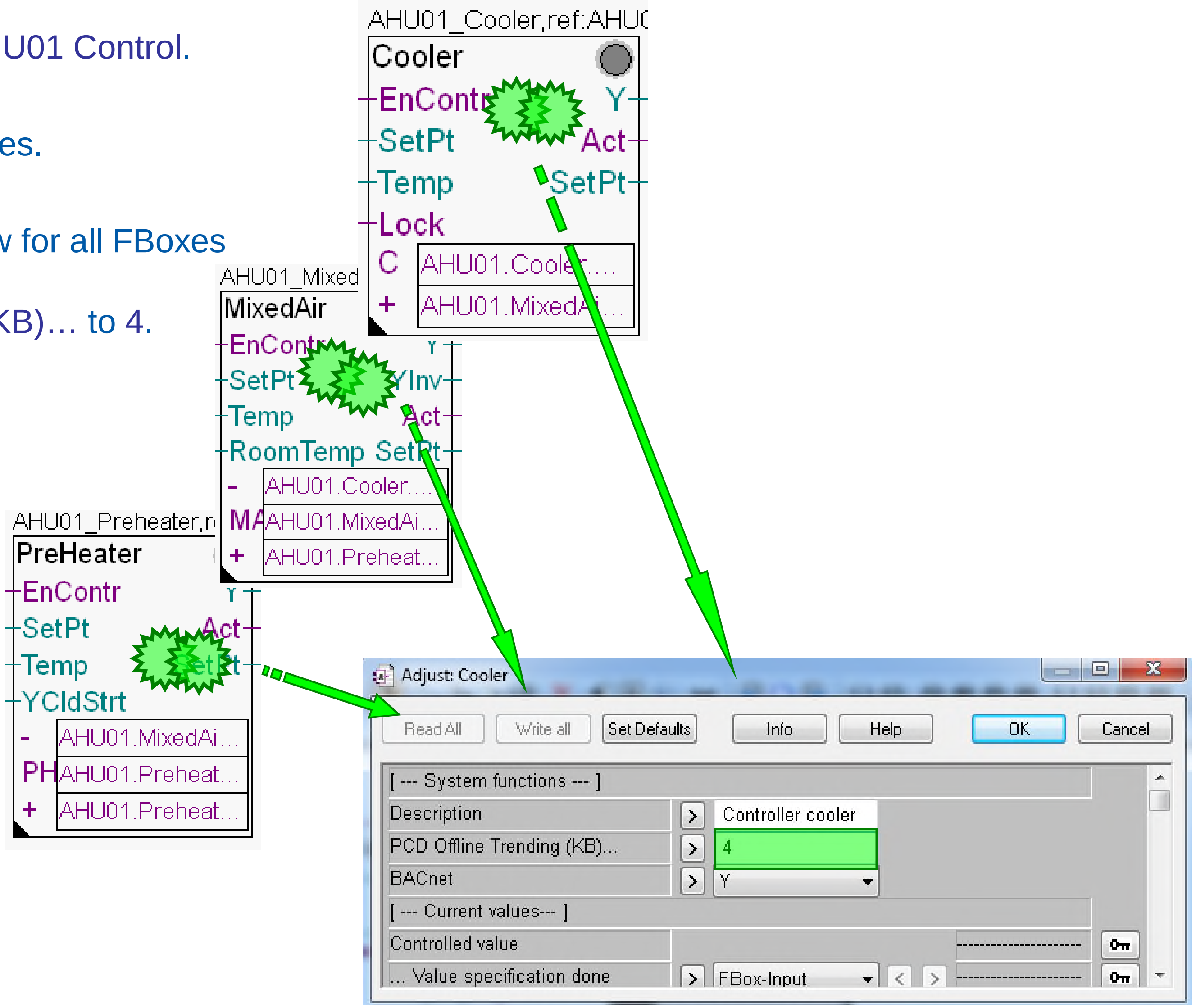
DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

Go to the third page AHU01 Control.

There, we have 3 FBoxes.

Open the Adjust window for all FBoxes and set the parameter PCD Offline Trending (KB)… to 4.



[--- System functions ---]

Description > Controller cooler

PCD Offline Trending (KB)... > 4

BACnet > Y

[--- Current values---]

Controlled value ----------------------

... Value specification done > FBox-Input ----------------------

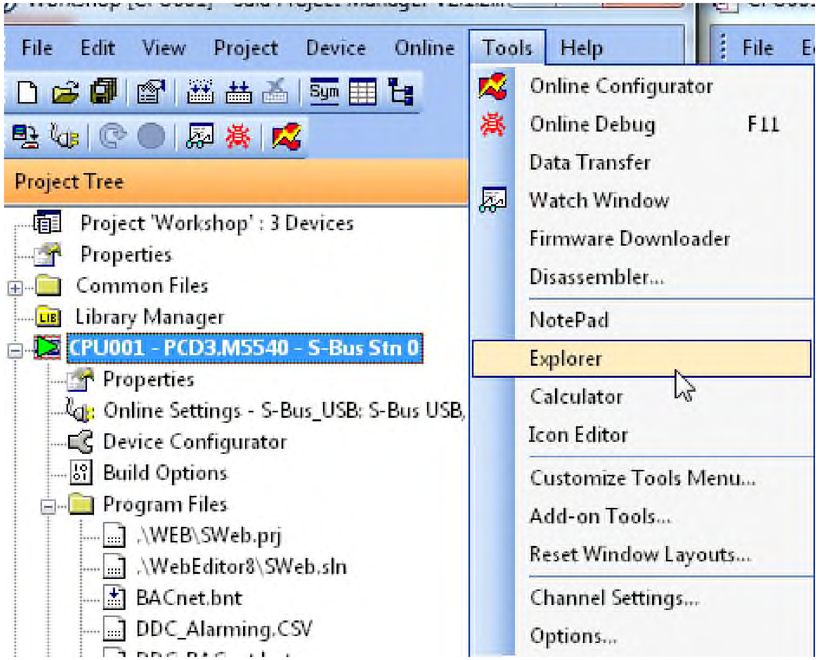
DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

We have now set up 5 offline trends in our little programme. Execute the Build for the programme by pressing the “F2” key – you should not get any error messages.

That’s all we have to do in Fupla. If we were to load the programme into the controller, historical data recording would work – but we need another application to allow us to view the offline trend data.

This file is always called DDC_HDLog.txt and is generated in the CPU directory. It is easiest way to find it using Tools/Explorer



DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

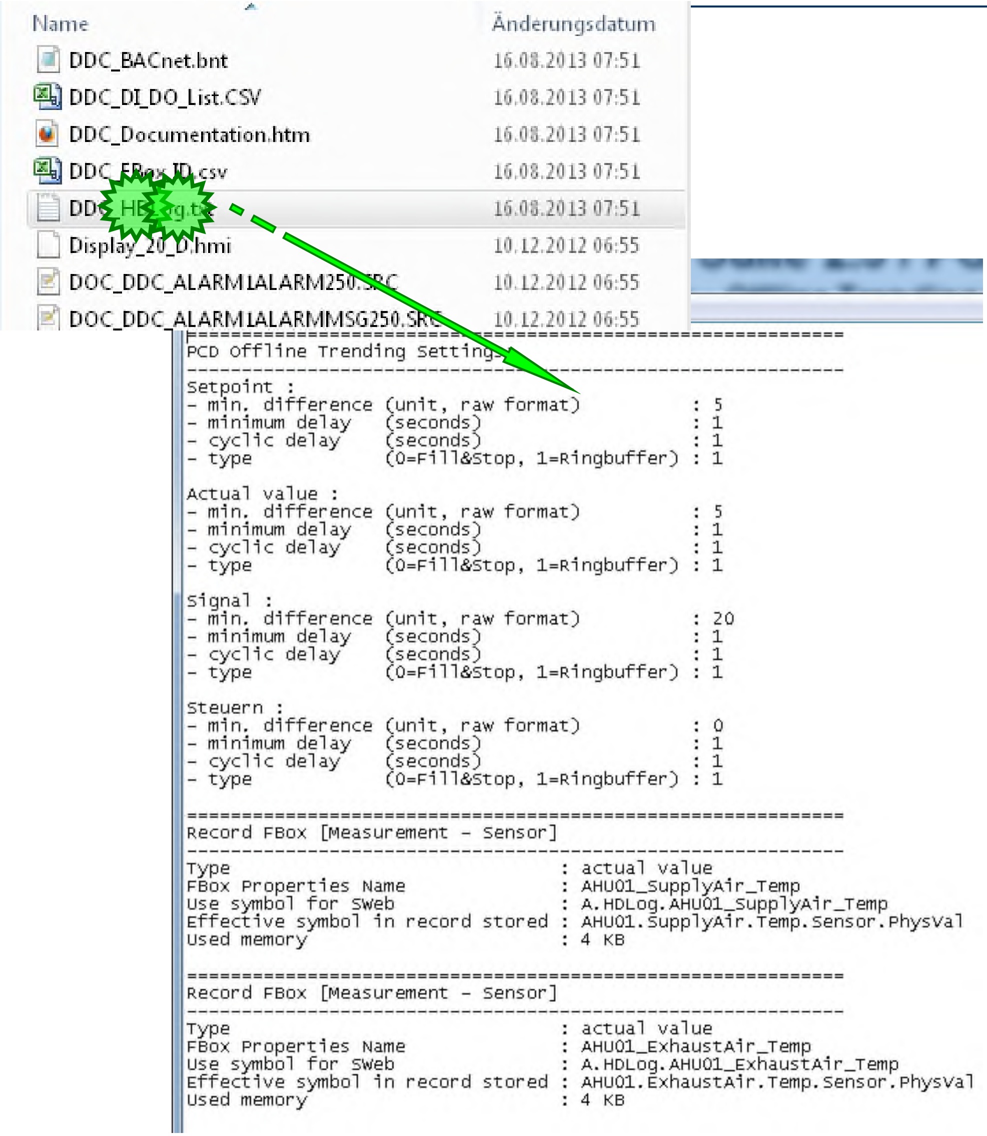
The file only contains information on the settings for historical data recording in the DDC Suite FBoxes.

Double-click on the file to open Notepad. You can see the HDLog FBox settings as well as the settings for all FBoxes in which the PCD Offline Trending (KB)… parameter is set to a value greater than 0 (= activated).

Here, you can find all FBox information such as:

- record type, setpoint, actual value …
- the FBox name
- symbol for the SWeb trend macro
- FBox symbol that is recorded
- used memory

You should not change this file. The file is regenerated during the next Build.



Name	Änderungsdatum
DDC_BACnet.bnt	16.08.2013 07:51
DDC_DI_DO_List.CSV	16.08.2013 07:51
DDC_Documentation.htm	16.08.2013 07:51
DDC_FBox_ID.csv	16.08.2013 07:51
DDC_HDLog.txt	16.08.2013 07:51
Display_20_0.hmi	10.12.2012 06:55
DOC_DDC_ALARM1ALARM250.SRC	10.12.2012 06:55
DOC_DDC_ALARM1ALARMMSG250.SRC	10.12.2012 06:55

```
===============================================================
PCD Offline Trending Settings
---------------------------------------------------------------
Setpoint :
- min. difference (unit, raw format)          : 5
- minimum delay   (seconds)                   : 1
- cyclic delay    (seconds)                   : 1
- type            (0=Fill&Stop, 1=Ringbuffer) : 1

Actual value :
- min. difference (unit, raw format)          : 5
- minimum delay   (seconds)                   : 1
- cyclic delay    (seconds)                   : 1
- type            (0=Fill&Stop, 1=Ringbuffer) : 1

Signal :
- min. difference (unit, raw format)          : 20
- minimum delay   (seconds)                   : 1
- cyclic delay    (seconds)                   : 1
- type            (0=Fill&Stop, 1=Ringbuffer) : 1

Steuern :
- min. difference (unit, raw format)          : 0
- minimum delay   (seconds)                   : 1
- cyclic delay    (seconds)                   : 1
- type            (0=Fill&Stop, 1=Ringbuffer) : 1

===============================================================
Record FBox [Measurement - Sensor]
---------------------------------------------------------------
Type                                 : actual value
FBox Properties Name                 : AHU01_SupplyAir_Temp
Use symbol for Sweb                  : A.HDLog.AHU01_SupplyAir_Temp
Effective symbol in record stored    : AHU01.SupplyAir.Temp.Sensor.PhysVal
Used memory                          : 4 KB

===============================================================
Record FBox [Measurement - Sensor]
---------------------------------------------------------------
Type                                 : actual value
FBox Properties Name                 : AHU01_ExhaustAir_Temp
Use symbol for Sweb                  : A.HDLog.AHU01_ExhaustAir_Temp
Effective symbol in record stored    : AHU01.ExhaustAir.Temp.Sensor.PhysVal
Used memory                          : 4 KB
```

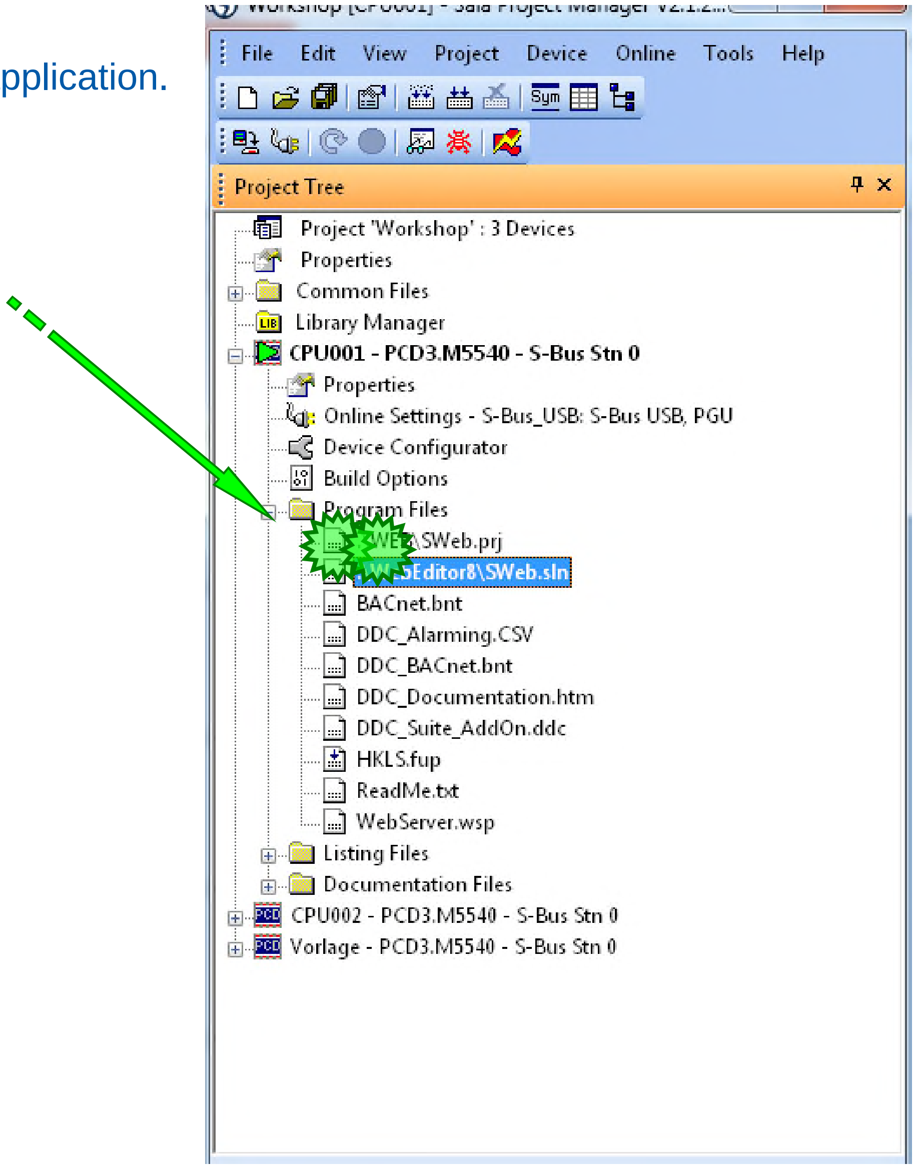
HDLog with DDC Suite
Accessing data with SWeb

DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

We are now going to edit the SWeb application.

Open the Web Editor 8 (SWeb.sln)



- Project 'Workshop' : 3 Devices
- Properties
- Common Files
- Library Manager
- CPU001 - PCD3.M5540 - S-Bus Stn 0
  - Properties
  - Online Settings - S-Bus_USB: S-Bus USB, PGU
  - Device Configurator
  - Build Options
  - Program Files
    - WE...\SWeb.prj
    - W...Editor8\SWeb.sln
    - BACnet.bnt
    - DDC_Alarming.CSV
    - DDC_BACnet.bnt
    - DDC_Documentation.htm
    - DDC_Suite_AddOn.ddc
    - HKLS.fup
    - ReadMe.txt
    - WebServer.wsp
  - Listing Files
  - Documentation Files
- CPU002 - PCD3.M5540 - S-Bus Stn 0
- Vorlage - PCD3.M5540 - S-Bus Stn 0

DDC Suite 2.5 / PG5 Building Advanced

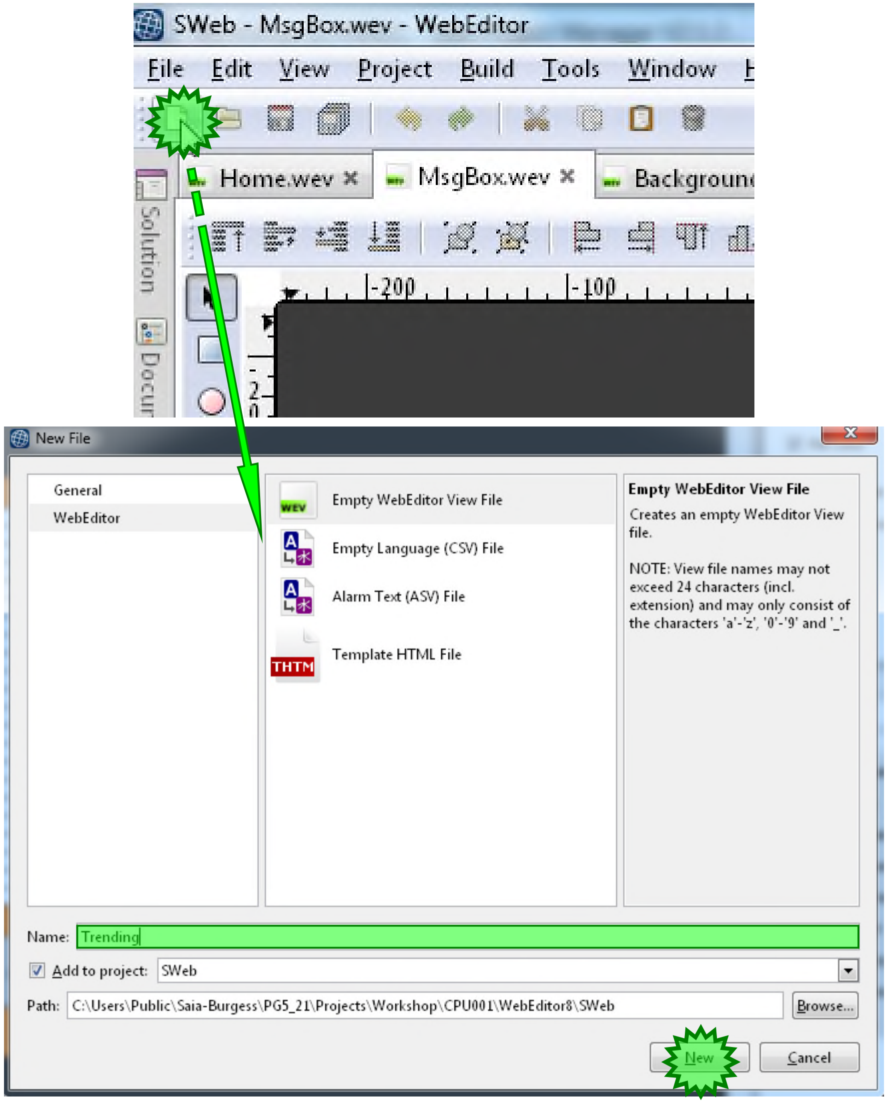
HDLog – Offline Trending

Create a new page in the SWeb editor

In the New File dialogue, select Empty WebEditor View File and enter Trending as the file name, then finish by clicking on New.

The next steps are standard when using HDLog offline data in SWeb.

No special handling is required for DDC Suite.



New File

Empty WebEditor View File

Creates an empty WebEditor View file.

NOTE: View file names may not exceed 24 characters (incl. extension) and may only consist of the characters 'a'-'z', '0'-'9' and '_'.

Name: Trending

☑ Add to project: SWeb

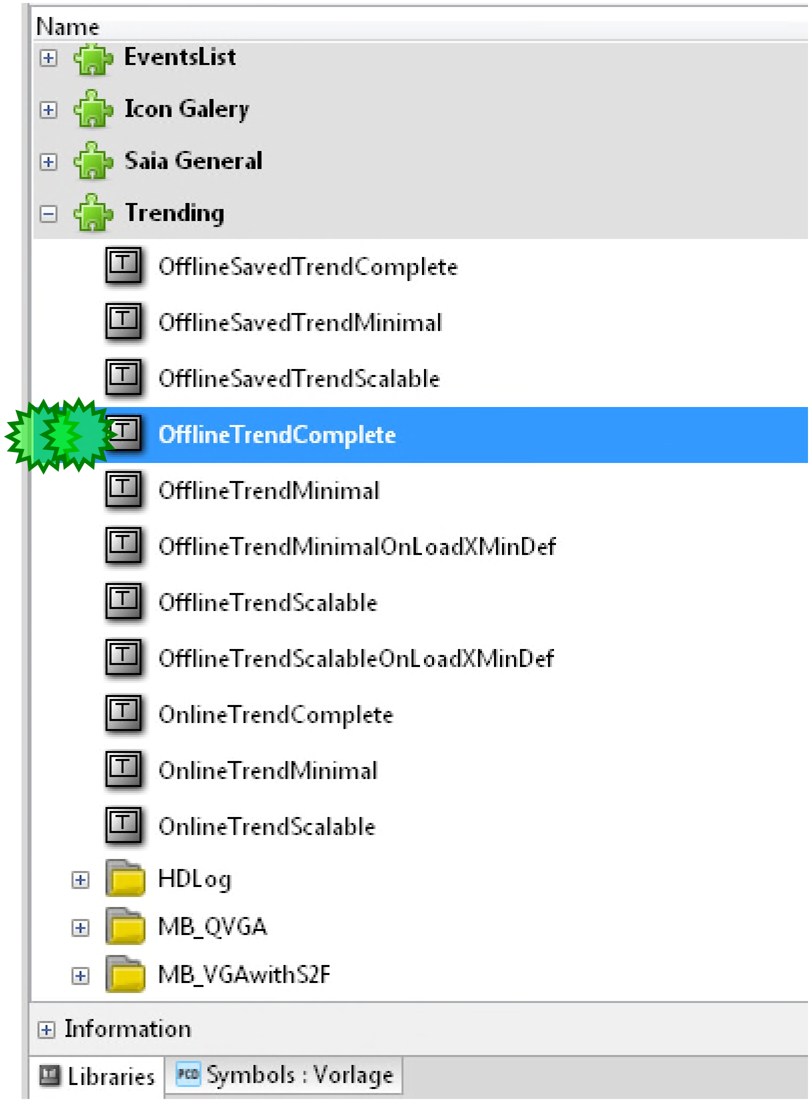
Path: C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop\CPU001\WebEditor8\SWeb

DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

The new page Trending.wev opens and we have to insert a trend macro.

Click on Trending in the libraries, and double-click on OfflineTrendComplete in the dialogue menu

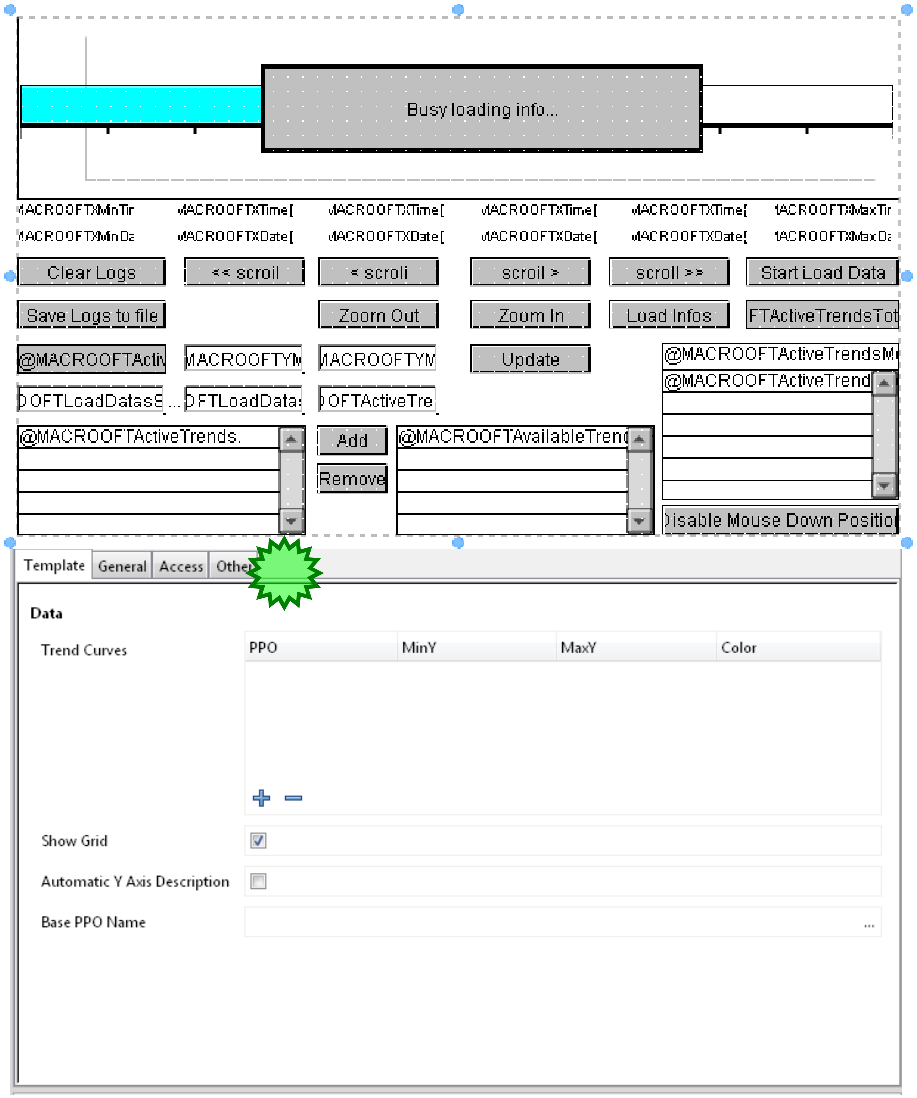


DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

Position the macro in the centre of the page.

In the macro properties, there is an empty Trend Curves table on the Template tab with a few lines below it.



Data

Trend Curves

PPO	MinY	MaxY	Color

Show Grid ☑

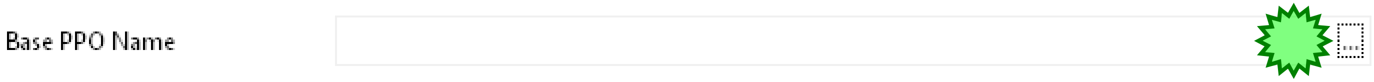
Automatic Y Axis Description □

Base PPO Name ...

DDC Suite 2.5 / PG5 Building Advanced

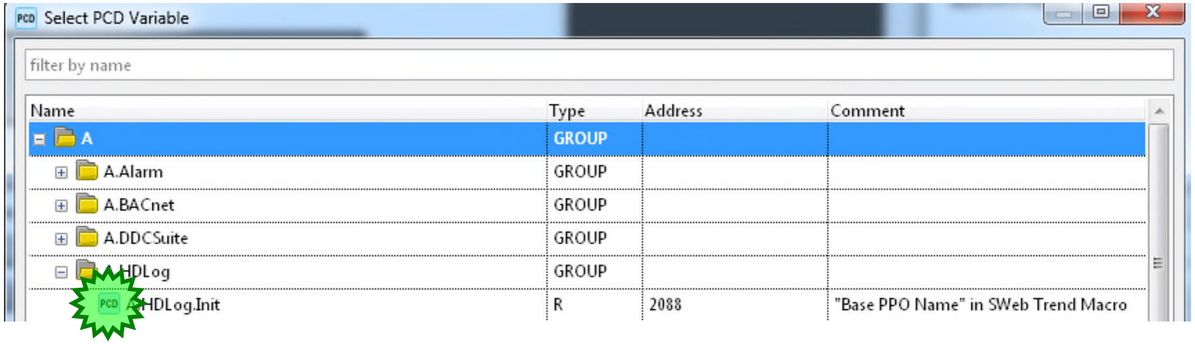
HDLog – Offline Trending

In the bottom line, we have to link the Base PPO Name which is automatically generated by the HDLog FBox.



Base PPO Name

This is found in the path A.HDLog.Init



Select PCD Variable

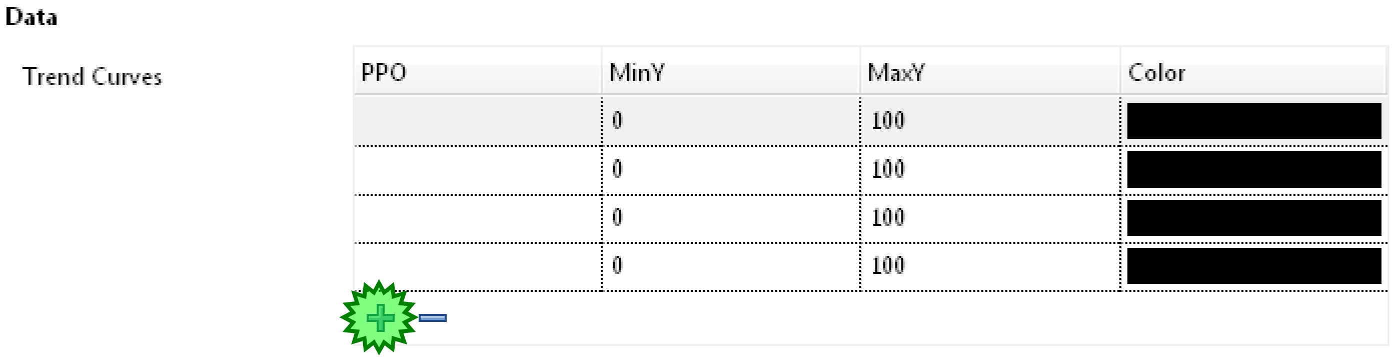
filter by name

Name	Type	Address	Comment
A	GROUP		
A.Alarm	GROUP		
A.BACnet	GROUP		
A.DDCSuite	GROUP		
A.HDLog	GROUP		
A.HDLog.Init	R	2088	"Base PPO Name" in SWeb Trend Macro

DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

With the +, we can generate as many lines as the curves we wish to display in the trend. In our example we had 5 trend curves.

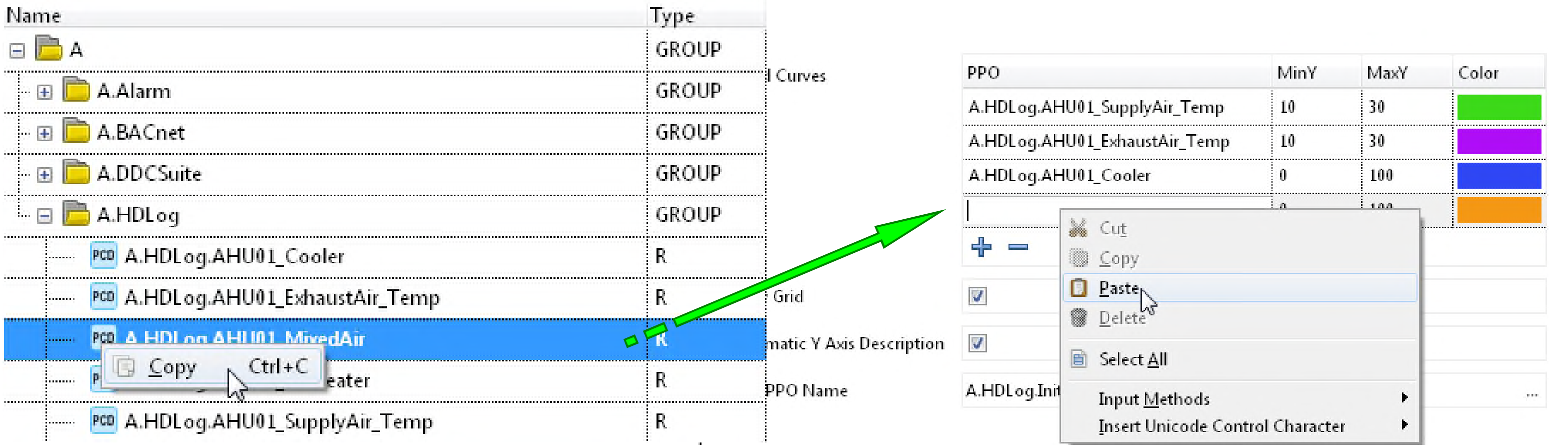


Data

Trend Curves

PPO	MinY	MaxY	Color
	0	100	⬛
	0	100	⬛
	0	100	⬛
	0	100	⬛

Now we search the symbols for the created trend PPO names and link these to our table with Copy/Paste. These are also found in the path A.HDLog.Init



Name	Type
A	GROUP
A.Alarm	GROUP
A.BACnet	GROUP
A.DDCSuite	GROUP
A.HDLog	GROUP
A.HDLog.AHU01_Cooler	R
A.HDLog.AHU01_ExhaustAir_Temp	R
A.HDLog.AHU01_MixedAir	R
P [illegible] eater	R
A.HDLog.AHU01_SupplyAir_Temp	R

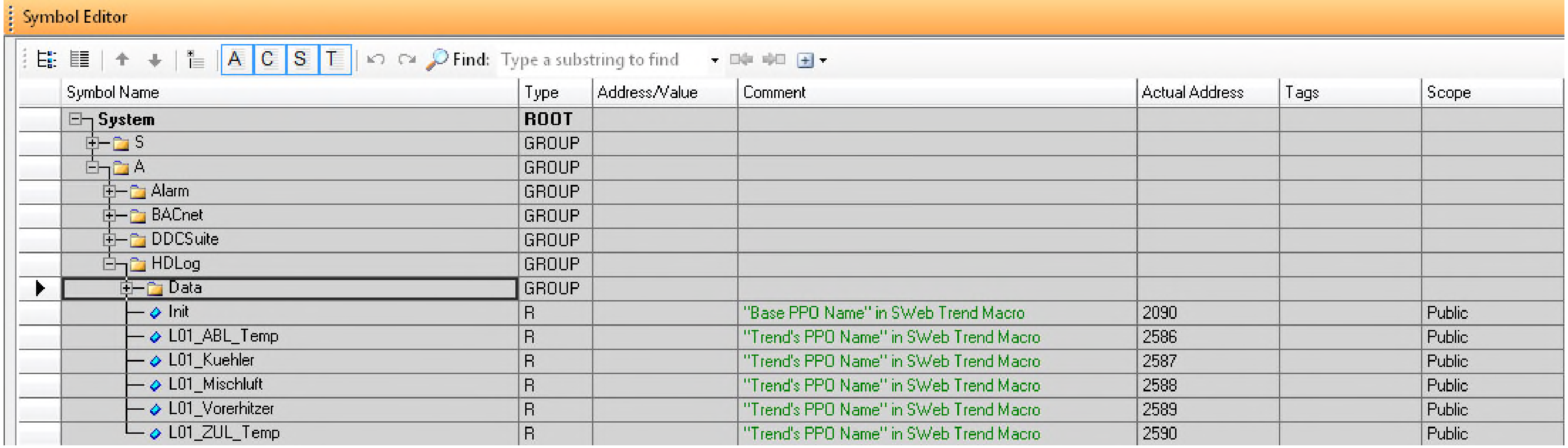
PPO	MinY	MaxY	Color
A.HDLog.AHU01_SupplyAir_Temp	10	30	🟩
A.HDLog.AHU01_ExhaustAir_Temp	10	30	🟪
A.HDLog.AHU01_Cooler	0	100	🟦
	0	100	🟧

DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

We can see that the DDC Suite FBox uses the FBox name to automatically generate a symbol in the Symbol Editor under the System tab in the A.HDLog group.

That is why it is always necessary to assign an FBox name – the name is also needed for other functions ...



Symbol Name	Type	Address/Value	Comment	Actual Address	Tags	Scope
System	**ROOT**					
S	GROUP					
A	GROUP					
Alarm	GROUP					
BACnet	GROUP					
DDCSuite	GROUP					
HDLog	GROUP					
Data	GROUP					
Init	R		"Base PPO Name" in SWeb Trend Macro	2090		Public
L01_ABL_Temp	R		"Trend's PPO Name" in SWeb Trend Macro	2586		Public
L01_Kuehler	R		"Trend's PPO Name" in SWeb Trend Macro	2587		Public
L01_Mischluft	R		"Trend's PPO Name" in SWeb Trend Macro	2588		Public
L01_Vorerhitzer	R		"Trend's PPO Name" in SWeb Trend Macro	2589		Public
L01_ZUL_Temp	R		"Trend's PPO Name" in SWeb Trend Macro	2590		Public

DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

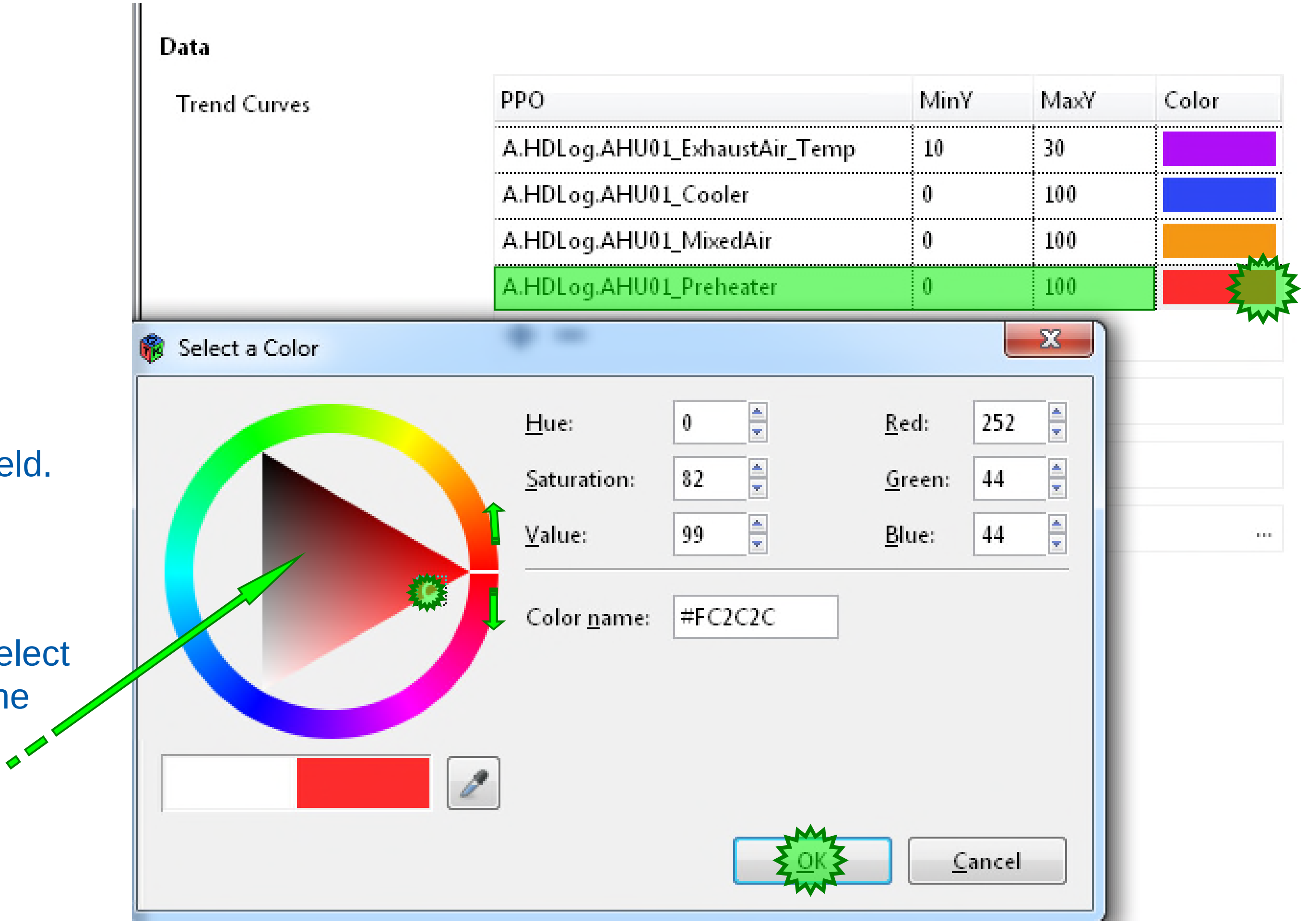
Set the parameters

Y-Min: to 10.0

Y-Max: to 30.0

and click in the Color field.

You can now rotate the coloured triangle in the desired direction and select the desired colour for the trend.



Data

Trend Curves

PPO	MinY	MaxY	Color
A.HDLog.AHU01_ExhaustAir_Temp	10	30	🟪
A.HDLog.AHU01_Cooler	0	100	🟦
A.HDLog.AHU01_MixedAir	0	100	🟧
A.HDLog.AHU01_Preheater	0	100	🟥

Select a Color

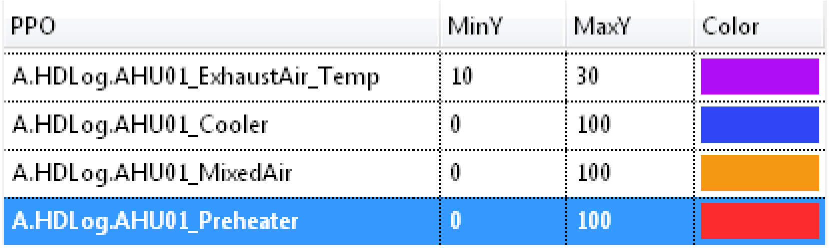
Hue:	0	Red:	252
Saturation:	82	Green:	44
Value:	99	Blue:	44

Color name: #FC2C2C

DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

Repeat this for the remaining 4 pieces of historical data. Use the list below as a guide

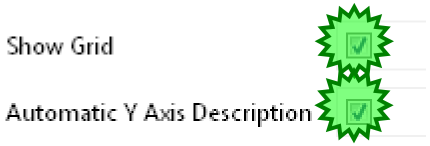


PPO	MinY	MaxY	Color
A.HDLog.AHU01_ExhaustAir_Temp	10	30	🟪
A.HDLog.AHU01_Cooler	0	100	🟦
A.HDLog.AHU01_MixedAir	0	100	🟧
A.HDLog.AHU01_Preheater	0	100	🟥

DDC Suite 2.5 / PG5 Building Advanced

HDLog – Offline Trending

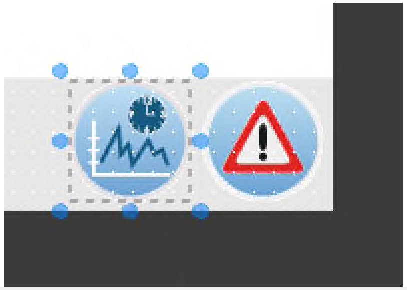
Finally, activate the options Show grid and Autom. Y- achses describtion

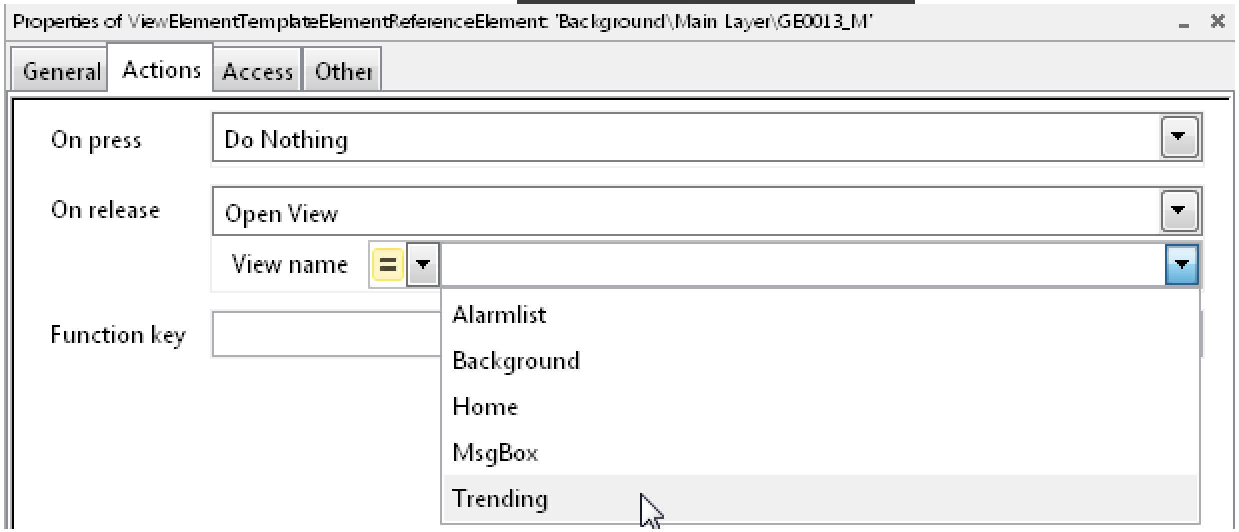


Show Grid ☑

Automatic Y Axis Description ☑

So that we can retrieve the trend from every image, we create another button on the Background next to the alarm list. The corresponding button can be found in the library under Basic elements. For this action, we give the new button the command On release Open view Trending.





Properties of ViewElementTemplateElementReferenceElement: 'Background\Main Layer\GE0013_M'

On press: Do Nothing

On release: Open View

View name:

Function key:

Then we must build the web

project and download it.

PG5 Building Advanced / DDC Suite 2.5
SWeb Alarming

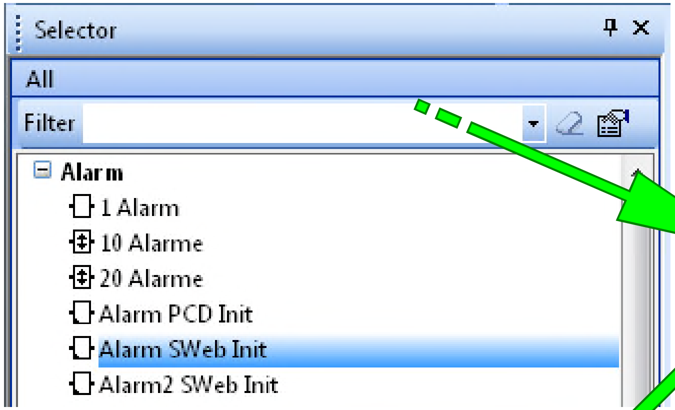
SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

SWeb Alarming

To use the SWeb Alarming function in the PCD, we need the Alarming FBox family

The Alarm SWeb FBox provides the basic functions, defines the memory and establishes the interface to SWeb or CGI calls.

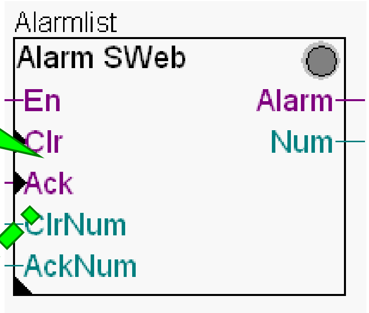


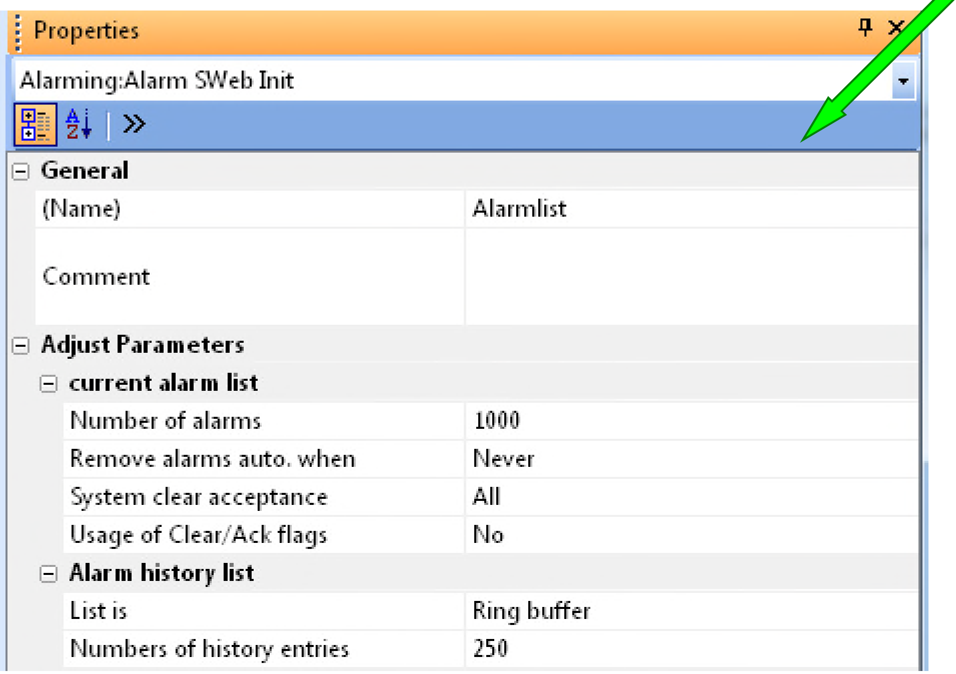
Selector

All

Filter

- Alarm
  - 1 Alarm
  - 10 Alarme
  - 20 Alarme
  - Alarm PCD Init
  - Alarm SWeb Init
  - Alarm2 SWeb Init





Properties

Alarming:Alarm SWeb Init

General	
(Name)	Alarmlist
Comment	
Adjust Parameters	
current alarm list	
Number of alarms	1000
Remove alarms auto. when	Never
System clear acceptance	All
Usage of Clear/Ack flags	No
Alarm history list	
List is	Ring buffer
Numbers of history entries	250

DDC Suite 2.5 / PG5 Building Advanced

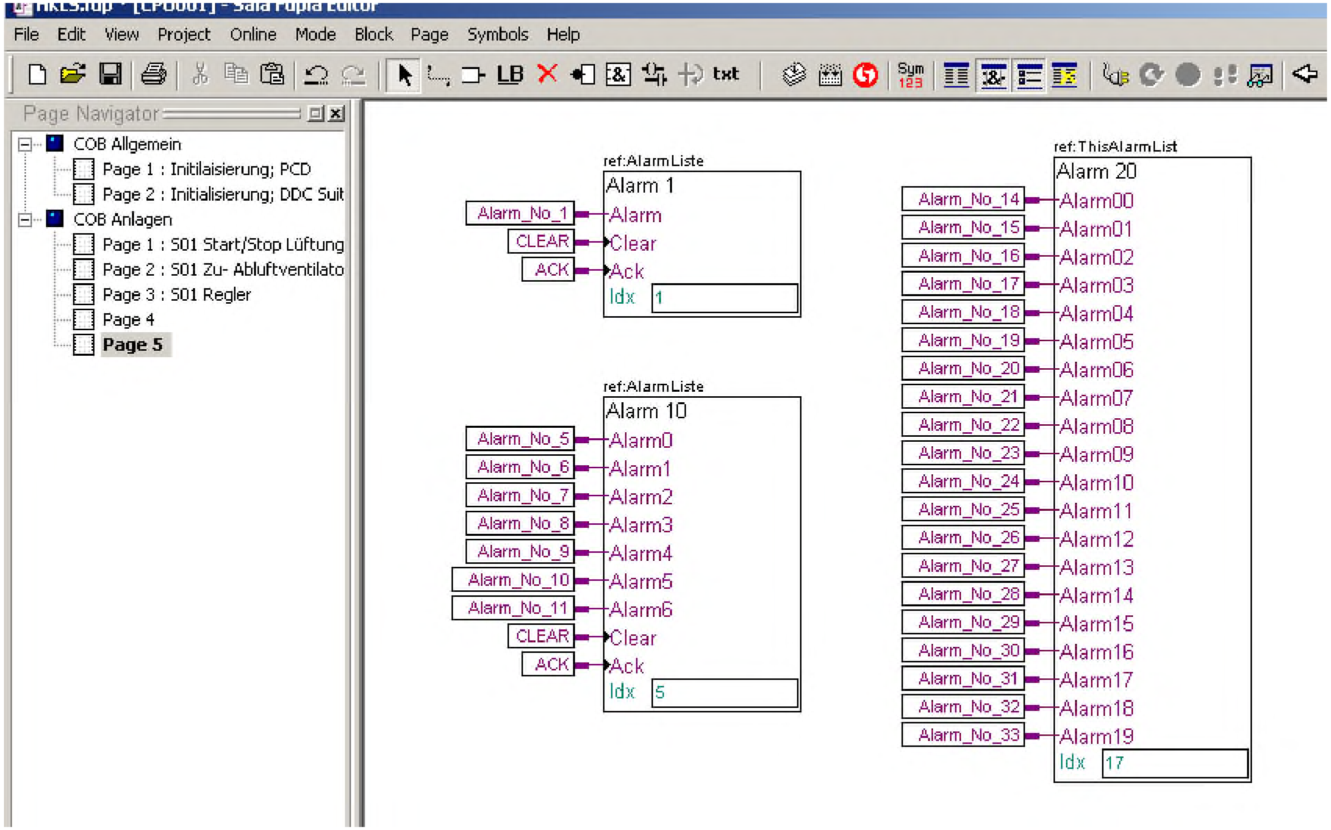
SWeb Alarming

And then a few more FBoxes had to be set to collect the alarm information from the programme. This often resulted in “Alarm collection pages”.

Some additional inputs were also necessary

- Assign symbol
- Alarm index number
- Alarm definition
- Creation of the alarm text in the csv file of the SWeb Editor in the correct sequence of alarms

This meant increasing amounts of work with higher error rates, especially if there were several alarm lists and/or ventilation systems.



Plant Coding System PCS

sbc
SAIA BURGESS CONTROLS

Plant Coding System (PCS)

A plant coding system (PCS) is often used together with a SCADA system. In principle, it is a structured naming system for all components in a system.

All components, machines and building parts can be easily identified.

With DDC Suite 2.5, this code can be generated directly from FUPLA. It can be used for alarm texts, BACnet object names and BACnet descriptions.

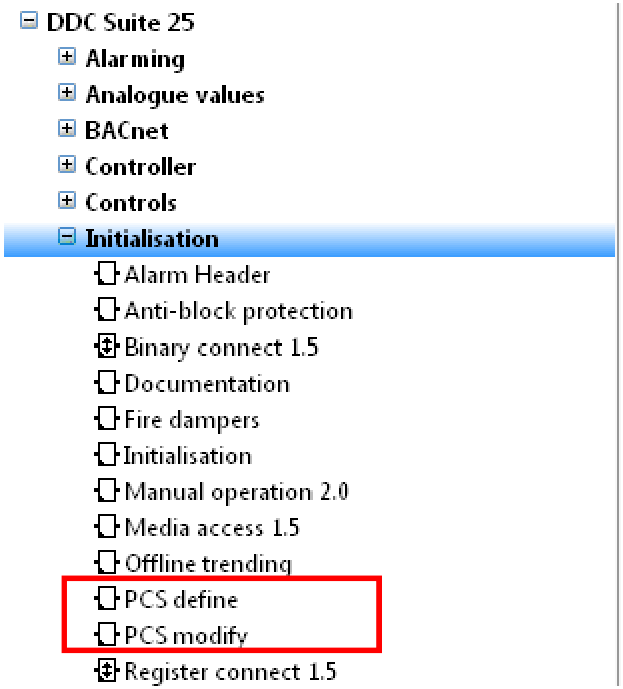
The BACnet name is no longer bound to the FBox name, but to a freely definable text in the PCS FBox.

Texts can be defined directly in the PCS FBox not only for BACnet, but also for alarms.

The resulting PCS after a Build can be used for BACnet objects, SWeb Alarming, SCADA systems, etc.

This PCS does not need any of the PCD's resources and does not generate any additional programme code.

Only the hierarchical names are generated.



- DDC Suite 25
  - Alarming
  - Analogue values
  - BACnet
  - Controller
  - Controls
  - Initialisation
    - Alarm Header
    - Anti-block protection
    - Binary connect 1.5
    - Documentation
    - Fire dampers
    - Initialisation
    - Manual operation 2.0
    - Media access 1.5
    - Offline trending
    - PCS define
    - PCS modify
    - Register connect 1.5

Plant Coding System (PCS)

The main aim is to generate these PCS names automatically!

021901L304BEA_E01ULK001SB01EIN

Possible problems with older DDC 2.0 Suite FBoxes:

- The PCS is too long to be used as an FBox name
- FBox names cannot start with a number, but BACnet objects can
- The name can be made up of several parts The necessary part can only be changed during modifications
- The name should not use up any resources in the PCD

0219 01 L BEA 304 _ E01 ULK001SB01EIN

Plant Coding System (PCS)

How can the PCS be generated for alarms?

This is done using the “PCS define” FBox from the “Initialisation” family.

The existing templates have been extended with the new functions accordingly.

An PCS can be used for different applications. In this FBox, you can choose between the following functions:

General : No function yet

Alarming : Used for the PCS of the alarms

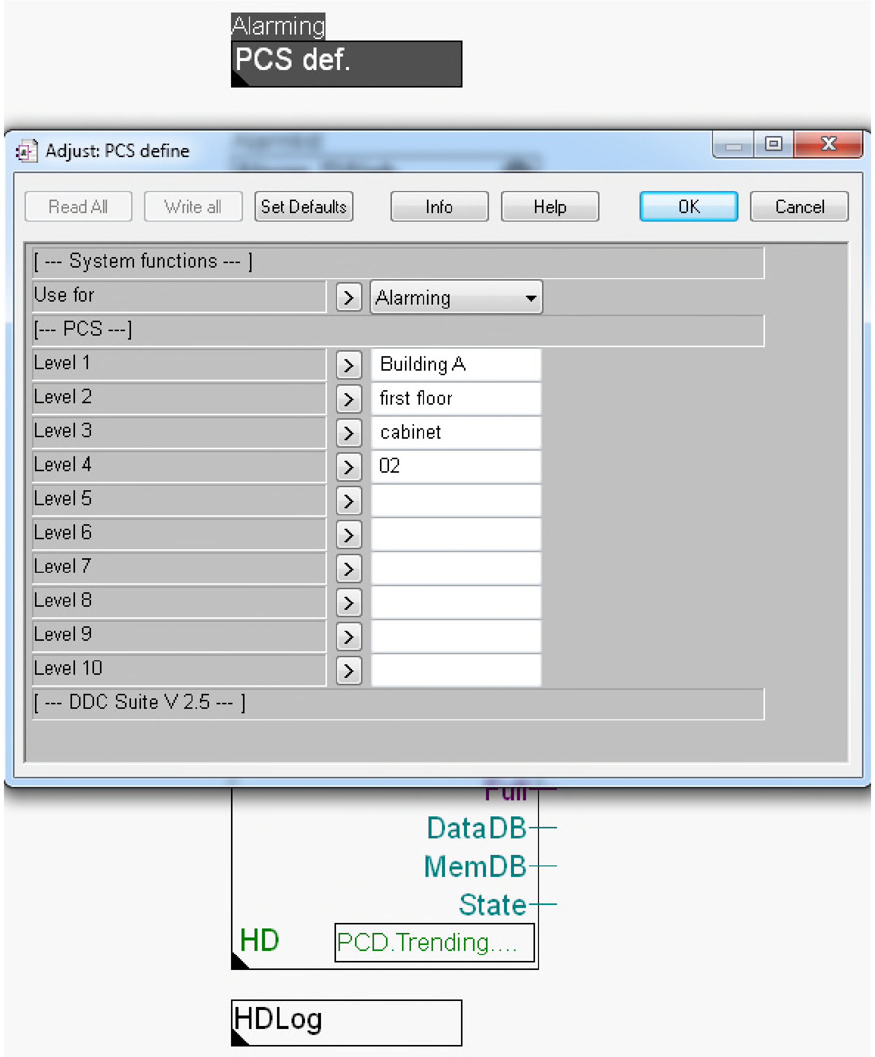
SCADA : No function yet

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

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

User 1..5 : No function yet

On page 2 of the COB Initialisation, an PCS FBox is already available for alarming.



[--- System functions ---]

Use for	Alarming
[--- PCS ---]	
Level 1	Building A
Level 2	first floor
Level 3	cabinet
Level 4	02
Level 5	
Level 6	
Level 7	
Level 8	
Level 9	
Level 10	

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

Plant Coding System (PCS)

The PCS can have up to 10 levels.

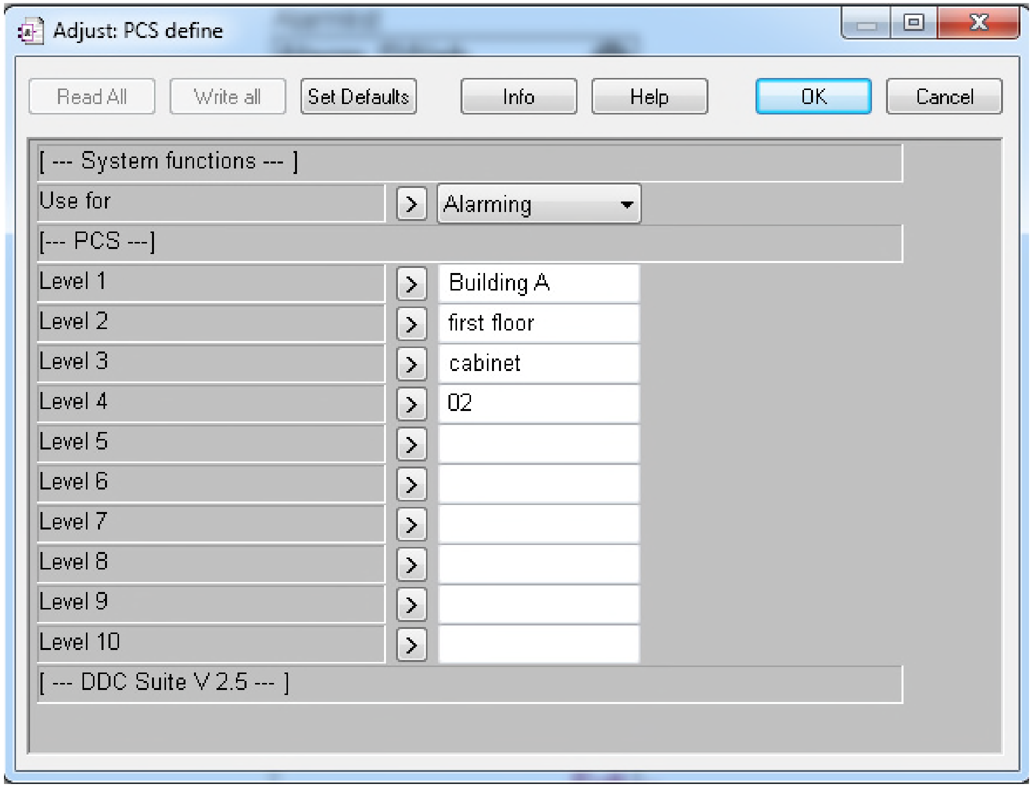
Our example, shows an PCS with a plain text name. At the end of the level, enter a space so the individual levels can be clearly separated from one another.

Reason: All of the following alarms now use this PCS as a prefix. The aim is to obtain this type of name:

“Building A first floor cabinet 02 ....”

All alarms will use this text as a prefix. Modifications can be made from one place.

Enter the PCS in this FBox as follows.



[--- System functions ---]

Use for > Alarming

[--- PCS ---]

Level 1	Building A
Level 2	first floor
Level 3	cabinet
Level 4	02
Level 5	
Level 6	
Level 7	
Level 8	
Level 9	
Level 10	

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

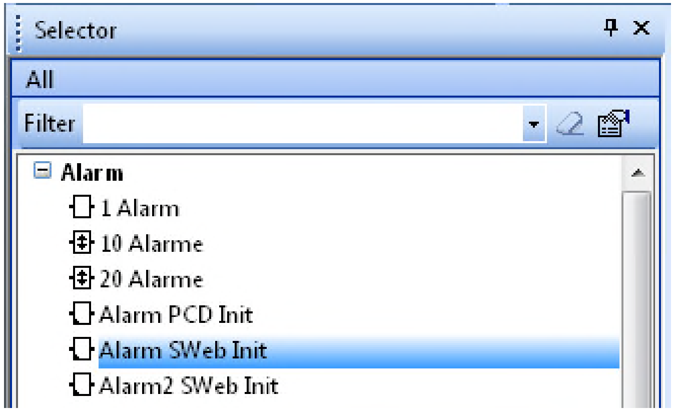
Alarming with DDC Suite Basics

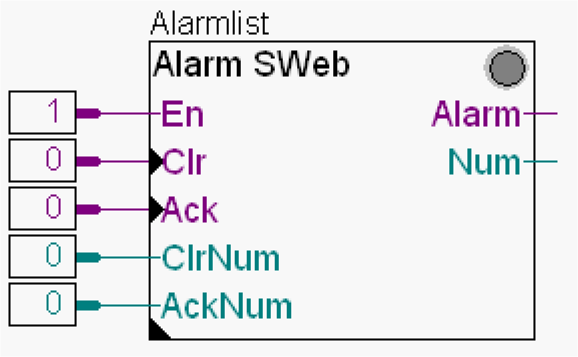
SAIA BURGESS CONTROLS

Plant Coding System (PCS)

We also need an alarm list → “Alarm” family, “Alarm SWeb Init” FBox

This FBox is already set on the Alarming page in COB Initialisation.



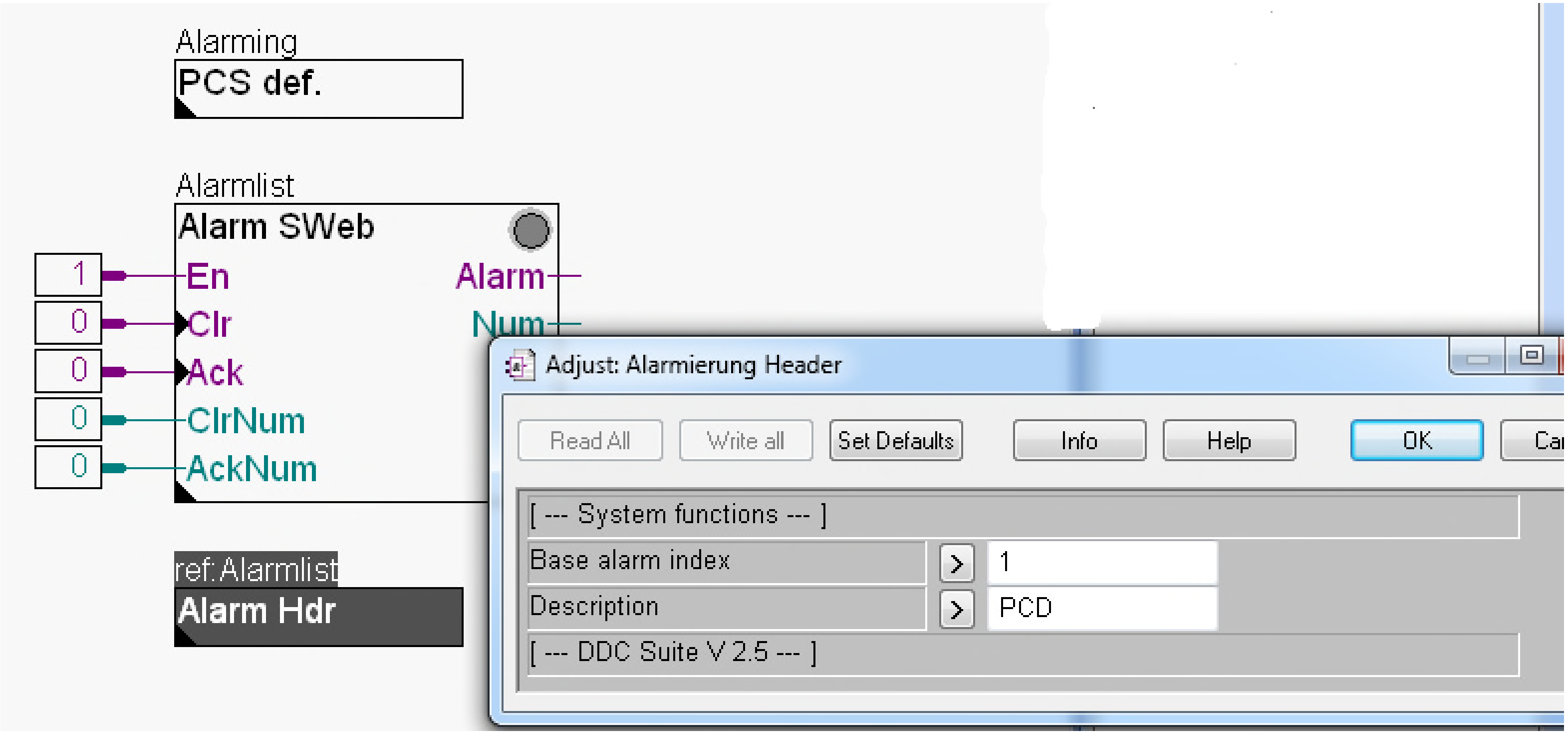


Plant Coding System (PCS)

An Alarm Header FBox is already available on page 2 of COB Initialisation.

Note the Adjust parameter of the FBox. This is the first Header FBox in the programme, so it must be given a “1” as the start index for alarming.

If [-1] 0 is entered here, no alarm list will be generated.



[--- System functions ---]

Base alarm index > 1

Description > PCD

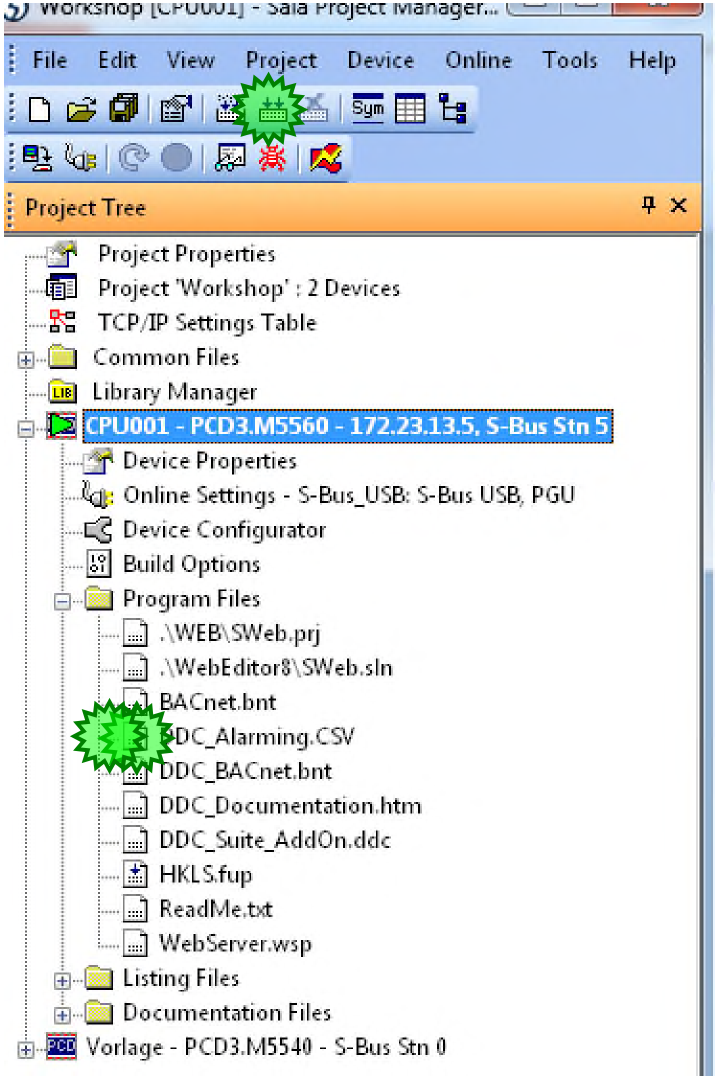
[--- DDC Suite V 2.5 ---]

Plant Coding System (PCS)

Build the project.

Now let’s check the defined alarms in the alarm list.

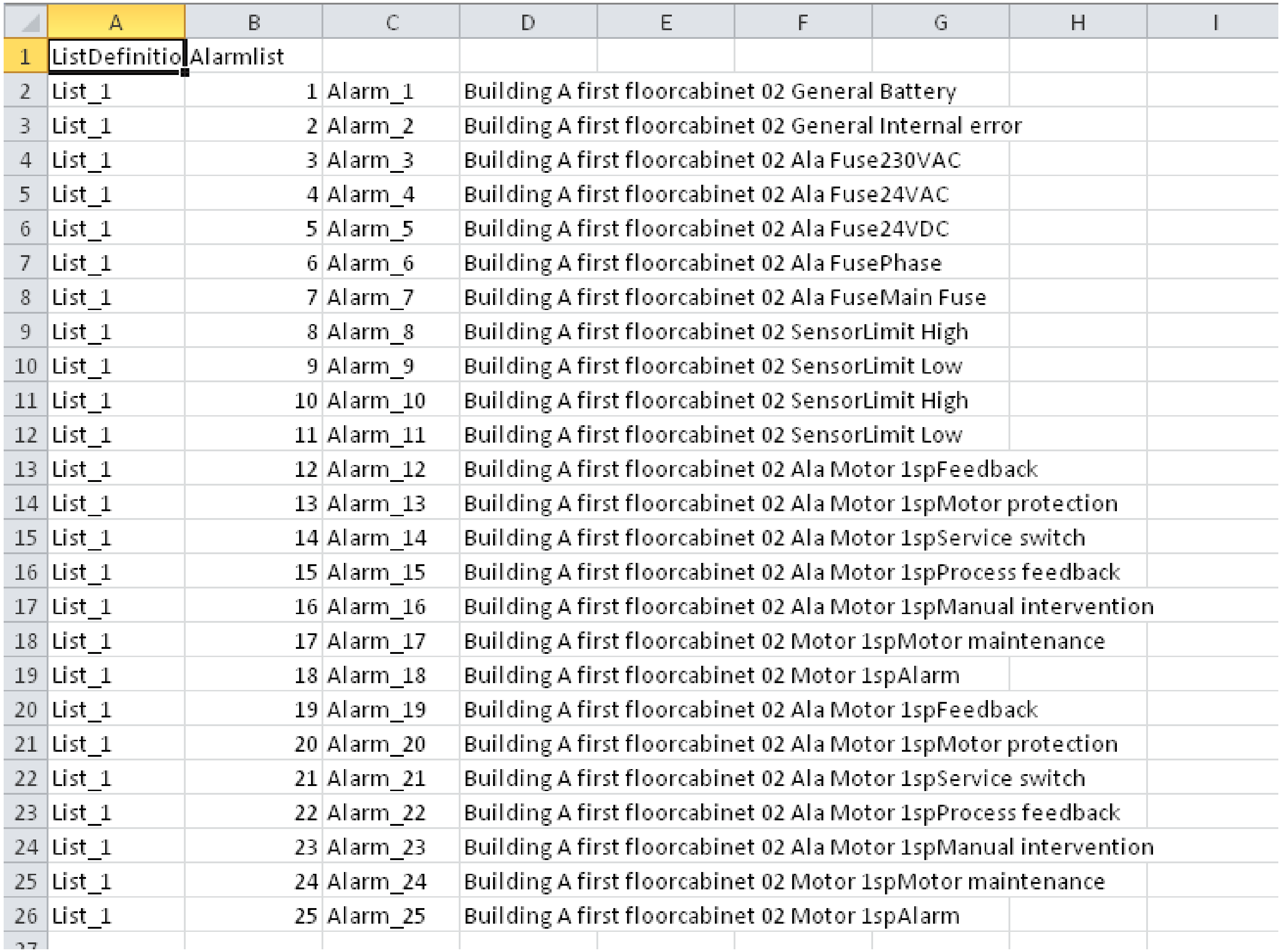
Open DDC_Alarming.csv
This file is rewritten with each Build.



Project Properties
Project 'Workshop' : 2 Devices
TCP/IP Settings Table
Common Files
Library Manager
CPU001 - PCD3.M5560 - 172.23.13.5, S-Bus Stn 5
Device Properties
Online Settings - S-Bus_USB: S-Bus USB, PGU
Device Configurator
Build Options
Program Files
.\WEB\SWeb.prj
.\WebEditor8\SWeb.sln
BACnet.bnt
DDC_Alarming.CSV
DDC_BACnet.bnt
DDC_Documentation.htm
DDC_Suite_AddOn.ddc
HKLS.fup
ReadMe.txt
WebServer.wsp
Listing Files
Documentation Files
Vorlage - PCD3.M5540 - S-Bus Stn 0

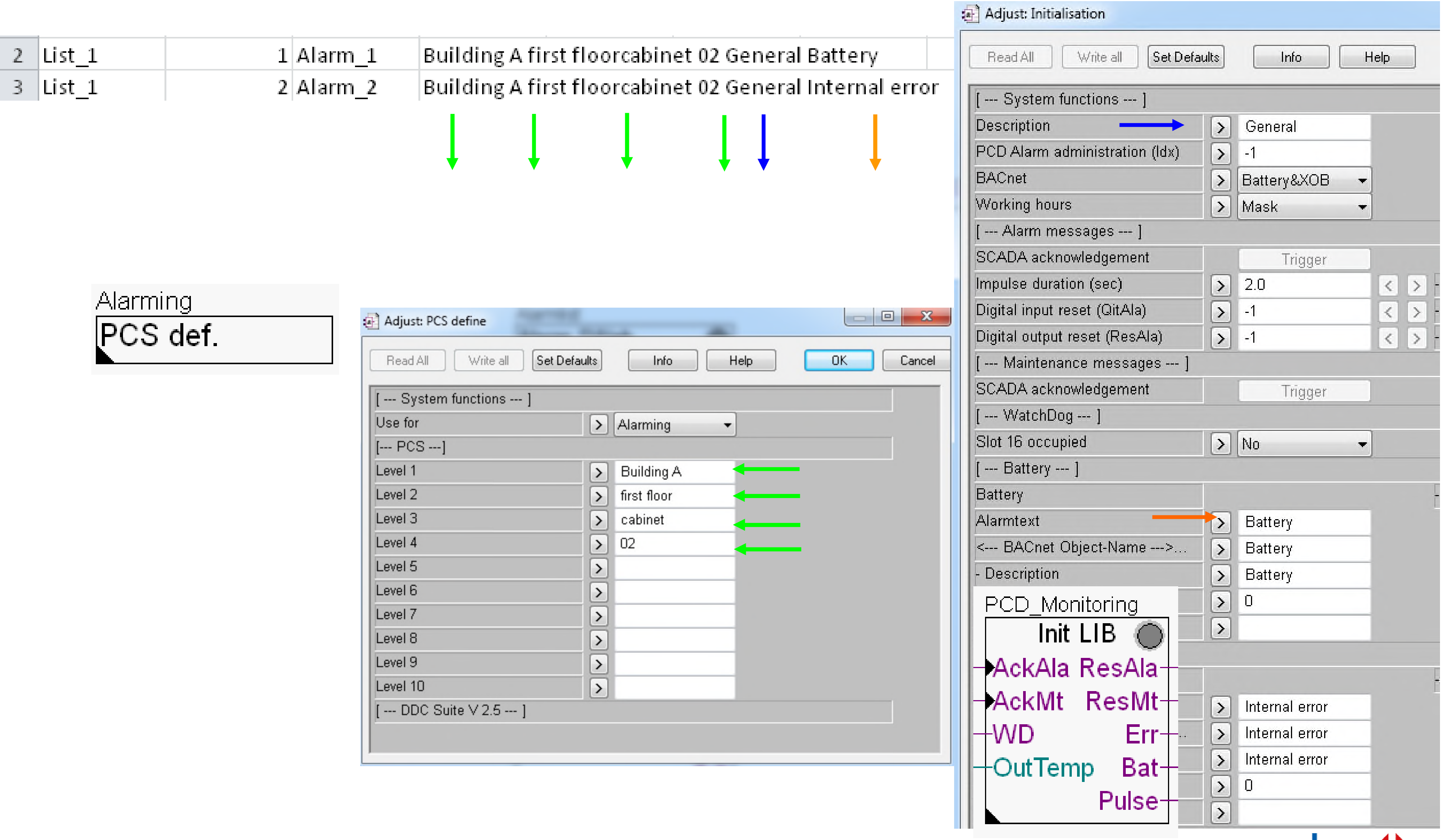
Plant Coding System (PCS)

How has this list been defined now?



	A	B	C	D	E	F	G	H	I
1	ListDefinitio	Alarmlist							
2	List_1	1	Alarm_1	Building A first floorcabinet 02 General Battery					
3	List_1	2	Alarm_2	Building A first floorcabinet 02 General Internal error					
4	List_1	3	Alarm_3	Building A first floorcabinet 02 Ala Fuse230VAC					
5	List_1	4	Alarm_4	Building A first floorcabinet 02 Ala Fuse24VAC					
6	List_1	5	Alarm_5	Building A first floorcabinet 02 Ala Fuse24VDC					
7	List_1	6	Alarm_6	Building A first floorcabinet 02 Ala FusePhase					
8	List_1	7	Alarm_7	Building A first floorcabinet 02 Ala FuseMain Fuse					
9	List_1	8	Alarm_8	Building A first floorcabinet 02 SensorLimit High					
10	List_1	9	Alarm_9	Building A first floorcabinet 02 SensorLimit Low					
11	List_1	10	Alarm_10	Building A first floorcabinet 02 SensorLimit High					
12	List_1	11	Alarm_11	Building A first floorcabinet 02 SensorLimit Low					
13	List_1	12	Alarm_12	Building A first floorcabinet 02 Ala Motor 1spFeedback					
14	List_1	13	Alarm_13	Building A first floorcabinet 02 Ala Motor 1spMotor protection					
15	List_1	14	Alarm_14	Building A first floorcabinet 02 Ala Motor 1spService switch					
16	List_1	15	Alarm_15	Building A first floorcabinet 02 Ala Motor 1spProcess feedback					
17	List_1	16	Alarm_16	Building A first floorcabinet 02 Ala Motor 1spManual intervention					
18	List_1	17	Alarm_17	Building A first floorcabinet 02 Motor 1spMotor maintenance					
19	List_1	18	Alarm_18	Building A first floorcabinet 02 Motor 1spAlarm					
20	List_1	19	Alarm_19	Building A first floorcabinet 02 Ala Motor 1spFeedback					
21	List_1	20	Alarm_20	Building A first floorcabinet 02 Ala Motor 1spMotor protection					
22	List_1	21	Alarm_21	Building A first floorcabinet 02 Ala Motor 1spService switch					
23	List_1	22	Alarm_22	Building A first floorcabinet 02 Ala Motor 1spProcess feedback					
24	List_1	23	Alarm_23	Building A first floorcabinet 02 Ala Motor 1spManual intervention					
25	List_1	24	Alarm_24	Building A first floorcabinet 02 Motor 1spMotor maintenance					
26	List_1	25	Alarm_25	Building A first floorcabinet 02 Motor 1spAlarm					

Plant Coding System (PCS)



2	List_1	1	Alarm_1	Building A first floorcabinet 02 General Battery
3	List_1	2	Alarm_2	Building A first floorcabinet 02 General Internal error

Alarming

PCS def.

Adjust: PCS define

[--- System functions ---]

Use for	Alarming
[--- PCS ---]	
Level 1	Building A
Level 2	first floor
Level 3	cabinet
Level 4	02
Level 5	
Level 6	
Level 7	
Level 8	
Level 9	
Level 10	

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

Adjust: Initialisation

[--- System functions ---]	
Description	General
PCD Alarm administration (Idx)	-1
BACnet	Battery&XOB
Working hours	Mask
[--- Alarm messages ---]	
SCADA acknowledgement	Trigger
Impulse duration (sec)	2.0
Digital input reset (QitAla)	-1
Digital output reset (ResAla)	-1
[--- Maintenance messages ---]	
SCADA acknowledgement	Trigger
[--- WatchDog ---]	
Slot 16 occupied	No
[--- Battery ---]	
Battery	
Alarmtext	Battery
<--- BACnet Object-Name --->...	Battery
- Description	Battery
	0
	Internal error
	Internal error
	Internal error
	0

PCD_Monitoring

Alarming with DDC Suite Application

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DDC Suite 2.5 / PG5 Building Advanced

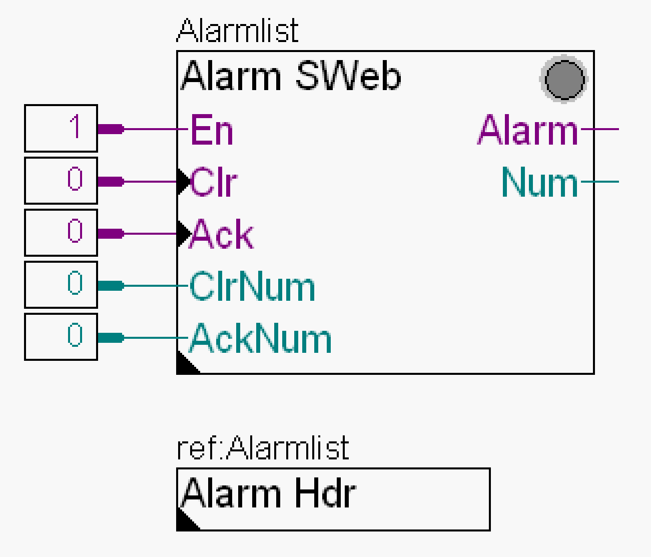
SWeb Alarming

If we want to use the Alarming managed from the PCD, using the DDC Suite, we also use the Alarming FBox family – which means that this DDC Suite functionality is based on the original alarming functions.

We must position the Alarm SWeb FBox – but this is prepared on the Alarming; Trending page in the COB Initialisation block.

The sub-FBoxes for alarming are connected to this FBox via the FBox name/ref link – it is possible to use more than one alarm list.

It is also possible to position several Alarm Hdr FBoxes and thus create a certain graduation in the alarm index.

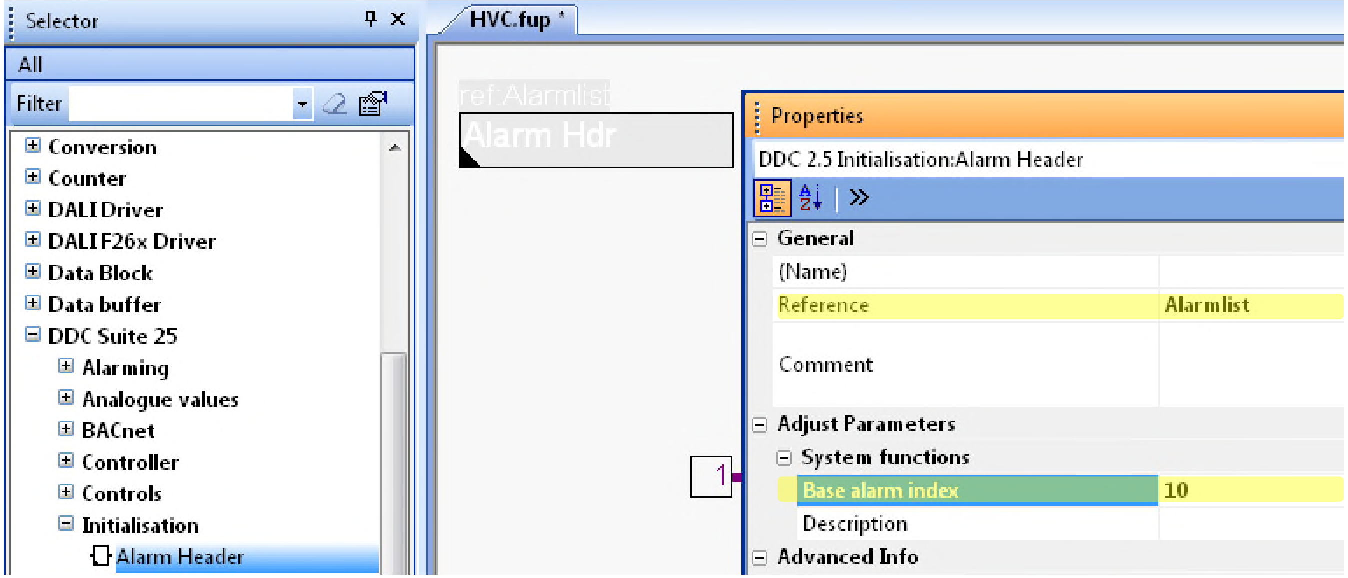


DDC Suite 2.5 / PG5 Building Advanced

SWeb Alarming

Let’s start with the definition of alarms for the SWeb of the ventilation system.

Go to the first page AHU01 Start/Stop AHU and position an Alarm Hdr FBox in the top left-hand corner.



DDC 2.5 Initialisation:Alarm Header

(Name)	
Reference	Alarmlist
Comment	
Base alarm index	10
Description	

As reference, we must specify the name of the Alarm SWeb FBox again and select 10 as the start index.

To activate alarm management in the DDC Suite FBoxes, we do not need any additional FBoxes – all DDC Suite FBoxes automatically support alarm management already.

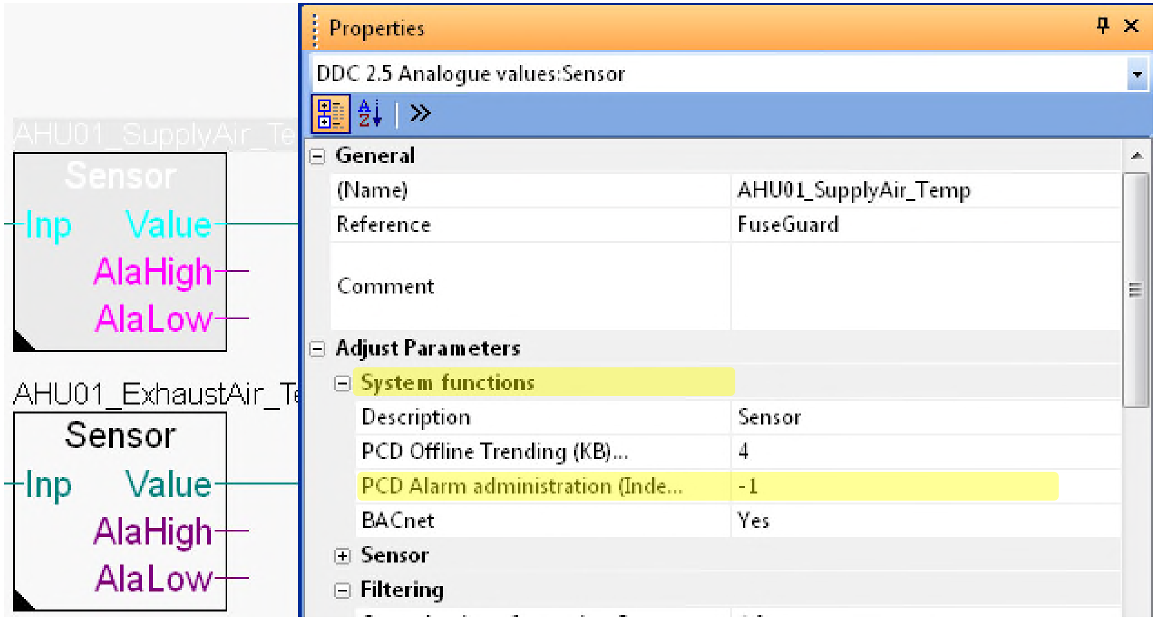
DDC Suite 2.5 / PG5 Building Advanced

SWeb Alarming

DDC Suite FBoxes always have a group at the top of the Adjust window called
[--- System functions ---] .

This contains various options depending on the function of the FBox.

To activate alarm management, the parameter PCD Alarm administration (index)… must be set.



DDC 2.5 Analogue values:Sensor

⊟ General

(Name)	AHU01_SupplyAir_Temp
Reference	FuseGuard
Comment	

⊟ Adjust Parameters

⊟ System functions

Description	Sensor
PCD Offline Trending (KB)...	4
PCD Alarm administration (Inde...	-1
BACnet	Yes

⊞ Sensor

⊟ Filtering

The value 0 deactivates Alarm Management in the FBox, the value -1 automatically numbers the alarms serially and any other value defines the basic alarm index for the first alarm of the FBox. This is the same as in the original Alarm FBoxes.

The value “-1”

As the default value, and in general, we recommend automatic generation of the index, i.e. with the value “-1”.

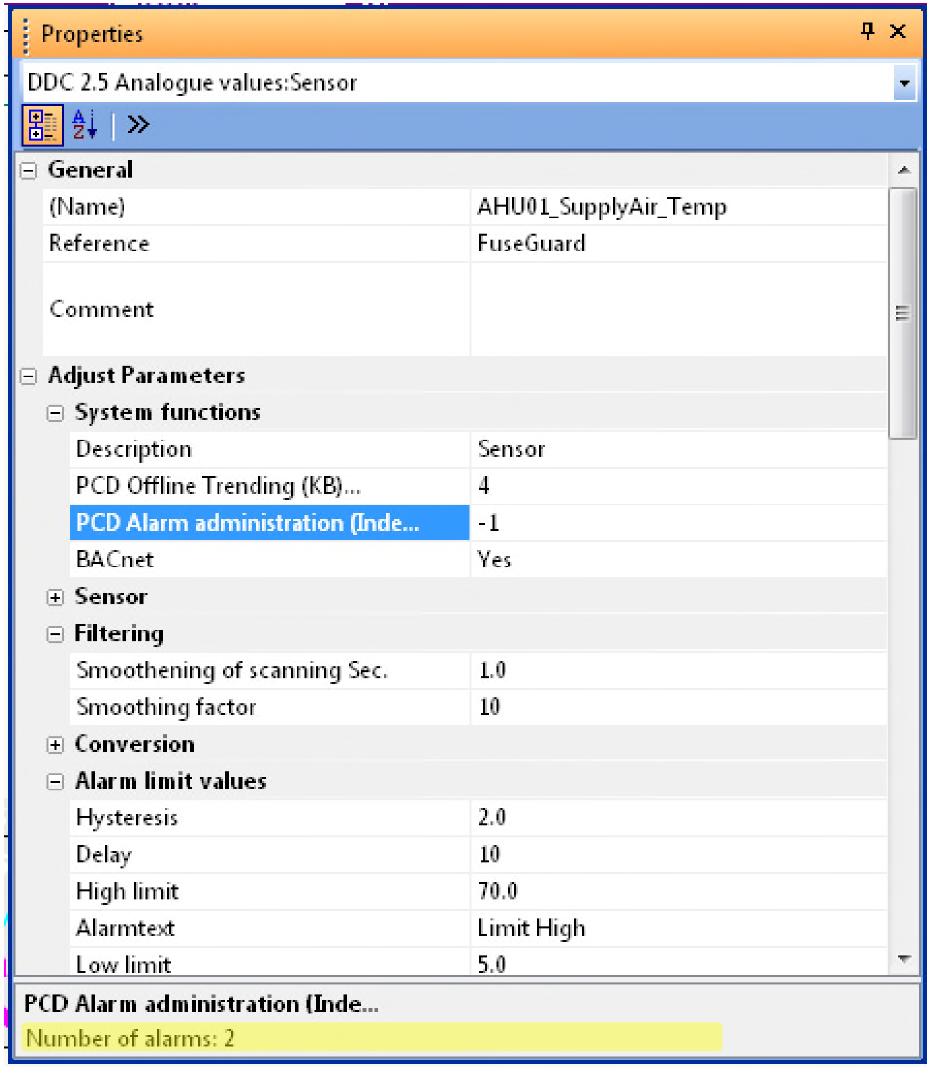
DDC Suite 2.5 / PG5 Building Advanced

SWeb Alarming

Of course, the FBoxes have different amounts of alarm information.

If you do not know how many alarms the FBox manages, click on the text PCD Alarm administration (Index)… to show how many parameters are evaluated.

Press F2 (Build) and open the alarm list DDC_Alarming.csv



Properties

DDC 2.5 Analogue values:Sensor

General	
(Name)	AHU01_SupplyAir_Temp
Reference	FuseGuard
Comment	
Adjust Parameters	
System functions	
Description	Sensor
PCD Offline Trending (KB)...	4
PCD Alarm administration (Inde...	-1
BACnet	Yes
Sensor	
Filtering	
Smoothening of scanning Sec.	1.0
Smoothing factor	10
Conversion	
Alarm limit values	
Hysteresis	2.0
Delay	10
High limit	70.0
Alarmtext	Limit High
Low limit	5.0

PCD Alarm administration (Inde...

Number of alarms: 2

DDC Suite 2.5 / PG5 Building Advanced

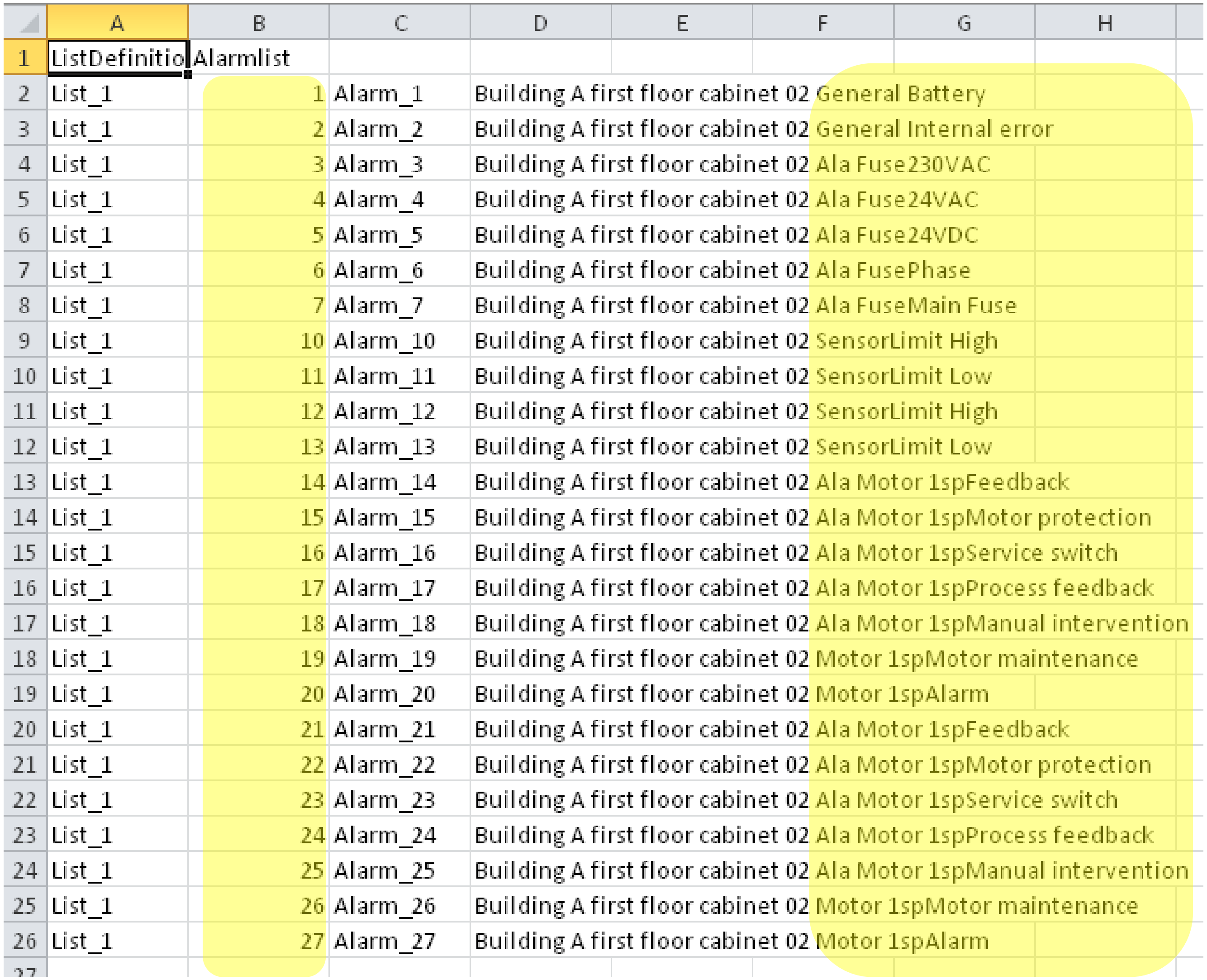
SWeb Alarming

What we find out:

Between index number 7 and 10 there is a gap due to our Alarm Hdr FBox.

Otherwise everything has been perfectly numbered.

The alarm texts are in English...



	A	B	C	D	E	F	G	H
1	ListDefinitio	Alarmlist						
2	List_1	1	Alarm_1	Building A first floor cabinet 02 General Battery				
3	List_1	2	Alarm_2	Building A first floor cabinet 02 General Internal error				
4	List_1	3	Alarm_3	Building A first floor cabinet 02 Ala Fuse230VAC				
5	List_1	4	Alarm_4	Building A first floor cabinet 02 Ala Fuse24VAC				
6	List_1	5	Alarm_5	Building A first floor cabinet 02 Ala Fuse24VDC				
7	List_1	6	Alarm_6	Building A first floor cabinet 02 Ala FusePhase				
8	List_1	7	Alarm_7	Building A first floor cabinet 02 Ala FuseMain Fuse				
9	List_1	10	Alarm_10	Building A first floor cabinet 02 SensorLimit High				
10	List_1	11	Alarm_11	Building A first floor cabinet 02 SensorLimit Low				
11	List_1	12	Alarm_12	Building A first floor cabinet 02 SensorLimit High				
12	List_1	13	Alarm_13	Building A first floor cabinet 02 SensorLimit Low				
13	List_1	14	Alarm_14	Building A first floor cabinet 02 Ala Motor 1spFeedback				
14	List_1	15	Alarm_15	Building A first floor cabinet 02 Ala Motor 1spMotor protection				
15	List_1	16	Alarm_16	Building A first floor cabinet 02 Ala Motor 1spService switch				
16	List_1	17	Alarm_17	Building A first floor cabinet 02 Ala Motor 1spProcess feedback				
17	List_1	18	Alarm_18	Building A first floor cabinet 02 Ala Motor 1spManual intervention				
18	List_1	19	Alarm_19	Building A first floor cabinet 02 Motor 1spMotor maintenance				
19	List_1	20	Alarm_20	Building A first floor cabinet 02 Motor 1spAlarm				
20	List_1	21	Alarm_21	Building A first floor cabinet 02 Ala Motor 1spFeedback				
21	List_1	22	Alarm_22	Building A first floor cabinet 02 Ala Motor 1spMotor protection				
22	List_1	23	Alarm_23	Building A first floor cabinet 02 Ala Motor 1spService switch				
23	List_1	24	Alarm_24	Building A first floor cabinet 02 Ala Motor 1spProcess feedback				
24	List_1	25	Alarm_25	Building A first floor cabinet 02 Ala Motor 1spManual intervention				
25	List_1	26	Alarm_26	Building A first floor cabinet 02 Motor 1spMotor maintenance				
26	List_1	27	Alarm_27	Building A first floor cabinet 02 Motor 1spAlarm				
27								

DDC Suite 2.5 / PG5 Building Advanced

SWeb Alarming

As an example, let's take the AlaMotor FBoxes and check the alarm texts:

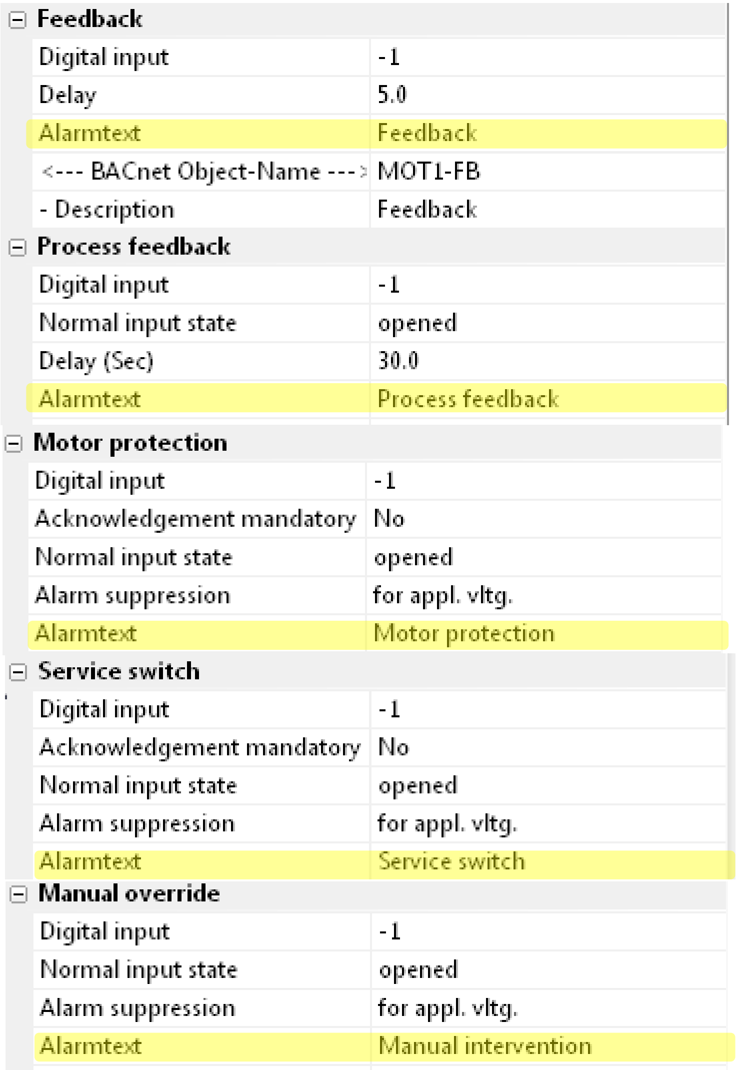
Feedback

Process feedback

Motor protection

Service switch

Manual intervention



⊟ **Feedback**	
Digital input	-1
Delay	5.0
Alarmtext	Feedback
<--- BACnet Object-Name --->	MOT1-FB
- Description	Feedback
⊟ **Process feedback**	
Digital input	-1
Normal input state	opened
Delay (Sec)	30.0
Alarmtext	Process feedback
⊟ **Motor protection**	
Digital input	-1
Acknowledgement mandatory	No
Normal input state	opened
Alarm suppression	for appl. vltg.
Alarmtext	Motor protection
⊟ **Service switch**	
Digital input	-1
Acknowledgement mandatory	No
Normal input state	opened
Alarm suppression	for appl. vltg.
Alarmtext	Service switch
⊟ **Manual override**	
Digital input	-1
Normal input state	opened
Alarm suppression	for appl. vltg.
Alarmtext	Manual intervention

DDC Suite 2.5 / PG5 Building Advanced

SWeb Alarming

We also want to modify the PCS for our ventilation system programme.

Instead of:

"Building A first floor cabinet 02 ...."

The new PCS should be called:

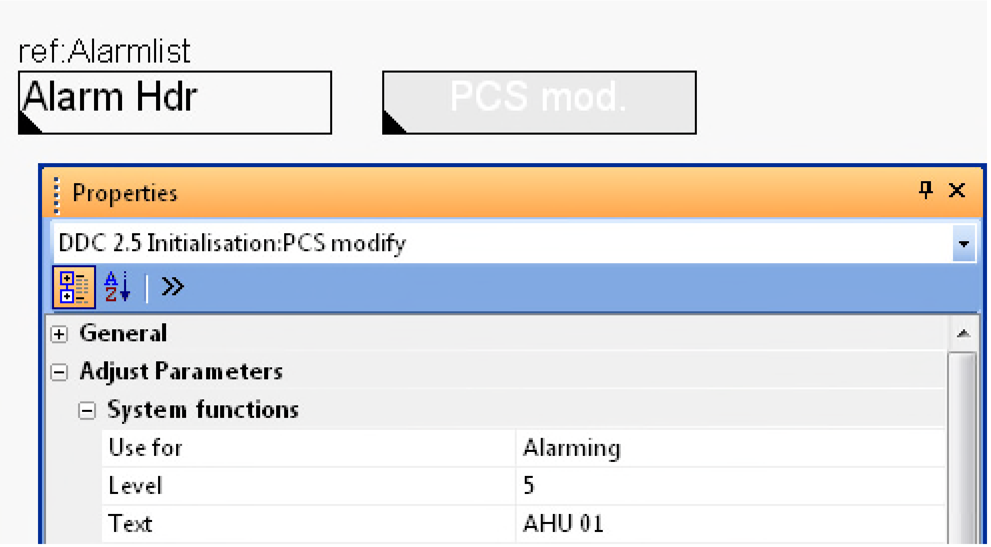
"Building A first floor cabinet 02 AHU 01"

To do this, we modify an PCS FBox and place it on page 1 of the COB's system.

Use for: Alarming

Level: 5 (in PCS)

Text: AHU 01



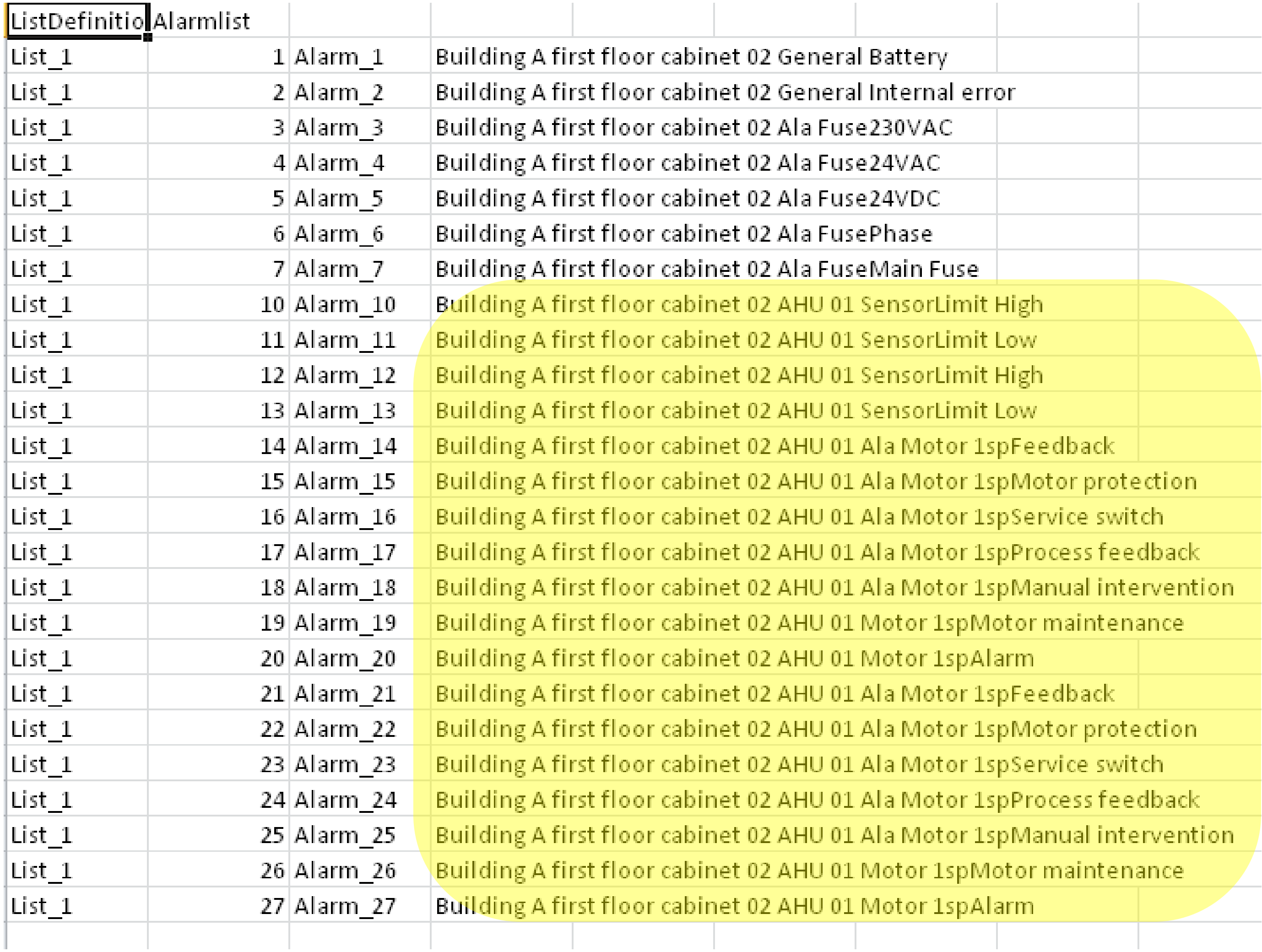
DDC 2.5 Initialisation:PCS modify

Use for	Alarming
Level	5
Text	AHU 01

DDC Suite 2.5 / PG5 Building Advanced

SWeb Alarming

Build the project and open the DDC_Alarming.csv again. From the alarm index 10, we have now AHU 01 in the PCS. Everything is fine…



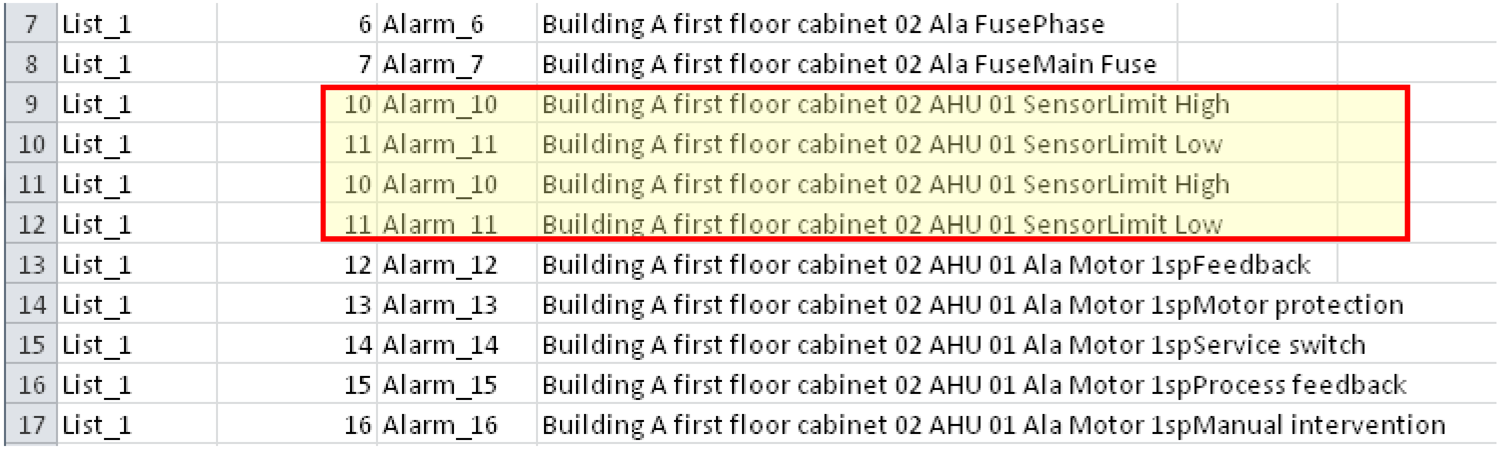
ListDefinitio	Alarmlist		
List_1	1	Alarm_1	Building A first floor cabinet 02 General Battery
List_1	2	Alarm_2	Building A first floor cabinet 02 General Internal error
List_1	3	Alarm_3	Building A first floor cabinet 02 Ala Fuse230VAC
List_1	4	Alarm_4	Building A first floor cabinet 02 Ala Fuse24VAC
List_1	5	Alarm_5	Building A first floor cabinet 02 Ala Fuse24VDC
List_1	6	Alarm_6	Building A first floor cabinet 02 Ala FusePhase
List_1	7	Alarm_7	Building A first floor cabinet 02 Ala FuseMain Fuse
List_1	10	Alarm_10	Building A first floor cabinet 02 AHU 01 SensorLimit High
List_1	11	Alarm_11	Building A first floor cabinet 02 AHU 01 SensorLimit Low
List_1	12	Alarm_12	Building A first floor cabinet 02 AHU 01 SensorLimit High
List_1	13	Alarm_13	Building A first floor cabinet 02 AHU 01 SensorLimit Low
List_1	14	Alarm_14	Building A first floor cabinet 02 AHU 01 Ala Motor 1spFeedback
List_1	15	Alarm_15	Building A first floor cabinet 02 AHU 01 Ala Motor 1spMotor protection
List_1	16	Alarm_16	Building A first floor cabinet 02 AHU 01 Ala Motor 1spService switch
List_1	17	Alarm_17	Building A first floor cabinet 02 AHU 01 Ala Motor 1spProcess feedback
List_1	18	Alarm_18	Building A first floor cabinet 02 AHU 01 Ala Motor 1spManual intervention
List_1	19	Alarm_19	Building A first floor cabinet 02 AHU 01 Motor 1spMotor maintenance
List_1	20	Alarm_20	Building A first floor cabinet 02 AHU 01 Motor 1spAlarm
List_1	21	Alarm_21	Building A first floor cabinet 02 AHU 01 Ala Motor 1spFeedback
List_1	22	Alarm_22	Building A first floor cabinet 02 AHU 01 Ala Motor 1spMotor protection
List_1	23	Alarm_23	Building A first floor cabinet 02 AHU 01 Ala Motor 1spService switch
List_1	24	Alarm_24	Building A first floor cabinet 02 AHU 01 Ala Motor 1spProcess feedback
List_1	25	Alarm_25	Building A first floor cabinet 02 AHU 01 Ala Motor 1spManual intervention
List_1	26	Alarm_26	Building A first floor cabinet 02 AHU 01 Motor 1spMotor maintenance
List_1	27	Alarm_27	Building A first floor cabinet 02 AHU 01 Motor 1spAlarm

DDC Suite 2.5 / PG5 Building Advanced

SWeb Alarming

Important features of Alarming with DDC Suite 2.5:

If the alarm index in an FBox is > 0, the alarms in this FBox will be numbered serially from this number. However, this is not compatible with the automatic numbering = duplicate assignments!



7	List_1	6	Alarm_6	Building A first floor cabinet 02 Ala FusePhase
8	List_1	7	Alarm_7	Building A first floor cabinet 02 Ala FuseMain Fuse
9	List_1	10	Alarm_10	Building A first floor cabinet 02 AHU 01 SensorLimit High
10	List_1	11	Alarm_11	Building A first floor cabinet 02 AHU 01 SensorLimit Low
11	List_1	10	Alarm_10	Building A first floor cabinet 02 AHU 01 SensorLimit High
12	List_1	11	Alarm_11	Building A first floor cabinet 02 AHU 01 SensorLimit Low
13	List_1	12	Alarm_12	Building A first floor cabinet 02 AHU 01 Ala Motor 1spFeedback
14	List_1	13	Alarm_13	Building A first floor cabinet 02 AHU 01 Ala Motor 1spMotor protection
15	List_1	14	Alarm_14	Building A first floor cabinet 02 AHU 01 Ala Motor 1spService switch
16	List_1	15	Alarm_15	Building A first floor cabinet 02 AHU 01 Ala Motor 1spProcess feedback
17	List_1	16	Alarm_16	Building A first floor cabinet 02 AHU 01 Ala Motor 1spManual intervention

The name text of the Alarm Hdr FBox always takes priority in the AKS, but, in our example, it is overwritten with the second Alarm Hdr without any name text.

If the alarms of an FBox are not to be generated, you can simply enter the index “0”.

Using the alarm texts in SWeb

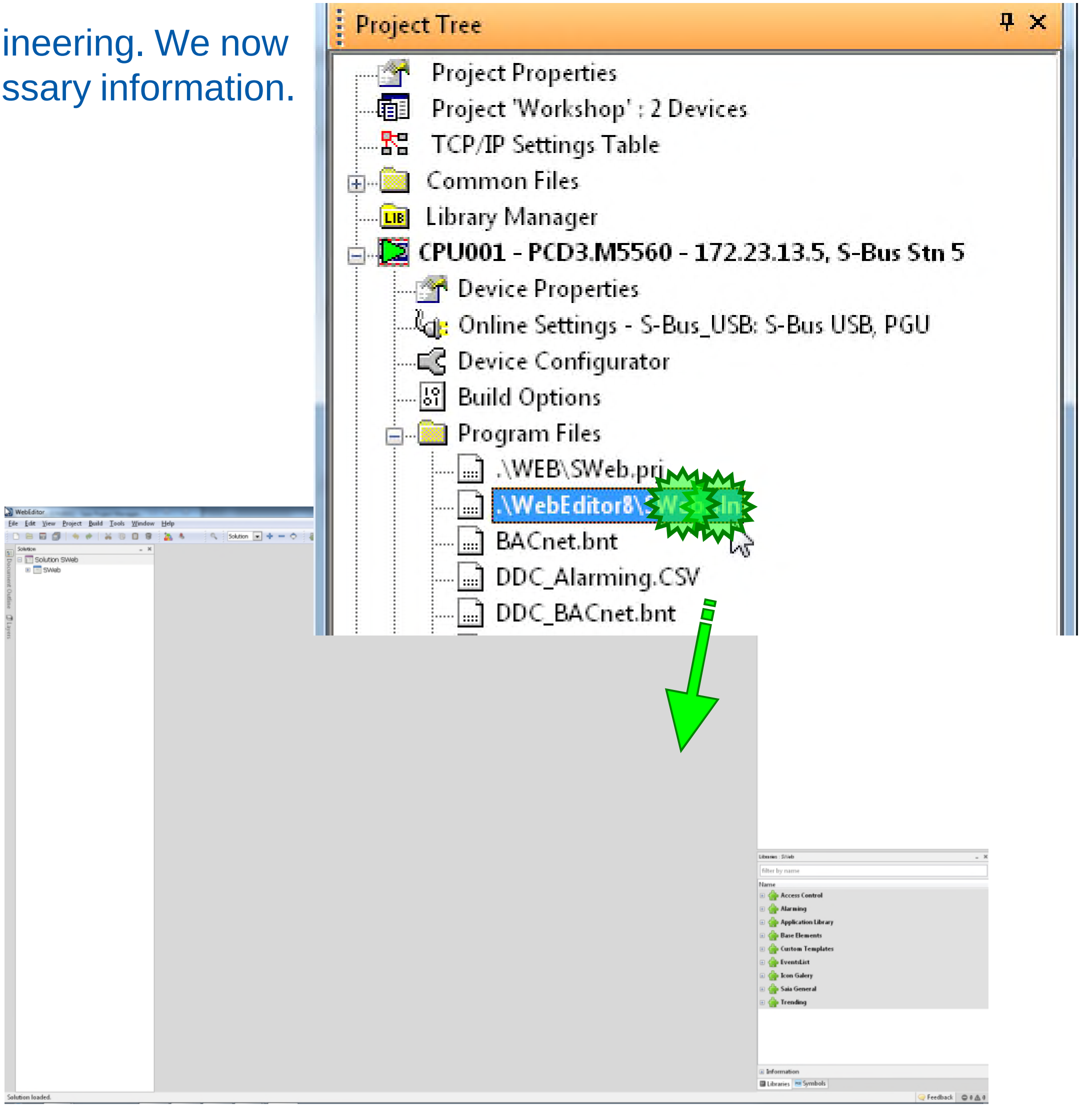
SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

SWeb Alarming

OK - let’s move on to SWeb Engineering. We now have a CSV file with all the necessary information.

Open the S-Web Editor 8:



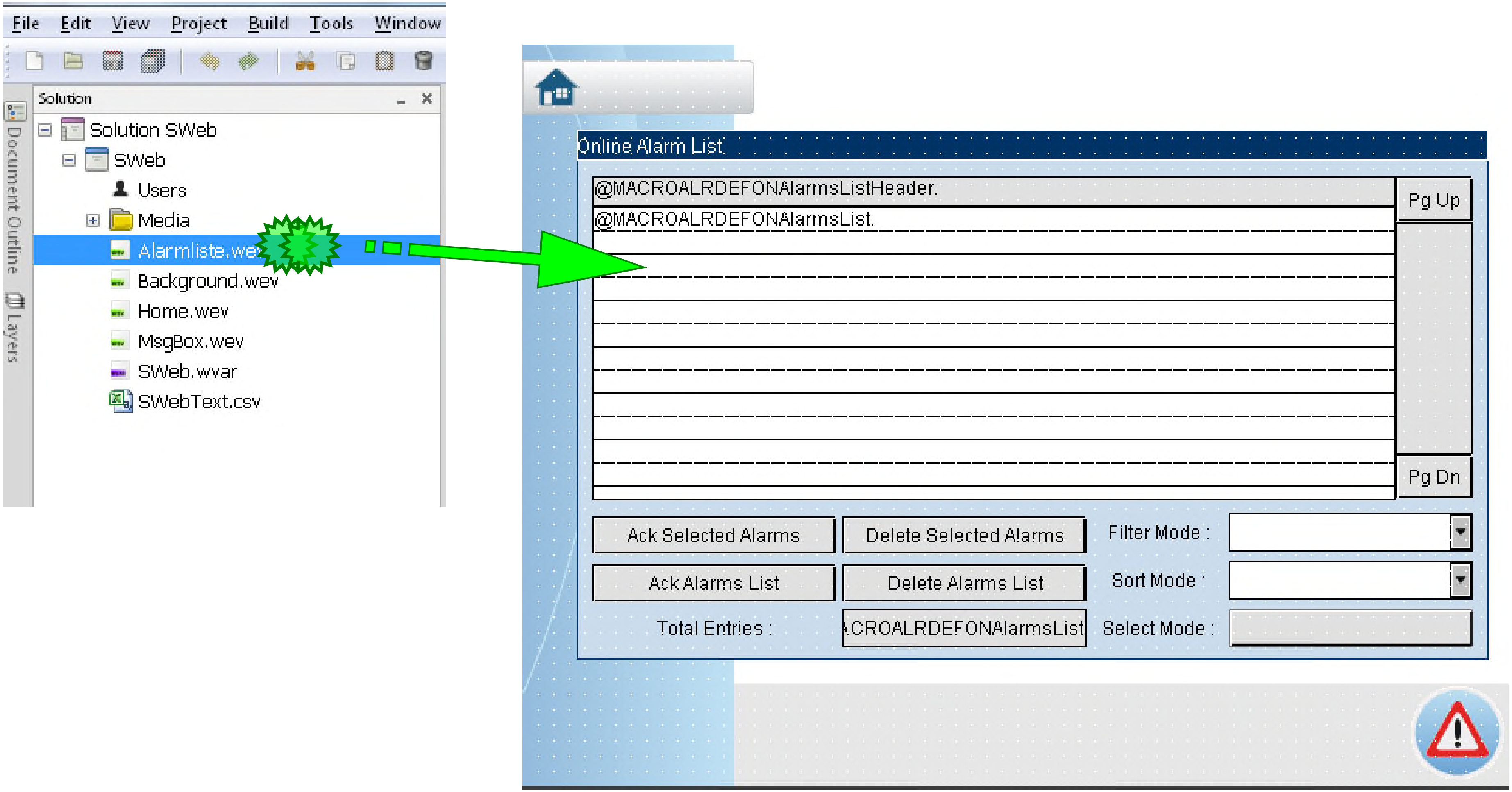
Project Tree

- Project Properties
- Project 'Workshop' : 2 Devices
- TCP/IP Settings Table
- Common Files
- Library Manager
- CPU001 - PCD3.M5560 - 172.23.13.5, S-Bus Stn 5
  - Device Properties
  - Online Settings - S-Bus_USB: S-Bus USB, PGU
  - Device Configurator
  - Build Options
  - Program Files
    - .\WEB\SWeb.prj
    - .\WebEditor8\SWeb.in
    - BACnet.bnt
    - DDC_Alarming.CSV
    - DDC_BACnet.bnt

DDC Suite 2.5 / PG5 Building Advanced

SWeb Alarming

In Solution, double-click on Alarmliste.wev to open a page with the prepared macro.



@MACROALRDEFONAlarmsListHeader.

@MACROALRDEFONAlarmsList.

ACROALRDEFONAlarmsList

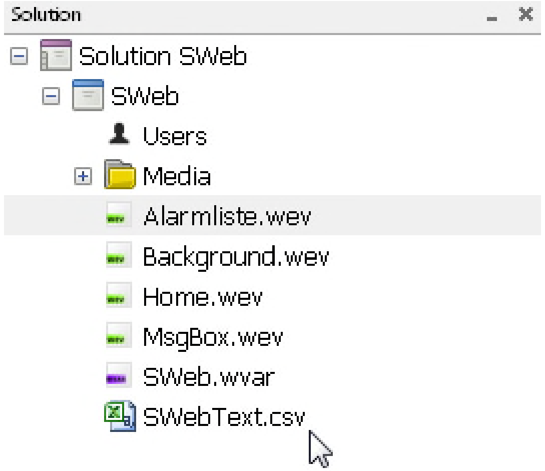
DDC Suite 2.5 / PG5 Building Advanced

SWeb Alarming

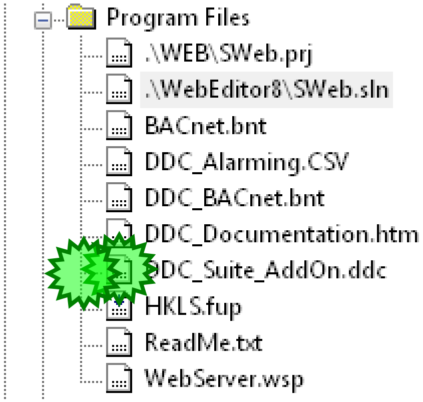
This SWebText.csv file in Solution is the file that contains all texts for the web project. It can, of course, be available multiple times if it is a multilingual project.

We must now overwrite the DDC_Alarming.csv file in the SWebText.csv file. This is done for us by the AddOn tool.

Close the WebEditor again and open the AddOn tool by double-clicking on the AddOnTool.ddc file in the Project Manager.



Solution
- Solution SWeb
  - SWeb
    - Users
    - Media
    - Alarmliste.wev
    - Background.wev
    - Home.wev
    - MsgBox.wev
    - SWeb.wvar
    - SWebText.csv



- Program Files
  - .\WEB\SWeb.prj
  - .\WebEditor8\SWeb.sln
  - BACnet.bnt
  - DDC_Alarming.CSV
  - DDC_BACnet.bnt
  - DDC_Documentation.htm
  - DDC_Suite_AddOn.ddc
  - HKLS.fup
  - ReadMe.txt
  - WebServer.wsp

DDC Suite 2.5 / PG5 Building Advanced

SWeb Alarming

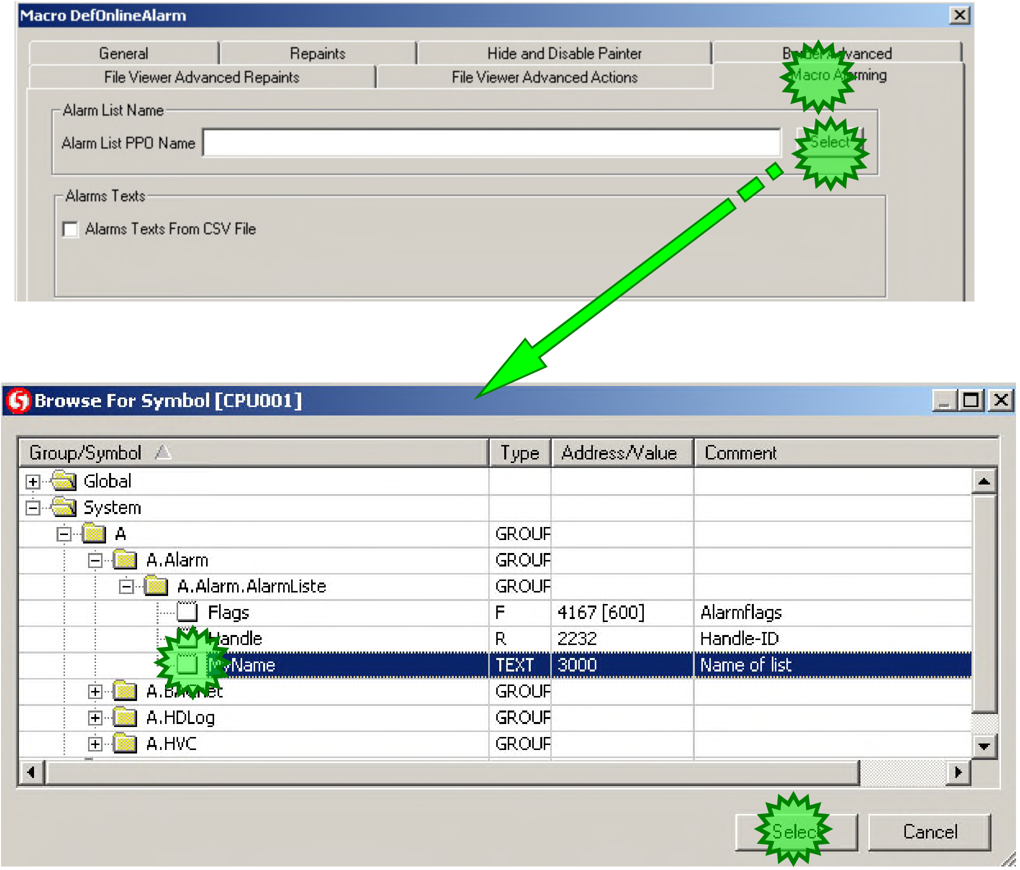
In the Macro DefOnlineAlarm dialogue, activate the Macro Alarming tab.

First, we have to define which alarm list we wish to display in this window. To do this, click on the Select key next to the Alarm List PPO Name parameter.

From the group

- System
- System.A
- System.A.Alarm
- System.A.Alarm.AlarmListe

Select the entry MyName and end with the Select key.



Macro DefOnlineAlarm

Alarm List Name

Alarm List PPO Name

Alarms Texts

□ Alarms Texts From CSV File

Browse For Symbol [CPU001]

Group/Symbol	Type	Address/Value	Comment
Global			
System			
A	GROUP		
A.Alarm	GROUP		
A.Alarm.AlarmListe	GROUP		
Flags	F	4167 [600]	Alarmflags
Handle	R	2232	Handle-ID
MyName	TEXT	3000	Name of list
A.B[illegible]et	GROUP		
A.HDLog	GROUP		
A.HVC	GROUP		

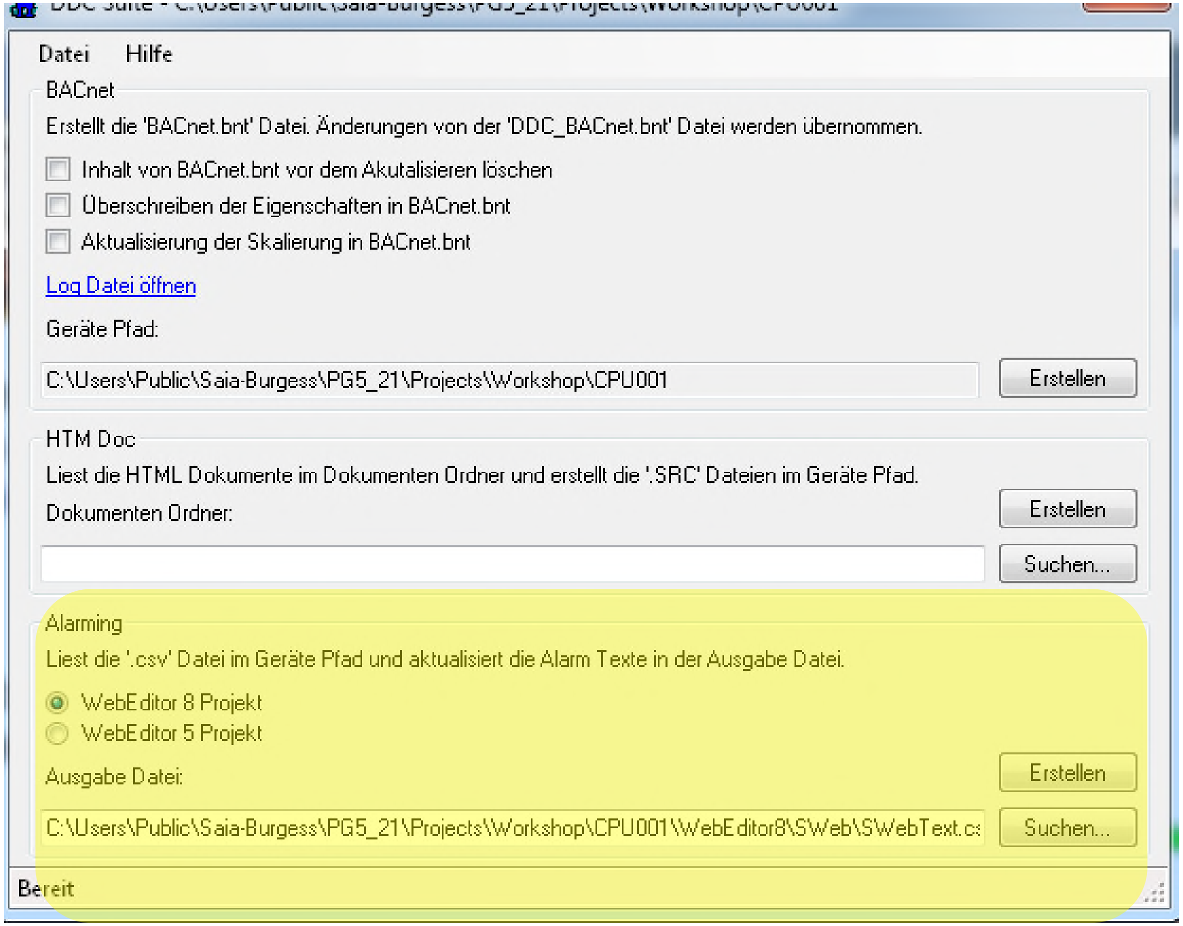
DDC Suite 2.5 / PG5 Building Advanced

SWeb Alarming

The bottom part of this tool is for alarming.

First select the correct web project, i.e. WebEditor 8 in our case. The path refers to the SWebText.csv file from our web project.

Now click on Erstellen to transfer the alarm texts.


DDC Suite - C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop\CPU001
Datei
Hilfe
Erstellen
Erstellen
Suchen...
Erstellen
Suchen...

BACnet

Erstellt die 'BACnet.bnt' Datei. Änderungen von der 'DDC_BACnet.bnt' Datei werden übernommen.

☐ Inhalt von BACnet.bnt vor dem Akutalisieren löschen
☐ Überschreiben der Eigenschaften in BACnet.bnt
☐ Aktualisierung der Skalierung in BACnet.bnt

Log Datei öffnen

Geräte Pfad:

C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop\CPU001

HTM Doc

Liest die HTML Dokumente im Dokumenten Ordner und erstellt die '.SRC' Dateien im Geräte Pfad.

Dokumenten Ordner:

Alarming

Liest die '.csv' Datei im Geräte Pfad und aktualisiert die Alarm Texte in der Ausgabe Datei.

● WebEditor 8 Projekt
○ WebEditor 5 Projekt

Ausgabe Datei:

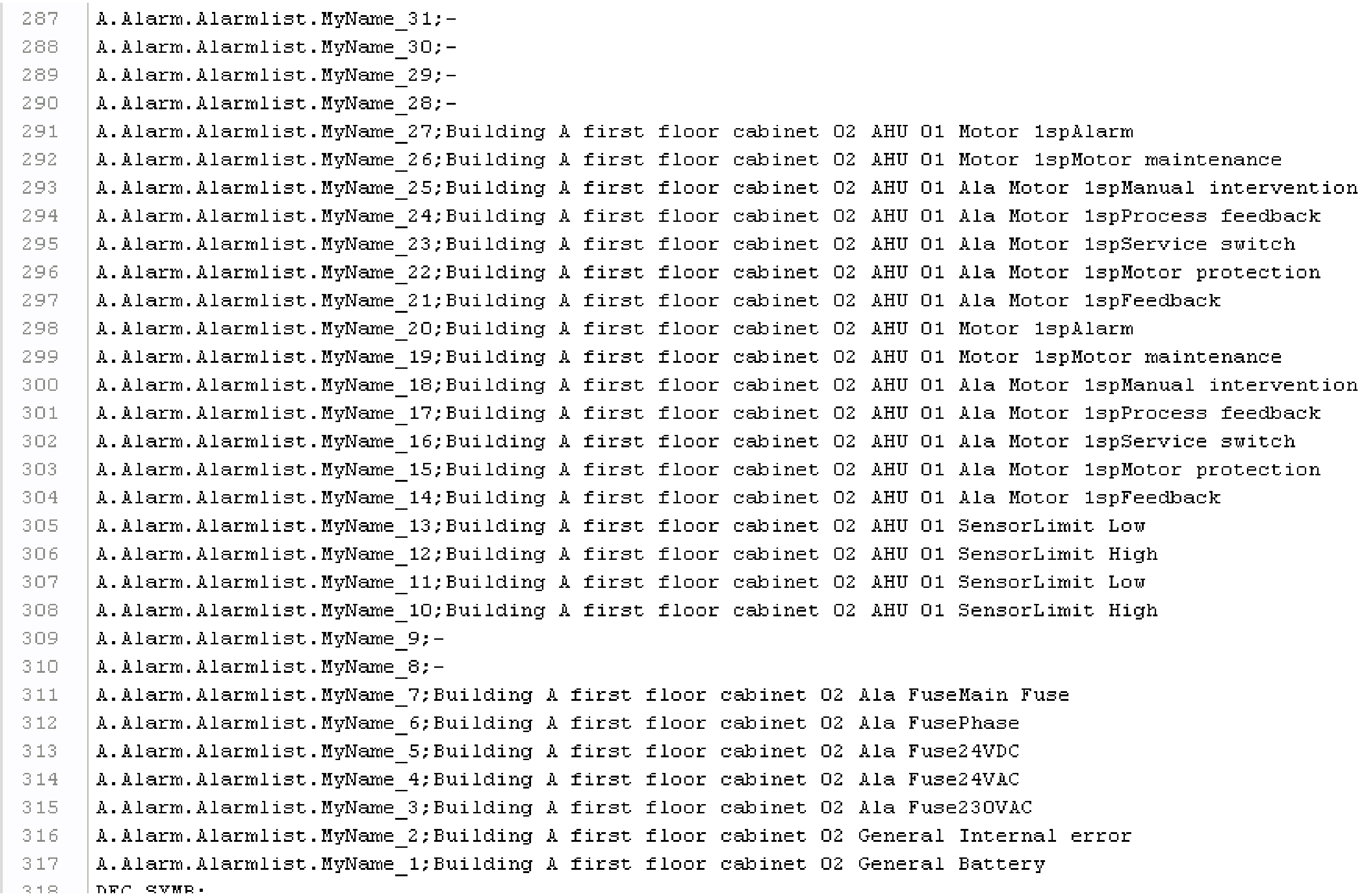
C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop\CPU001\WebEditor8\SWeb\SWebText.cs

Bereit

DDC Suite 2.5 / PG5 Building Advanced

SWeb Alarming

Here is an extract from the file. The texts have been transferred correctly, together with the generated gaps. Further use of the Alarming macro is dealt with in the Web Editor course.



```
A.Alarm.Alarmlist.MyName_31;-
A.Alarm.Alarmlist.MyName_30;-
A.Alarm.Alarmlist.MyName_29;-
A.Alarm.Alarmlist.MyName_28;-
A.Alarm.Alarmlist.MyName_27;Building A first floor cabinet 02 AHU 01 Motor 1spAlarm
A.Alarm.Alarmlist.MyName_26;Building A first floor cabinet 02 AHU 01 Motor 1spMotor maintenance
A.Alarm.Alarmlist.MyName_25;Building A first floor cabinet 02 AHU 01 Ala Motor 1spManual intervention
A.Alarm.Alarmlist.MyName_24;Building A first floor cabinet 02 AHU 01 Ala Motor 1spProcess feedback
A.Alarm.Alarmlist.MyName_23;Building A first floor cabinet 02 AHU 01 Ala Motor 1spService switch
A.Alarm.Alarmlist.MyName_22;Building A first floor cabinet 02 AHU 01 Ala Motor 1spMotor protection
A.Alarm.Alarmlist.MyName_21;Building A first floor cabinet 02 AHU 01 Ala Motor 1spFeedback
A.Alarm.Alarmlist.MyName_20;Building A first floor cabinet 02 AHU 01 Motor 1spAlarm
A.Alarm.Alarmlist.MyName_19;Building A first floor cabinet 02 AHU 01 Motor 1spMotor maintenance
A.Alarm.Alarmlist.MyName_18;Building A first floor cabinet 02 AHU 01 Ala Motor 1spManual intervention
A.Alarm.Alarmlist.MyName_17;Building A first floor cabinet 02 AHU 01 Ala Motor 1spProcess feedback
A.Alarm.Alarmlist.MyName_16;Building A first floor cabinet 02 AHU 01 Ala Motor 1spService switch
A.Alarm.Alarmlist.MyName_15;Building A first floor cabinet 02 AHU 01 Ala Motor 1spMotor protection
A.Alarm.Alarmlist.MyName_14;Building A first floor cabinet 02 AHU 01 Ala Motor 1spFeedback
A.Alarm.Alarmlist.MyName_13;Building A first floor cabinet 02 AHU 01 SensorLimit Low
A.Alarm.Alarmlist.MyName_12;Building A first floor cabinet 02 AHU 01 SensorLimit High
A.Alarm.Alarmlist.MyName_11;Building A first floor cabinet 02 AHU 01 SensorLimit Low
A.Alarm.Alarmlist.MyName_10;Building A first floor cabinet 02 AHU 01 SensorLimit High
A.Alarm.Alarmlist.MyName_9;-
A.Alarm.Alarmlist.MyName_8;-
A.Alarm.Alarmlist.MyName_7;Building A first floor cabinet 02 Ala FuseMain Fuse
A.Alarm.Alarmlist.MyName_6;Building A first floor cabinet 02 Ala FusePhase
A.Alarm.Alarmlist.MyName_5;Building A first floor cabinet 02 Ala Fuse24VDC
A.Alarm.Alarmlist.MyName_4;Building A first floor cabinet 02 Ala Fuse24VAC
A.Alarm.Alarmlist.MyName_3;Building A first floor cabinet 02 Ala Fuse230VAC
A.Alarm.Alarmlist.MyName_2;Building A first floor cabinet 02 General Internal error
A.Alarm.Alarmlist.MyName_1;Building A first floor cabinet 02 General Battery
DEC SYMB:
```

DDC Suite 2.5 / PG5 Building Advanced BACnet

SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

BACnet

What is BACnet?

- BACnet stands for **B**uilding **A**utomation and **C**ontrol **net**work

- BACnet is a data protocol for the exchange of data between different systems and devices in building automation

- BACnet describes the representation of objects and their interaction with other objects, not their inner function

- BACnet is a registered trademark of ASHRAE

- BACnet supports many network standards and topologies, incl. Internet protocol (BACnet/IP)

- BACnet does not require any licence fees

DDC Suite 2.5 / PG5 Building Advanced

BACnet

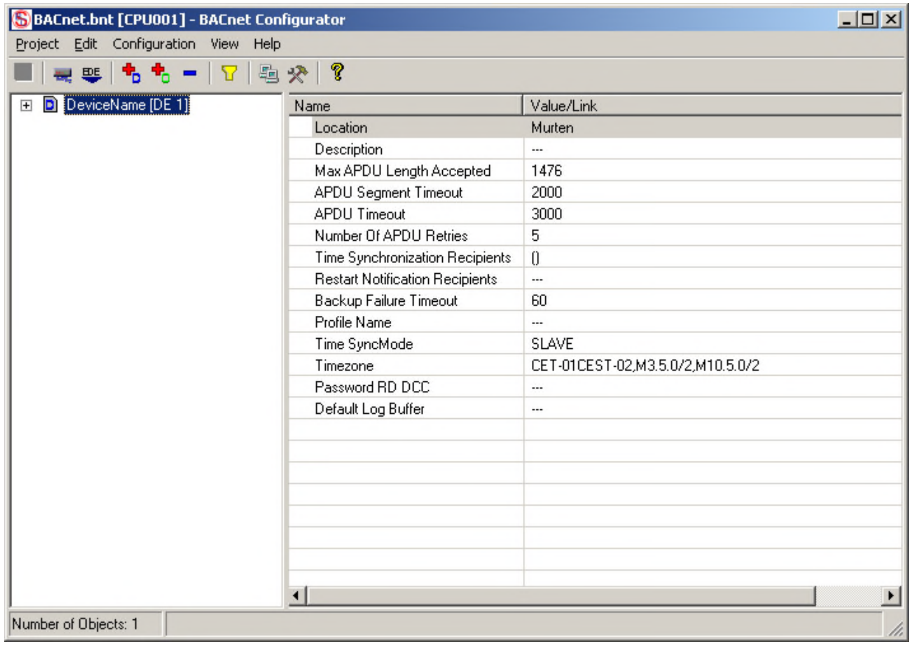
BACnet is edited using the PG5 BACnet Configurator.

This tool helps you in creating BACnet objects and mapping from PCD resources to BACnet objects.

However, you need to know which resources are to be mapped to which BACnet object, and when this is done, what has to be done with it in Fupla?

BACnet is not a transport protocol, such as S-Bus or Modbus. BACnet is a function which must be learned by the programmer. However, it takes a long time to learn BACnet and to specialise in BACnet.

DDC Suite does this for you – you yourself do not have to “struggle” with the inner workings of BACnet.



Name	Value/Link
Location	Murten
Description	---
Max APDU Length Accepted	1476
APDU Segment Timeout	2000
APDU Timeout	3000
Number Of APDU Retries	5
Time Synchronization Recipients	()
Restart Notification Recipients	---
Backup Failure Timeout	60
Profile Name	---
Time SyncMode	SLAVE
Timezone	CET-01CEST-02,M3.5.0/2,M10.5.0/2
Password RD DCC	---
Default Log Buffer	---

BACnet with DDC Suite
Use

SAIA BURGESS CONTROLS

BACnet - General

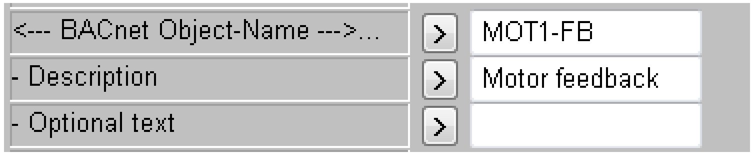
There are new parameters in the FBoxes, so you can generate BACnet objects directly from FUPLA.

These areas each begin with:

<--- BACnet Object Name --->

After the online value (e.g. physical value (corrected)), you will find the corresponding parameter.

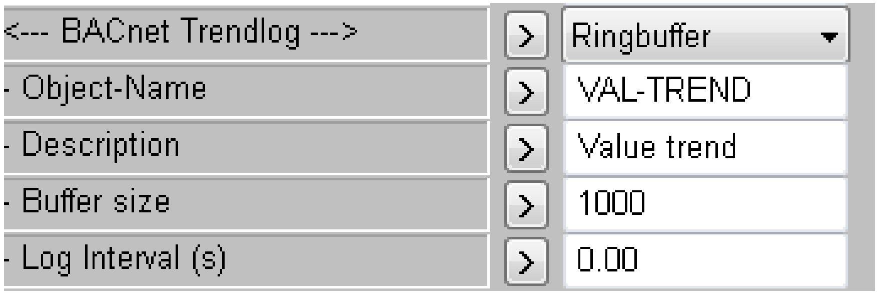
All properties that belong to the BACnet objects are marked at the beginning with “-...”.



<--- BACnet Object-Name --->...	>	MOT1-FB
- Description	>	Motor feedback
- Optional text	>	

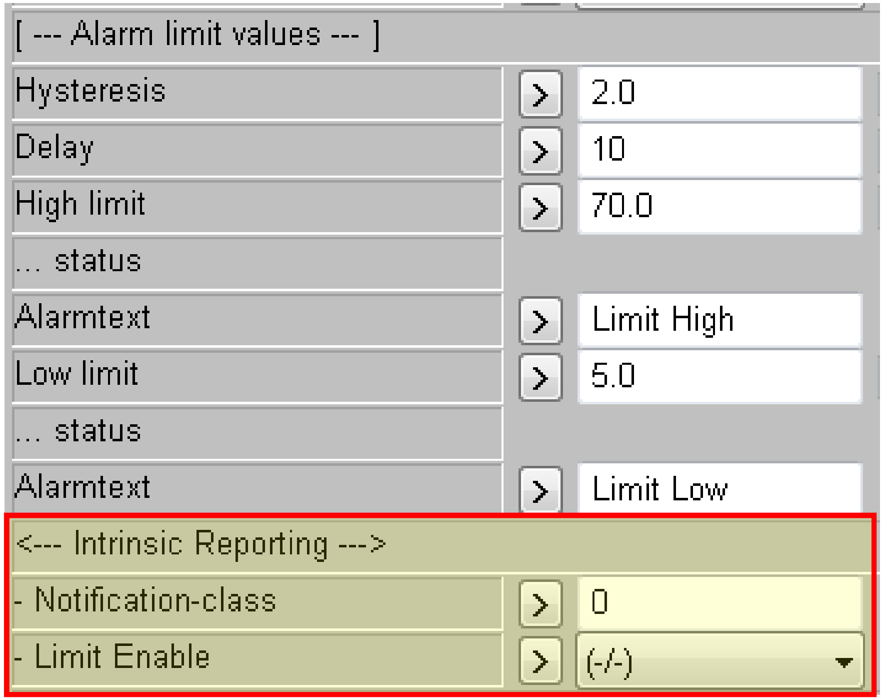
BACnet - General

If the FBox supports Intrinsic Reporting or Trendlog, you will find the corresponding parameters for them.



<--- BACnet Trendlog --->	Ringbuffer
- Object-Name	VAL-TREND
- Description	Value trend
- Buffer size	1000
- Log Interval (s)	0.00

Sometimes BACnet parameters apply to several online values (e.g. Intrinsic Reporting for several notifications). If this is the case, these parameters are positioned at the end of the list.



[--- Alarm limit values ---]	
Hysteresis	2.0
Delay	10
High limit	70.0
... status	
Alarmtext	Limit High
Low limit	5.0
... status	
Alarmtext	Limit Low
<--- Intrinsic Reporting --->	
- Notification-class	0
- Limit Enable	(-/-)

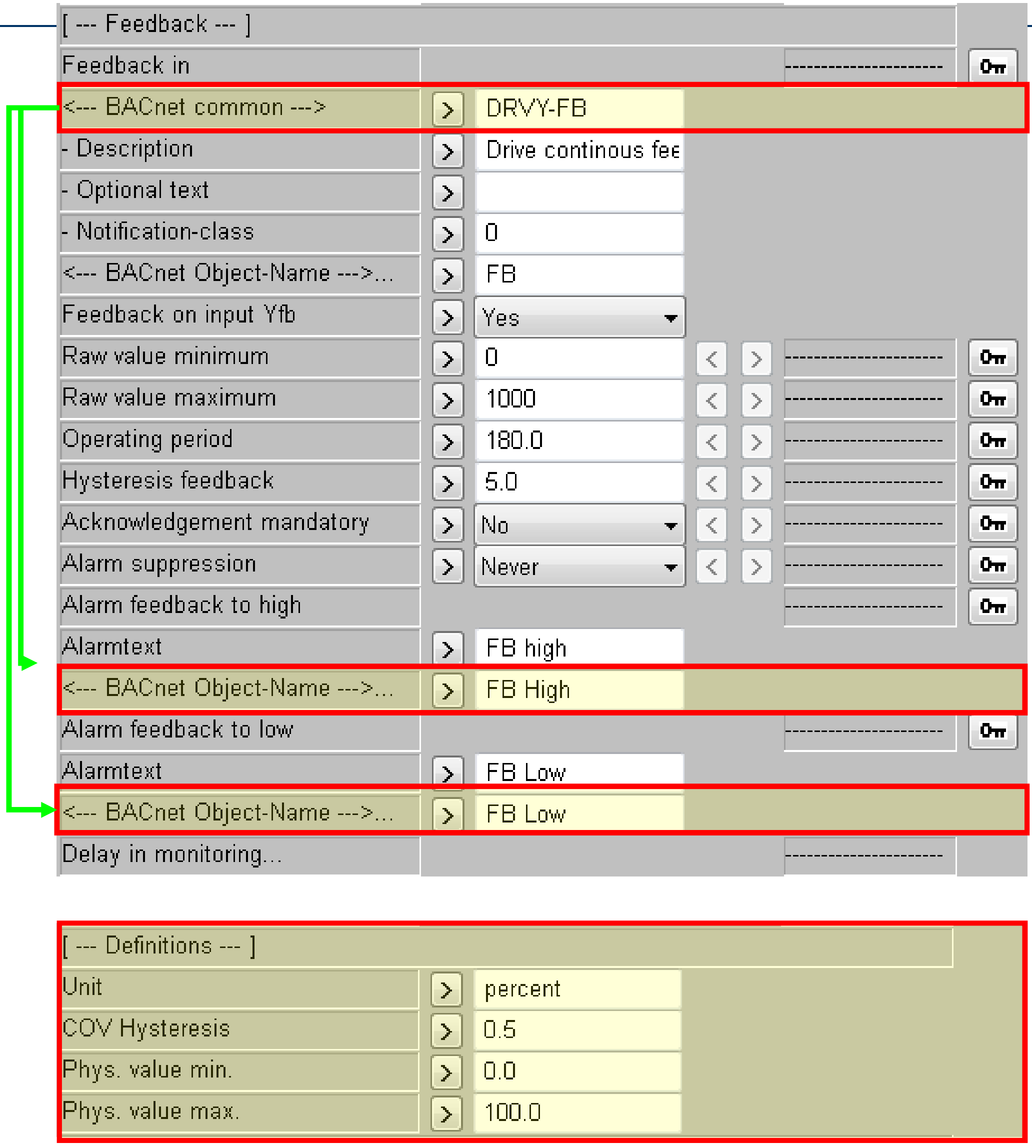
BACnet - General

In some cases, several objects are generated from one FBox. Then only the Alarm text parameter is located under the corresponding online value.

The resulting BACnet object name is then a combination of the BACnet definition and the alarm text.

Several parameters, such as the unit, the COV hysteresis and the limit values are available for every object that is generated by this FBox. (If several BACnet objects are generated...)

These are located at the end of the list.



[--- Feedback ---]	
Feedback in	
<--- BACnet common --->	DRVY-FB
- Description	Drive continous fee
- Optional text	
- Notification-class	0
<--- BACnet Object-Name --->...	FB
Feedback on input Yfb	Yes
Raw value minimum	0
Raw value maximum	1000
Operating period	180.0
Hysteresis feedback	5.0
Acknowledgement mandatory	No
Alarm suppression	Never
Alarm feedback to high	
Alarmtext	FB high
<--- BACnet Object-Name --->...	FB High
Alarm feedback to low	
Alarmtext	FB Low
<--- BACnet Object-Name --->...	FB Low
Delay in monitoring...	

[--- Definitions ---]	
Unit	percent
COV Hysteresis	0.5
Phys. value min.	0.0
Phys. value max.	100.0

PCS for BACnet

SAIA BURGESS CONTROLS

Plant Coding System (PCS)

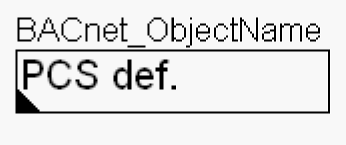
We use the same application for the BACnet object names as in AKS for SWeb Alarming.

Two “PCS def” FBoxes are prepared on the BACnet page.

1. “BACnet – ON” (=ObjectName). The BACnet object name is an AKS with the short form of the name of the hardware used. It can contain numbers, letters and special characters but no spaces

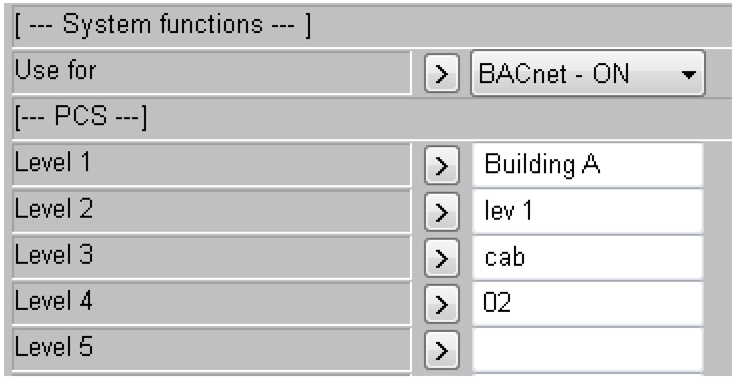
2. “BACnet – D” (=Description) The description can contain any text corresponding to the selected AKS.

Note: Do not use any “<” and “>” characters. This problem will be eliminated with a future PG5 version.

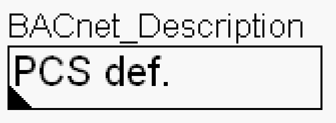


BACnet_ObjectName

PCS def.

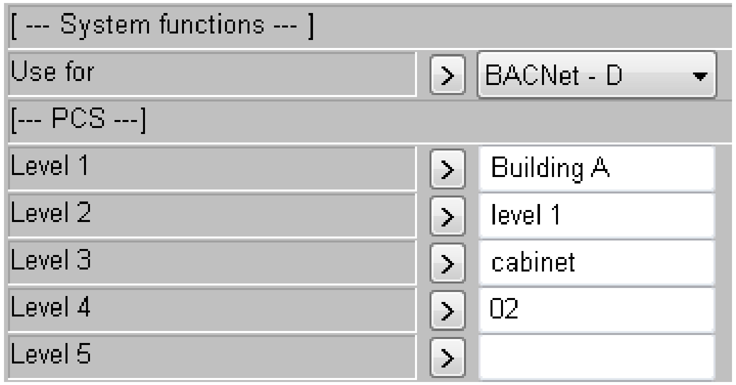


[--- System functions ---]	
Use for	BACnet - ON
[--- PCS ---]	
Level 1	Building A
Level 2	lev 1
Level 3	cab
Level 4	02
Level 5	



BACnet_Description

PCS def.

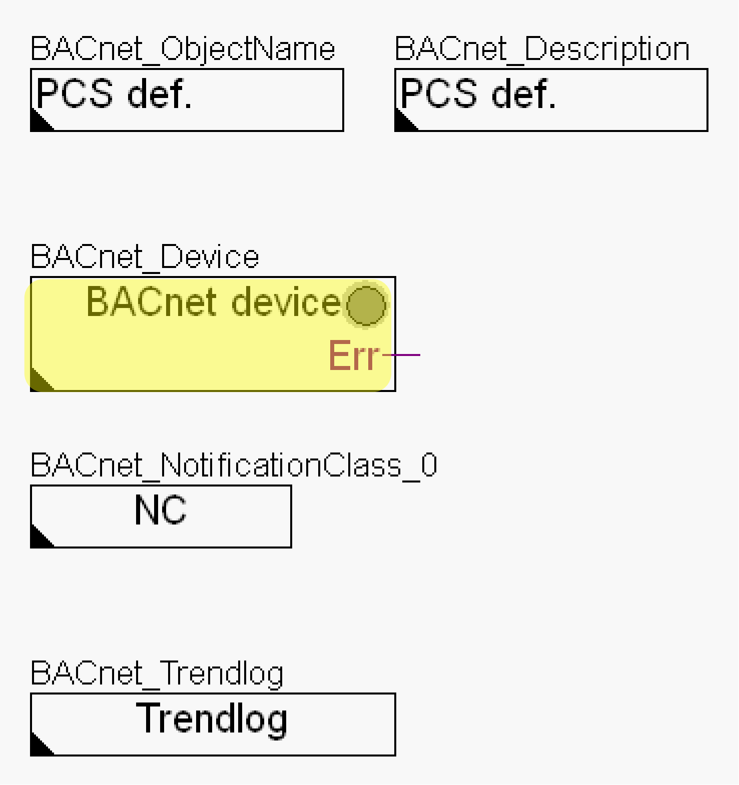


[--- System functions ---]	
Use for	BACNet - D
[--- PCS ---]	
Level 1	Building A
Level 2	level 1
Level 3	cabinet
Level 4	02
Level 5	

DDC Suite 2.5 / PG5 Building Advanced

BACnet

The third page (Initialisation; BACnet) contains the BACnet Device FBox. This FBox can be found in the DDC BACnet FBox family and must be positioned once in the programme.



Systems Identification System (AKS)

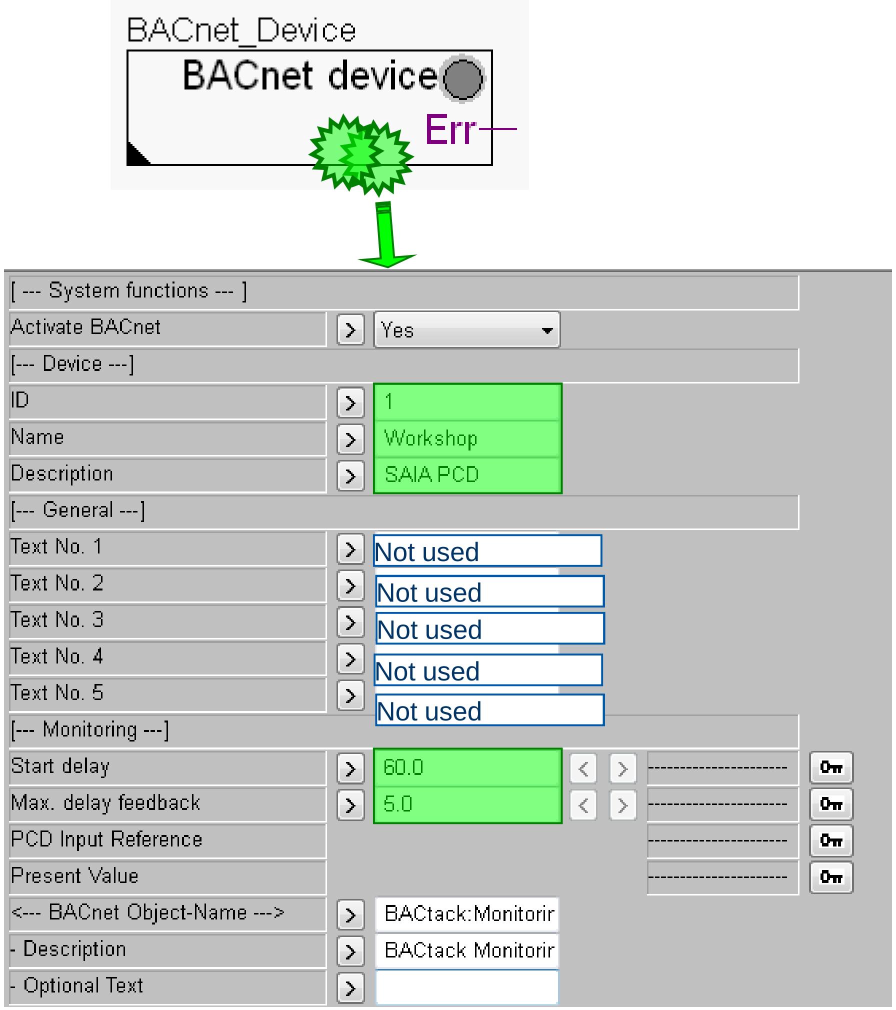
1. The function is almost the same as in the old version, except that the Device Name can now be defined without any constraints.

Change the name to Workshop_BACnet and the description to Saia PCD

2. The parameters “1. Text” to “5. Text” are still not used.

3. The BACnet Stack is now monitored. The start delay is the waiting time after a restart of the PCD until the stack is monitored.

4. The max. response time monitors the work of the BACnet stack. If, for example, the PCDInRef is switched for a BI object, the Present Value must be within this time. If this is not the case, the output error of the BACnet Device FBox will be set and all BACnet objects independently copy their PCDInRef to their present value.



[--- System functions ---]	
Activate BACnet	Yes
[--- Device ---]	
ID	1
Name	Workshop
Description	SAIA PCD
[--- General ---]	
Text No. 1	Not used
Text No. 2	Not used
Text No. 3	Not used
Text No. 4	Not used
Text No. 5	Not used
[--- Monitoring ---]	
Start delay	60.0
Max. delay feedback	5.0
PCD Input Reference	
Present Value	
<--- BACnet Object-Name --->	BACtack:Monitorir
- Description	BACtack Monitorir
- Optional Text	

Systems Identification System (AKS)

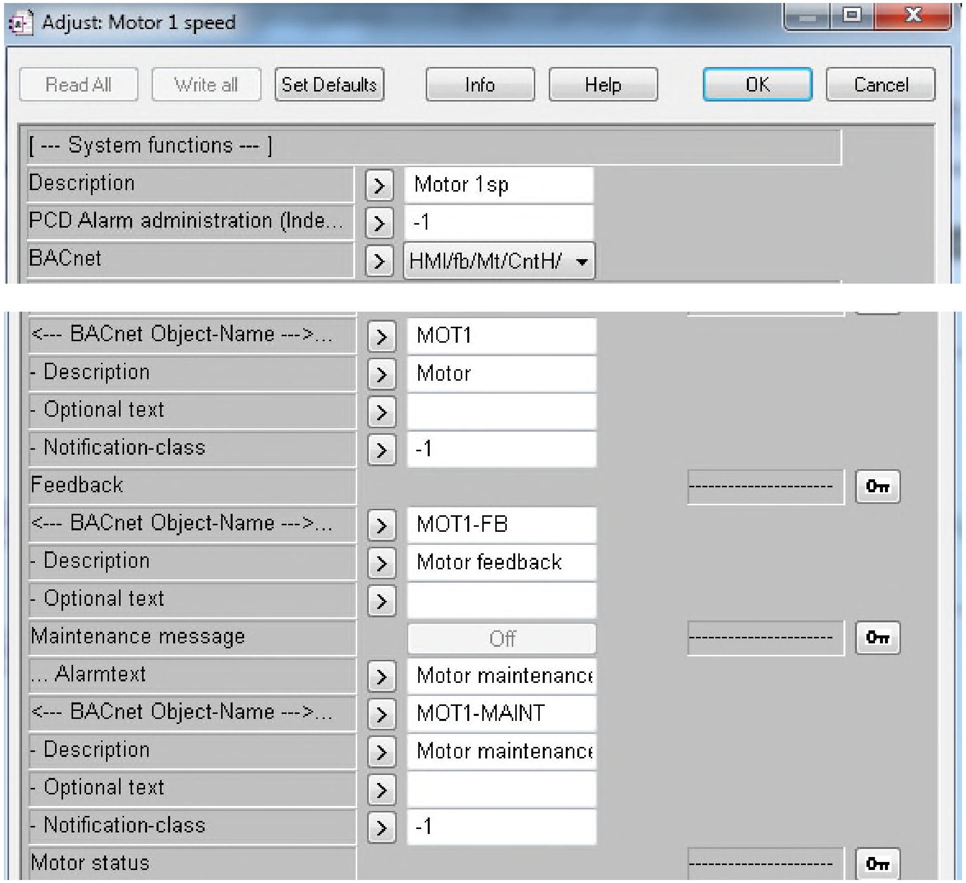
Let’s look at the BACnet object of the supply air fan, but only the Motor FBox without the corresponding Alarming FBox.

Open the parameters of the inflow pump and set the properties of the “Ausgang” object.

“Feedback” object

“Maintenance” object

Adapt the object names and descriptions and define Notification class: -1 for all.



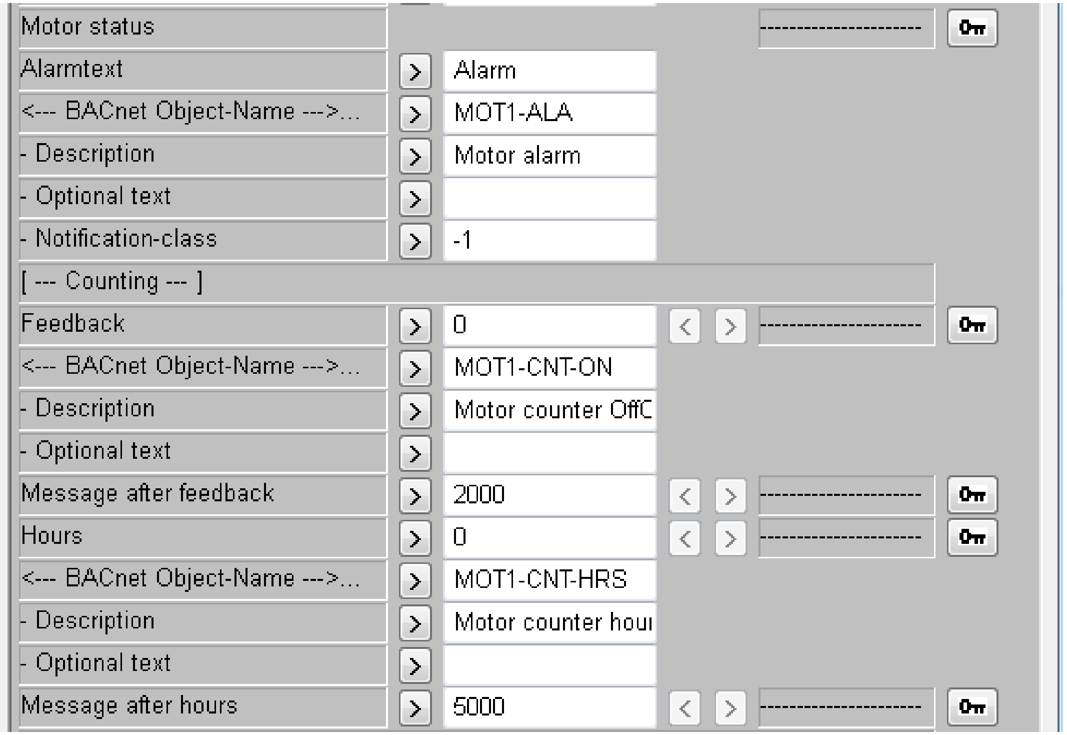
[--- System functions ---]		
Description	Motor 1sp	
PCD Alarm administration (Inde...	-1	
BACnet	HMI/fb/Mt/CntH/	
<--- BACnet Object-Name --->...	MOT1	
- Description	Motor	
- Optional text		
- Notification-class	-1	
Feedback		---------------------
<--- BACnet Object-Name --->...	MOT1-FB	
- Description	Motor feedback	
- Optional text		
Maintenance message	Off	---------------------
... Alarmtext	Motor maintenance	
<--- BACnet Object-Name --->...	MOT1-MAINT	
- Description	Motor maintenance	
- Optional text		
- Notification-class	-1	
Motor status		---------------------

Systems Identification System (AKS)

“Motor Alarm” object

“Counter” object

“Hours” object



Motor status		--------------------
Alarmtext	Alarm	
<--- BACnet Object-Name --->...	MOT1-ALA	
- Description	Motor alarm	
- Optional text		
- Notification-class	-1	
[--- Counting ---]		
Feedback	0	--------------------
<--- BACnet Object-Name --->...	MOT1-CNT-ON	
- Description	Motor counter OffC	
- Optional text		
Message after feedback	2000	--------------------
Hours	0	--------------------
<--- BACnet Object-Name --->...	MOT1-CNT-HRS	
- Description	Motor counter houı	
- Optional text		
Message after hours	5000	--------------------

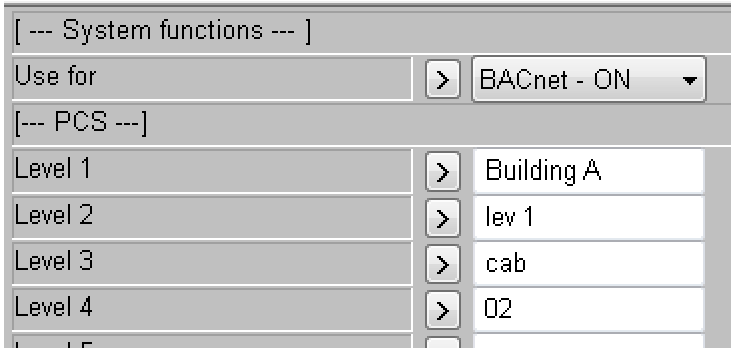
Adapt the object names and descriptions and define Notification class: -1 for all.

Systems Identification System (AKS)

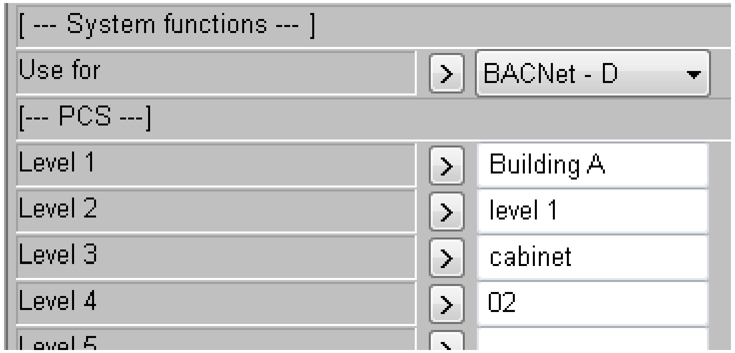
“Build all”

Open the generated BACnet file “DDC_BACnet.bnt”.

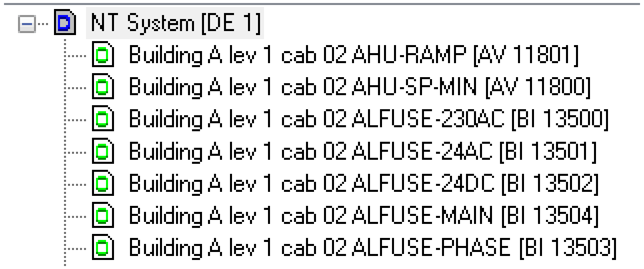
You will see that the name generation works almost exactly the same as for alarming. The difference is that we can also define the description with another FBox.



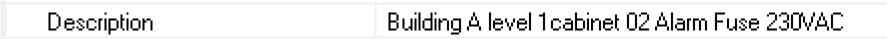
[--- System functions ---]	
Use for	BACnet - ON
[--- PCS ---]	
Level 1	Building A
Level 2	lev 1
Level 3	cab
Level 4	02



[--- System functions ---]	
Use for	BACNet - D
[--- PCS ---]	
Level 1	Building A
Level 2	level 1
Level 3	cabinet
Level 4	02
Level 5	



```
NT System [DE 1]
    Building A lev 1 cab 02 AHU-RAMP [AV 11801]
    Building A lev 1 cab 02 AHU-SP-MIN [AV 11800]
    Building A lev 1 cab 02 ALFUSE-230AC [BI 13500]
    Building A lev 1 cab 02 ALFUSE-24AC [BI 13501]
    Building A lev 1 cab 02 ALFUSE-24DC [BI 13502]
    Building A lev 1 cab 02 ALFUSE-MAIN [BI 13504]
    Building A lev 1 cab 02 ALFUSE-PHASE [BI 13503]
```

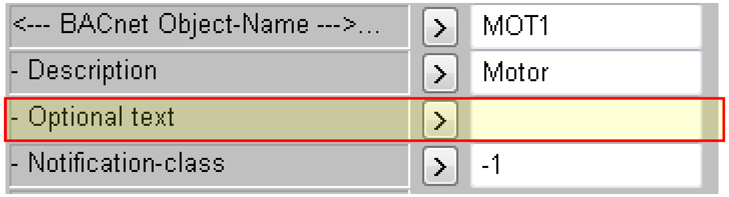


Description	Building A level 1cabinet 02 Alarm Fuse 230VAC

Systems Identification System (AKS)

You will find “Optional text” in various FBoxes.

This “Optional text” parameter is a place holder and is not used yet. However, it can be used in the corresponding .src file for user-specific texts.



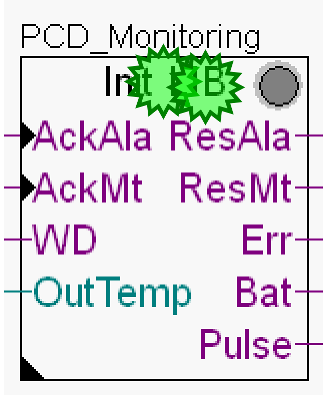
<--- BACnet Object-Name --->...	>	MOT1
- Description	>	Motor
- Optional text	>	
- Notification-class	>	-1

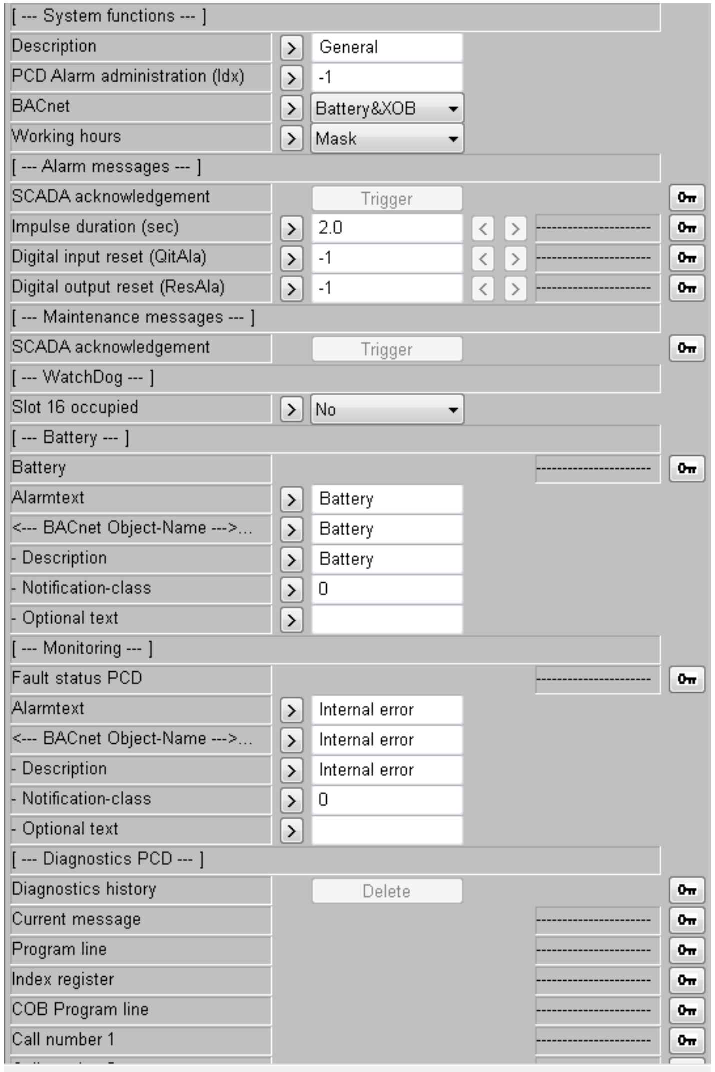
DDC Suite 2.5 / PG5 Building Advanced

BACnet

Go to page 4;DDC Suite

The Init Lib FBox already has the English names in it, as we have loaded an English template.





[--- System functions ---]		
Description	General	
PCD Alarm administration (Idx)	-1	
BACnet	Battery&XOB	
Working hours	Mask	
[--- Alarm messages ---]		
SCADA acknowledgement	Trigger	
Impulse duration (sec)	2.0	--------------------
Digital input reset (QitAla)	-1	--------------------
Digital output reset (ResAla)	-1	--------------------
[--- Maintenance messages ---]		
SCADA acknowledgement	Trigger	
[--- WatchDog ---]		
Slot 16 occupied	No	
[--- Battery ---]		
Battery		--------------------
Alarmtext	Battery	
<--- BACnet Object-Name --->...	Battery	
- Description	Battery	
- Notification-class	0	
- Optional text		
[--- Monitoring ---]		
Fault status PCD		--------------------
Alarmtext	Internal error	
<--- BACnet Object-Name --->...	Internal error	
- Description	Internal error	
- Notification-class	0	
- Optional text		
[--- Diagnostics PCD ---]		
Diagnostics history	Delete	
Current message		--------------------
Program line		--------------------
Index register		--------------------
COB Program line		--------------------
Call number 1		--------------------

DDC Suite 2.5 / PG5 Building Advanced

BACnet

However, the Alm Fuse FBox is still on this page.

Check the texts for the different voltages.

Sicherungen:230VAC

Sicherungen:230VAC

Sicherungen:24VAC

Sicherungen:24VAC

Sicherungen:24VAC

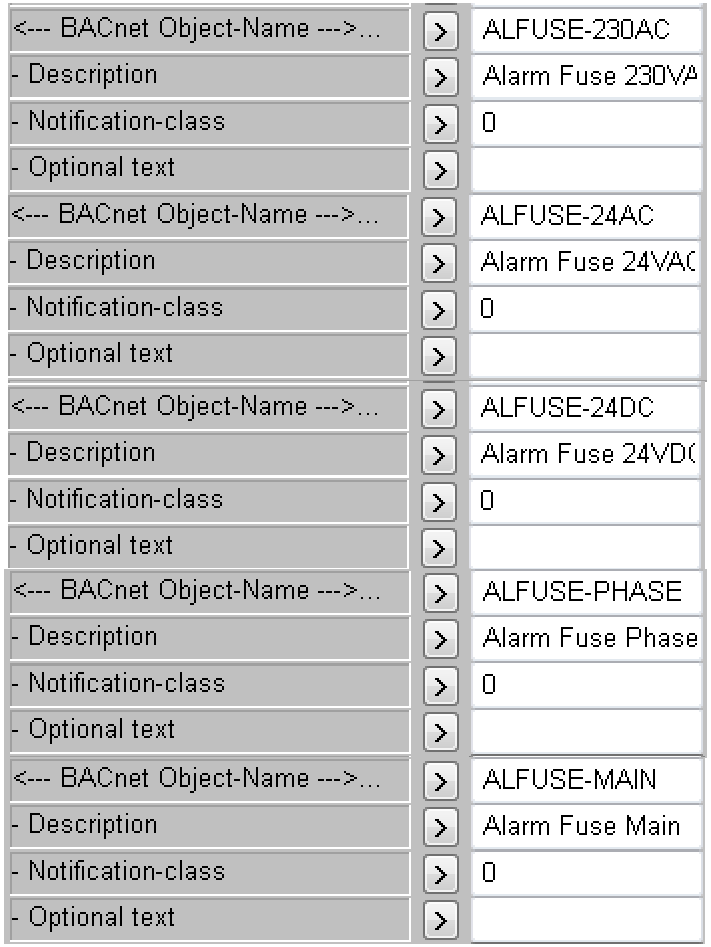
Sicherungen:24VAC

Sicherungen:Phasenwächter

Sicherungen:Phasenwächter

Sicherungen:Steuerkreis

Sicherungen:Steuerkreis

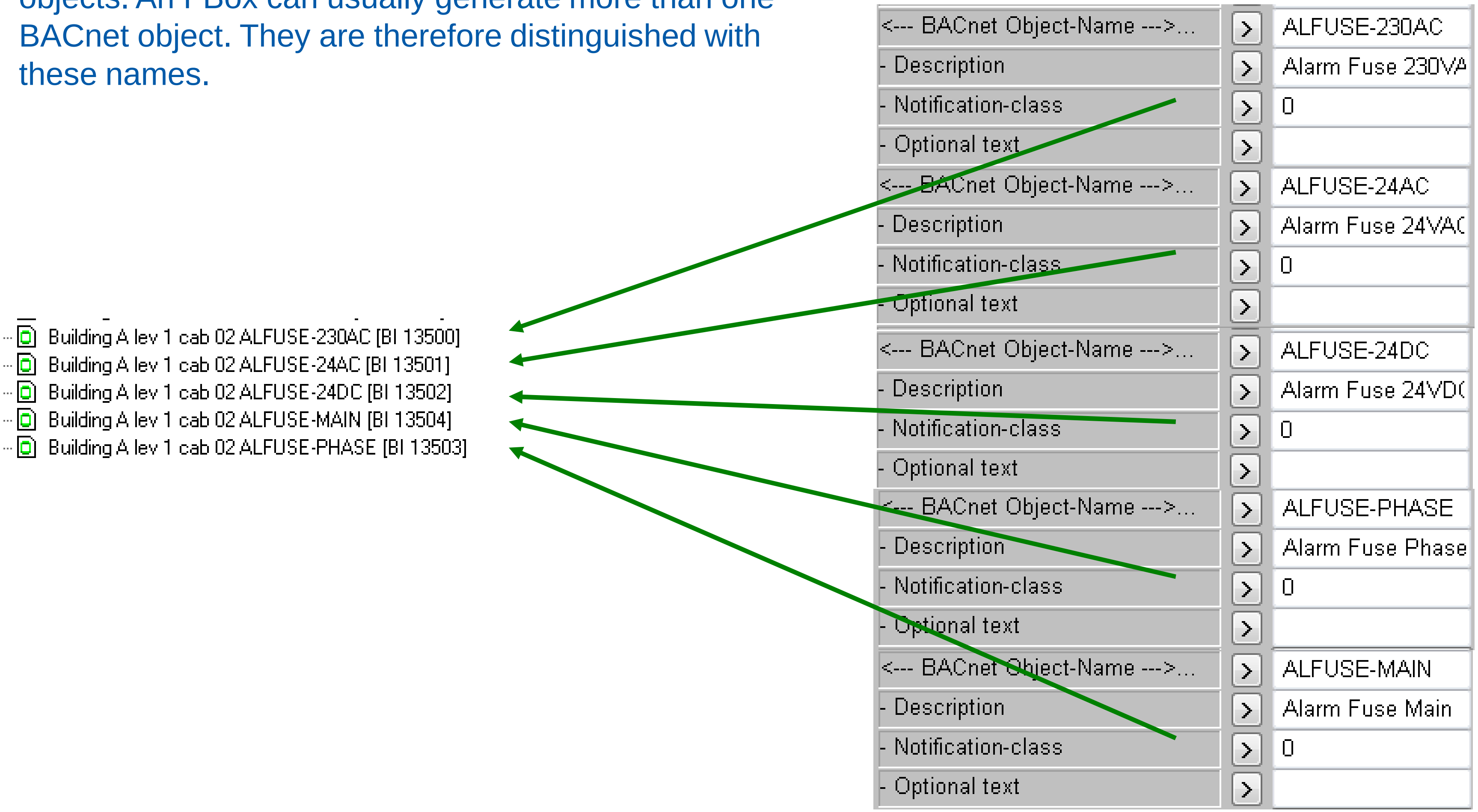


<--- BACnet Object-Name --->...	>	ALFUSE-230AC
- Description	>	Alarm Fuse 230VA
- Notification-class	>	0
- Optional text	>	
<--- BACnet Object-Name --->...	>	ALFUSE-24AC
- Description	>	Alarm Fuse 24VAC
- Notification-class	>	0
- Optional text	>	
<--- BACnet Object-Name --->...	>	ALFUSE-24DC
- Description	>	Alarm Fuse 24VDC
- Notification-class	>	0
- Optional text	>	
<--- BACnet Object-Name --->...	>	ALFUSE-PHASE
- Description	>	Alarm Fuse Phase
- Notification-class	>	0
- Optional text	>	
<--- BACnet Object-Name --->...	>	ALFUSE-MAIN
- Description	>	Alarm Fuse Main
- Notification-class	>	0
- Optional text	>	

DDC Suite 2.5 / PG5 Building Advanced

BACnet

These names are now used to describe the individual objects. An FBox can usually generate more than one BACnet object. They are therefore distinguished with these names.



- Building A lev 1 cab 02 ALFUSE-230AC [BI 13500]
- Building A lev 1 cab 02 ALFUSE-24AC [BI 13501]
- Building A lev 1 cab 02 ALFUSE-24DC [BI 13502]
- Building A lev 1 cab 02 ALFUSE-MAIN [BI 13504]
- Building A lev 1 cab 02 ALFUSE-PHASE [BI 13503]

<--- BACnet Object-Name --->...	>	ALFUSE-230AC
- Description	>	Alarm Fuse 230VA
- Notification-class	>	0
- Optional text	>	
<--- BACnet Object-Name --->...	>	ALFUSE-24AC
- Description	>	Alarm Fuse 24VAC
- Notification-class	>	0
- Optional text	>	
<--- BACnet Object-Name --->...	>	ALFUSE-24DC
- Description	>	Alarm Fuse 24VDC
- Notification-class	>	0
- Optional text	>	
<--- BACnet Object-Name --->...	>	ALFUSE-PHASE
- Description	>	Alarm Fuse Phase
- Notification-class	>	0
- Optional text	>	
<--- BACnet Object-Name --->...	>	ALFUSE-MAIN
- Description	>	Alarm Fuse Main
- Notification-class	>	0
- Optional text	>	

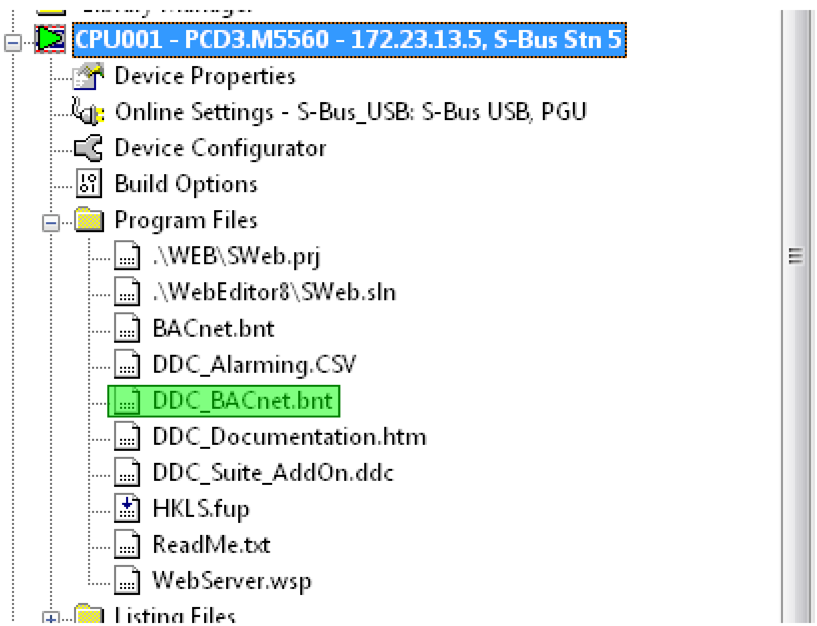
DDC Suite 2.5 / PG5 Building Advanced

BACnet

Execute a Build programme. During the Build, the DDC Suite FBoxes create all BACnet objects and the mapping to the Fupla resources for all BACnet functions.

The generated file is called DDC_BACnet.bnt – and is a completely parameterised BACnet configuration.

Let’s look at the file.



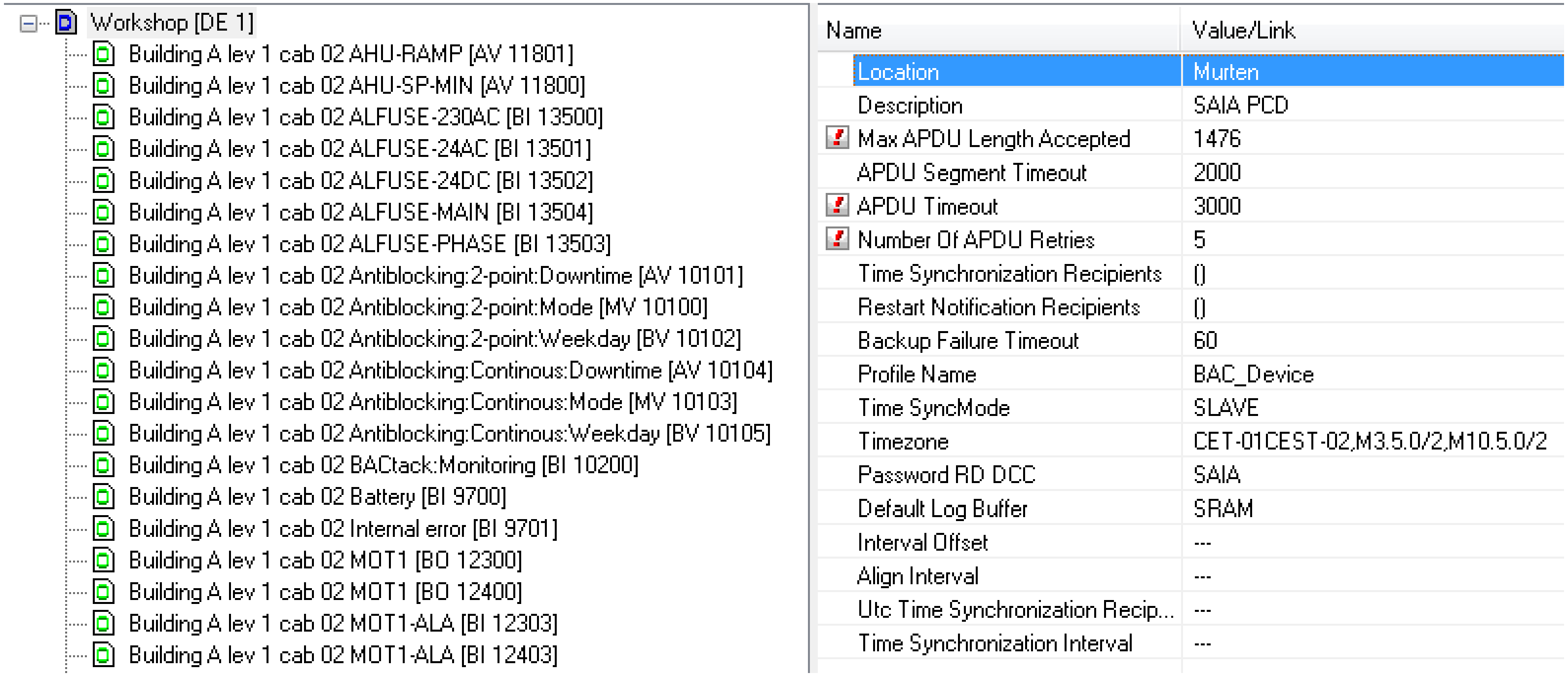
Library Manager
CPU001 - PCD3.M5560 - 172.23.13.5, S-Bus Stn 5
Device Properties
Online Settings - S-Bus_USB: S-Bus USB, PGU
Device Configurator
Build Options
Program Files
.\WEB\SWeb.prj
.\WebEditor8\SWeb.sln
BACnet.bnt
DDC_Alarming.CSV
DDC_BACnet.bnt
DDC_Documentation.htm
DDC_Suite_AddOn.ddc
HKLS.fup
ReadMe.txt
WebServer.wsp
Listing Files

DDC Suite 2.5 / PG5 Building Advanced

BACnet

We can see the device “Workshop_BACnet” with ID 1.

We can also see 54 BACnet objects. In 2 minutes we have defined all these BACnet objects in our Fupla –simply by selecting the functions in the FBox.



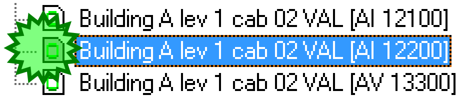
Workshop [DE 1]
- Building A lev 1 cab 02 AHU-RAMP [AV 11801]
- Building A lev 1 cab 02 AHU-SP-MIN [AV 11800]
- Building A lev 1 cab 02 ALFUSE-230AC [BI 13500]
- Building A lev 1 cab 02 ALFUSE-24AC [BI 13501]
- Building A lev 1 cab 02 ALFUSE-24DC [BI 13502]
- Building A lev 1 cab 02 ALFUSE-MAIN [BI 13504]
- Building A lev 1 cab 02 ALFUSE-PHASE [BI 13503]
- Building A lev 1 cab 02 Antiblocking:2-point:Downtime [AV 10101]
- Building A lev 1 cab 02 Antiblocking:2-point:Mode [MV 10100]
- Building A lev 1 cab 02 Antiblocking:2-point:Weekday [BV 10102]
- Building A lev 1 cab 02 Antiblocking:Continous:Downtime [AV 10104]
- Building A lev 1 cab 02 Antiblocking:Continous:Mode [MV 10103]
- Building A lev 1 cab 02 Antiblocking:Continous:Weekday [BV 10105]
- Building A lev 1 cab 02 BACtack:Monitoring [BI 10200]
- Building A lev 1 cab 02 Battery [BI 9700]
- Building A lev 1 cab 02 Internal error [BI 9701]
- Building A lev 1 cab 02 MOT1 [BO 12300]
- Building A lev 1 cab 02 MOT1 [BO 12400]
- Building A lev 1 cab 02 MOT1-ALA [BI 12303]
- Building A lev 1 cab 02 MOT1-ALA [BI 12403]

Name	Value/Link
Location	Murten
Description	SAIA PCD
Max APDU Length Accepted	1476
APDU Segment Timeout	2000
APDU Timeout	3000
Number Of APDU Retries	5
Time Synchronization Recipients	()
Restart Notification Recipients	()
Backup Failure Timeout	60
Profile Name	BAC_Device
Time SyncMode	SLAVE
Timezone	CET-01CEST-02,M3.5.0/2,M10.5.0/2
Password RD DCC	SAIA
Default Log Buffer	SRAM
Interval Offset	---
Align Interval	---
Utc Time Synchronization Recip...	---
Time Synchronization Interval	---

DDC Suite 2.5 / PG5 Building Advanced

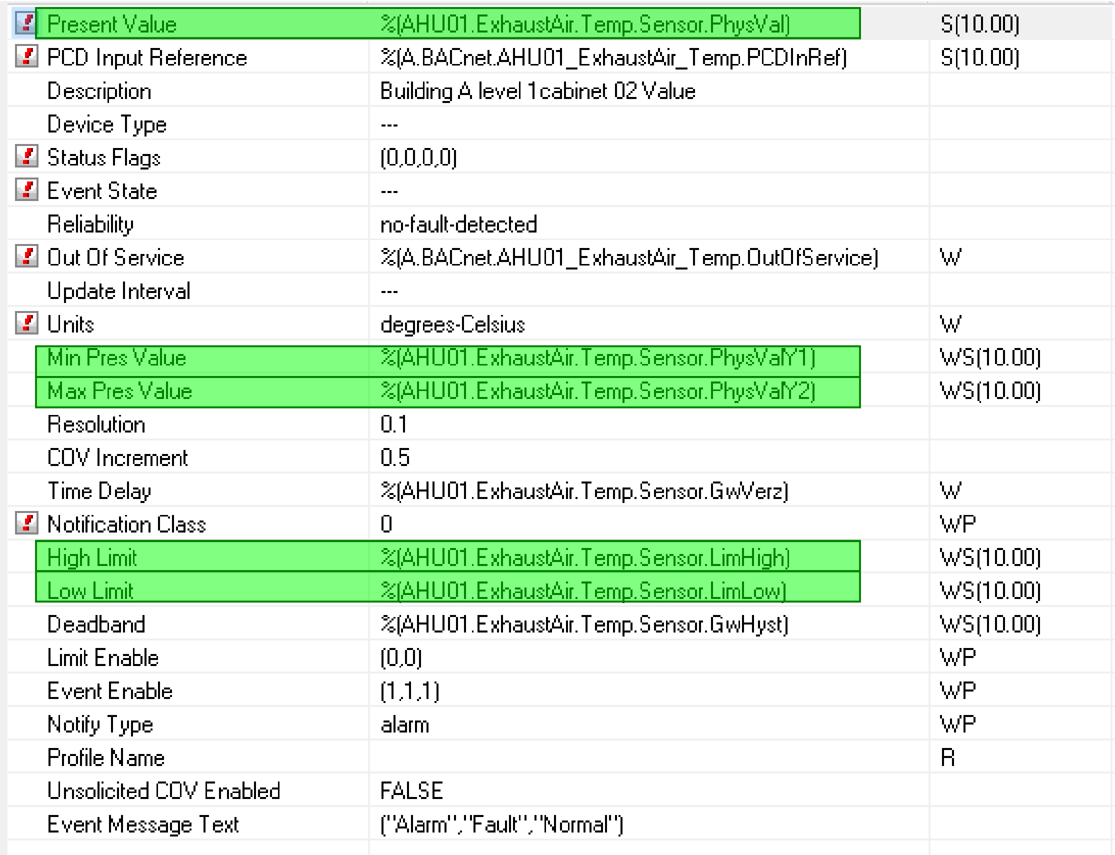
BACnet

Select AHU01_ExhaustAir_Temp Analog [AI xxxx] from the object list



Building A lev 1 cab 02 VAL [AI 12100]
Building A lev 1 cab 02 VAL [AI 12200]
Building A lev 1 cab 02 VAL [AV 13300]

and view all parameters.



!	Present Value	%(AHU01.ExhaustAir.Temp.Sensor.PhysVal)	S(10.00)
!	PCD Input Reference	%(A.BACnet.AHU01_ExhaustAir_Temp.PCDInRef)	S(10.00)
	Description	Building A level 1cabinet 02 Value	
	Device Type	---	
!	Status Flags	(0,0,0,0)	
!	Event State	---	
	Reliability	no-fault-detected	
!	Out Of Service	%(A.BACnet.AHU01_ExhaustAir_Temp.OutOfService)	W
	Update Interval	---	
!	Units	degrees-Celsius	W
	Min Pres Value	%(AHU01.ExhaustAir.Temp.Sensor.PhysValY1)	WS(10.00)
	Max Pres Value	%(AHU01.ExhaustAir.Temp.Sensor.PhysValY2)	WS(10.00)
	Resolution	0.1	
	COV Increment	0.5	
	Time Delay	%(AHU01.ExhaustAir.Temp.Sensor.GwVerz)	W
!	Notification Class	0	WP
	High Limit	%(AHU01.ExhaustAir.Temp.Sensor.LimHigh)	WS(10.00)
	Low Limit	%(AHU01.ExhaustAir.Temp.Sensor.LimLow)	WS(10.00)
	Deadband	%(AHU01.ExhaustAir.Temp.Sensor.GwHyst)	WS(10.00)
	Limit Enable	(0,0)	WP
	Event Enable	(1,1,1)	WP
	Notify Type	alarm	WP
	Profile Name		R
	Unsolicited COV Enabled	FALSE	
	Event Message Text	("Alarm","Fault","Normal")	

As you can see, many PCD resources are mapped to this object – at least the Present Value parameter must be mapped.

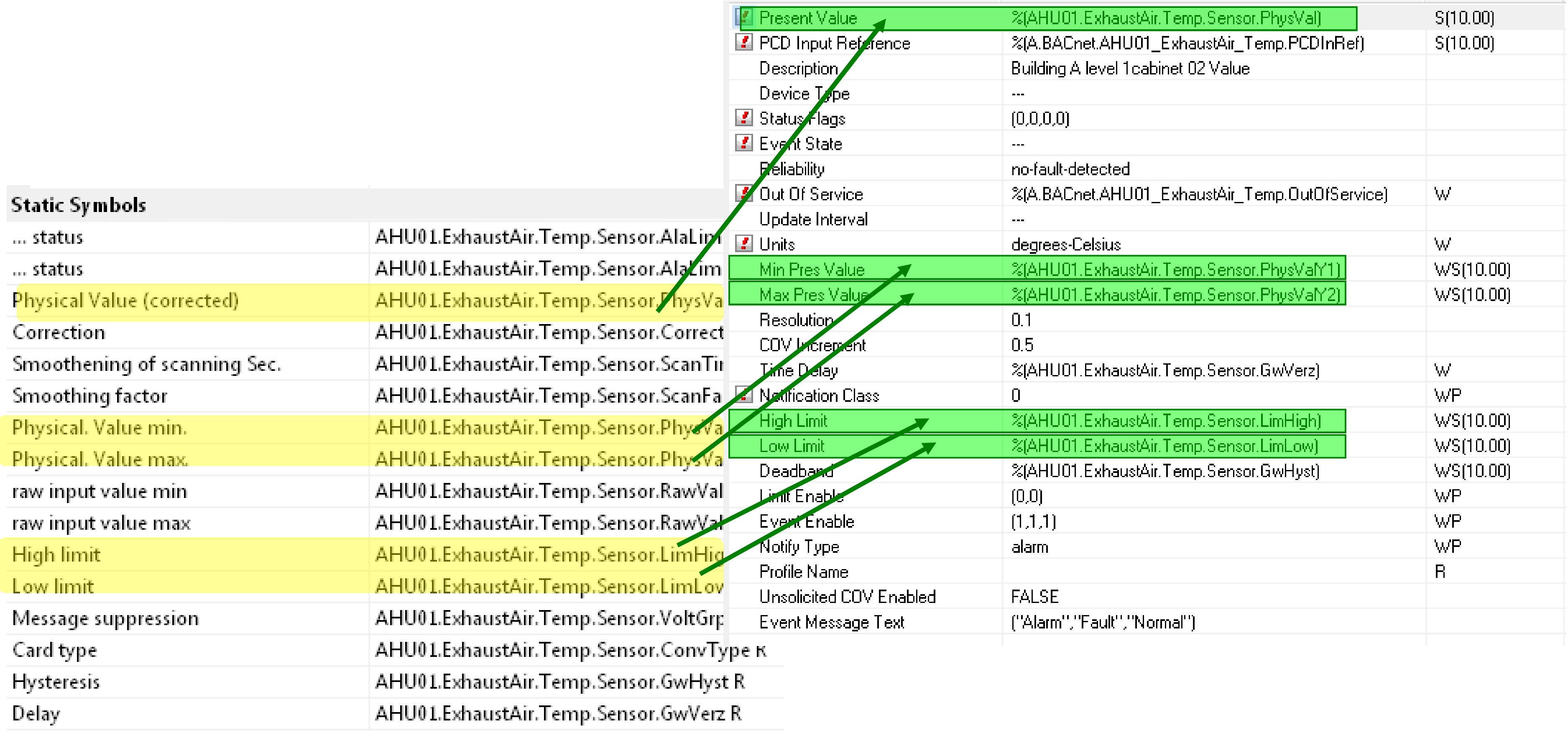
Depending on the functions, more than one resource is used. Thus, these are real BACnet functions and not only the mapping of the temperature value in BACnet.

In this example, for instance, the limits are low/high and the units are min/max.

DDC Suite 2.5 / PG5 Building Advanced

BACnet

For example, FBox Analog



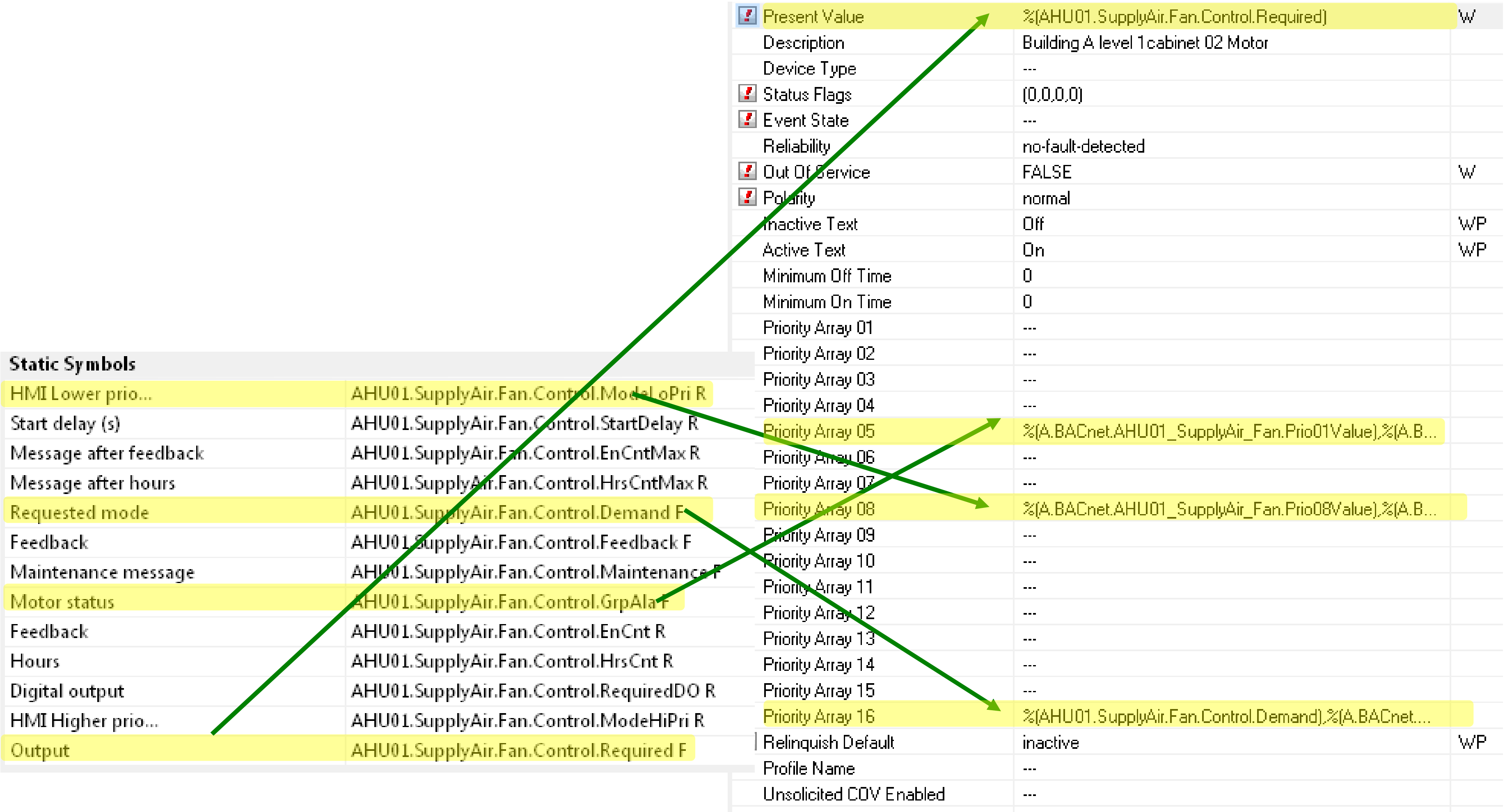
Static Symbols	
... status	AHU01.ExhaustAir.Temp.Sensor.AlaLim
... status	AHU01.ExhaustAir.Temp.Sensor.AlaLim
Physical Value (corrected)	AHU01.ExhaustAir.Temp.Sensor.PhysVa
Correction	AHU01.ExhaustAir.Temp.Sensor.Correct
Smoothening of scanning Sec.	AHU01.ExhaustAir.Temp.Sensor.ScanTi
Smoothing factor	AHU01.ExhaustAir.Temp.Sensor.ScanFa
Physical. Value min.	AHU01.ExhaustAir.Temp.Sensor.PhysVa
Physical. Value max.	AHU01.ExhaustAir.Temp.Sensor.PhysVa
raw input value min	AHU01.ExhaustAir.Temp.Sensor.RawVal
raw input value max	AHU01.ExhaustAir.Temp.Sensor.RawVal
High limit	AHU01.ExhaustAir.Temp.Sensor.LimHig
Low limit	AHU01.ExhaustAir.Temp.Sensor.LimLow
Message suppression	AHU01.ExhaustAir.Temp.Sensor.VoltGrp
Card type	AHU01.ExhaustAir.Temp.Sensor.ConvType R
Hysteresis	AHU01.ExhaustAir.Temp.Sensor.GwHyst R
Delay	AHU01.ExhaustAir.Temp.Sensor.GwVerz R

Present Value	%(AHU01.ExhaustAir.Temp.Sensor.PhysVal)	S(10.00)
PCD Input Reference	%(A.BACnet.AHU01_ExhaustAir_Temp.PCDInRef)	S(10.00)
Description	Building A level 1cabinet 02 Value	
Device Type	---	
Status Flags	(0,0,0,0)	
Event State	---	
Reliability	no-fault-detected	
Out Of Service	%(A.BACnet.AHU01_ExhaustAir_Temp.OutOfService)	W
Update Interval	---	
Units	degrees-Celsius	W
Min Pres Value	%(AHU01.ExhaustAir.Temp.Sensor.PhysValY1)	WS(10.00)
Max Pres Value	%(AHU01.ExhaustAir.Temp.Sensor.PhysValY2)	WS(10.00)
Resolution	0.1	
COV Increment	0.5	
Time Delay	%(AHU01.ExhaustAir.Temp.Sensor.GwVerz)	W
Notification Class	0	WP
High Limit	%(AHU01.ExhaustAir.Temp.Sensor.LimHigh)	WS(10.00)
Low Limit	%(AHU01.ExhaustAir.Temp.Sensor.LimLow)	WS(10.00)
Deadband	%(AHU01.ExhaustAir.Temp.Sensor.GwHyst)	WS(10.00)
Limit Enable	(0,0)	WP
Event Enable	(1,1,1)	WP
Notify Type	alarm	WP
Profile Name		R
Unsolicited COV Enabled	FALSE	
Event Message Text	("Alarm","Fault","Normal")	

DDC Suite 2.5 / PG5 Building Advanced

BACnet

For example, FBox Motor1 (Commandable object)



Static Symbols	
HMI Lower prio...	AHU01.SupplyAir.Fan.Control.ModeLoPri R
Start delay (s)	AHU01.SupplyAir.Fan.Control.StartDelay R
Message after feedback	AHU01.SupplyAir.Fan.Control.EnCntMax R
Message after hours	AHU01.SupplyAir.Fan.Control.HrsCntMax R
Requested mode	AHU01.SupplyAir.Fan.Control.Demand F
Feedback	AHU01.SupplyAir.Fan.Control.Feedback F
Maintenance message	AHU01.SupplyAir.Fan.Control.Maintenance F
Motor status	AHU01.SupplyAir.Fan.Control.GrpAla F
Feedback	AHU01.SupplyAir.Fan.Control.EnCnt R
Hours	AHU01.SupplyAir.Fan.Control.HrsCnt R
Digital output	AHU01.SupplyAir.Fan.Control.RequiredDO R
HMI Higher prio...	AHU01.SupplyAir.Fan.Control.ModeHiPri R
Output	AHU01.SupplyAir.Fan.Control.Required F

Present Value	%(AHU01.SupplyAir.Fan.Control.Required)	W
Description	Building A level 1cabinet 02 Motor	
Device Type	---	
Status Flags	(0,0,0,0)	
Event State	---	
Reliability	no-fault-detected	
Out Of Service	FALSE	W
Polarity	normal	
Inactive Text	Off	WP
Active Text	On	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.AHU01_SupplyAir_Fan.Prio01Value),%(A.B...	
Priority Array 06	---	
Priority Array 07	---	
Priority Array 08	%(A.BACnet.AHU01_SupplyAir_Fan.Prio08Value),%(A.B...	
Priority Array 09	---	
Priority Array 10	---	
Priority Array 11	---	
Priority Array 12	---	
Priority Array 13	---	
Priority Array 14	---	
Priority Array 15	---	
Priority Array 16	%(AHU01.SupplyAir.Fan.Control.Demand),%(A.BACnet....	
Relinquish Default	inactive	WP
Profile Name	---	
Unsolicited COV Enabled	---	

BACnet – Intrinsic Reporting

SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

Intrinsic Reporting

What is intrinsic reporting?

- It is event-dependent communication in BACnet

This includes:

- COV/COS => Change of Value/Change of State
- Intrinsic Alarming
- Algorithmic Intrinsic Reporting

- With COV/COS reporting, a notification is sent as soon as the value to be observed changes by a set amount.

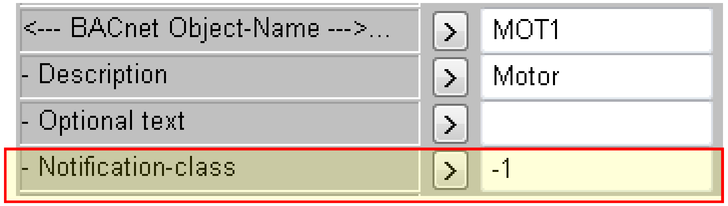
- Intrinsic Alarming is BACnets own alarming, with groups and priorities.

- Algorithmic Intrinsic Reporting is realised via Event Enrolment Object and can also monitor the deviation from an also variable setpoint. This means it is also possible to achieve a “pre-alarm” which reports when the measured value has come close to an alarm value by a minimum interval.

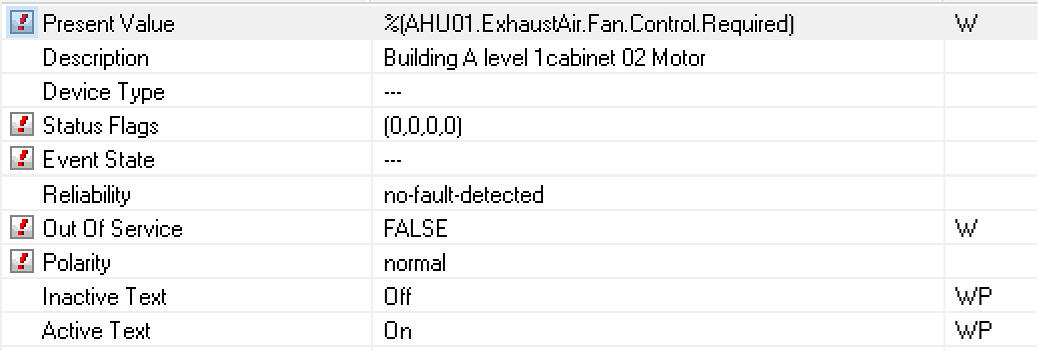
Intrinsic reporting

In the Pumps FBox, we define the notification class as “-1”.

This generates a BACnet object, but without “Intrinsic Reporting”.



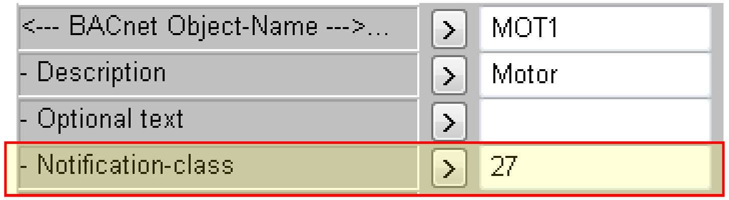
<--- BACnet Object-Name --->...	>	MOT1
- Description	>	Motor
- Optional text	>	
- Notification-class	>	-1



Present Value	%(AHU01.ExhaustAir.Fan.Control.Required)	W
Description	Building A level 1cabinet 02 Motor	
Device Type	---	
Status Flags	(0,0,0,0)	
Event State	---	
Reliability	no-fault-detected	
Out Of Service	FALSE	W
Polarity	normal	
Inactive Text	Off	WP
Active Text	On	WP

Intrinsic reporting

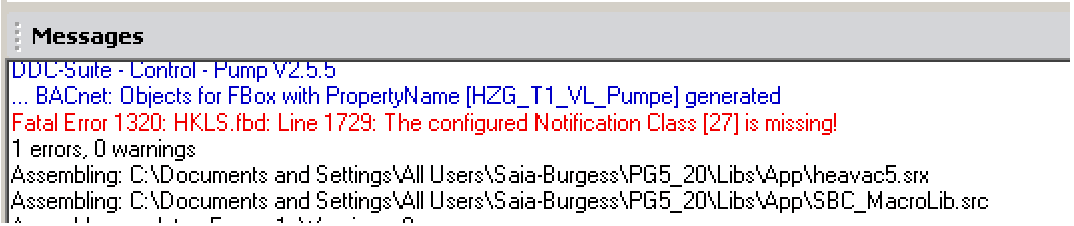
Now we change the notification class of the pump from “-1” to “27”:



<--- BACnet Object-Name --->... MOT1
- Description Motor
- Optional text
- Notification-class 27

Project build → The build will fail:

The FBox now tries to add alarms for a notification class that doesn’t even exist. During the build, the plausibility of the settings is checked.

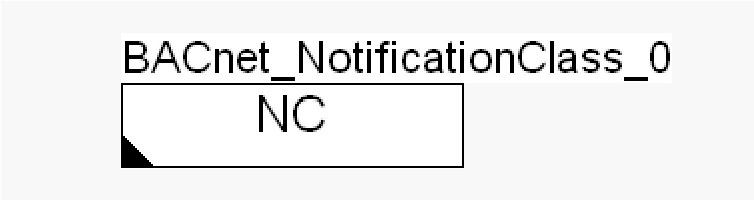


Messages

```
DDC-Suite - Control - Pump V2.5.5
... BACnet: Objects for FBox with PropertyName [HZG_T1_VL_Pumpe] generated
Fatal Error 1320: HKLS.fbd: Line 1729: The configured Notification Class [27] is missing!
1 errors, 0 warnings
Assembling: C:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Libs\App\heavac5.srx
Assembling: C:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Libs\App\SBC_MacroLib.src
```

Intrinsic reporting

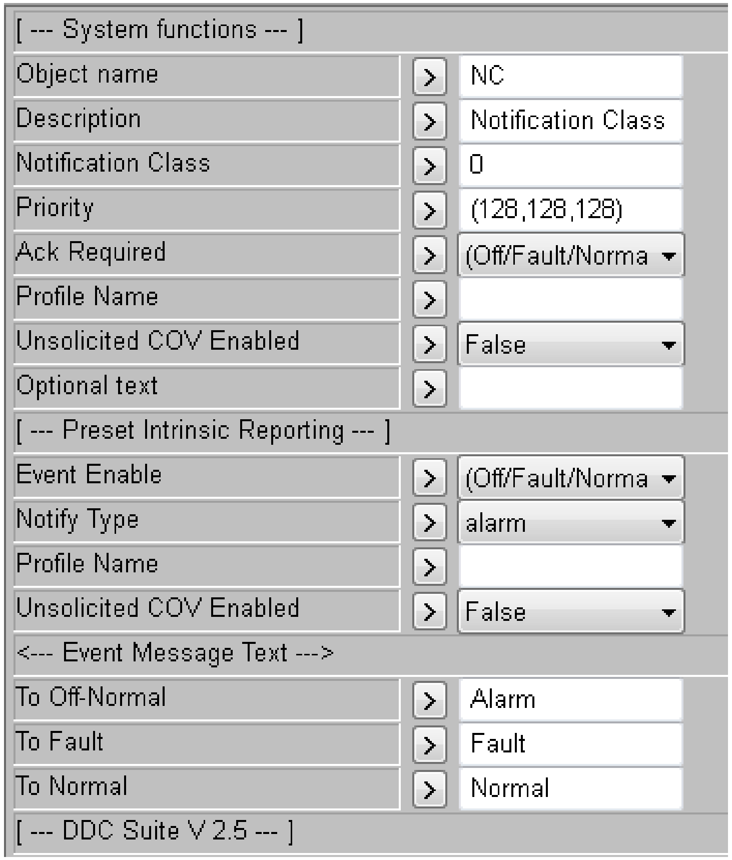
On the third page, BACnet already has an NC FBox, i.e. a notification class. This defines the NC 0



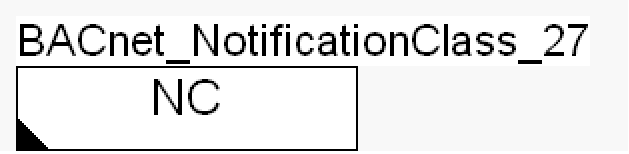
BACnet_NotificationClass_0

NC

These are the default settings.



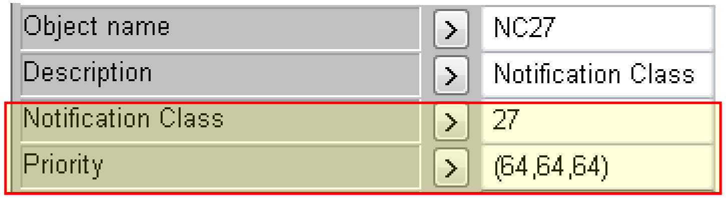
[--- System functions ---]		
Object name	>	NC
Description	>	Notification Class
Notification Class	>	0
Priority	>	(128,128,128)
Ack Required	>	(Off/Fault/Norma
Profile Name	>	
Unsolicited COV Enabled	>	False
Optional text	>	
[--- Preset Intrinsic Reporting ---]		
Event Enable	>	(Off/Fault/Norma
Notify Type	>	alarm
Profile Name	>	
Unsolicited COV Enabled	>	False
<--- Event Message Text --->		
To Off-Normal	>	Alarm
To Fault	>	Fault
To Normal	>	Normal
[--- DDC Suite V 2.5 ---]		



BACnet_NotificationClass_27

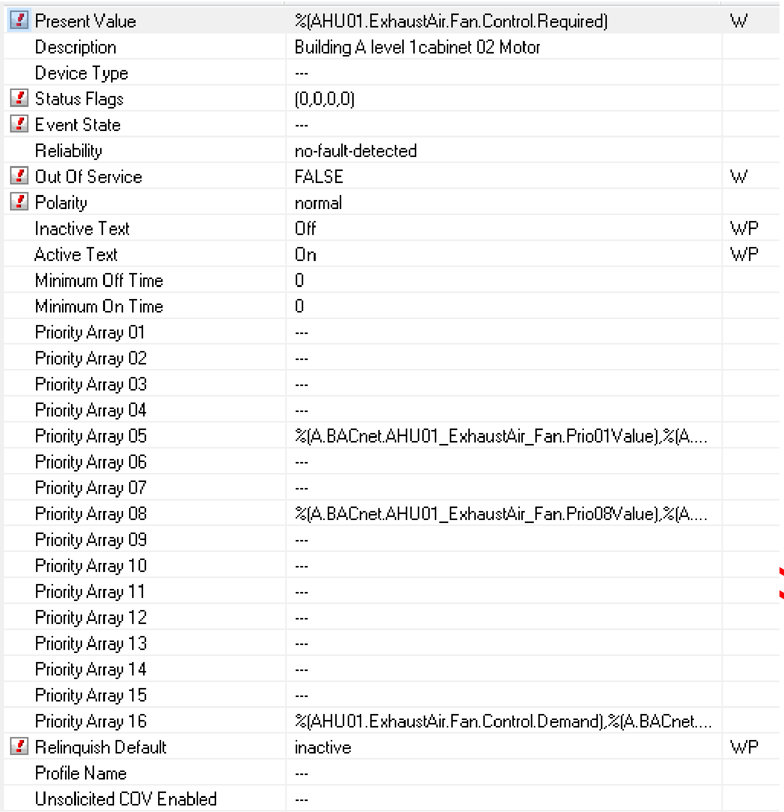
NC

Now make a second "notification class" (27) with different settings.

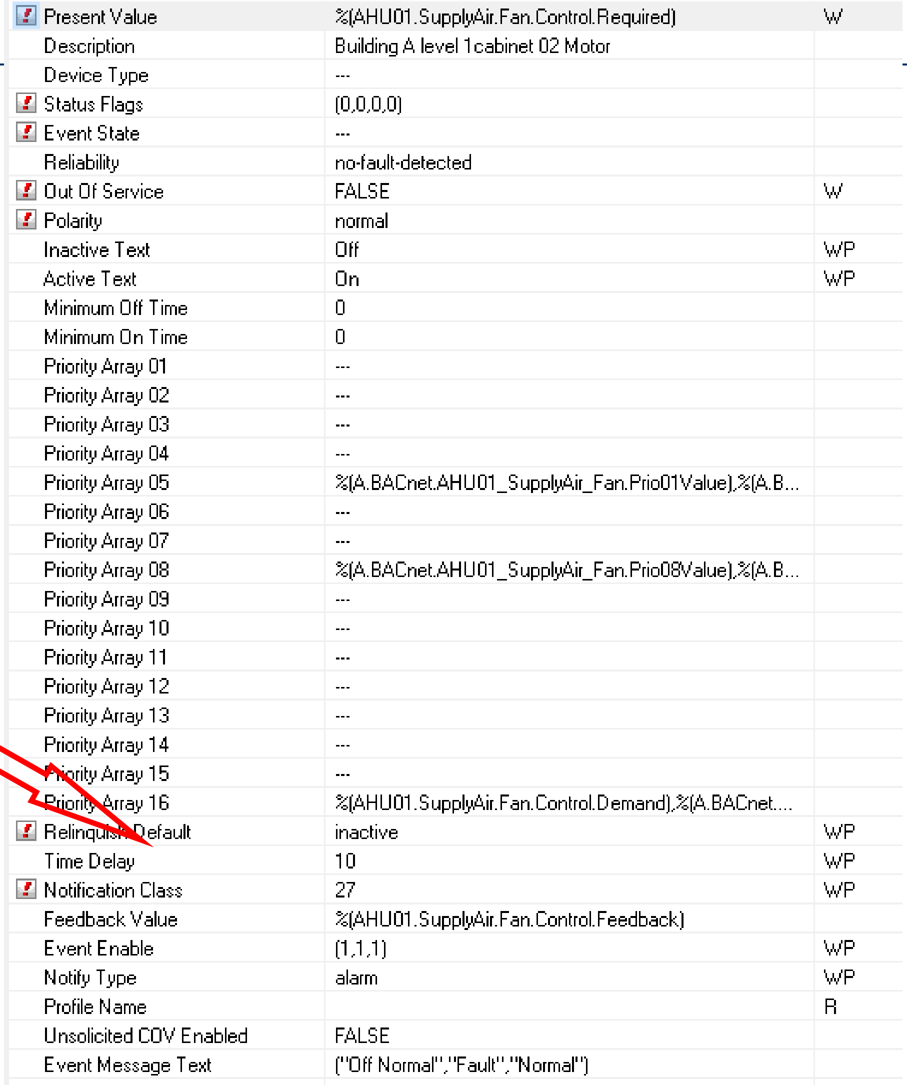


Object name	>	NC27
Description	>	Notification Class
Notification Class	>	27
Priority	>	(64,64,64)

Intrinsic reporting



Present Value	%(AHU01.ExhaustAir.Fan.Control.Required)	W
Description	Building A level 1cabinet 02 Motor	
Device Type	---	
Status Flags	(0,0,0,0)	
Event State	---	
Reliability	no-fault-detected	
Out Of Service	FALSE	W
Polarity	normal	
Inactive Text	Off	WP
Active Text	On	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.AHU01_ExhaustAir_Fan.Prio01Value),%(A....	
Priority Array 06	---	
Priority Array 07	---	
Priority Array 08	%(A.BACnet.AHU01_ExhaustAir_Fan.Prio08Value),%(A....	
Priority Array 09	---	
Priority Array 10	---	
Priority Array 11	---	
Priority Array 12	---	
Priority Array 13	---	
Priority Array 14	---	
Priority Array 15	---	
Priority Array 16	%(AHU01.ExhaustAir.Fan.Control.Demand),%(A.BACnet....	
Relinquish Default	inactive	WP
Profile Name	---	
Unsolicited COV Enabled	---	



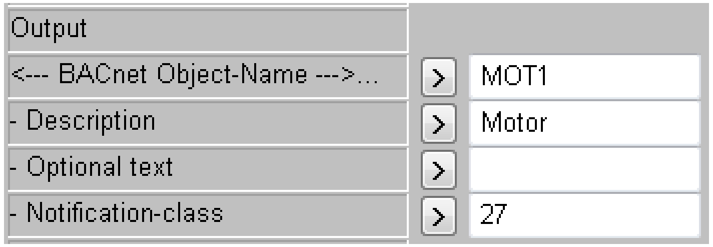
Present Value	%(AHU01.SupplyAir.Fan.Control.Required)	W
Description	Building A level 1cabinet 02 Motor	
Device Type	---	
Status Flags	(0,0,0,0)	
Event State	---	
Reliability	no-fault-detected	
Out Of Service	FALSE	W
Polarity	normal	
Inactive Text	Off	WP
Active Text	On	WP
Minimum Off Time	0	
Minimum On Time	0	
Priority Array 01	---	
Priority Array 02	---	
Priority Array 03	---	
Priority Array 04	---	
Priority Array 05	%(A.BACnet.AHU01_SupplyAir_Fan.Prio01Value),%(A.B...	
Priority Array 06	---	
Priority Array 07	---	
Priority Array 08	%(A.BACnet.AHU01_SupplyAir_Fan.Prio08Value),%(A.B...	
Priority Array 09	---	
Priority Array 10	---	
Priority Array 11	---	
Priority Array 12	---	
Priority Array 13	---	
Priority Array 14	---	
Priority Array 15	---	
Priority Array 16	%(AHU01.SupplyAir.Fan.Control.Demand),%(A.BACnet....	
Relinquish Default	inactive	WP
Time Delay	10	WP
Notification Class	27	WP
Feedback Value	%(AHU01.SupplyAir.Fan.Control.Feedback)	
Event Enable	(1,1,1)	WP
Notify Type	alarm	WP
Profile Name		R
Unsolicited COV Enabled	FALSE	
Event Message Text	("Off Normal","Fault","Normal")	

With another Build, the FBoxes now refer to an existing notification class and show the settings in the object.

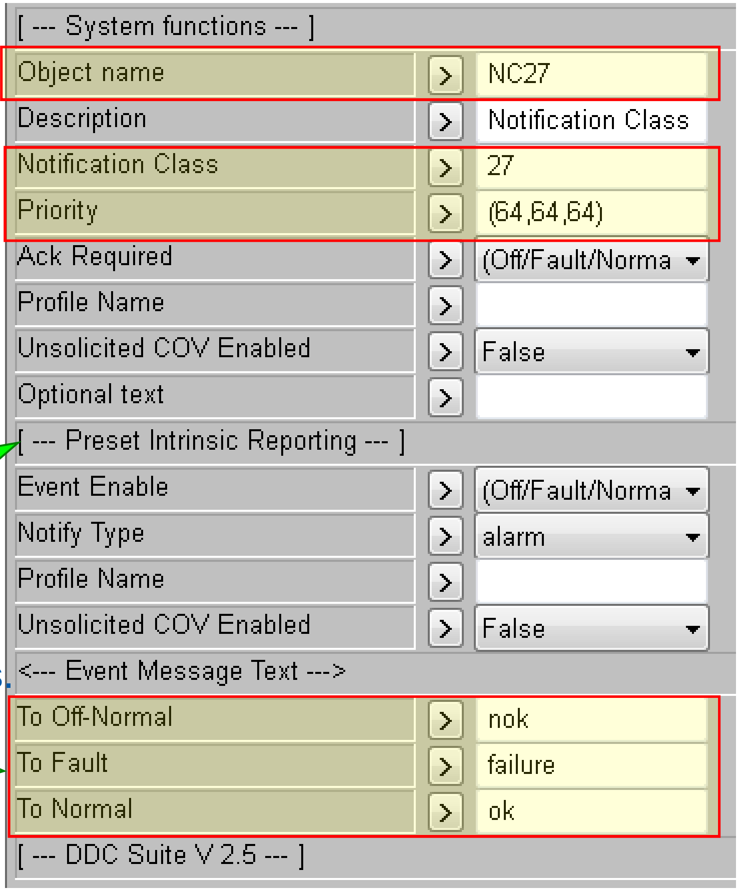
Important: Notification class “-1” deactivates BACnet alarming (Intrinsic Reporting)
Notification-class X Select the notification class that you want to use

Intrinsic reporting

Also define NC27 in the Exhaust Air Fan. We now have two objects in the group for NC27.



Output		
<--- BACnet Object-Name --->...	>	MOT1
- Description	>	Motor
- Optional text	>	
- Notification-class	>	27



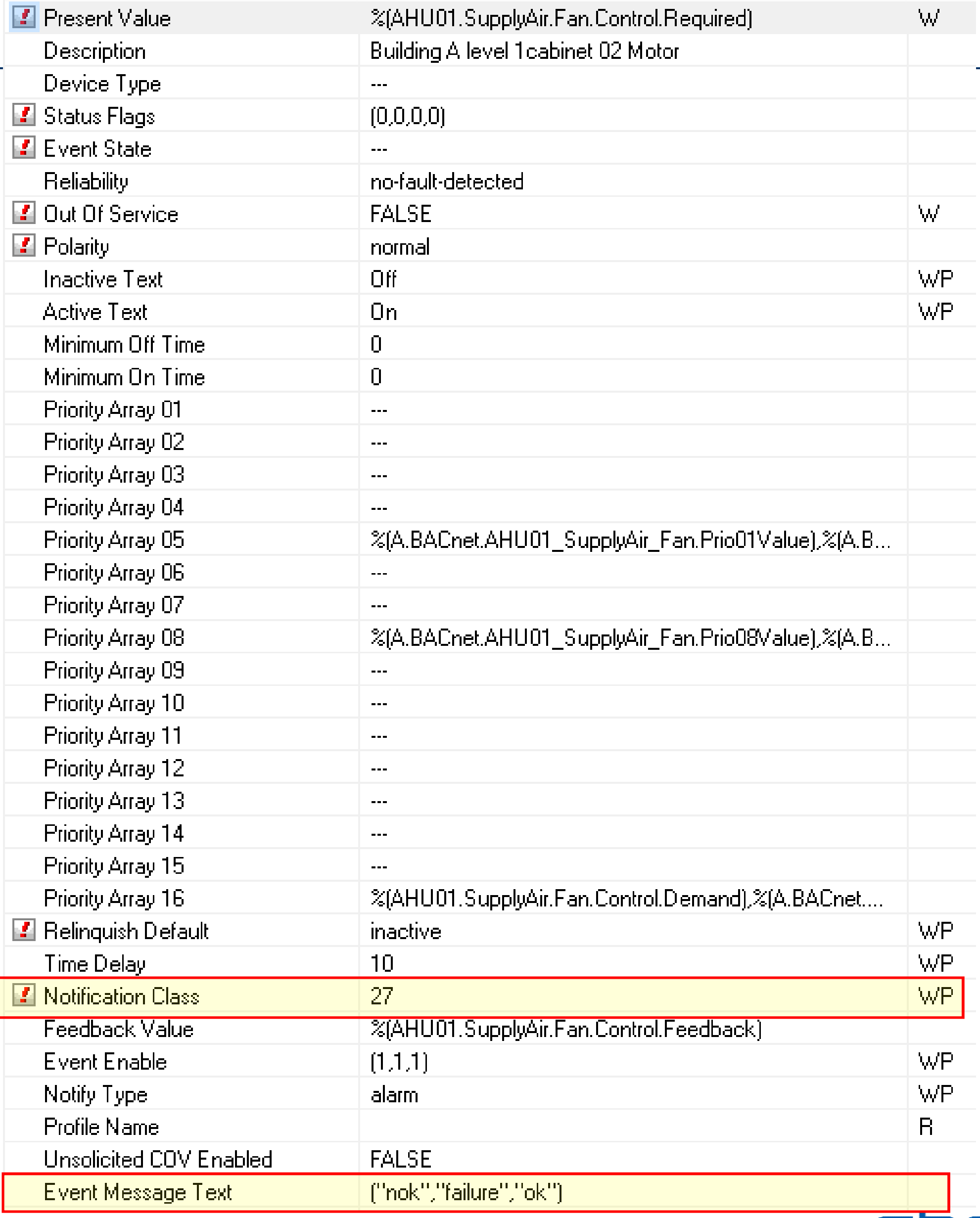
[--- System functions ---]		
Object name	>	NC27
Description	>	Notification Class
Notification Class	>	27
Priority	>	(64,64,64)
Ack Required	>	(Off/Fault/Norma
Profile Name	>	
Unsolicited COV Enabled	>	False
Optional text	>	
[--- Preset Intrinsic Reporting ---]		
Event Enable	>	(Off/Fault/Norma
Notify Type	>	alarm
Profile Name	>	
Unsolicited COV Enabled	>	False
<--- Event Message Text --->		
To Off-Normal	>	nok
To Fault	>	failure
To Normal	>	ok
[--- DDC Suite V 2.5 ---]		

Now let’s set further parameters that are required for Intrinsic Reporting.

You can make different settings or even change the alarm texts. It’s important for the object name to be changed so that you don’t have two NCs with the same name...

Intrinsic reporting

After another build, we can see the parameters set for the alarming object in the defined BACnet object.

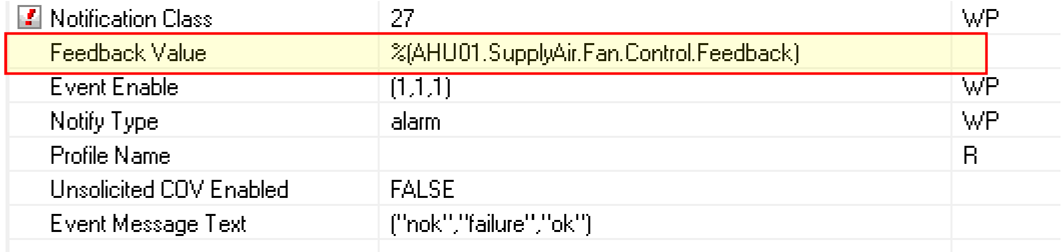


!	Present Value	%(AHU01.SupplyAir.Fan.Control.Required)	W
	Description	Building A level 1cabinet 02 Motor	
	Device Type	---	
!	Status Flags	(0,0,0,0)	
!	Event State	---	
	Reliability	no-fault-detected	
!	Out Of Service	FALSE	W
!	Polarity	normal	
	Inactive Text	Off	WP
	Active Text	On	WP
	Minimum Off Time	0	
	Minimum On Time	0	
	Priority Array 01	---	
	Priority Array 02	---	
	Priority Array 03	---	
	Priority Array 04	---	
	Priority Array 05	%(A.BACnet.AHU01_SupplyAir_Fan.Prio01Value),%(A.B...	
	Priority Array 06	---	
	Priority Array 07	---	
	Priority Array 08	%(A.BACnet.AHU01_SupplyAir_Fan.Prio08Value),%(A.B...	
	Priority Array 09	---	
	Priority Array 10	---	
	Priority Array 11	---	
	Priority Array 12	---	
	Priority Array 13	---	
	Priority Array 14	---	
	Priority Array 15	---	
	Priority Array 16	%(AHU01.SupplyAir.Fan.Control.Demand),%(A.BACnet....	
!	Relinquish Default	inactive	WP
	Time Delay	10	WP
!	Notification Class	27	WP
	Feedback Value	%(AHU01.SupplyAir.Fan.Control.Feedback)	
	Event Enable	(1,1,1)	WP
	Notify Type	alarm	WP
	Profile Name		R
	Unsolicited COV Enabled	FALSE	
	Event Message Text	("nok","failure","ok")	

Intrinsic reporting

You can now perhaps also see that some objects for the notifications are missing.

If you activate the NC in a Binary Output or Multistate Output object, it needs the Feedback Value which is part of the BO or MO object. The physical Feedback Value (input) references this value and if you switch the binary output without feedback, BACnet generates an alarm,



Notification Class	27	WP
Feedback Value	%(AHU01.SupplyAir.Fan.Control.Feedback)	
Event Enable	(1,1,1)	WP
Notify Type	alarm	WP
Profile Name		R
Unsolicited COV Enabled	FALSE	
Event Message Text	("nok","failure","ok")	

i.e. the feedback information is already available in the Output object.

It is important to know that if you define a notification class in a BO or MO object, the object will monitor the feedback itself.

Intrinsic reporting

Activate BACnet in the AlaMotor FBox and use NC0:

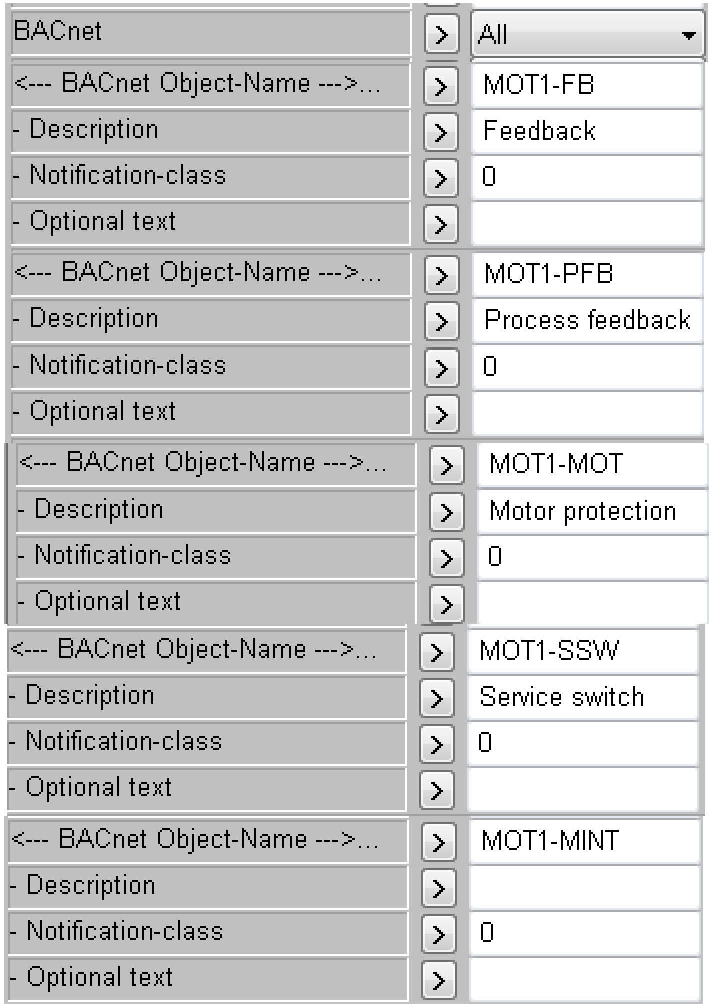
Feedback

Process feedback

Motor protection

Revision switch

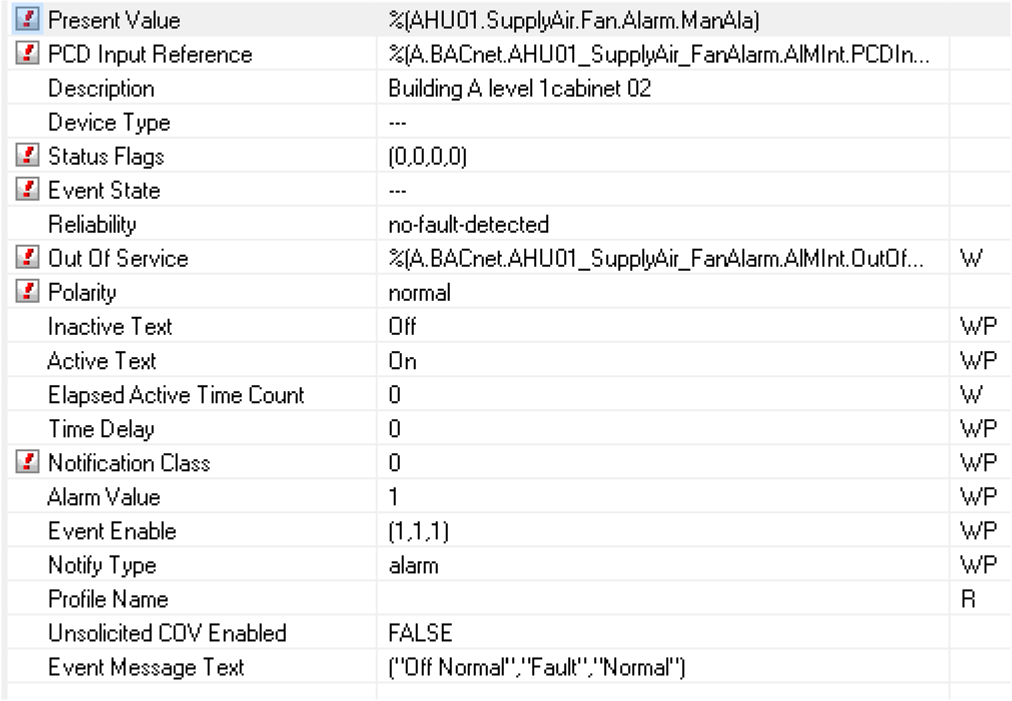
Manual intervention



BACnet	>	All
<--- BACnet Object-Name --->...	>	MOT1-FB
- Description	>	Feedback
- Notification-class	>	0
- Optional text	>	
<--- BACnet Object-Name --->...	>	MOT1-PFB
- Description	>	Process feedback
- Notification-class	>	0
- Optional text	>	
<--- BACnet Object-Name --->...	>	MOT1-MOT
- Description	>	Motor protection
- Notification-class	>	0
- Optional text	>	
<--- BACnet Object-Name --->...	>	MOT1-SSW
- Description	>	Service switch
- Notification-class	>	0
- Optional text	>	
<--- BACnet Object-Name --->...	>	MOT1-MINT
- Description	>	
- Notification-class	>	0
- Optional text	>	

Intrinsic reporting

After another Build, there are therefore 10 objects more with Intrinsic Reporting. All objects that reference the same notification class have the same settings for Intrinsic Reporting.



!	Present Value	%(AHU01.SupplyAir.Fan.Alarm.ManAla)	
!	PCD Input Reference	%(A.BACnet.AHU01_SupplyAir_FanAlarm.AlMInt.PCDIn...	
	Description	Building A level 1cabinet 02	
	Device Type	---	
!	Status Flags	(0,0,0,0)	
!	Event State	---	
	Reliability	no-fault-detected	
!	Out Of Service	%(A.BACnet.AHU01_SupplyAir_FanAlarm.AlMInt.OutOf...	W
!	Polarity	normal	
	Inactive Text	Off	WP
	Active Text	On	WP
	Elapsed Active Time Count	0	W
	Time Delay	0	WP
!	Notification Class	0	WP
	Alarm Value	1	WP
	Event Enable	(1,1,1)	WP
	Notify Type	alarm	WP
	Profile Name		R
	Unsolicited COV Enabled	FALSE	
	Event Message Text	("Off Normal","Fault","Normal")	

BACnet – Trendlog

DDC Suite 2.5 / PG5 Building Advanced

Trendlog

What is Trendlog?

- The Trendlog object records data from BACnet objects, but not directly from PCD resources.

- Data storage from BACnet and the web is unfortunately still separate as the memory format is incompatible.

- Trending can be time or event-controlled (COV).

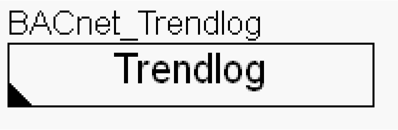
Trendlog

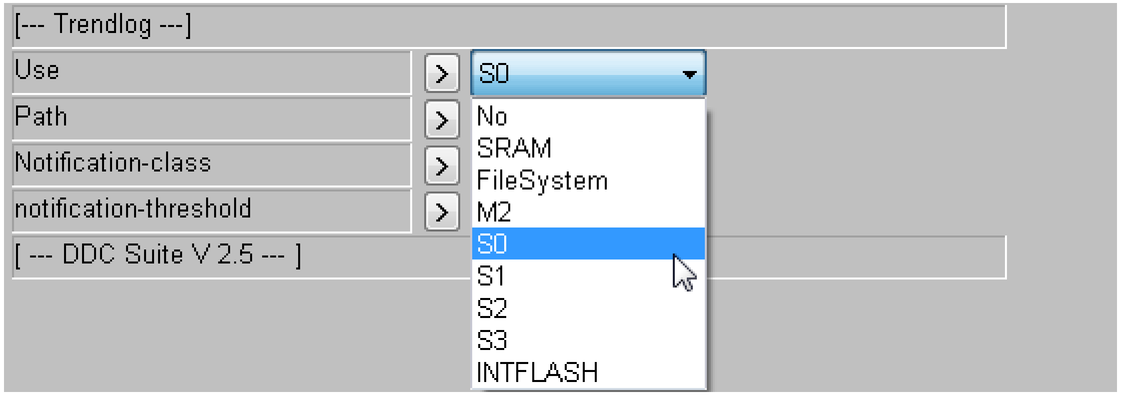
It is possible to define Trendlog objects directly from the programme.

To do this, we use the “Trendlog” FBox from the BACnet family.

With the “Verwenden” option – “No”, no Trendlogs are generated in the entire programme, even if Trendlog is activated in other FBoxes. This works like a switch for all Trendlogs.

Otherwise, we can define here where the Trendlog objects should save the data.




[--- Trendlog ---]

Use > S0

Path >

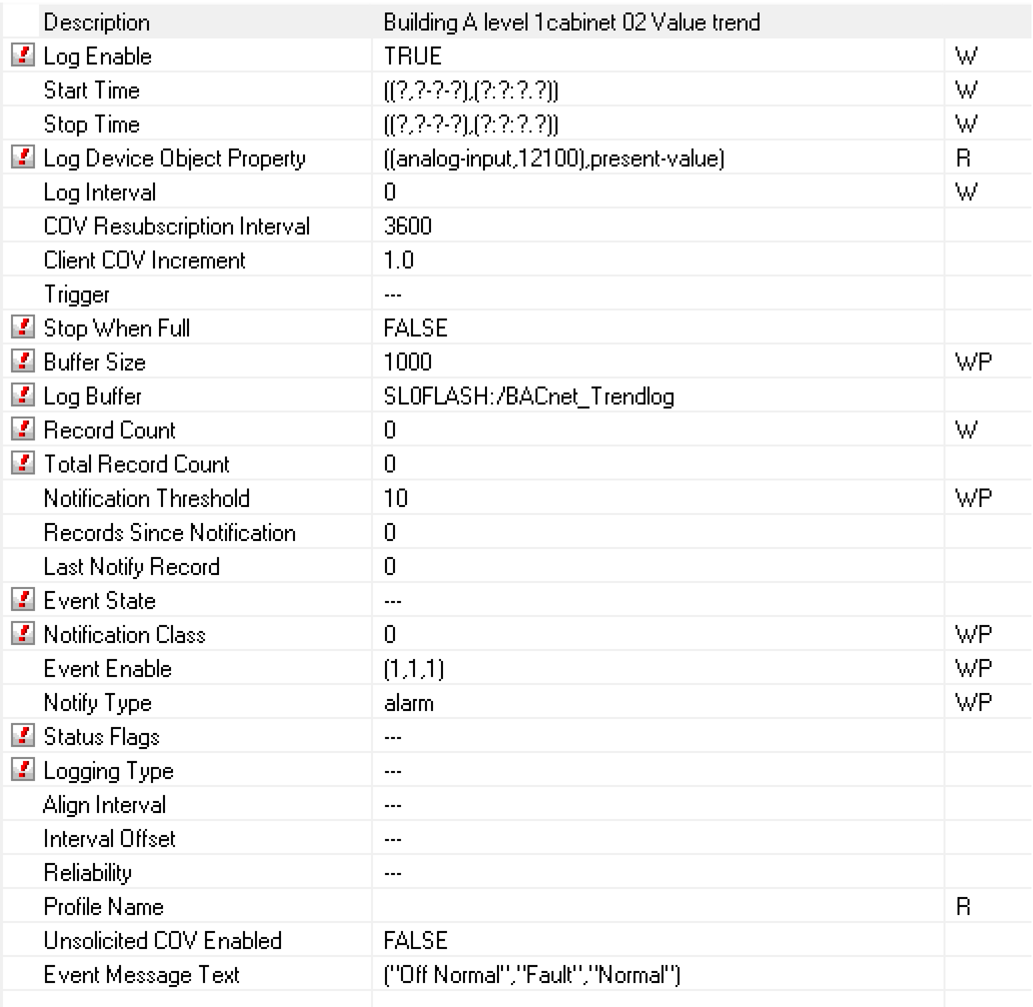
Notification-class >

notification-threshold >

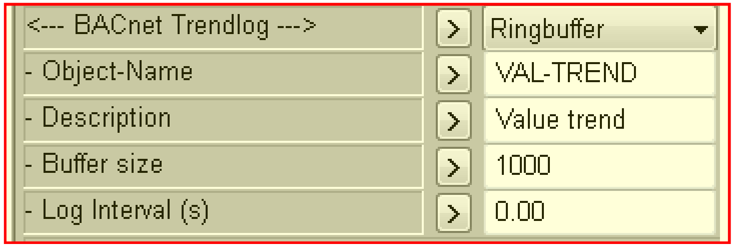
[--- DDC Suite V 2.5 ---]

Trendlog

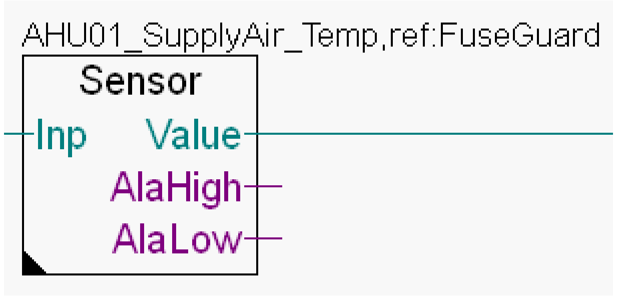
The rest of the settings are made in the FBoxes that can generate Trendlog objects.



	Description	Building A level 1cabinet 02 Value trend	
!	Log Enable	TRUE	W
	Start Time	((?,?-?-?),(?:?:?.?))	W
	Stop Time	((?,?-?-?),(?:?:?.?))	W
!	Log Device Object Property	((analog-input,12100),present-value)	R
	Log Interval	0	W
	COV Resubscription Interval	3600	
	Client COV Increment	1.0	
	Trigger	---	
!	Stop When Full	FALSE	
!	Buffer Size	1000	WP
!	Log Buffer	SL0FLASH:/BACnet_Trendlog	
!	Record Count	0	W
!	Total Record Count	0	
	Notification Threshold	10	WP
	Records Since Notification	0	
	Last Notify Record	0	
!	Event State	---	
!	Notification Class	0	WP
	Event Enable	(1,1,1)	WP
	Notify Type	alarm	WP
!	Status Flags	---	
!	Logging Type	---	
	Align Interval	---	
	Interval Offset	---	
	Reliability	---	
	Profile Name		R
	Unsolicited COV Enabled	FALSE	
	Event Message Text	("Off Normal","Fault","Normal")	



<--- BACnet Trendlog --->	>	Ringbuffer
- Object-Name	>	VAL-TREND
- Description	>	Value trend
- Buffer size	>	1000
- Log Interval (s)	>	0.00



BACnet – Scheduler

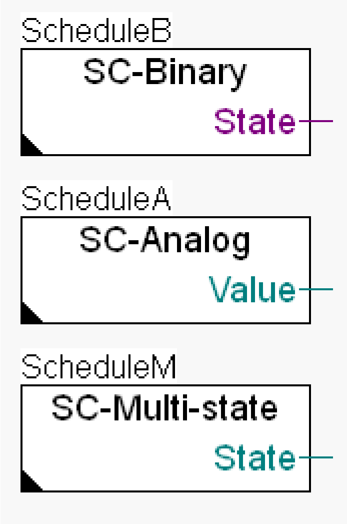
DDC Suite 2.5 / PG5 Building Advanced

Scheduler

What is a scheduler?

A scheduler is a “timetable” at BACnet level.

- In principle, three “types” of scheduler are used:
  - Present_Value of the Binary Output/Value object
  - Present_Value of the Analogue Output/Value object
  - Present_Value of the Multistate Output/Value object



To generate these, there are new FBoxes in the BACnet group as of version 2.8.131.

BACnet – Loop

SAIA BURGESS CONTROLS

Loop

The Loop object is a PID controller in the BACnet.

The Loop is a complicated object that is connected to three other objects via references.

These objects are the setpoint (reference) value, the actual (process/measured) value and the control signal (output) object.

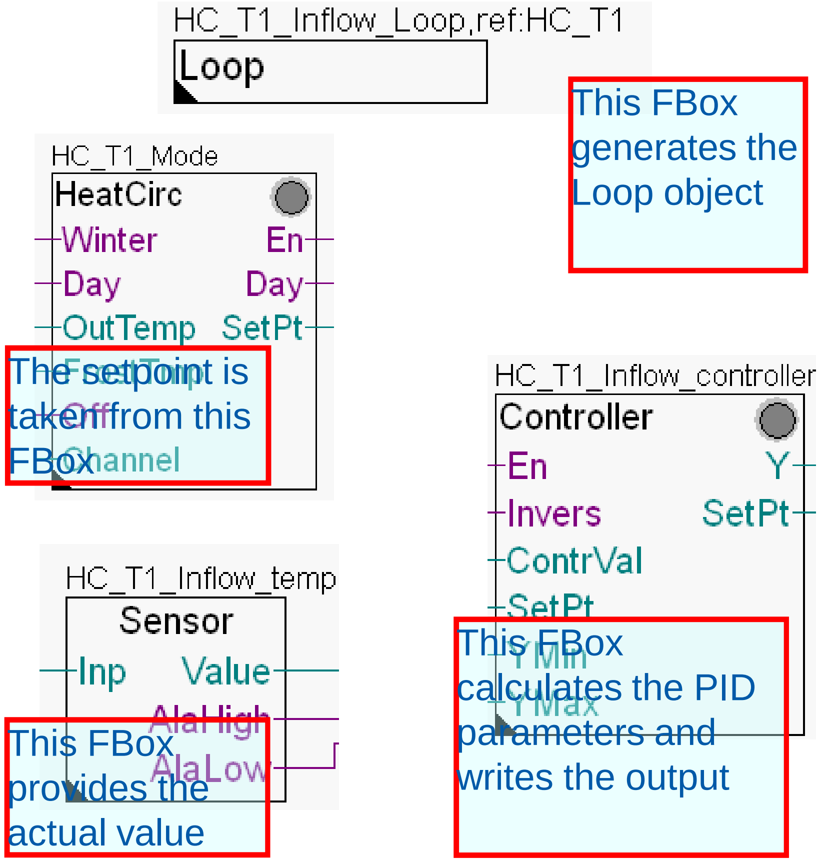
The Loop FBox was programmed very flexibly. This FBox generates the objects for the BACnet Loop object.

However, the FBoxes from the “Controller” family generate their BACnet functions themselves.

You must make the connections between the Loop FBox and the other FBoxes from which the Loop FBox uses values. The difficulty lies in defining more than one FBox as the reference.

The elements of the control loop in the FUPLA heating circuit template are shown in the illustration on the right.

Important: The Examples from here are with a heating circuit template!



This FBox generates the Loop object

The setpoint is taken from this FBox

This FBox provides the actual value

This FBox calculates the PID parameters and writes the output

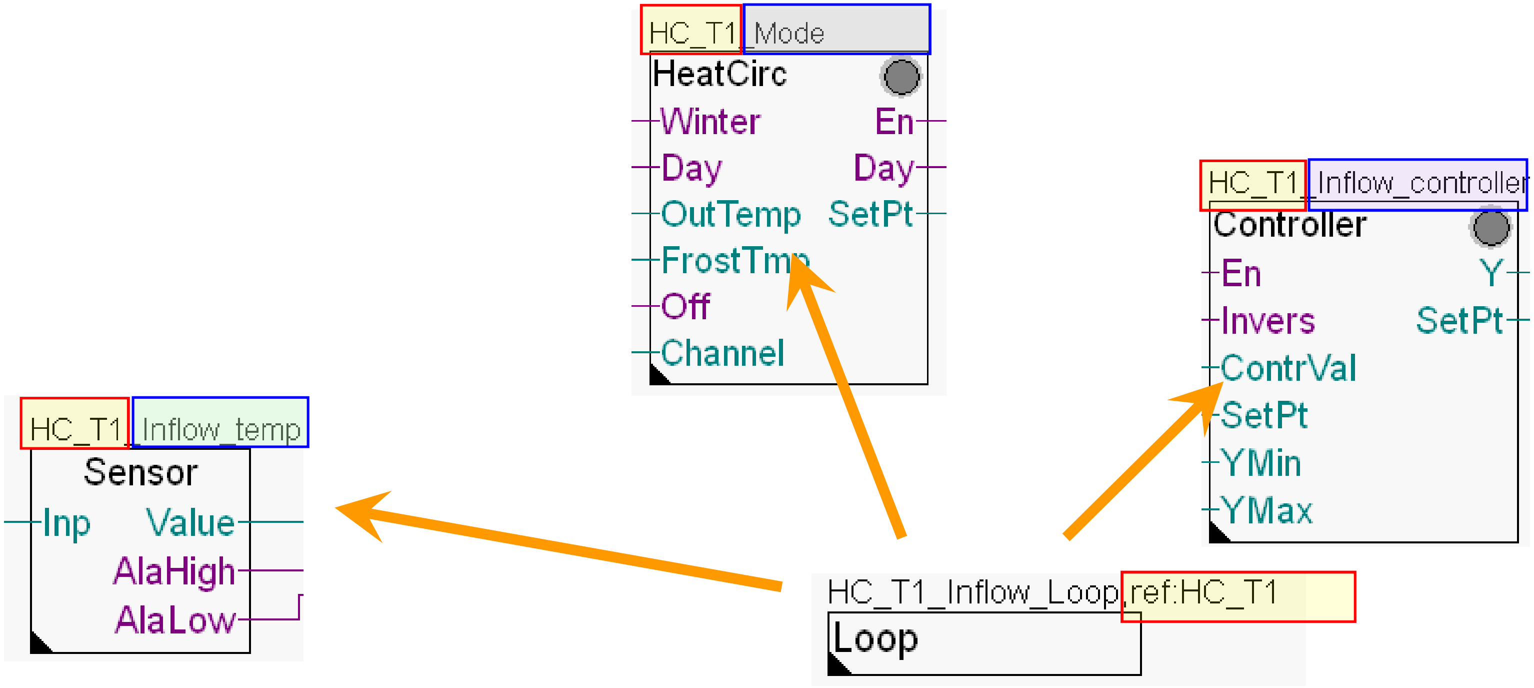
Loop

How do we define the reference between four different FBoxes if we can only write one reference to the FBox?

The solution is to take the longest common name as the reference for the Loop FBox.

HC_T1. The rest of the reference is then defined in the parameters of the Loop FBox itself.

The name of the Loop FBox is only a description and has no special task in connection with the references.

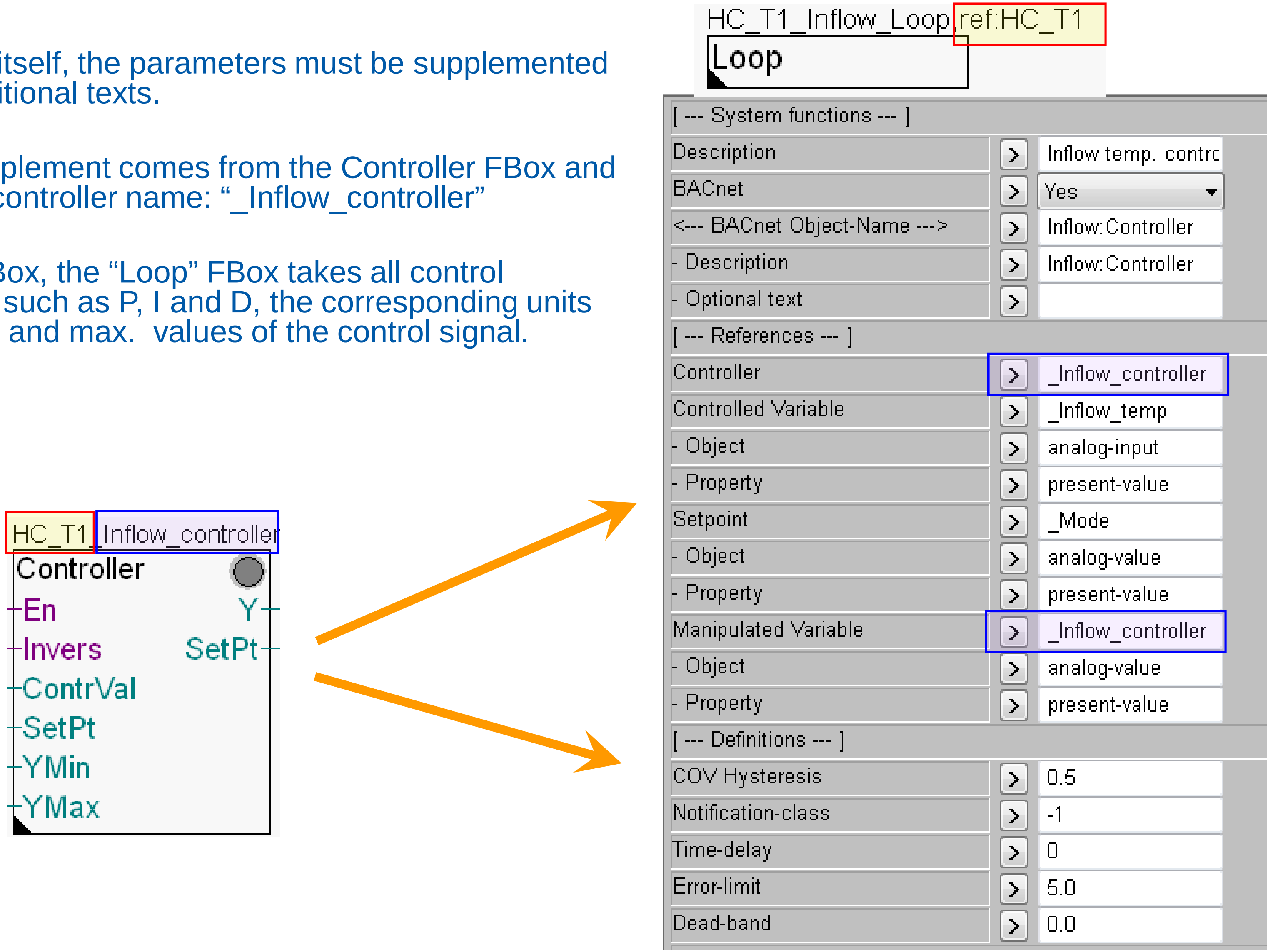


Loop

In the FBox itself, the parameters must be supplemented with the additional texts.

The first supplement comes from the Controller FBox and defines the controller name: “_Inflow_controller”

From this FBox, the “Loop” FBox takes all control parameters, such as P, I and D, the corresponding units and the min. and max. values of the control signal.



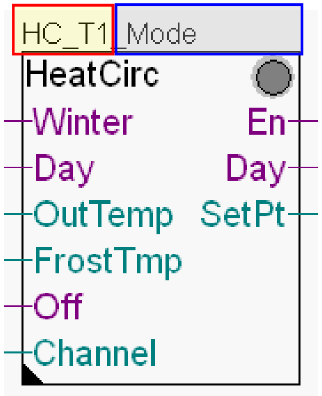
[--- System functions ---]		
Description	>	Inflow temp. contrc
BACnet	>	Yes
<--- BACnet Object-Name --->	>	Inflow:Controller
- Description	>	Inflow:Controller
- Optional text	>	
[--- References ---]		
Controller	>	_Inflow_controller
Controlled Variable	>	_Inflow_temp
- Object	>	analog-input
- Property	>	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
Notification-class	>	-1
Time-delay	>	0
Error-limit	>	5.0
Dead-band	>	0.0

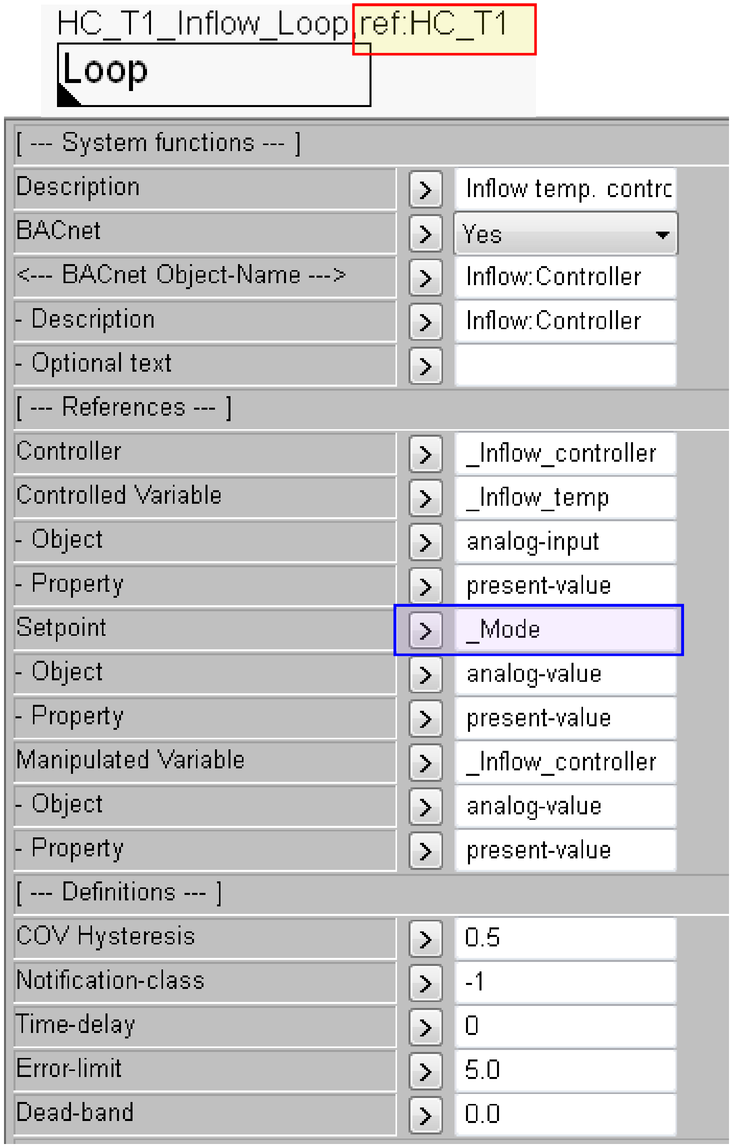
Loop

Next, we enter the reference supplement to the FBox that generates the "_Mode" setpoint.

Normally, this is an "analogue value" object.

From this, we use the "present value" to save the setpoint. This means it can be adapted when necessary.





HC_T1_Inflow_Loop ref:HC_T1

Loop

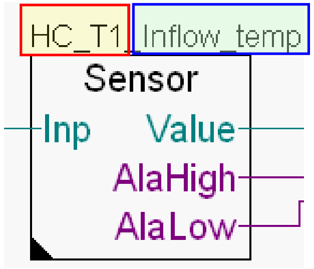
[--- System functions ---]	
Description	Inflow temp. contrc
BACnet	Yes
<--- BACnet Object-Name --->	Inflow:Controller
- Description	Inflow:Controller
- Optional text	
[--- References ---]	
Controller	_Inflow_controller
Controlled Variable	_Inflow_temp
- Object	analog-input
- Property	present-value
Setpoint	_Mode
- Object	analog-value
- Property	present-value
Manipulated Variable	_Inflow_controller
- Object	analog-value
- Property	present-value
[--- Definitions ---]	
COV Hysteresis	0.5
Notification-class	-1
Time-delay	0
Error-limit	5.0
Dead-band	0.0

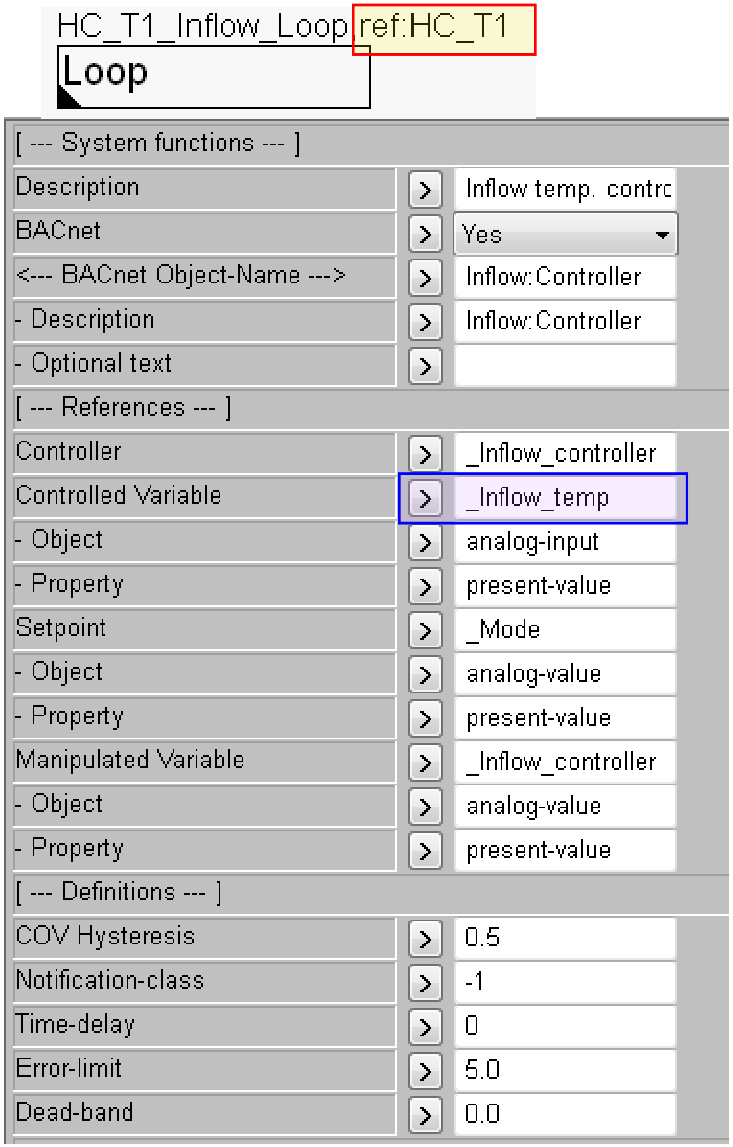
Loop

Finally, we enter the reference supplement in the FBox that provides the measured value, i.e. the actual value – in this case "_Inflow_temp".

Normally, this is an "analogue value" object.

From this, we use the "present value" to save the setpoint. This means it can be adapted when necessary.



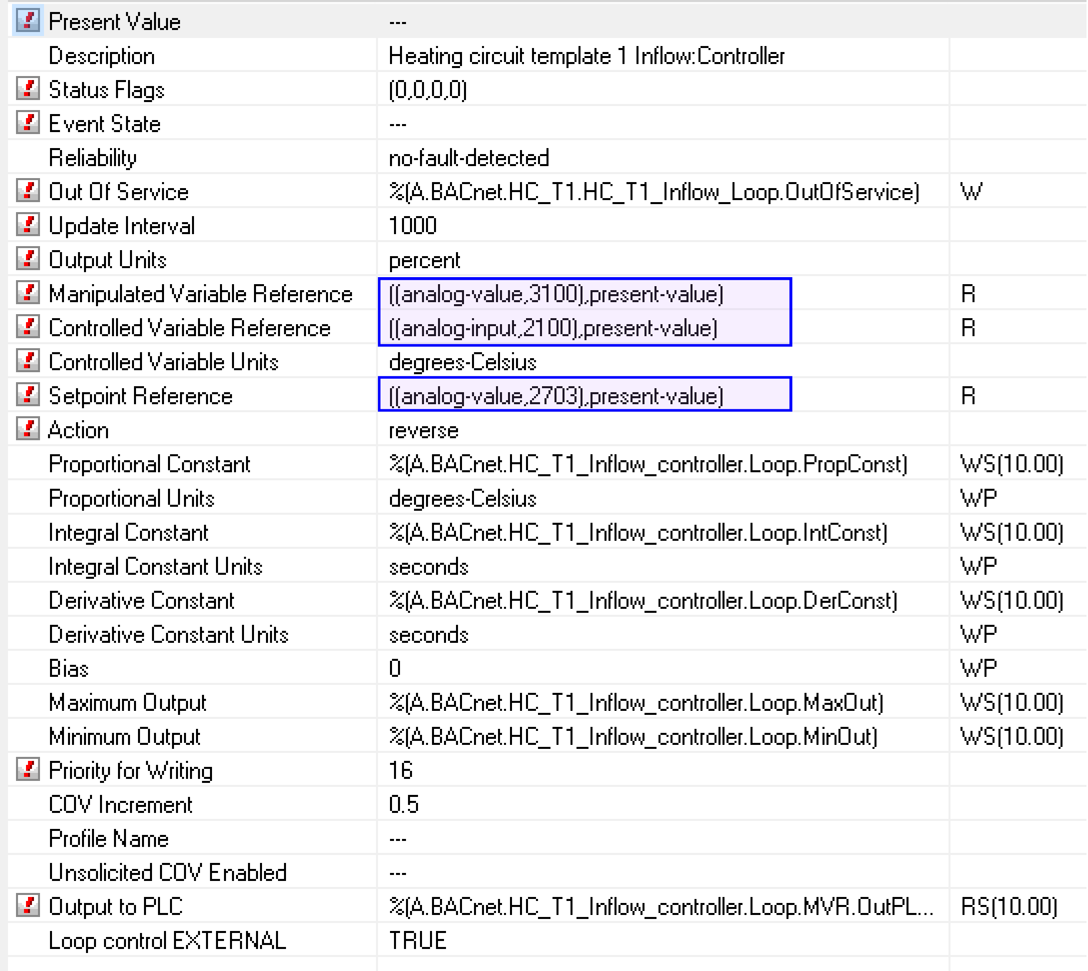

HC_T1_Inflow_Loop ref:HC_T1

Loop

[--- System functions ---]	
Description	Inflow temp. contrc
BACnet	Yes
<--- BACnet Object-Name --->	Inflow:Controller
- Description	Inflow:Controller
- 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
Notification-class	-1
Time-delay	0
Error-limit	5.0
Dead-band	0.0

Loop

Now the Loop object has all necessary references and information



!	Present Value	---	
	Description	Heating circuit template 1 Inflow:Controller	
!	Status Flags	{0,0,0,0}	
!	Event State	---	
	Reliability	no-fault-detected	
!	Out Of Service	%(A.BACnet.HC_T1.HC_T1_Inflow_Loop.OutOfService)	W
!	Update Interval	1000	
!	Output Units	percent	
!	Manipulated Variable Reference	((analog-value,3100),present-value)	R
!	Controlled Variable Reference	((analog-input,2100),present-value)	R
!	Controlled Variable Units	degrees-Celsius	
!	Setpoint Reference	((analog-value,2703),present-value)	R
!	Action	reverse	
	Proportional Constant	%(A.BACnet.HC_T1_Inflow_controller.Loop.PropConst)	WS(10.00)
	Proportional Units	degrees-Celsius	WP
	Integral Constant	%(A.BACnet.HC_T1_Inflow_controller.Loop.IntConst)	WS(10.00)
	Integral Constant Units	seconds	WP
	Derivative Constant	%(A.BACnet.HC_T1_Inflow_controller.Loop.DerConst)	WS(10.00)
	Derivative Constant Units	seconds	WP
	Bias	0	WP
	Maximum Output	%(A.BACnet.HC_T1_Inflow_controller.Loop.MaxOut)	WS(10.00)
	Minimum Output	%(A.BACnet.HC_T1_Inflow_controller.Loop.MinOut)	WS(10.00)
!	Priority for Writing	16	
	COV Increment	0.5	
	Profile Name	---	
	Unsolicited COV Enabled	---	
!	Output to PLC	%(A.BACnet.HC_T1_Inflow_controller.Loop.MVR.OutPL...	RS(10.00)
	Loop control EXTERNAL	TRUE	

Loop

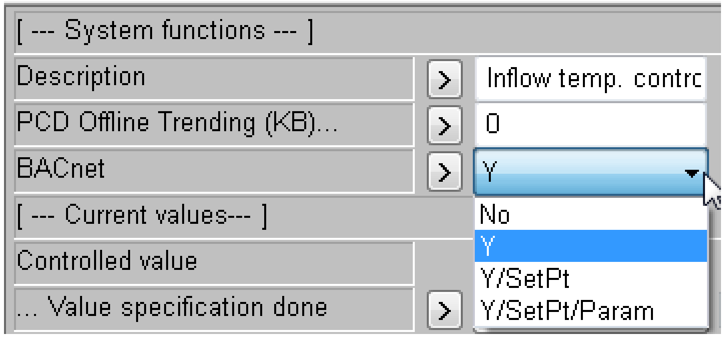
Possible BACnet settings in the Controller FBoxes:

- No > Loop object does not work.

- Y > Loop object can be referenced at “Controller” and “Manipulated Variable”

- Y/SetPt, Loop object can be referenced to “Controller”, “Setpoint” and “Manipulated Variable”

- Y/SetPt/Param > Loop object cannot be used because the FBox creates Analogue Value objects for all values and parameters. This can be necessary when communicating with a SCADA system which does not support Loop objects.



[--- System functions ---]

Description > Inflow temp. contrc

PCD Offline Trending (KB)... > 0

BACnet > Y

[--- Current values---]

Controlled value

... Value specification done >

Overwriting settings (properties)

SAIA BURGESS CONTROLS

Overwriting properties

Now we will change some BACnet object settings for feedback alarms for the inflow pump.

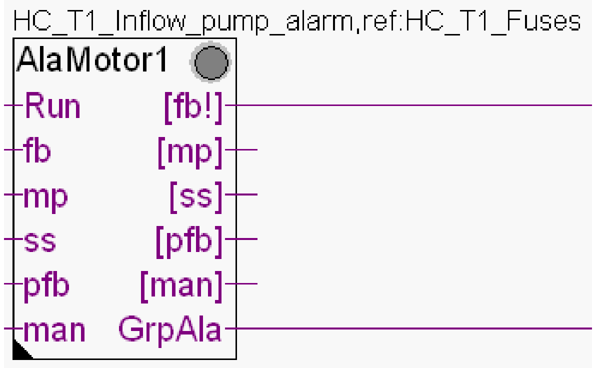
We only overwrite the properties of this FBox.

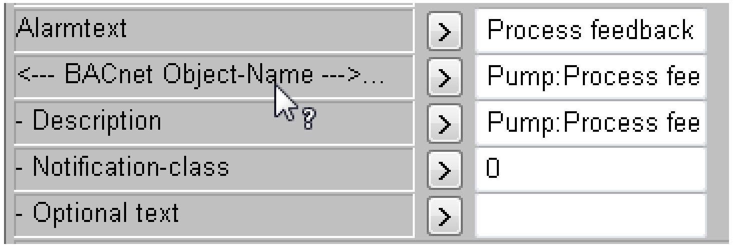
First, we must find out the name of the object. It defines the text definitions of the settings. We want to overwrite this in a further step.

In the settings, there is a field after the respective alarm <--- BACnet Object Name ---> . Click on this field to see the name the BACnet object in a new smaller window.

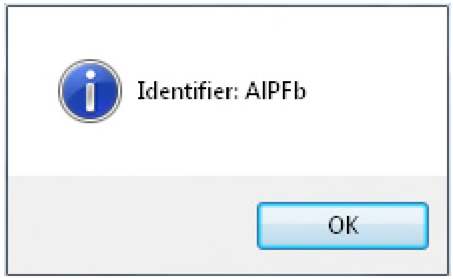
The identifier is “AlFB” (Alarm ProcessFeedback).

Every BACnet object can be identified in this way.





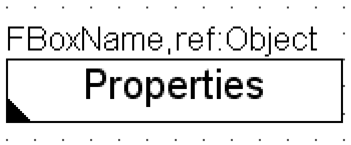
Alarmtext	>	Process feedback
<--- BACnet Object-Name --->...	>	Pump:Process fee
- Description	>	Pump:Process fee
- Notification-class	>	0
- Optional text	>	



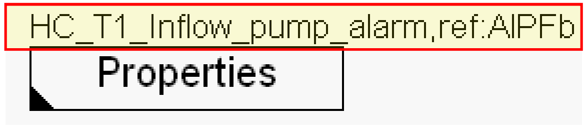
Identifier: AlPFb

Overwriting properties

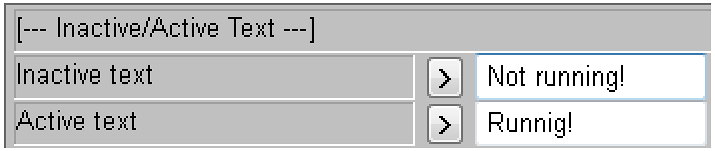
Now take the “Properties” FBox from the “BACnet” family.



The FBox must be given the name of the FBox to be changed (= Name) and must have the name of the object to be changed as reference (= REF).



In the FBox settings, we change the Active and Inactive texts.

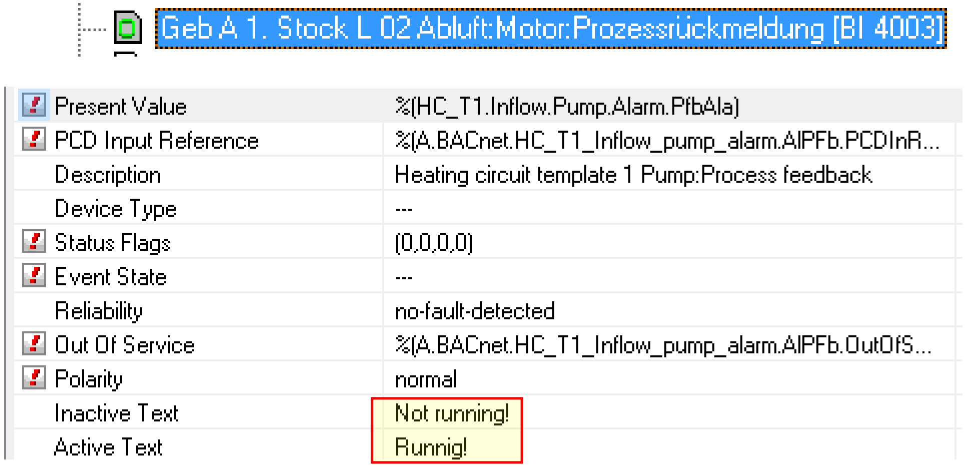


[--- Inactive/Active Text ---]

Inactive text	Not running!
Active text	Runnig!

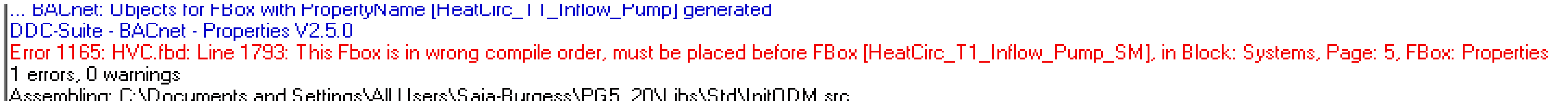
After another Build, you will see that the texts changed above have also been adapted in the BACnet object. All others still have the texts “Off” and “On”.

However, do set this FBox property for use directly in front of the referencing FBox and check the sequence with the “Show FBox Priorities” function.



Geb A 1. Stock L 02 Abluft:Motor:Prozessrückmeldung [BI 4003]

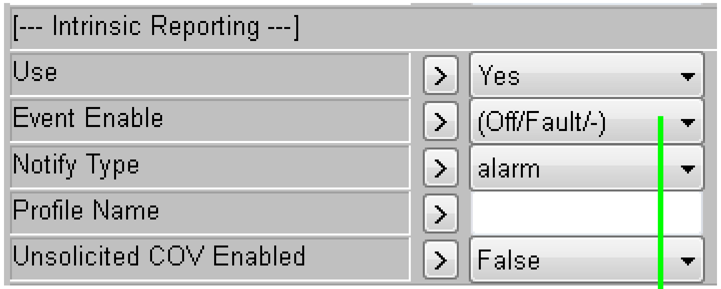
Present Value	%(HC_T1.Inflow.Pump.Alarm.PfbAla)
PCD Input Reference	%(A.BACnet.HC_T1_Inflow_pump_alarm.AIPFb.PCDInR...
Description	Heating circuit template 1 Pump:Process feedback
Device Type	---
Status Flags	(0,0,0,0)
Event State	---
Reliability	no-fault-detected
Out Of Service	%(A.BACnet.HC_T1_Inflow_pump_alarm.AIPFb.OutOfS...
Polarity	normal
Inactive Text	Not running!
Active Text	Runnig!



```
... 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\InitODM.src
```

Overwriting properties

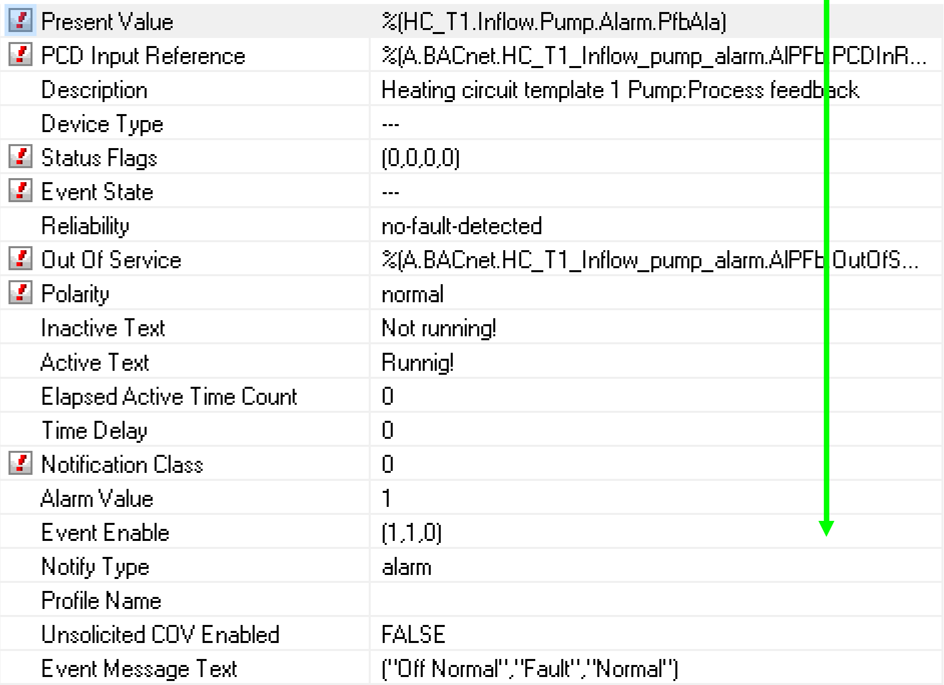
You can also change texts in the settings in the notification class.



[--- Intrinsic Reporting ---]

Use	Yes
Event Enable	(Off/Fault/-)
Notify Type	alarm
Profile Name	
Unsolicited COV Enabled	False

Here, too, these will then only be applied to the referenced objects with the same NC.



Present Value	%(HC_T1.Inflow.Pump.Alarm.PfbAla)
PCD Input Reference	%(A.BACnet.HC_T1_Inflow_pump_alarm.AIPFb.PCDInR...
Description	Heating circuit template 1 Pump:Process feedback
Device Type	---
Status Flags	(0,0,0,0)
Event State	---
Reliability	no-fault-detected
Out Of Service	%(A.BACnet.HC_T1_Inflow_pump_alarm.AIPFb.OutOfS...
Polarity	normal
Inactive Text	Not running!
Active Text	Runnig!
Elapsed Active Time Count	0
Time Delay	0
Notification Class	0
Alarm Value	1
Event Enable	(1,1,0)
Notify Type	alarm
Profile Name	
Unsolicited COV Enabled	FALSE
Event Message Text	("Off Normal","Fault","Normal")

BACnet with DDC Suite AddOn tool

SAIA BURGESS CONTROLS

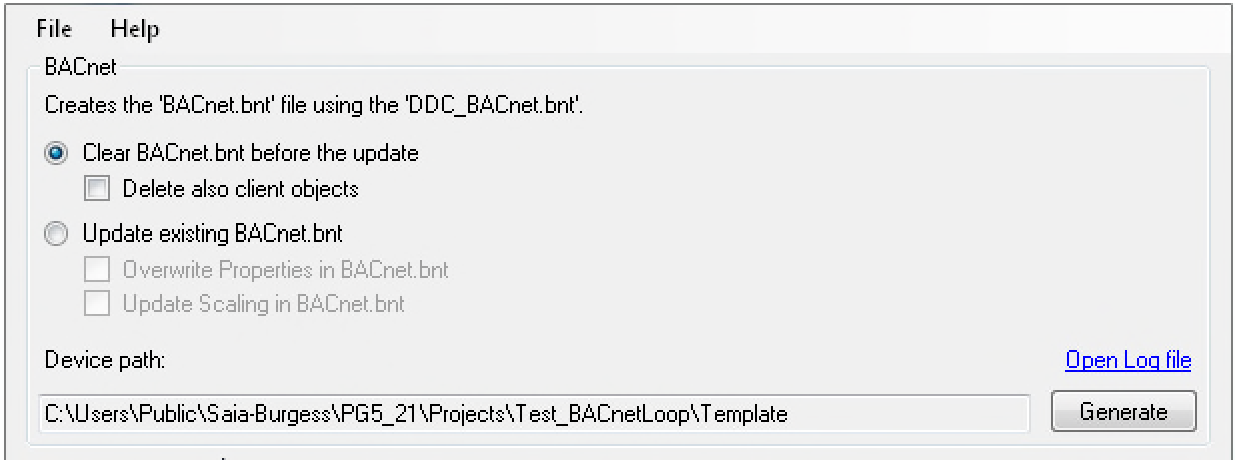
DDC Suite 2.5 / PG5 Building Advanced

BACnet

The BACnet configuration DDC_BACnet.bnt which is generated from the DDC Suite FBoxes does not normally fit perfectly, e.g. if you use the Analogue FBox for a pressure sensor.

With DDC Suite 2.5, there is no longer the problem of BACnet object numbers being moved with programme modifications and, thus, the link being lost.

However, there can be other reasons for having to adapt the objects. To prevent each Build from overwriting the important BACnet.bnt file and, thus, causing changes to be lost, there is now an intermediate step with the AddOn tool.



BACnet

Creates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.

● Clear BACnet.bnt before the update

□ Delete also client objects

○ Update existing BACnet.bnt

□ Overwrite Properties in BACnet.bnt

□ Update Scaling in BACnet.bnt

Device path:

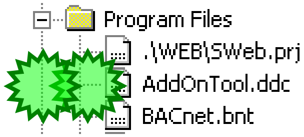
C:\Users\Public\Saia-Burgess\PG5_21\Projects\Test_BACnetLoop\Template

DDC Suite 2.5 / PG5 Building Advanced

BACnet

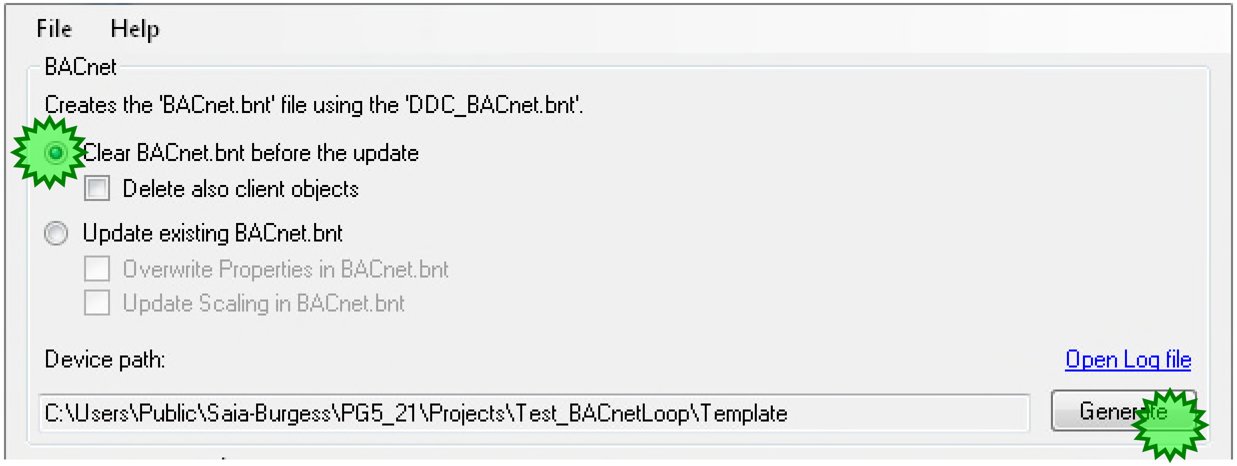
After the Build, the DDC_BACnet.bnt file is regenerated. It can also be found in the CPU folder under “Program files”.

Start the DDC Suite AddOnTool by double-clicking on the AddOnTool.ddc file under “Program Files”.



When using the DDC Suite AddOnTool for the first time, activate the “Force Update” option so that the device name and device ID are copied from the DDC_BACnet.bnt.

Click on “Generate” to update the BACnet.bnt.
The changes made can be viewed in a log file.



Creates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.

● Clear BACnet.bnt before the update

□ Delete also client objects

○ Update existing BACnet.bnt

□ Overwrite Properties in BACnet.bnt

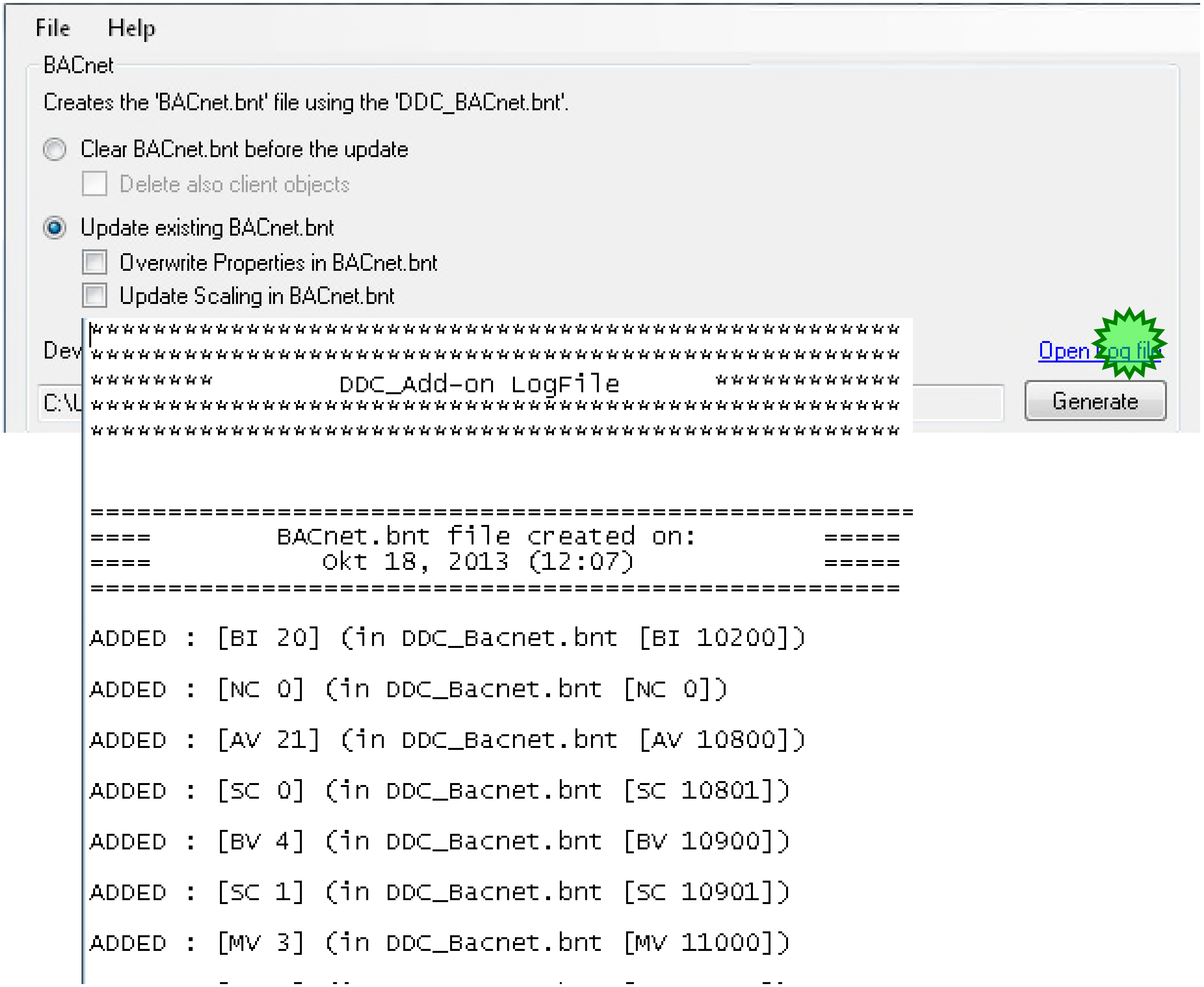
□ Update Scaling in BACnet.bnt

Device path: C:\Users\Public\Saia-Burgess\PG5_21\Projects\Test_BACnetLoop\Template

DDC Suite 2.5 / PG5 Building Advanced

BACnet

The AddOn tool generates a log file in which the changes to the BACnet.bnt are listed.



Creates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.

○ Clear BACnet.bnt before the update

□ Delete also client objects

● Update existing BACnet.bnt

□ Overwrite Properties in BACnet.bnt

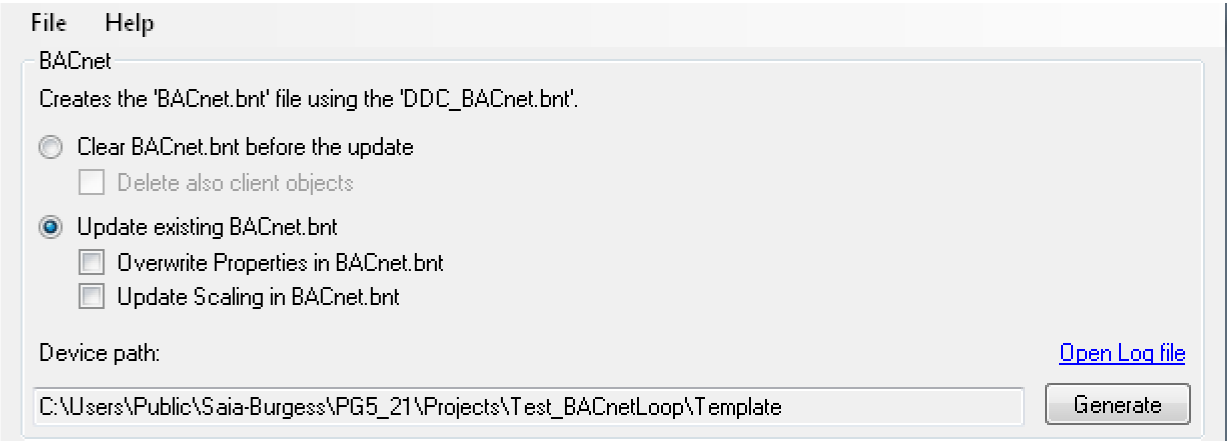
□ Update Scaling in BACnet.bnt

```
*****************************************************
*****************************************************
********          DDC_Add-on LogFile       ***********
*****************************************************
*****************************************************



=====================================================
====        BACnet.bnt file created on:        =====
====           okt 18, 2013 (12:07)            =====
=====================================================

ADDED : [BI 20] (in DDC_Bacnet.bnt [BI 10200])

ADDED : [NC 0] (in DDC_Bacnet.bnt [NC 0])

ADDED : [AV 21] (in DDC_Bacnet.bnt [AV 10800])

ADDED : [SC 0] (in DDC_Bacnet.bnt [SC 10801])

ADDED : [BV 4] (in DDC_Bacnet.bnt [BV 10900])

ADDED : [SC 1] (in DDC_Bacnet.bnt [SC 10901])

ADDED : [MV 3] (in DDC_Bacnet.bnt [MV 11000])
```

DDC Suite 2.5 / PG5 Building Advanced

BACnet

If you are supplementing the BACnet objects, you should use the Update function in the AddOn tool. This will allow for the new objects to be added.



File Help

BACnet

Creates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.

○ Clear BACnet.bnt before the update

□ Delete also client objects

● Update existing BACnet.bnt

□ Overwrite Properties in BACnet.bnt

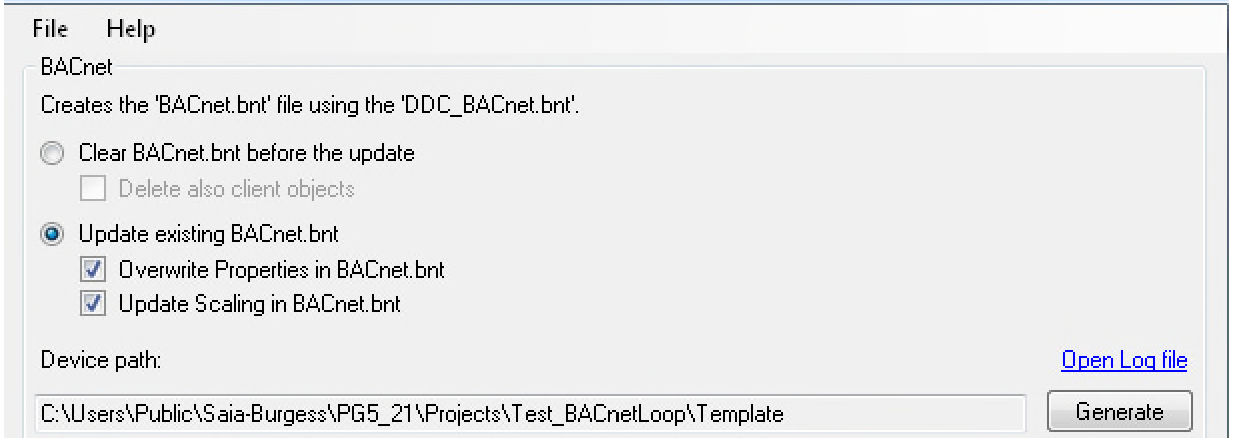
□ Update Scaling in BACnet.bnt

Device path: Open Log file

C:\Users\Public\Saia-Burgess\PG5_21\Projects\Test_BACnetLoop\Template

Generate

If you only wish to modify object properties, you must select the bottom two settings. This allows the tool to modify the properties of the existing objects.



File Help

BACnet

Creates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.

○ Clear BACnet.bnt before the update

□ Delete also client objects

● Update existing BACnet.bnt

☑ Overwrite Properties in BACnet.bnt

☑ Update Scaling in BACnet.bnt

Device path: Open Log file

C:\Users\Public\Saia-Burgess\PG5_21\Projects\Test_BACnetLoop\Template

Generate

PG5 Building Advanced / DDC Suite 2.5 Working with templates

DDC Suite 2.5 / PG5 Building Advanced

Working with templates

In the first parts of the workshop we created a small ventilation system with the following parts:

- 3 Fupla pages, basic functions
- Offline trending in the PCD
- Alarm management in the PCD
- BACnet configuration

In our daily work, we want to reuse this ventilation system in a different device or in a different project. To do this, it would be simpler if we could use the template.

Let’s take a look at how easy this is.

Creating a new device in the project

DDC Suite 2.5 / PG5 Building Advanced

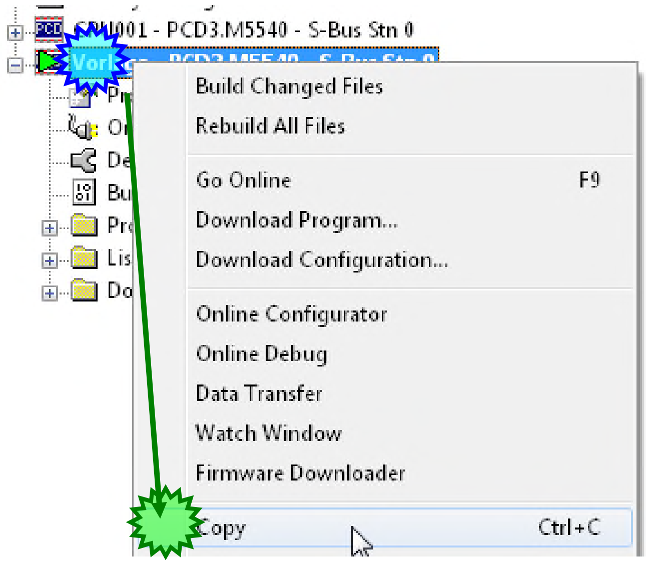
Working with templates

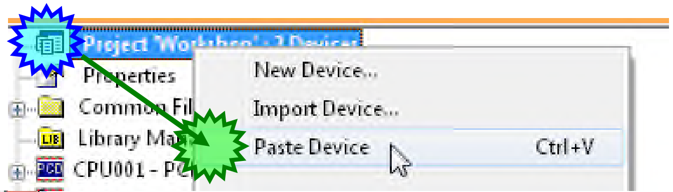
First we create a new device – the “CPU_Template” device should be kept since some settings are predefined there.

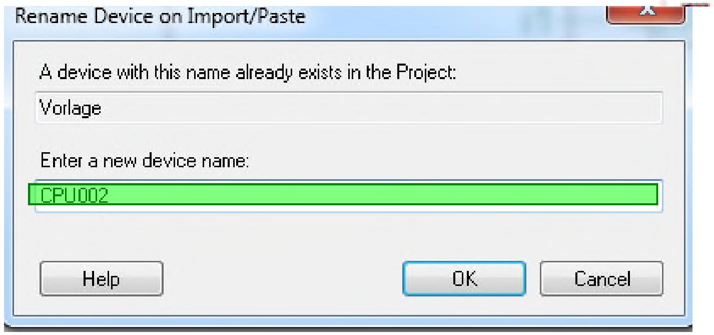
To do this, copy and paste into Project Manager. Right-click on “CPU _Template” and then select Copy in the context menu.

Right-click on “Project ’Workshop’” and then Paste Device in the context menu.

We have to rename the device. Please use “CPU02” and confirm with “OK”.






Rename Device on Import/Paste

A device with this name already exists in the Project:

Vorlage

Enter a new device name:

CPU002

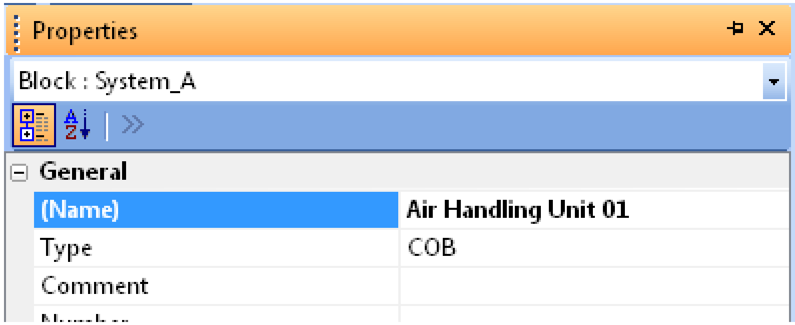
DDC Suite 2.5 / PG5 Building Advanced

Working with templates

In Fupla, go to the first page COB Anlage_X.

Rename the COB, we will importing then the ventilation system that we have previously programmed.

Air Handling Unit 01



Properties

Block : System_A

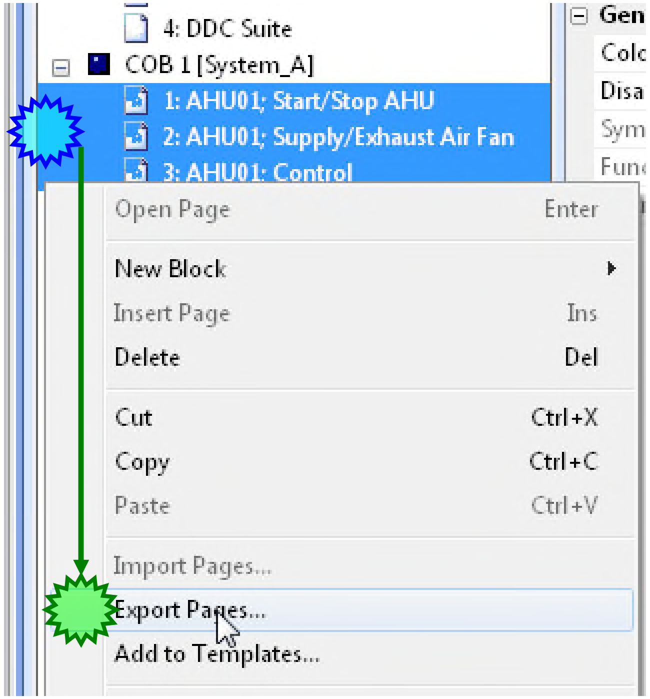
General

(Name)	Air Handling Unit 01
Type	COB
Comment	

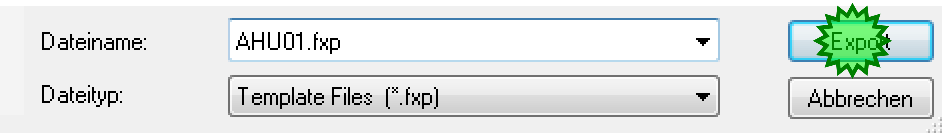
DDC Suite 2.5 / PG5 Building Advanced

Working with templates

In CPU01, select the three programme pages without the I/Os and right-click on Export Pages…



We can enter AHU01, for example, as the name and save the template by clicking on Export.



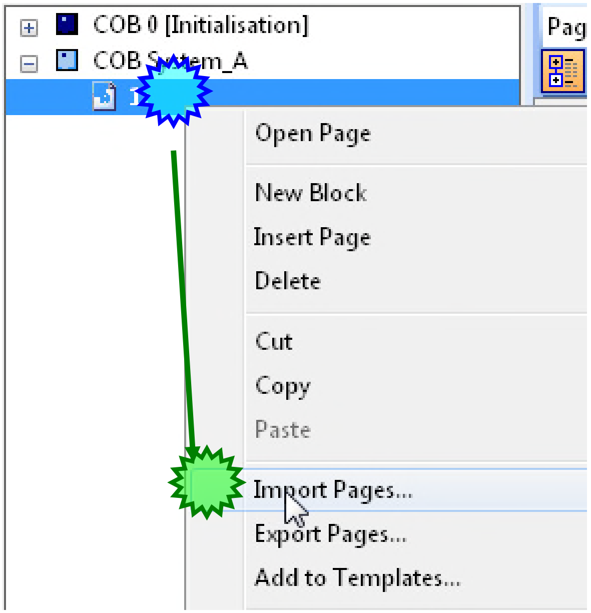
Dateiname: AHU01.fxp

Dateityp: Template Files (*.fxp)

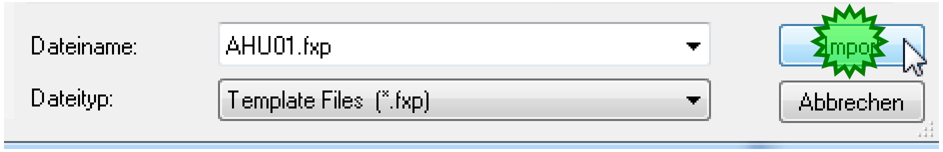
DDC Suite 2.5 / PG5 Building Advanced

Working with templates

We then import this template back into the new CPU02. Right-click on the first empty page and Import Pages…



Search for our exported template and import it.



Dateiname: AHU01.fxp

Dateityp: Template Files (*.fxp)

DDC Suite 2.5 / PG5 Building Advanced

Working with templates

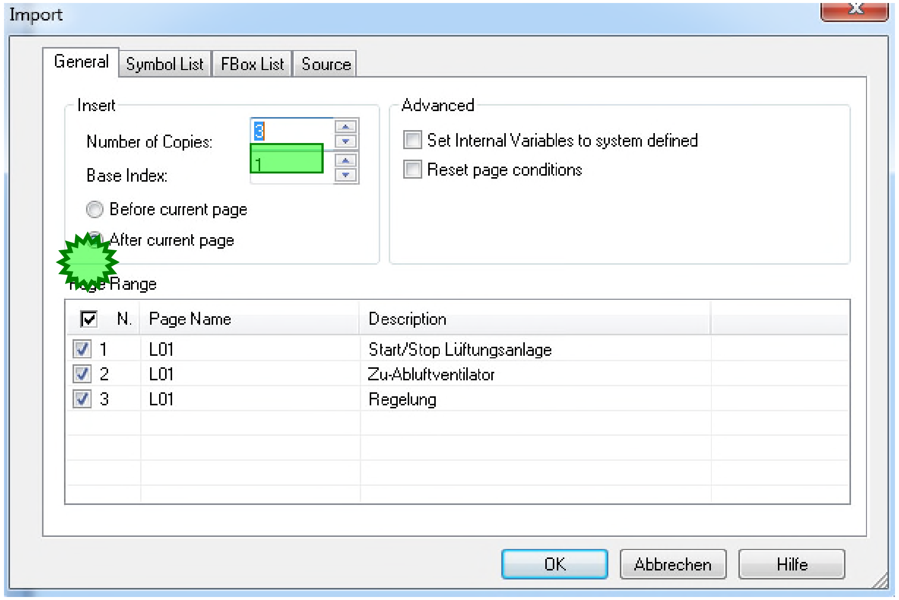
1. Do not activate the option Set Internal Variables to system defined, otherwise you will not get any internal FBox symbols during the import.

2. If you select “Reset page conditions”, special page options configured in the properties for the page would be reset.

3. We want to import the system three times, so we enter 3 next to “Number of Copies”.

4. We want numbering to start at “1”, so Base Index 1 is correct.

5. Select After current page



Import

General | Symbol List | FBox List | Source

Insert

Number of Copies: 3

Base Index: 1

○ Before current page

● After current page

Advanced

□ Set Internal Variables to system defined

□ Reset page conditions

Page Range

☑	N.	Page Name	Description
☑	1	L01	Start/Stop Lüftungsanlage
☑	2	L01	Zu-Abluftventilator
☑	3	L01	Regelung

DDC Suite 2.5 / PG5 Building Advanced

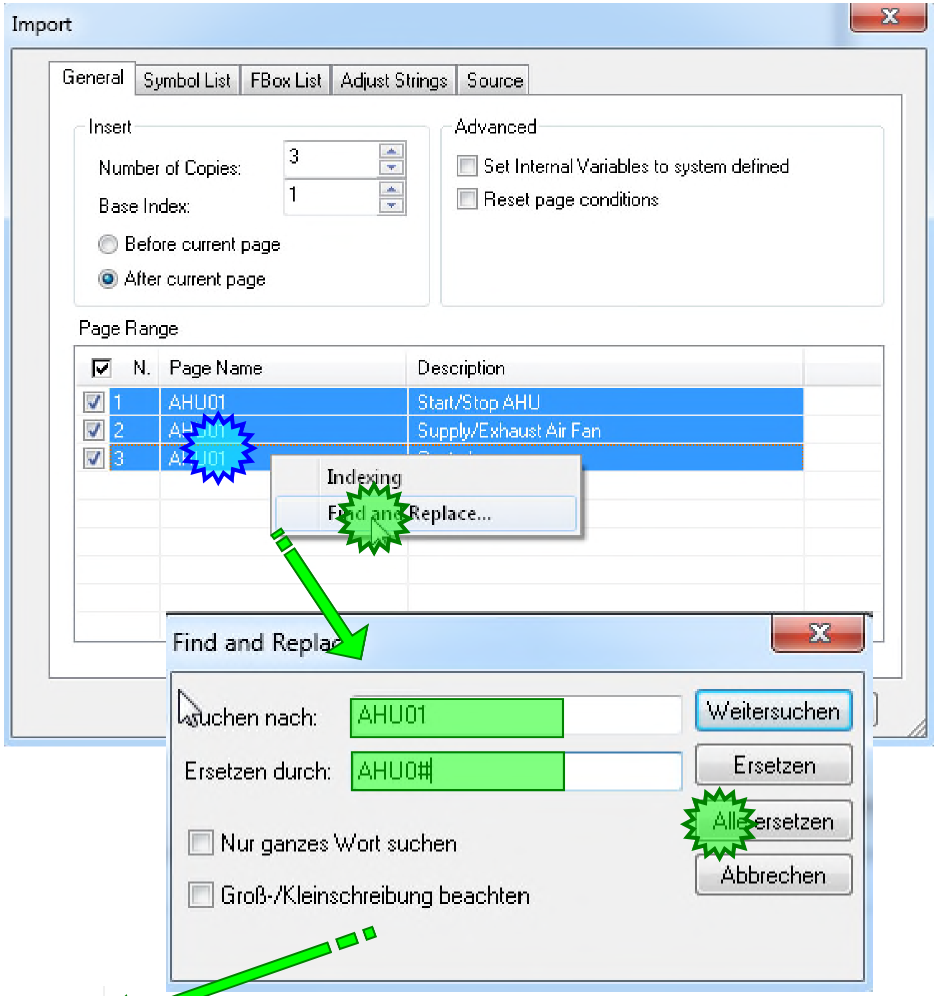
Working with templates

In the Page Name column, change the name AHU01 to AHU0#

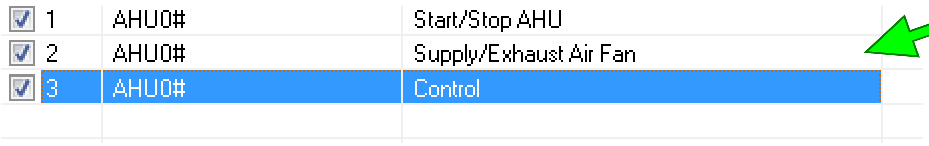
To do this, right-click with the mouse and select “Find and Replace”

Use the “Alle ersetzen” button and close the dialogue with the “Abbrechen” button

Do not use the OK button.
This would start the IMPORT.



☑	N.	Page Name	Description
☑	1	AHU01	Start/Stop AHU
☑	2	AHU01	Supply/Exhaust Air Fan
☑	3	AHU01	Control



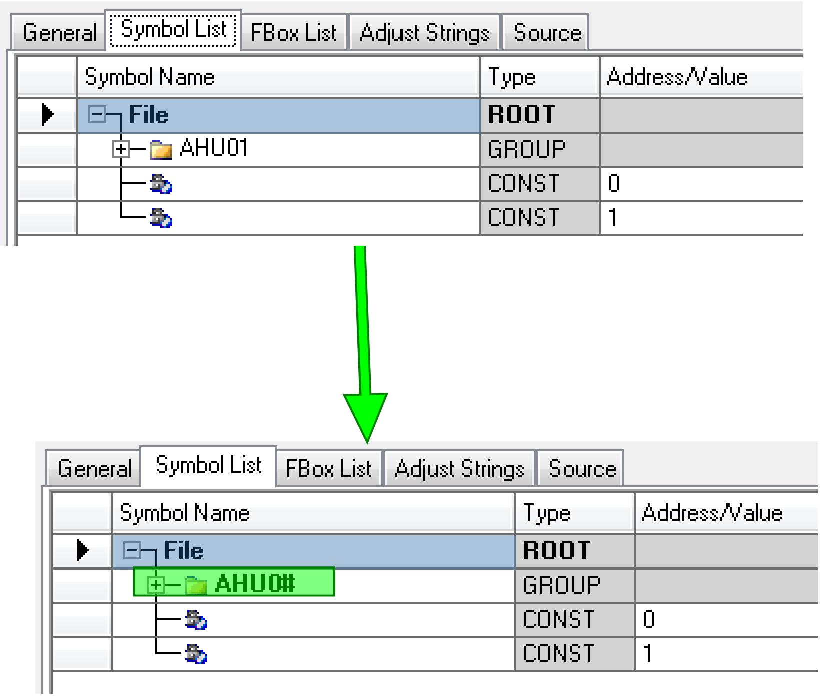
☑	1	AHU0#	Start/Stop AHU
☑	2	AHU0#	Supply/Exhaust Air Fan
☑	3	AHU0#	Control

DDC Suite 2.5 / PG5 Building Advanced

Working with templates

Activate the
Symbol List tab

Rename the group AHU01 to AHU0#



Symbol Name	Type	Address/Value
File	ROOT	
AHU01	GROUP	
	CONST	0
	CONST	1

Symbol Name	Type	Address/Value
File	ROOT	
AHU0#	GROUP	
	CONST	0
	CONST	1

Do not use the OK button. This would start the IMPORT.

DDC Suite 2.5 / PG5 Building Advanced

Working with templates

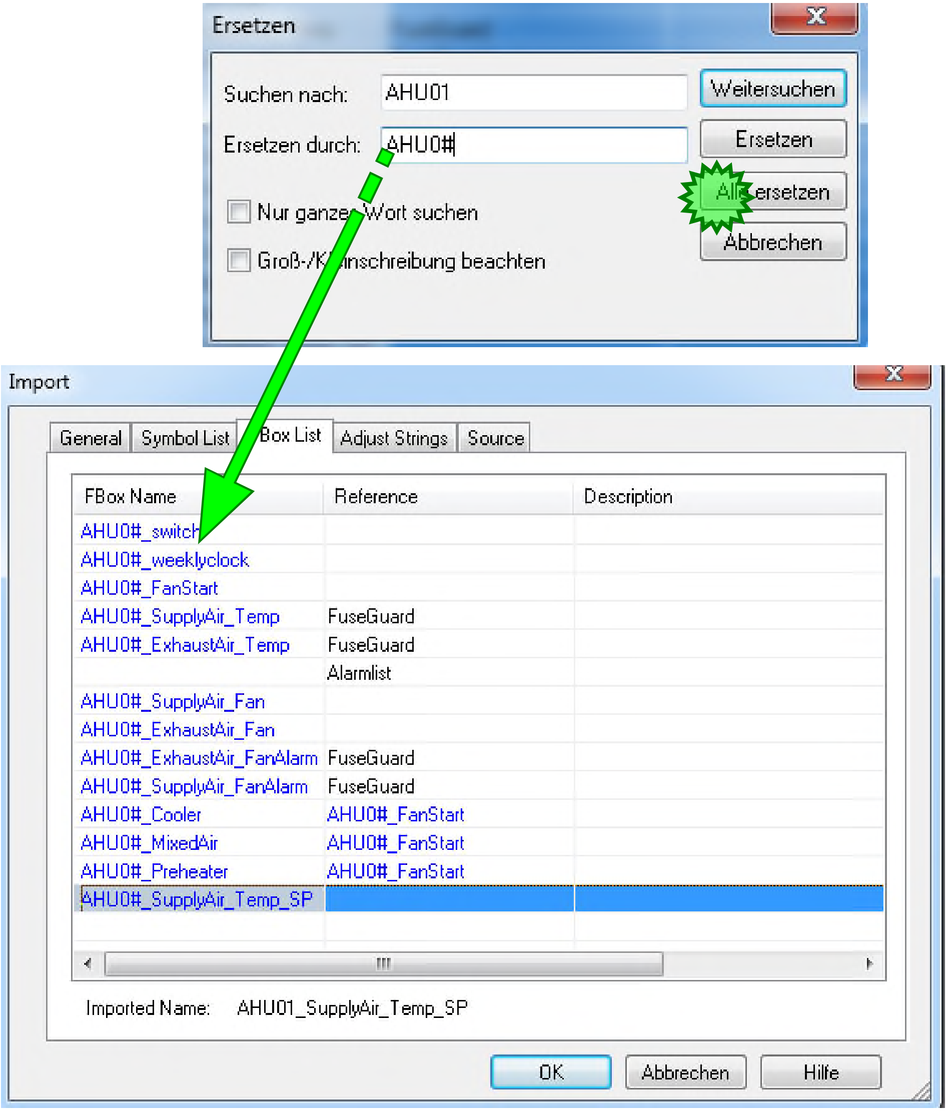
Activate the FBox List tab

Select all entries, right-click with the mouse and select

Replace prefix from the selection menu

Search for AHU01 and replace with AHU0#.

Any FBoxes without prefixes would have to be supplemented with a prefix here, because otherwise there would be FBoxes with the same names. And also the reference is changed in the second row.



Suchen nach: AHU01

Ersetzen durch: AHU0#

□ Nur ganzes Wort suchen

□ Groß-/Kleinschreibung beachten

FBox Name	Reference	Description
AHU0#_switch		
AHU0#_weeklyclock		
AHU0#_FanStart		
AHU0#_SupplyAir_Temp	FuseGuard	
AHU0#_ExhaustAir_Temp	FuseGuard	
	Alarmlist	
AHU0#_SupplyAir_Fan		
AHU0#_ExhaustAir_Fan		
AHU0#_ExhaustAir_FanAlarm	FuseGuard	
AHU0#_SupplyAir_FanAlarm	FuseGuard	
AHU0#_Cooler	AHU0#_FanStart	
AHU0#_MixedAir	AHU0#_FanStart	
AHU0#_Preheater	AHU0#_FanStart	
AHU0#_SupplyAir_Temp_SP		

Imported Name: AHU01_SupplyAir_Temp_SP

DDC Suite 2.5 / PG5 Building Advanced

Working with templates

Change to the new tab Fbox Strings

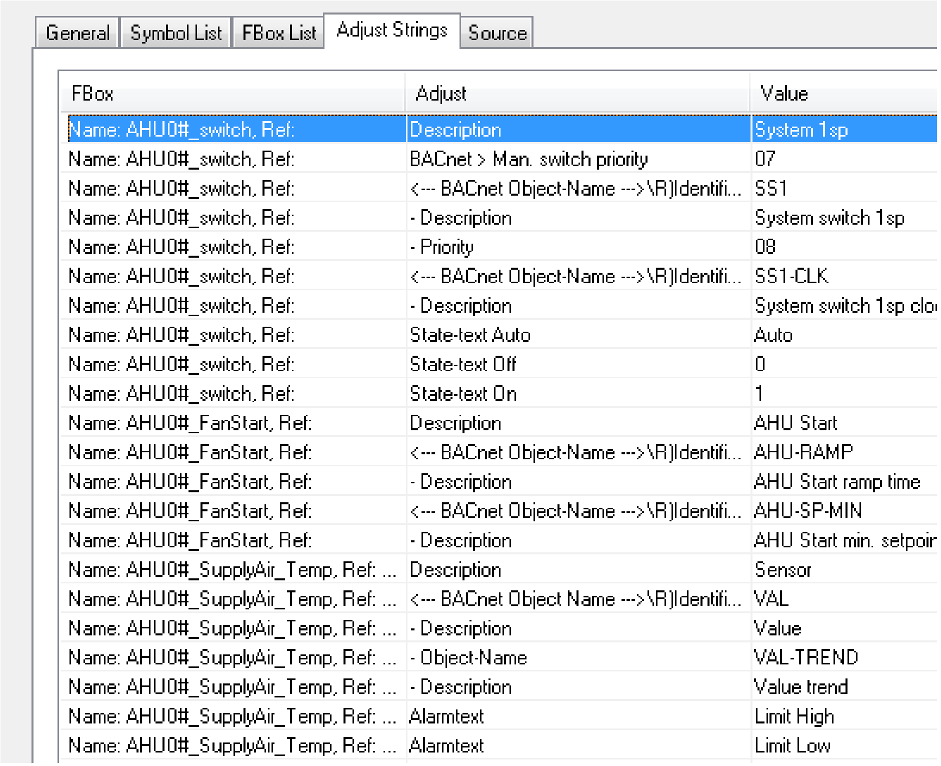
Here we have all the adjust names, texts, strings from each fbox in the programme.

It is possible to change them already here during the import.

The fbox name is already changed to AHU0# because of the changes in the tab Fbox List.

We do nothing here and also not in the last tab Source.

Now we start the import with OK.



FBox	Adjust	Value
Name: AHU0#_switch, Ref:	Description	System 1sp
Name: AHU0#_switch, Ref:	BACnet > Man. switch priority	07
Name: AHU0#_switch, Ref:	<--- BACnet Object-Name --->\R)Identifi...	SS1
Name: AHU0#_switch, Ref:	- Description	System switch 1sp
Name: AHU0#_switch, Ref:	- Priority	08
Name: AHU0#_switch, Ref:	<--- BACnet Object-Name --->\R)Identifi...	SS1-CLK
Name: AHU0#_switch, Ref:	- Description	System switch 1sp clo
Name: AHU0#_switch, Ref:	State-text Auto	Auto
Name: AHU0#_switch, Ref:	State-text Off	0
Name: AHU0#_switch, Ref:	State-text On	1
Name: AHU0#_FanStart, Ref:	Description	AHU Start
Name: AHU0#_FanStart, Ref:	<--- BACnet Object-Name --->\R)Identifi...	AHU-RAMP
Name: AHU0#_FanStart, Ref:	- Description	AHU Start ramp time
Name: AHU0#_FanStart, Ref:	<--- BACnet Object-Name --->\R)Identifi...	AHU-SP-MIN
Name: AHU0#_FanStart, Ref:	- Description	AHU Start min. setpoir
Name: AHU0#_SupplyAir_Temp, Ref: ...	Description	Sensor
Name: AHU0#_SupplyAir_Temp, Ref: ...	<--- BACnet Object Name --->\R)Identifi...	VAL
Name: AHU0#_SupplyAir_Temp, Ref: ...	- Description	Value
Name: AHU0#_SupplyAir_Temp, Ref: ...	- Object-Name	VAL-TREND
Name: AHU0#_SupplyAir_Temp, Ref: ...	- Description	Value trend
Name: AHU0#_SupplyAir_Temp, Ref: ...	Alarmtext	Limit High
Name: AHU0#_SupplyAir_Temp, Ref: ...	Alarmtext	Limit Low

Steps after the import

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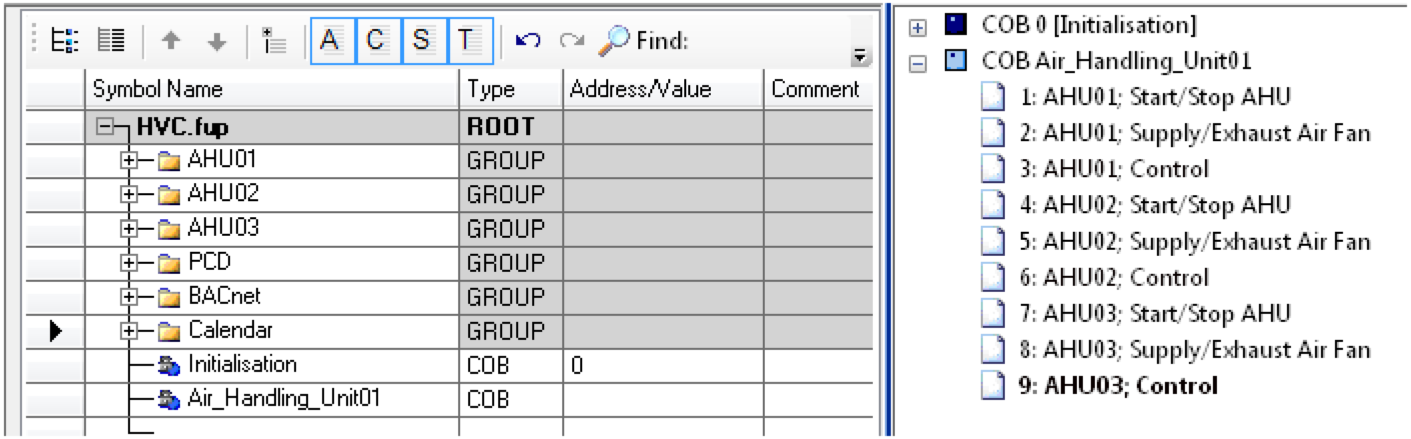
Working with templates - Steps after the import

After the import, a “Build” should work without errors.

But we need to check all core areas of the template as it may be necessary to modify some data that contains duplicated addresses or definitions. Let’s check step by step:

The programme itself. Well-structured templates, such as the ventilation system that we have created in this workshop and all DDC Suite templates, use strict groups and prefixes. During the import, we renamed the page names/groups and FBox properties (Name/Ref) so that each imported template would have its own name. This means no further action is needed after the import (other than a quick check in the Symbol Editor).



Symbol Name	Type	Address/Value	Comment
HVC.fup	ROOT		
AHU01	GROUP		
AHU02	GROUP		
AHU03	GROUP		
PCD	GROUP		
BACnet	GROUP		
Calendar	GROUP		
Initialisation	COB	0	
Air_Handling_Unit01	COB		

- COB 0 [Initialisation]
- COB Air_Handling_Unit01
  - 1: AHU01; Start/Stop AHU
  - 2: AHU01; Supply/Exhaust Air Fan
  - 3: AHU01; Control
  - 4: AHU02; Start/Stop AHU
  - 5: AHU02; Supply/Exhaust Air Fan
  - 6: AHU02; Control
  - 7: AHU03; Start/Stop AHU
  - 8: AHU03; Supply/Exhaust Air Fan
  - **9: AHU03; Control**

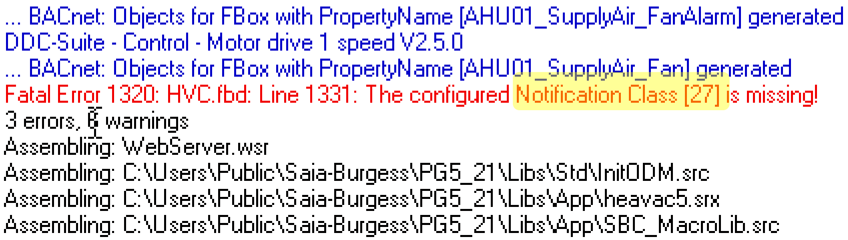
DDC Suite 2.5 / PG5 Building Advanced

Working with templates - Steps after the import

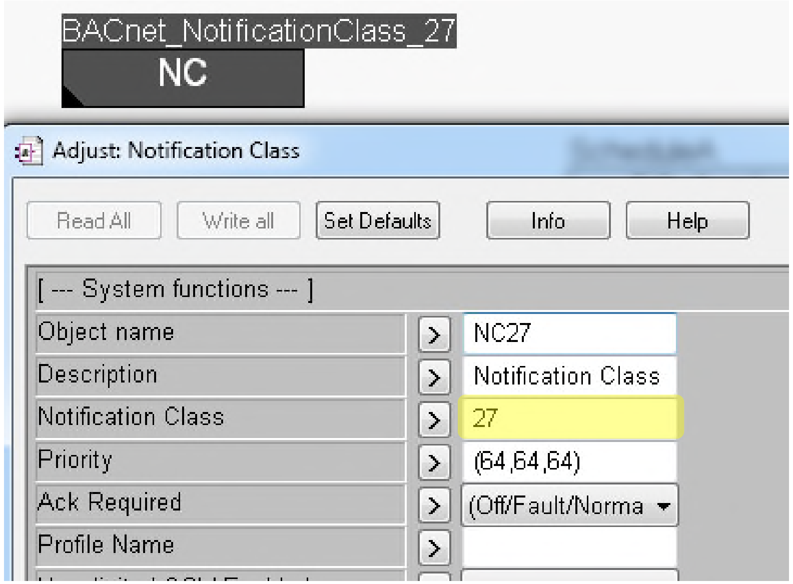
We defined in the BACnet part a notification class 27 for some alarms, but in this COB Initialisation, the fbox to define the NC27 is missing.

So let’s create the NC27 for this CPU once again on the BACnet Page.

Do another Build!



```
... BACnet: Objects for FBox with PropertyName [AHU01_SupplyAir_FanAlarm] generated
DDC-Suite - Control - Motor drive 1 speed V2.5.0
... BACnet: Objects for FBox with PropertyName [AHU01_SupplyAir_Fan] generated
Fatal Error 1320: HVC.fbd: Line 1331: The configured Notification Class [27] is missing!
3 errors, 6 warnings
Assembling: WebServer.wsr
Assembling: C:\Users\Public\Saia-Burgess\PG5_21\Libs\Std\InitODM.src
Assembling: C:\Users\Public\Saia-Burgess\PG5_21\Libs\App\heavac5.srx
Assembling: C:\Users\Public\Saia-Burgess\PG5_21\Libs\App\SBC_MacroLib.src
```



[--- System functions ---]

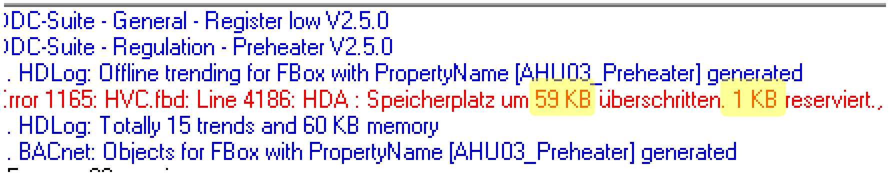
Object name	NC27
Description	Notification Class
Notification Class	27
Priority	(64,64,64)
Ack Required	(Off/Fault/Norma
Profile Name	

DDC Suite 2.5 / PG5 Building Advanced

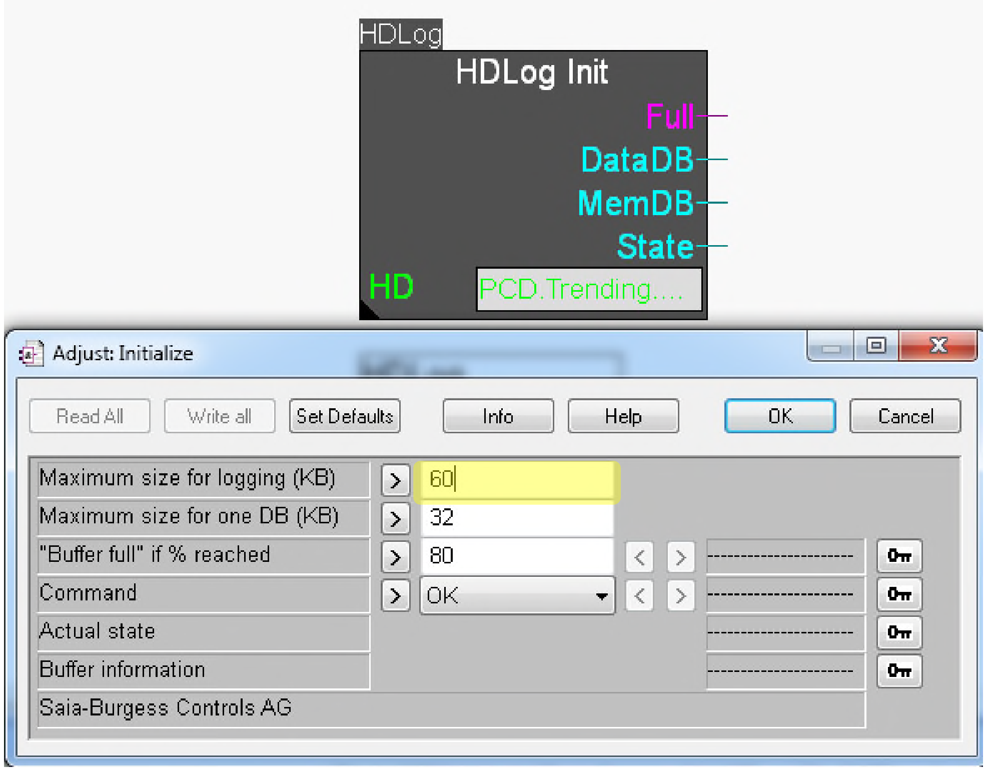
Working with templates - Steps after the import

HDLog – Every FBox that is parameterised for historical data generates all programme code and symbols for the SWeb Editor automatically according to the “Name” FBox property. Due to the strict naming (see previous point), we are confident that every FBox has a unique name – which is an absolute must when using DDC Suite (even for HLK FBoxes).

The reserved memory for the HDLog FBoxes has also grown, as we have a lot of historical data – but during the “Compile” process, you will probably receive an error message regarding HDA. Check the last error message and add the two pieces of information in the error message,1kB reserved exceeded by 59 kB = 60 kB and adapt the definition in the HDLog FBox to this value.



```
DC-Suite - General - Register low V2.5.0
DC-Suite - Regulation - Preheater V2.5.0
. HDLog: Offline trending for FBox with PropertyName [AHU03_Preheater] generated
rror 1165: HVC.fbd: Line 4186: HDA : Speicherplatz um 59 KB überschritten. 1 KB reserviert.,
. HDLog: Totally 15 trends and 60 KB memory
. BACnet: Objects for FBox with PropertyName [AHU03_Preheater] generated
```

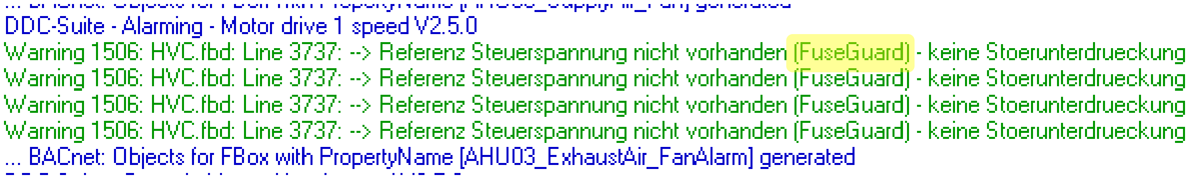


Maximum size for logging (KB)	60
Maximum size for one DB (KB)	32
"Buffer full" if % reached	80
Command	OK
Actual state	
Buffer information	
Saia-Burgess Controls AG	

DDC Suite 2.5 / PG5 Building Advanced

Working with templates - Steps after the import

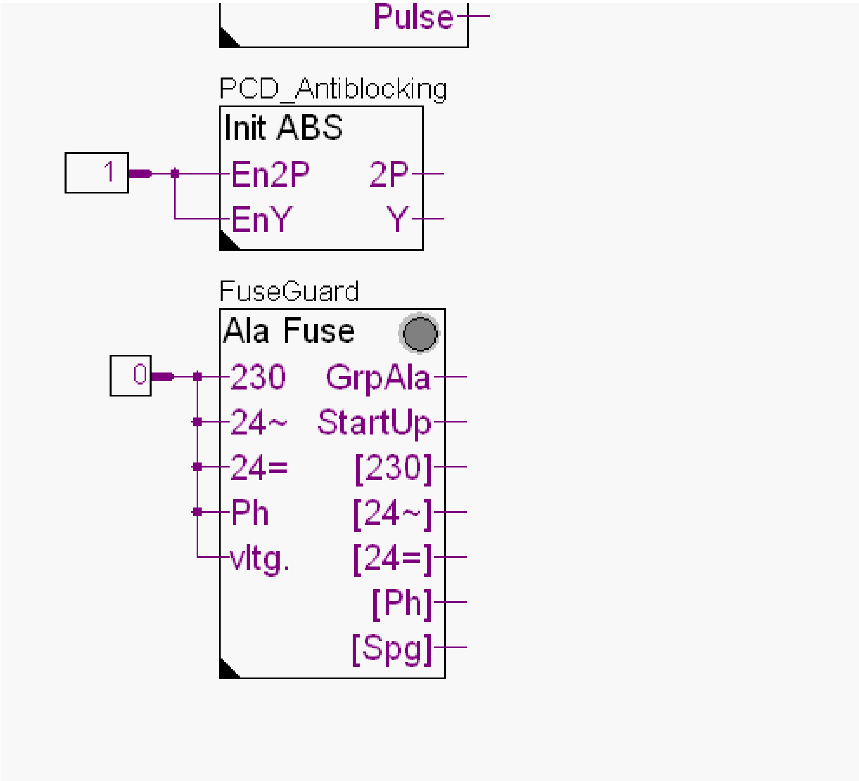
Once again the Fuse Guard Fbox is missing.



```
DDC-Suite - Alarming - Motor drive 1 speed V2.5.0
Warning 1506: HVC.fbd: Line 3737: --> Referenz Steuerspannung nicht vorhanden (FuseGuard) - keine Stoerunterdrueckung
Warning 1506: HVC.fbd: Line 3737: --> Referenz Steuerspannung nicht vorhanden (FuseGuard) - keine Stoerunterdrueckung
Warning 1506: HVC.fbd: Line 3737: --> Referenz Steuerspannung nicht vorhanden (FuseGuard) - keine Stoerunterdrueckung
Warning 1506: HVC.fbd: Line 3737: --> Referenz Steuerspannung nicht vorhanden (FuseGuard) - keine Stoerunterdrueckung
... BACnet: Objects for FBox with PropertyName [AHU03_ExhaustAir_FanAlarm] generated
```

We take the Control Voltage Fbox (Fuse Guard) from the Group DDC Suite 25 Alarming and place it on the page 4 of the COB Initialisation. Connect each input with “0”.

Do another Build!



DDC Suite 2.5 / PG5 Building Advanced

Working with templates - Steps after the import

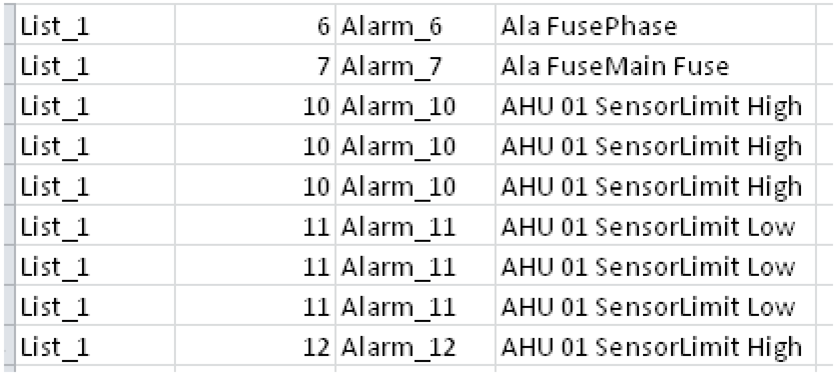
Check the alarm numbering, in particular for whether or not all the alarm numbers are in the same alarm list.

By opening the “DDC_Alarming.csv” file and sorting Column B, you will see that many alarm numbers occur multiple times.

The default setting in the templates in the “AlarmHdr” FBox is to use alarm no. -1 as the first alarm. This results in serial numbering.

However, in our template, the number entered is 10. Therefore, we must reorganise the alarm numbers. Check the file and find out how many alarms are used by our ventilation system.

Ventilation: 18 (from 10 – 27)



List_1	6	Alarm_6	Ala FusePhase
List_1	7	Alarm_7	Ala FuseMain Fuse
List_1	10	Alarm_10	AHU 01 SensorLimit High
List_1	10	Alarm_10	AHU 01 SensorLimit High
List_1	10	Alarm_10	AHU 01 SensorLimit High
List_1	11	Alarm_11	AHU 01 SensorLimit Low
List_1	11	Alarm_11	AHU 01 SensorLimit Low
List_1	11	Alarm_11	AHU 01 SensorLimit Low
List_1	12	Alarm_12	AHU 01 SensorLimit High

DDC Suite 2.5 / PG5 Building Advanced

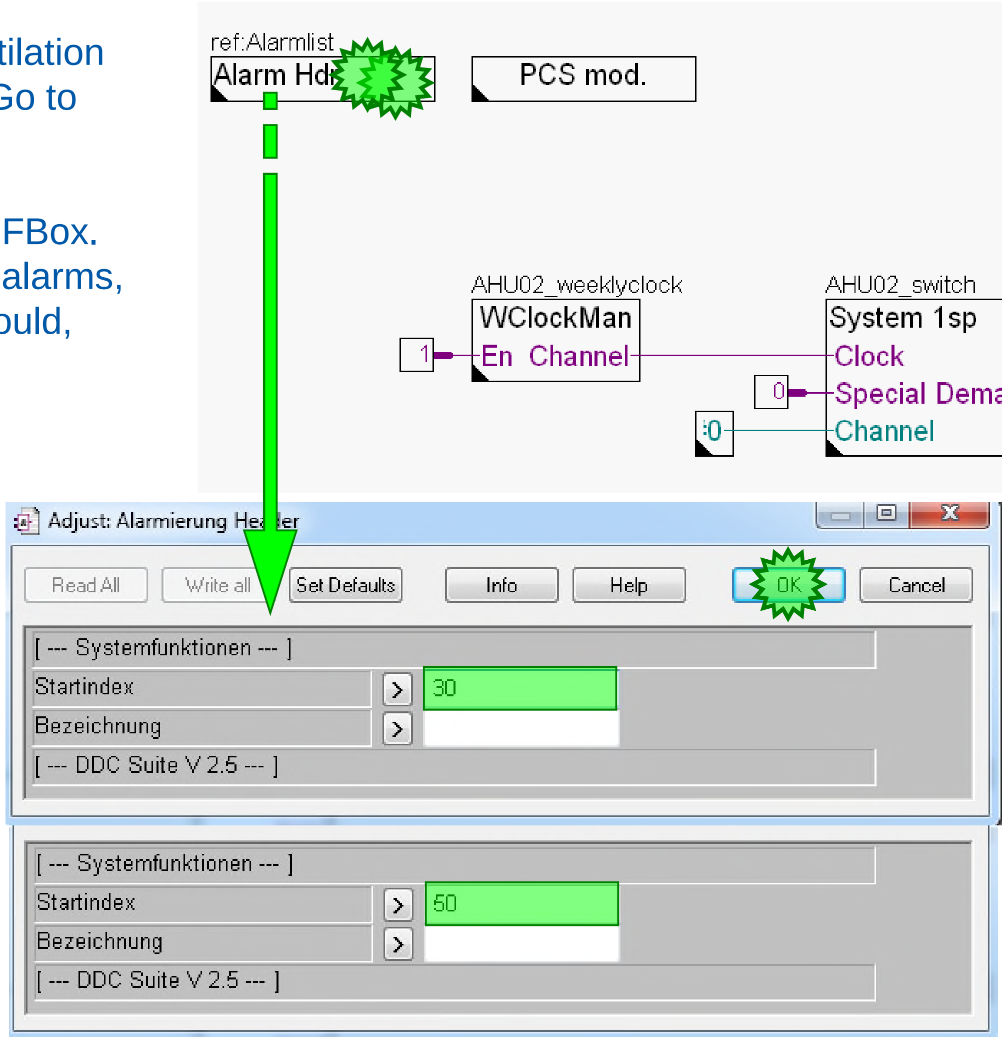
Working with templates - Steps after the import

We need to adapt the second and third ventilation systems in Fupla, i.e. AHU02 and AHU03. Go to page “AHU02;Start/Stop AHU”

Open the Adjust window of the “Alarm Hdr” FBox. The first system begins with 10 and has 18 alarms, therefore 10+18=28. The next free alarm would, therefore, be 28.

Let’s leave a couple free and start with 30.

And for AHU03, we’ll start with 50.



[--- Systemfunktionen ---]
Startindex 30
Bezeichnung
[--- DDC Suite V 2.5 ---]

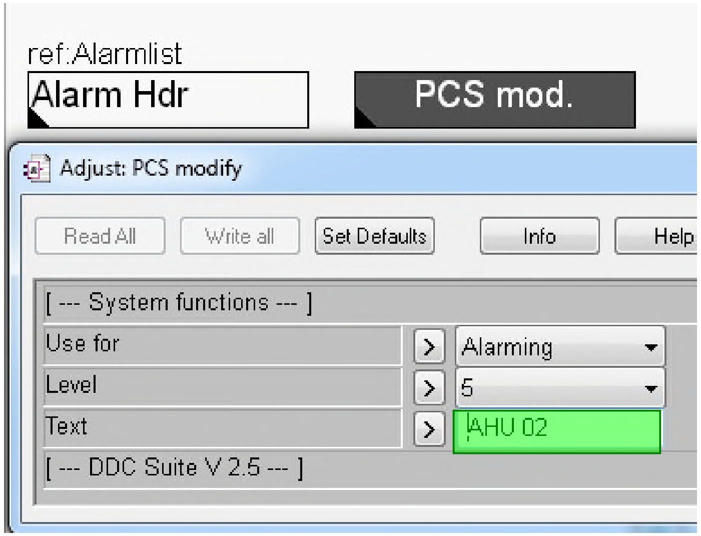
[--- Systemfunktionen ---]
Startindex 50
Bezeichnung
[--- DDC Suite V 2.5 ---]

DDC Suite 2.5 / PG5 Building Advanced

Working with templates - Steps after the import

Of course, we also have to adapt the AKS for the alarming. At present, AHU 01 is used throughout as the introductory text.

So, on page 4, we have to change the AKS for alarming to AHU 02 and on page 7, we have to change it to AHU 03.



[--- System functions ---]

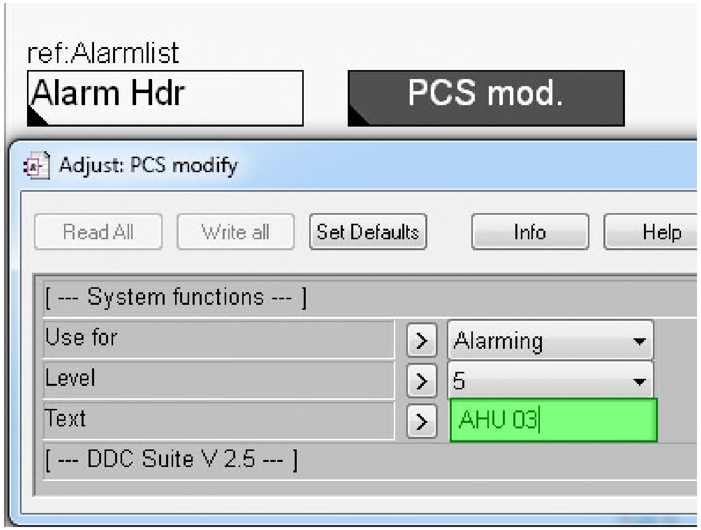
Use for > Alarming

Level > 5

Text > AHU 02

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

After the Compile process, we should have an alarm list without any duplicated alarm numbers.



[--- System functions ---]

Use for > Alarming

Level > 5

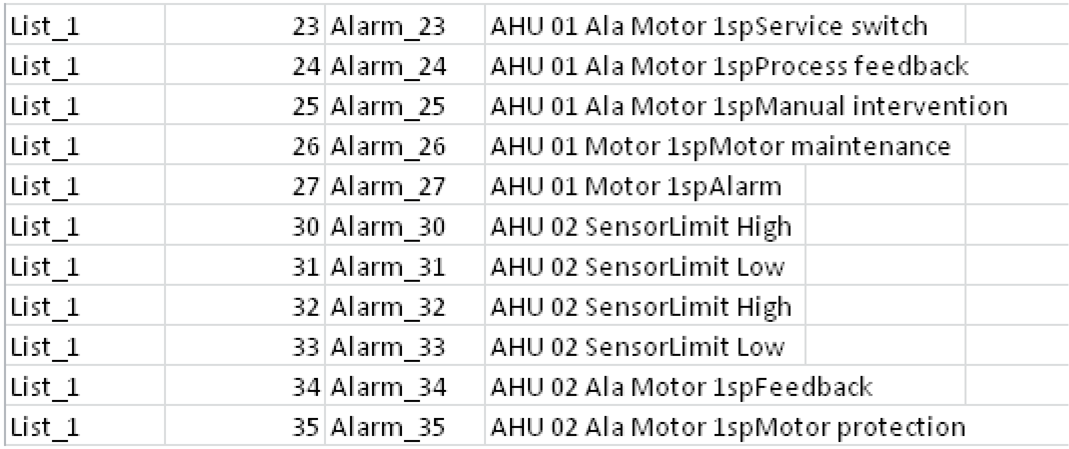
Text > AHU 03

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

DDC Suite 2.5 / PG5 Building Advanced

Working with templates - Steps after the import

The result should look like this. All alarms are numbered serially and the system names distinguish the alarms for the individual systems. The individual systems are separated by a small gap in the numbering.

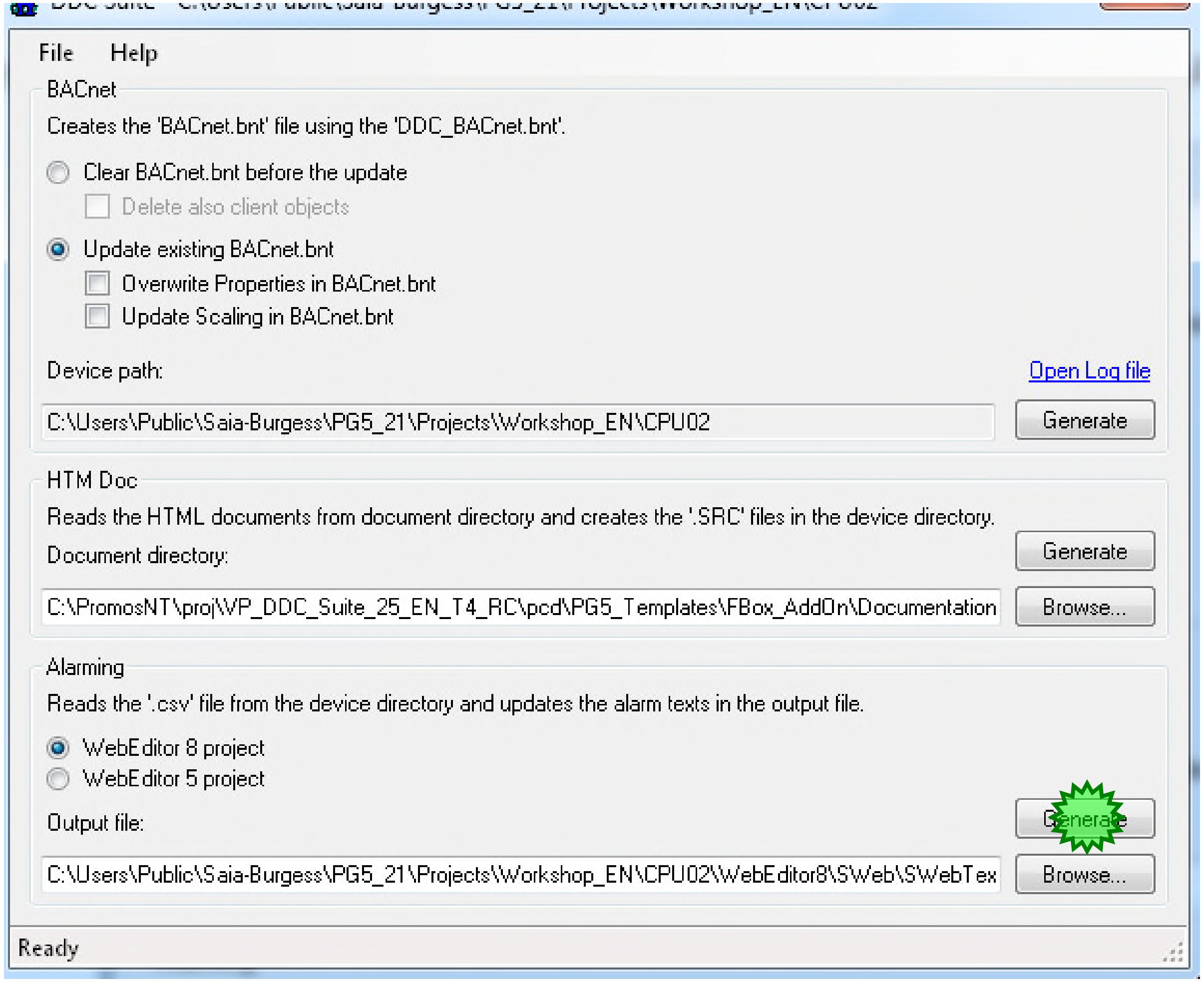


List_1	23	Alarm_23	AHU 01 Ala Motor 1spService switch
List_1	24	Alarm_24	AHU 01 Ala Motor 1spProcess feedback
List_1	25	Alarm_25	AHU 01 Ala Motor 1spManual intervention
List_1	26	Alarm_26	AHU 01 Motor 1spMotor maintenance
List_1	27	Alarm_27	AHU 01 Motor 1spAlarm
List_1	30	Alarm_30	AHU 02 SensorLimit High
List_1	31	Alarm_31	AHU 02 SensorLimit Low
List_1	32	Alarm_32	AHU 02 SensorLimit High
List_1	33	Alarm_33	AHU 02 SensorLimit Low
List_1	34	Alarm_34	AHU 02 Ala Motor 1spFeedback
List_1	35	Alarm_35	AHU 02 Ala Motor 1spMotor protection

DDC Suite 2.5 / PG5 Building Advanced

Working with templates - Steps after the import

Finally, we need to update the SWebText.csv file with the SWeb Alarm AddOn Tool.



DDC Suite - C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop_EN\CPU02

BACnet

Creates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.

○ Clear BACnet.bnt before the update

□ Delete also client objects

● Update existing BACnet.bnt

□ Overwrite Properties in BACnet.bnt

□ Update Scaling in BACnet.bnt

Device path:

C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop_EN\CPU02

HTM Doc

Reads the HTML documents from document directory and creates the '.SRC' files in the device directory.

Document directory:

C:\PromosNT\proj\VP_DDC_Suite_25_EN_T4_RC\pcd\PG5_Templates\FBox_AddOn\Documentation

Alarming

Reads the '.csv' file from the device directory and updates the alarm texts in the output file.

● WebEditor 8 project

○ WebEditor 5 project

Output file:

C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop_EN\CPU02\WebEditor8\SWeb\SWebTex

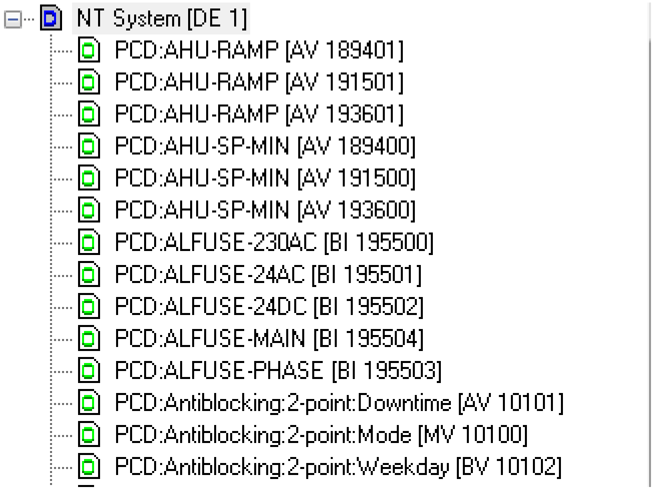
Ready

DDC Suite 2.5 / PG5 Building Advanced

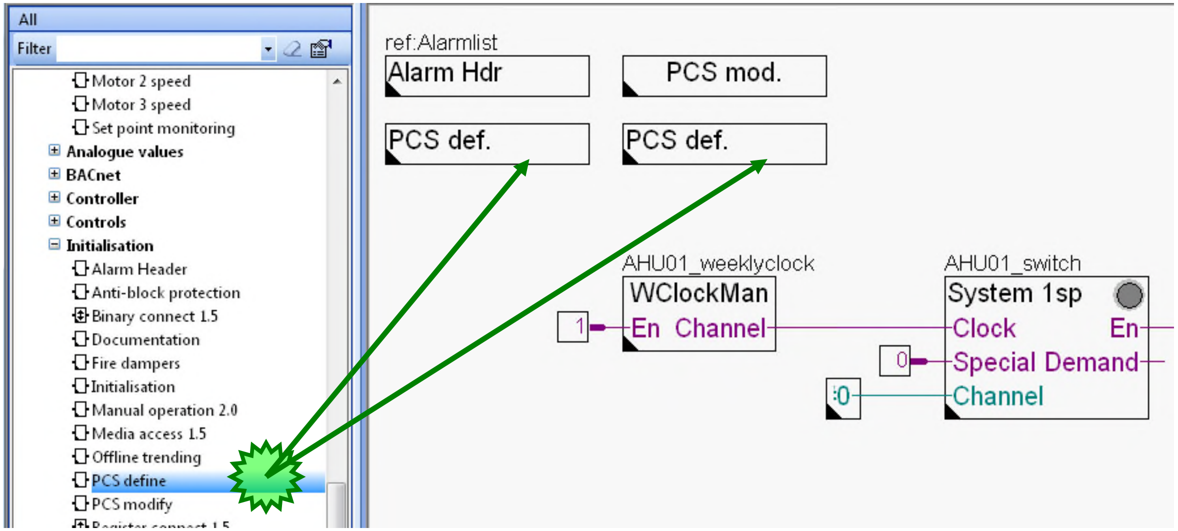
Working with templates - Steps after the import

Open the DDC_BACnet.bnt file.
As we have not dealt with the AKS for BACnet in our template, we now have several objects with the same names in this project.

This is easy to correct, by generating an AKS for the BACnet object names and for the description for our three small systems.



- NT System [DE 1]
  - PCD:AHU-RAMP [AV 189401]
  - PCD:AHU-RAMP [AV 191501]
  - PCD:AHU-RAMP [AV 193601]
  - PCD:AHU-SP-MIN [AV 189400]
  - PCD:AHU-SP-MIN [AV 191500]
  - PCD:AHU-SP-MIN [AV 193600]
  - PCD:ALFUSE-230AC [BI 195500]
  - PCD:ALFUSE-24AC [BI 195501]
  - PCD:ALFUSE-24DC [BI 195502]
  - PCD:ALFUSE-MAIN [BI 195504]
  - PCD:ALFUSE-PHASE [BI 195503]
  - PCD:Antiblocking:2-point:Downtime [AV 10101]
  - PCD:Antiblocking:2-point:Mode [MV 10100]
  - PCD:Antiblocking:2-point:Weekday [BV 10102]

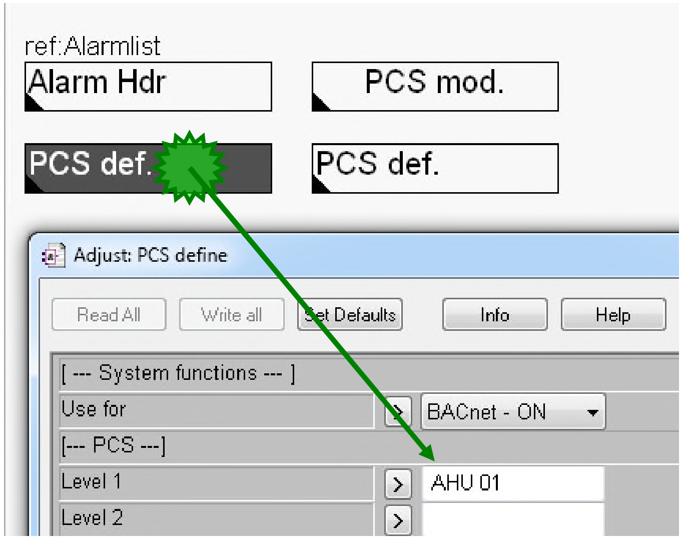


DDC Suite 2.5 / PG5 Building Advanced

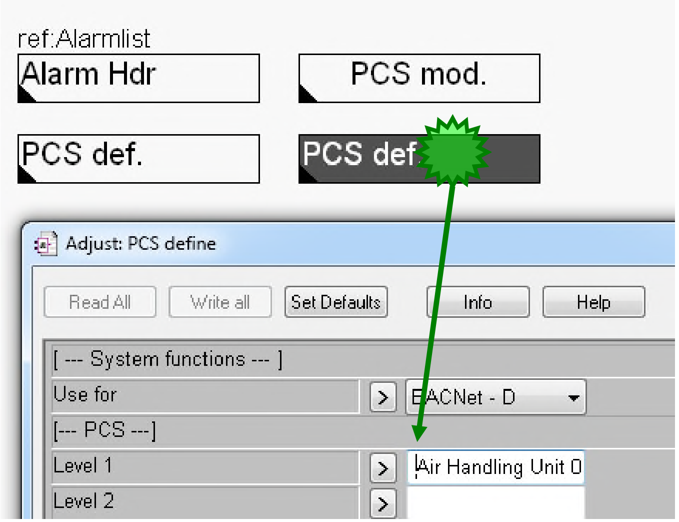
Working with templates - Steps after the import

Simply define the system in the AKS FBox, i.e. AHU 01 for the first, AHU 02 for the second and AHU 03 for the third.

We define these texts for the description too, i.e. Air Handling Unit 01 for the first, Air Handling Unit 02 for the second and Air Handling Unit 03 for the third.



[--- System functions ---]
Use for > BACnet - ON
[--- PCS ---]
Level 1 > AHU 01
Level 2 >



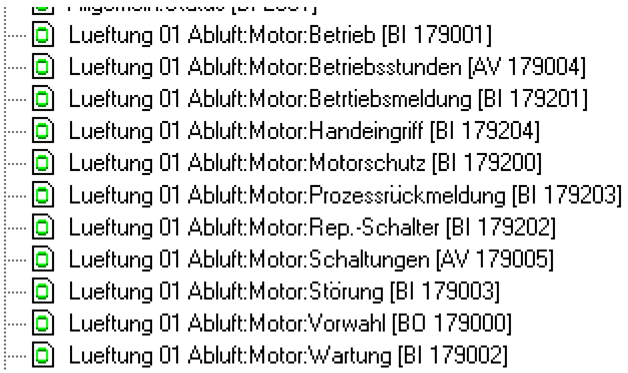
[--- System functions ---]
Use for > BACNet - D
[--- PCS ---]
Level 1 > Air Handling Unit 0
Level 2 >

DDC Suite 2.5 / PG5 Building Advanced

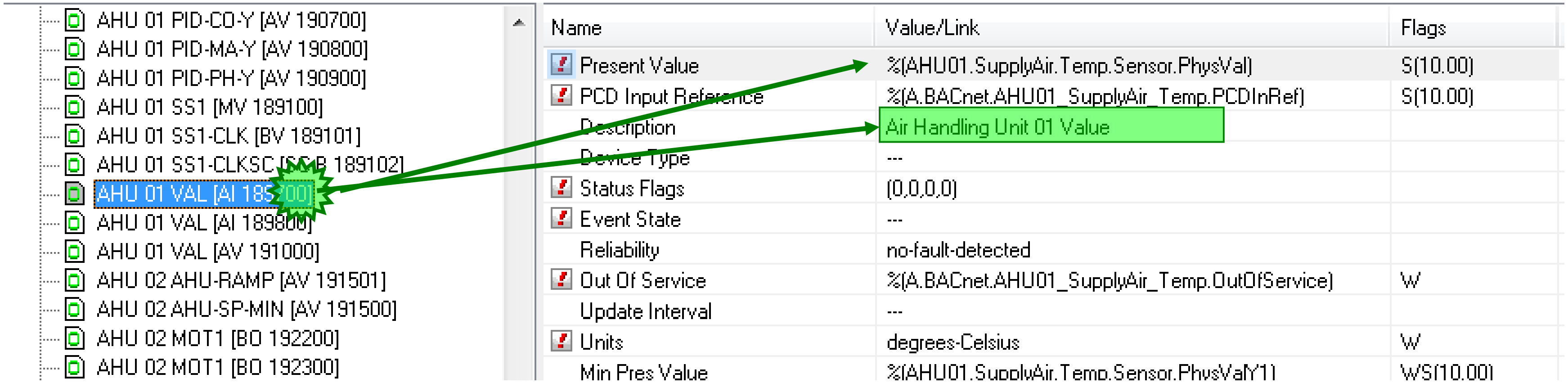
Working with templates - Steps after the import

After a further Build, we can see that the BACnet objects have now been named for each system.

The same applies to the object description, of course.



```
Lueftung 01 Abluft:Motor:Betrieb [BI 179001]
Lueftung 01 Abluft:Motor:Betriebsstunden [AV 179004]
Lueftung 01 Abluft:Motor:Betrtiebsmeldung [BI 179201]
Lueftung 01 Abluft:Motor:Handeingriff [BI 179204]
Lueftung 01 Abluft:Motor:Motorschutz [BI 179200]
Lueftung 01 Abluft:Motor:Prozessrückmeldung [BI 179203]
Lueftung 01 Abluft:Motor:Rep.-Schalter [BI 179202]
Lueftung 01 Abluft:Motor:Schaltungen [AV 179005]
Lueftung 01 Abluft:Motor:Störung [BI 179003]
Lueftung 01 Abluft:Motor:Vorwahl [BO 179000]
Lueftung 01 Abluft:Motor:Wartung [BI 179002]
```



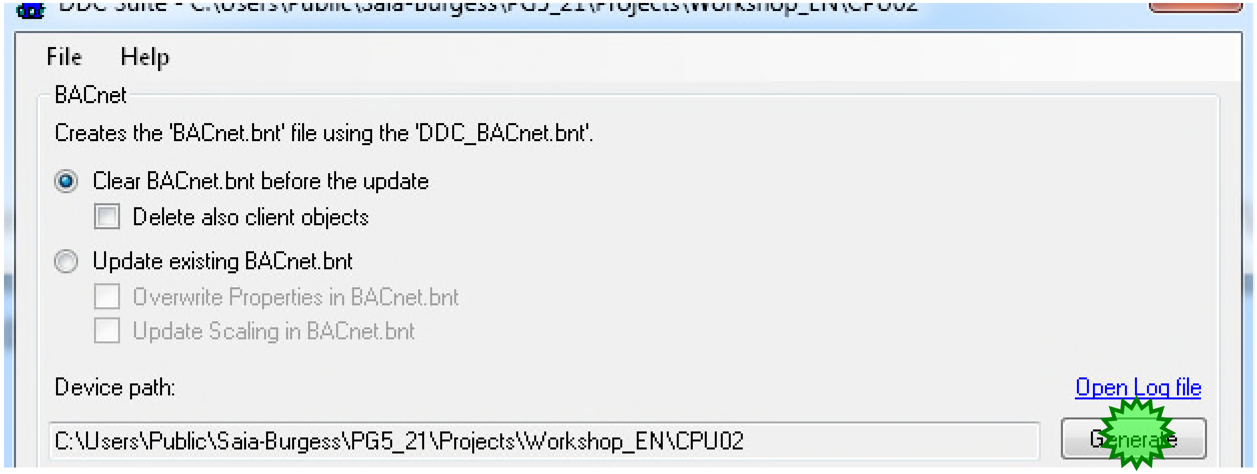
```
AHU 01 PID-CO-Y [AV 190700]
AHU 01 PID-MA-Y [AV 190800]
AHU 01 PID-PH-Y [AV 190900]
AHU 01 SS1 [MV 189100]
AHU 01 SS1-CLK [BV 189101]
AHU 01 SS1-CLKSC [SCB 189102]
AHU 01 VAL [AI 189700]
AHU 01 VAL [AI 189800]
AHU 01 VAL [AV 191000]
AHU 02 AHU-RAMP [AV 191501]
AHU 02 AHU-SP-MIN [AV 191500]
AHU 02 MOT1 [BO 192200]
AHU 02 MOT1 [BO 192300]
```

Name	Value/Link	Flags
Present Value	%[AHU01.SupplyAir.Temp.Sensor.PhysVal]	S[10.00]
PCD Input Reference	%[A.BACnet.AHU01_SupplyAir_Temp.PCDInRef]	S[10.00]
Description	Air Handling Unit 01 Value	
Device Type	---	
Status Flags	[0,0,0,0]	
Event State	---	
Reliability	no-fault-detected	
Out Of Service	%[A.BACnet.AHU01_SupplyAir_Temp.OutOfService]	W
Update Interval	---	
Units	degrees-Celsius	W
Min Pres Value	%[AHU01.SupplyAir.Temp.Sensor.PhysValY1]	WS[10.00]

DDC Suite 2.5 / PG5 Building Advanced

Working with templates - Steps after the import

Finally, we have to write the BACnet objects to the BACnet.bnt file. We do this with the AddOn tool. As we are doing this for the first time in this PCD, we tick the first checkbox so that a new file is generated with our objects.



DDC Suite - C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop_EN\CPU02
File
Help
BACnet
Open Log file
Generate

Creates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.

● Clear BACnet.bnt before the update

□ Delete also client objects

○ Update existing BACnet.bnt

□ Overwrite Properties in BACnet.bnt

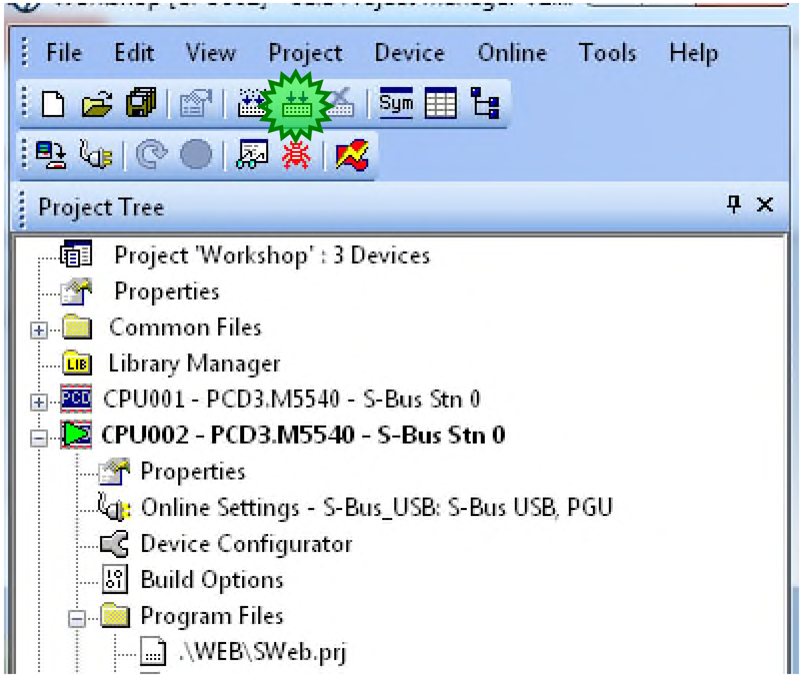
□ Update Scaling in BACnet.bnt

Device path: C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop_EN\CPU02

DDC Suite 2.5 / PG5 Building Advanced

Working with templates - Steps after the import

After checking the settings for HDLog, Alarming and BACnet, we must rebuild the programme so we are certain that all files have been updated before the programme download.



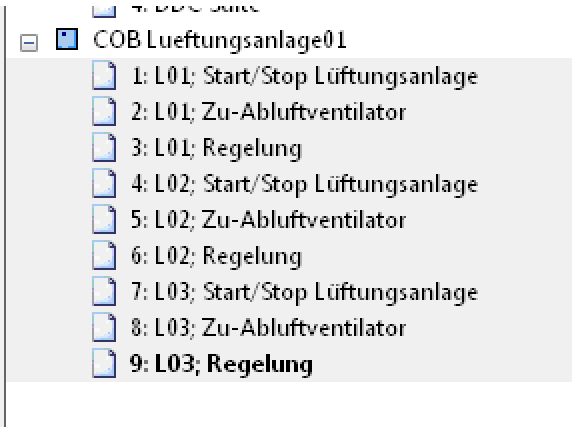
Project 'Workshop' : 3 Devices
Properties
Common Files
Library Manager
CPU001 - PCD3.M5540 - S-Bus Stn 0
CPU002 - PCD3.M5540 - S-Bus Stn 0
Properties
Online Settings - S-Bus_USB: S-Bus USB, PGU
Device Configurator
Build Options
Program Files
.\WEB\SWeb.prj

DDC Suite 2.5 / PG5 Building Advanced

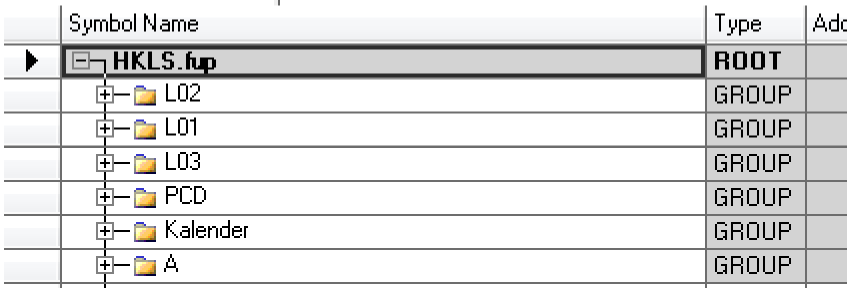
Working with templates

These few changes that we made during the import, give us a complete copy of our ventilation system, we have renamed everything to AHU01 – AHU03.

In the Page Navigator, we can see the modified page name and in the Symbol Editor, we can see the three symbol groups AHU01 – AHU03.



4: DDC Suite
COB Lueftungsanlage01
1: L01; Start/Stop Lüftungsanlage
2: L01; Zu-Abluftventilator
3: L01; Regelung
4: L02; Start/Stop Lüftungsanlage
5: L02; Zu-Abluftventilator
6: L02; Regelung
7: L03; Start/Stop Lüftungsanlage
8: L03; Zu-Abluftventilator
9: L03; Regelung



Symbol Name	Type	Adc
HKLS.fup	**ROOT**	
L02	GROUP	
L01	GROUP	
L03	GROUP	
PCD	GROUP	
Kalender	GROUP	
A	GROUP	

Adapting templates and creating in the Selector

SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

Adapting templates and creating in the Selector

If you have created an example programme or want to save an application as a template, this was previously done with fxp Export. During import, you then had to use the # place holder everywhere.

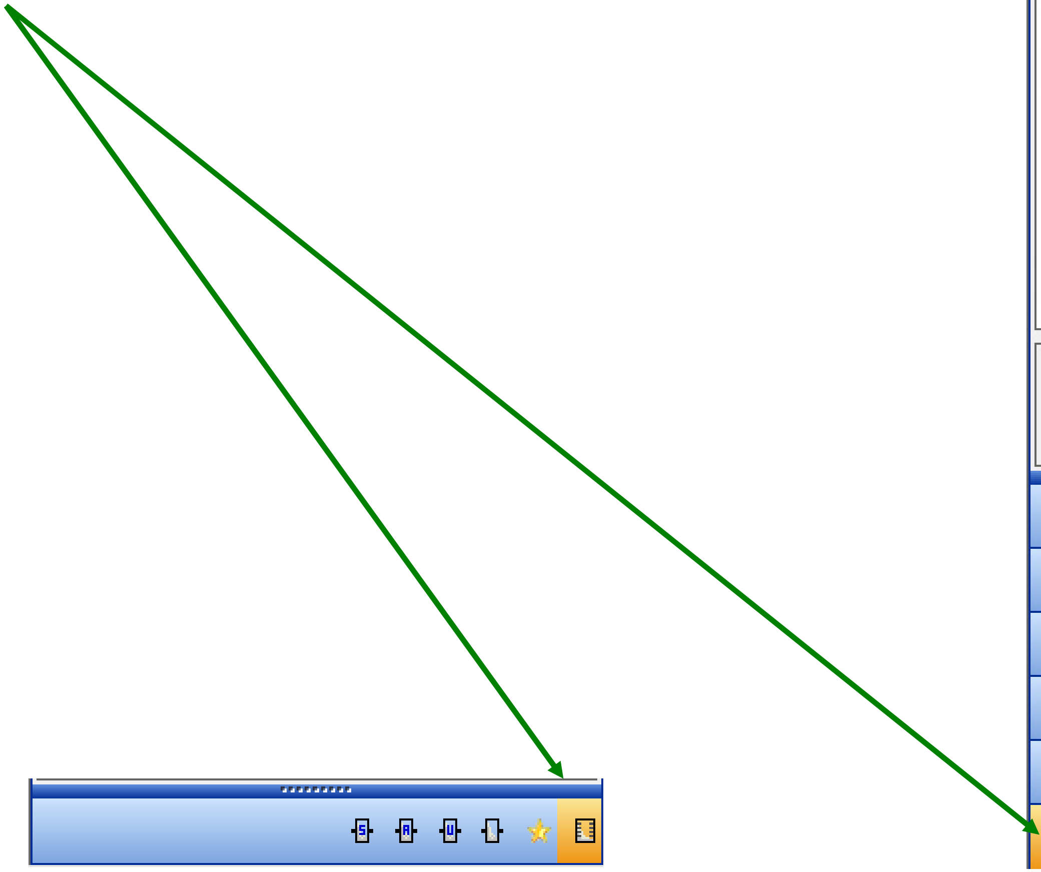
Now it is possible to save templates in the Selector where the programme libraries can also be found. And in addition, you can edit templates directly in Fupla.

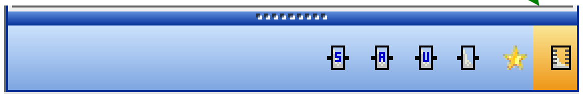
We’re going to do this now with a template for a heating circuit.

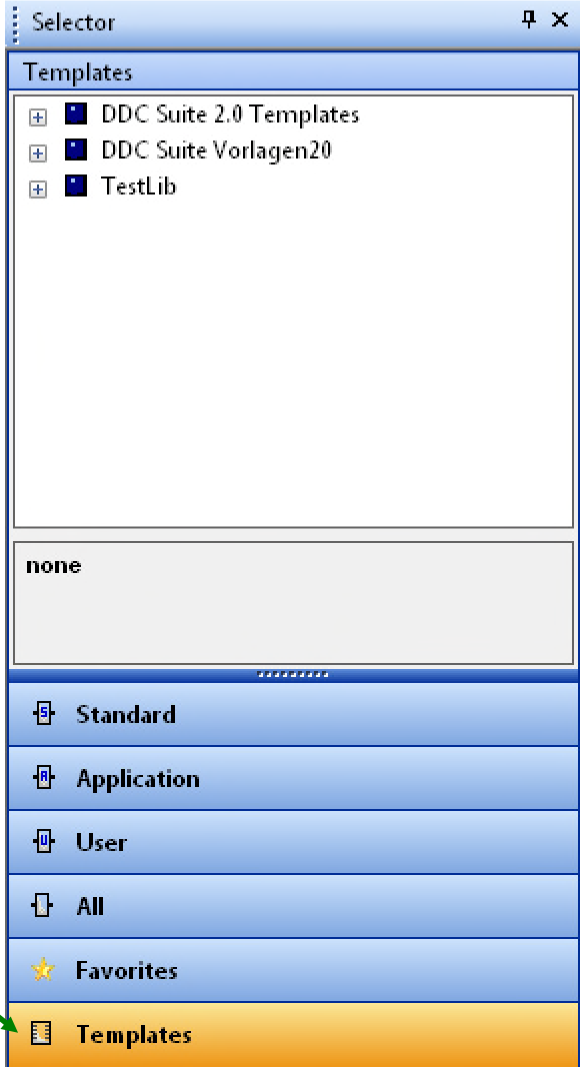
DDC Suite 2.5 / PG5 Building Advanced

Adapting templates and creating in the Selector

In the Selector in the Fupla Editor, we find the “Templates” tab next to the four tabs for the FBox libraries and the favourites you created yourself.






Selector

Templates

- DDC Suite 2.0 Templates
- DDC Suite Vorlagen20
- TestLib

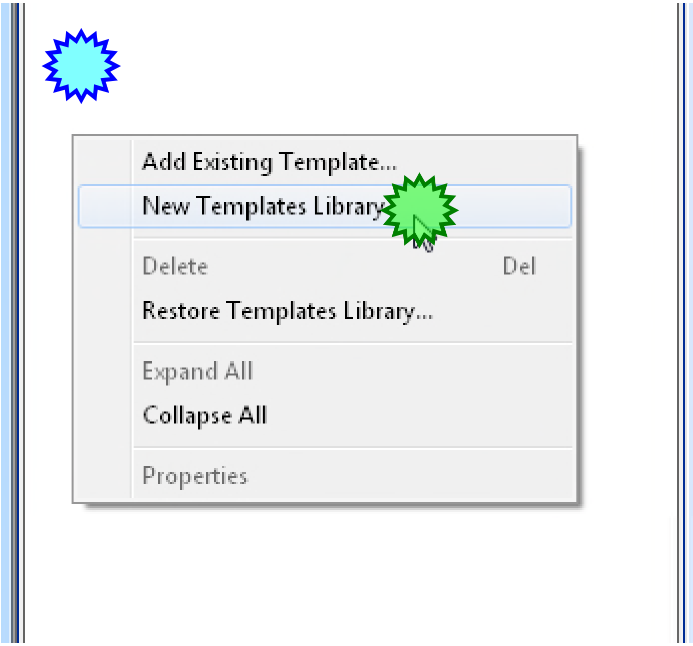
none

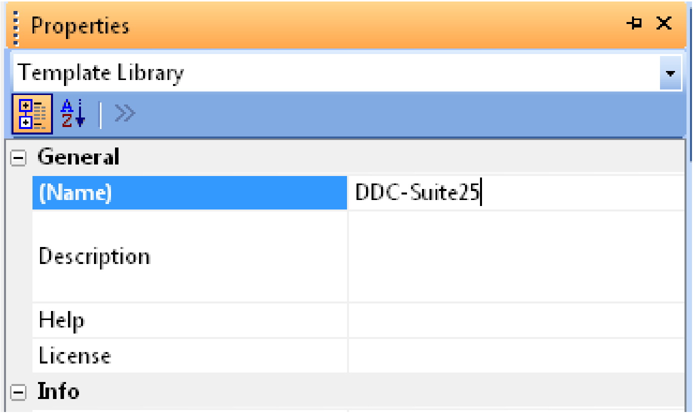
DDC Suite 2.5 / PG5 Building Advanced

Adapting templates and creating in the Selector

Here we can create our own template structure.

Select New Templates Library and enter DDC-Suite25 as the name.





Template Library

General

(Name)	DDC-Suite25
Description	
Help	
License	

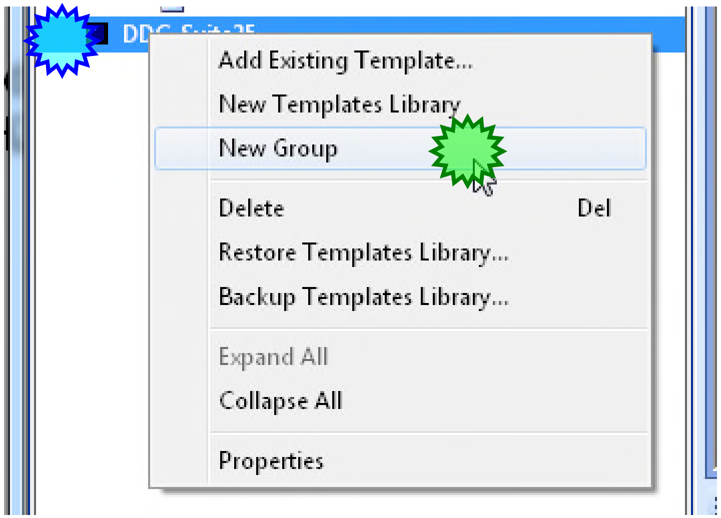
Info

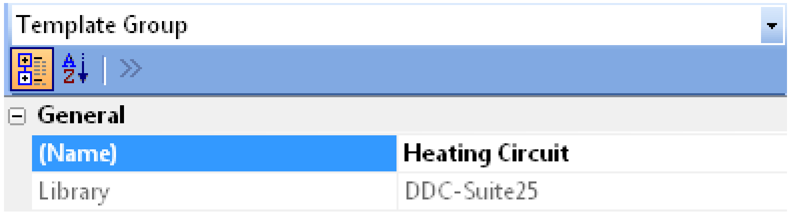
DDC Suite 2.5 / PG5 Building Advanced

Adapting templates and creating in the Selector

We then add a group which we will call Heizkreise.

To do this, right-click on our new Template Library and select New Group.

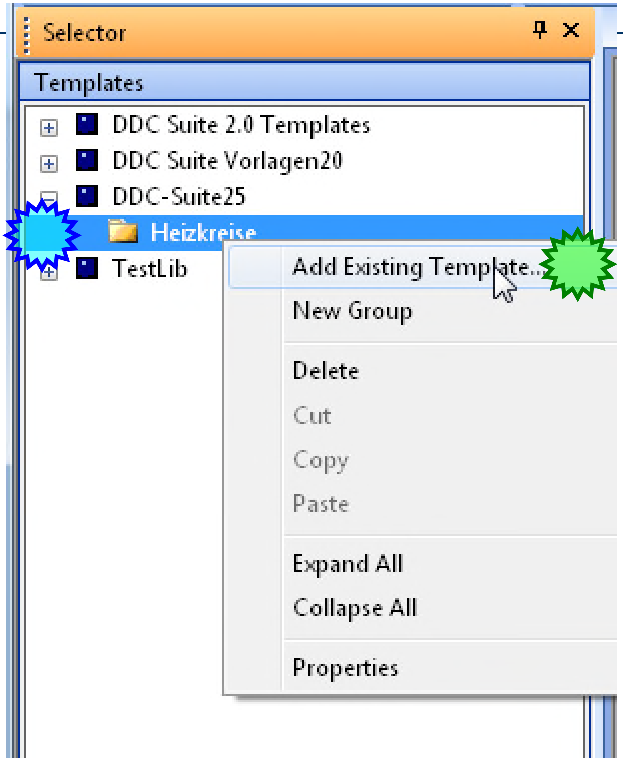




(Name)	Heating Circuit
Library	DDC-Suite25

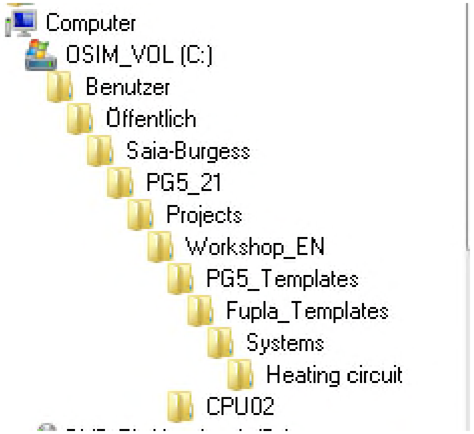
DDC Suite 2.5 / PG5 Building Advanced

Adapting templates and creating in the Selector



Once again, right-click on our new group and select Add Existing Template…

In projects that were started with a DDC Suite template, templates are already included for various systems. These can be found in the project folder under PG5_Templates/Fupla_Templates/Systems/…

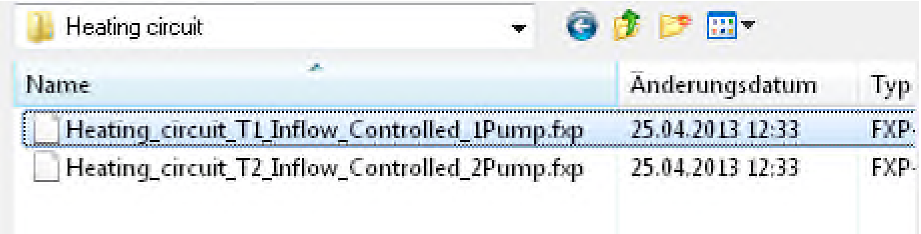


DDC Suite 2.5 / PG5 Building Advanced

Adapting templates and creating in the Selector

Heating Circuit… Here, we select the heating circuit

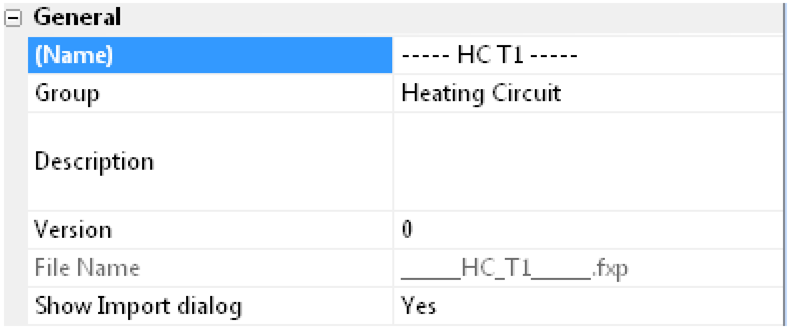
Heating-circuit_T1_Inflow_Controlled_1Pump.fxp



Heating circuit

Name	Änderungsdatum	Typ
Heating_circuit_T1_Inflow_Controlled_1Pump.fxp	25.04.2013 12:33	FXP-
Heating_circuit_T2_Inflow_Controlled_2Pump.fxp	25.04.2013 12:33	FXP-

Leave the name as it is, i.e. HC T1.



General

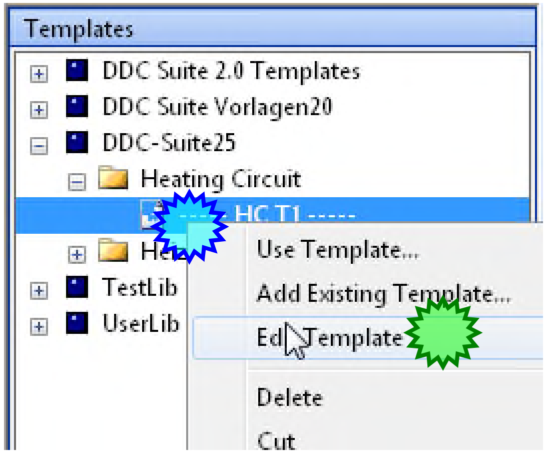
(Name)	----- HC T1 -----
Group	Heating Circuit
Description	
Version	0
File Name	_____HC_T1_____.fxp
Show Import dialog	Yes

DDC Suite 2.5 / PG5 Building Advanced

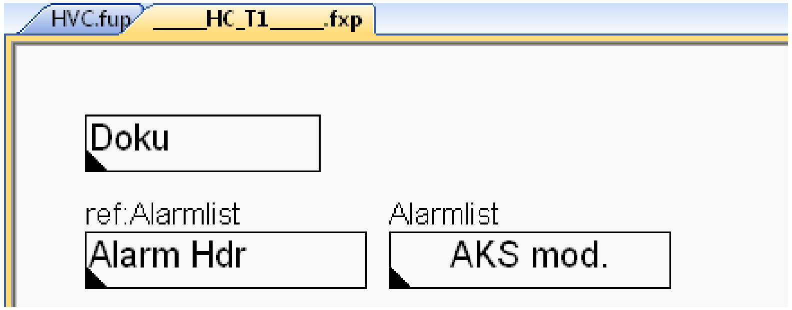
Adapting templates and creating in the Selector

Let’s take a look at this template and change it straight away if necessary.

We open our template by right-clicking on it and using the Edit Template command.



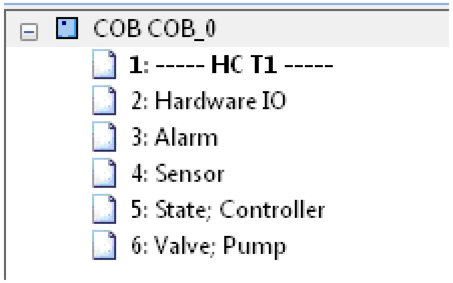
The .fxp on the Fupla Editor tab shows you that you have opened a template and modified it.



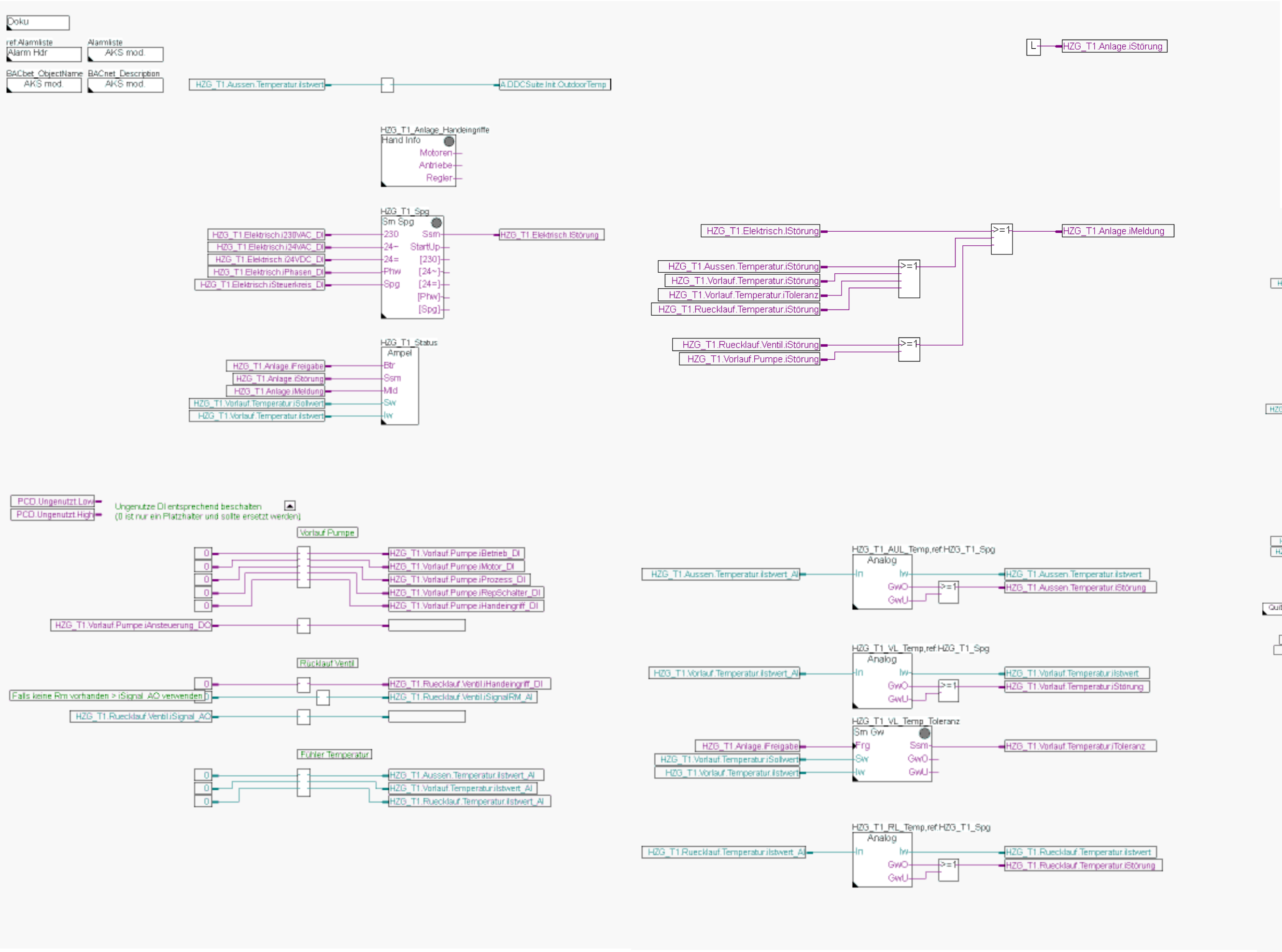
DDC Suite 2.5 / PG5 Building Advanced

Adapting templates and creating in the Selector

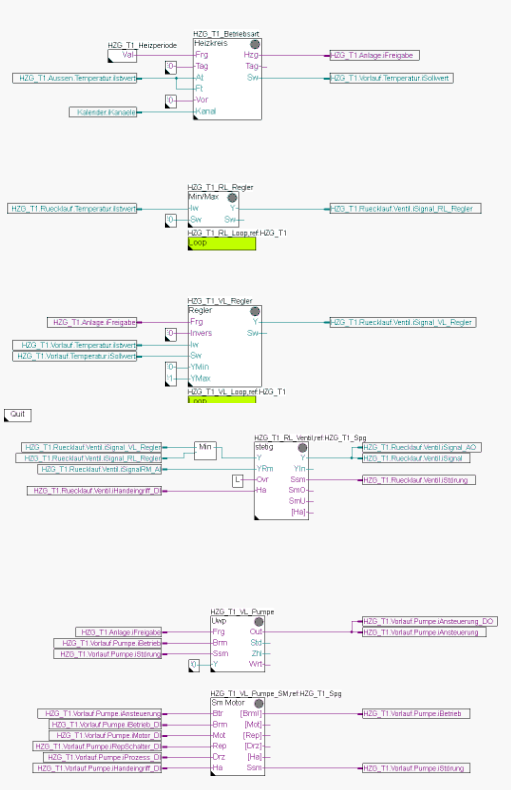
6 programme pages belong to this template.



- COB COB_0
  - 1: ----- HC T1 -----
  - 2: Hardware IO
  - 3: Alarm
  - 4: Sensor
  - 5: State; Controller
  - 6: Valve; Pump



Doku
ref Alarmliste
Alarm Hdr
Alarmliste
AKS mod.
BACbet_ObjectName
BACnet_Description
HZG_T1.Aussen.Temperatur.iIstwert
A.DDCSuite.Init.OutdoorTemp
HZG_T1.Anlage.iStörung
HZG_T1_Anlage_Handeingriffe
Hand Info
Motoren
Antriebe
Regler
HZG_T1_Spg
HZG_T1.Elektrisch.iStörung
HZG_T1.Anlage.iMeldung
HZG_T1.Aussen.Temperatur.iStörung
HZG_T1.Vorlauf.Temperatur.iStörung
HZG_T1.Vorlauf.Temperatur.iToleranz
HZG_T1.Ruecklauf.Temperatur.iStörung
HZG_T1.Ruecklauf.Ventil.iStörung
HZG_T1.Vorlauf.Pumpe.iStörung
HZG_T1_Status
Ampel
PCD.Ungenutzt.Low
PCD.Ungenutzt.High
Ungenutze DI entsprechend beschalten
(0 ist nur ein Platzhalter und sollte ersetzt werden)
Vorlauf Pumpe
HZG_T1.Vorlauf.Pumpe.iAnsteuerung_DO
Rücklauf Ventil
Falls keine Rm vorhanden > iSignal_AO verwenden
HZG_T1.Ruecklauf.Ventil.iSignal_AO
Fühler Temperatur
HZG_T1_AUL_Temp,ref HZG_T1_Spg
HZG_T1_VL_Temp,ref HZG_T1_Spg
HZG_T1_VL_Temp_Toleranz
HZG_T1_RL_Temp,ref HZG_T1_Spg
Analog

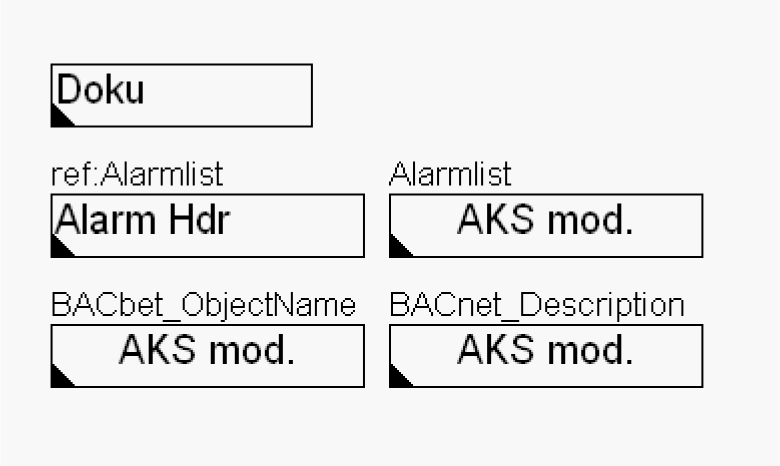


HZG_T1_Heizperiode
HZG_T1_Betriebsart
Heizkreis
HZG_T1.Anlage.iFreigabe
HZG_T1.Vorlauf.Temperatur.iSollwert
HZG_T1_RL_Regler
HZG_T1_RL_Loop,ref HZG_T1
HZG_T1_VL_Regler
HZG_T1_VL_Loop,ref HZG_T1
HZG_T1_RL_Ventil,ref HZG_T1_Spg
HZG_T1_VL_Pumpe
HZG_T1_VL_Pumpe_SM,ref HZG_T1_Spg
Quit

DDC Suite 2.5 / PG5 Building Advanced

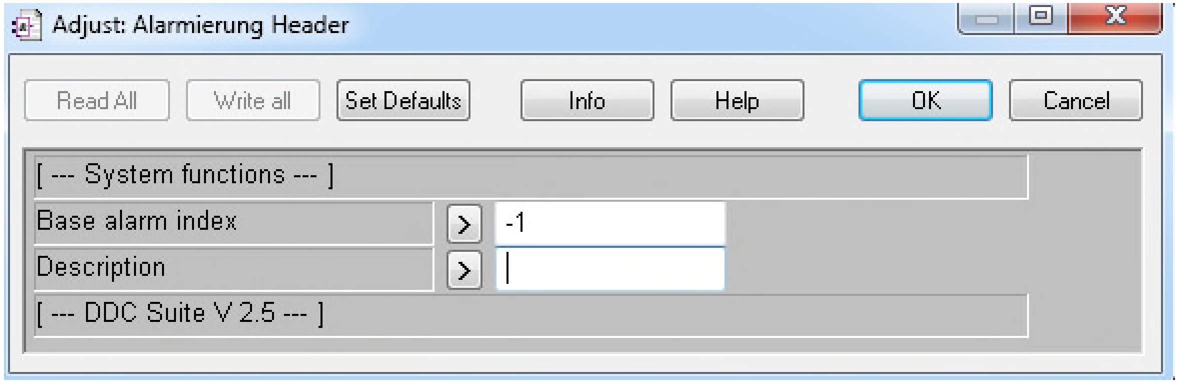
Adapting templates and creating in the Selector

On the first page of our template, we find the Alarm Hdr and three AKS mod. FBoxes at top left.



As we already know, the Alarm Hdr FBox writes in the first place to the Alarming AKS. To prevent this from happening, we delete the text in the FBox.

We leave “-1” as the Startindex, and we then decide whether we should change anything there on a case-by-case basis after the import.



[--- System functions ---]

Base alarm index > -1

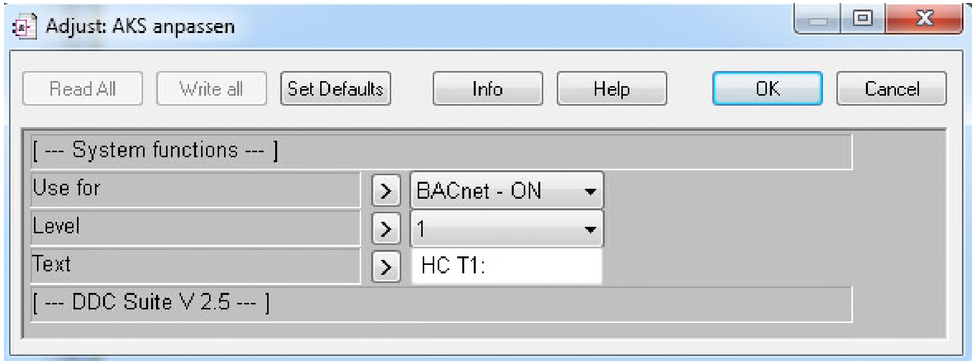
Description >

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

DDC Suite 2.5 / PG5 Building Advanced

Adapting templates and creating in the Selector

The BACnet Object Name and BACnet Description each contain a text for Ebene 1, HC_T1 for the name and heating circuit template 1 as the description. It is difficult to guess what the PCS in which we are going to use this template will look like. Therefore, we will leave these first settings as they are.



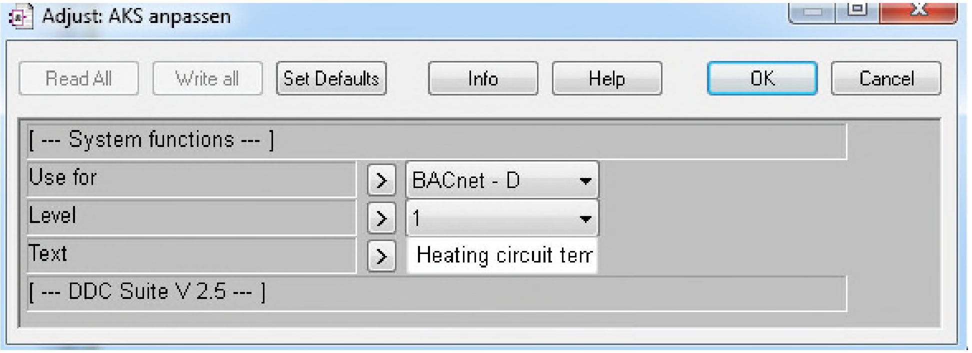
[--- System functions ---]

Use for > BACnet - ON

Level > 1

Text > HC T1:

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



[--- System functions ---]

Use for > BACnet - D

Level > 1

Text > Heating circuit tem

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

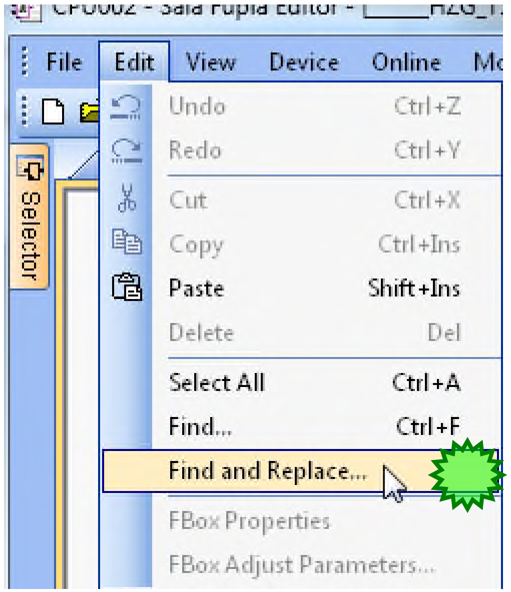
DDC Suite 2.5 / PG5 Building Advanced

Adapting templates and creating in the Selector

What we can already prepare at this point is writing the # place holder throughout the indexing so we then only have to enter the number of systems during the import, in our case heating circuits.

To do this, there is a new function in PG5, which is not only used for this purpose. Find and Replace. With this function, we can insert place holders wherever they are needed.

Select Edit/Find and Replace in the Fupla Editor.

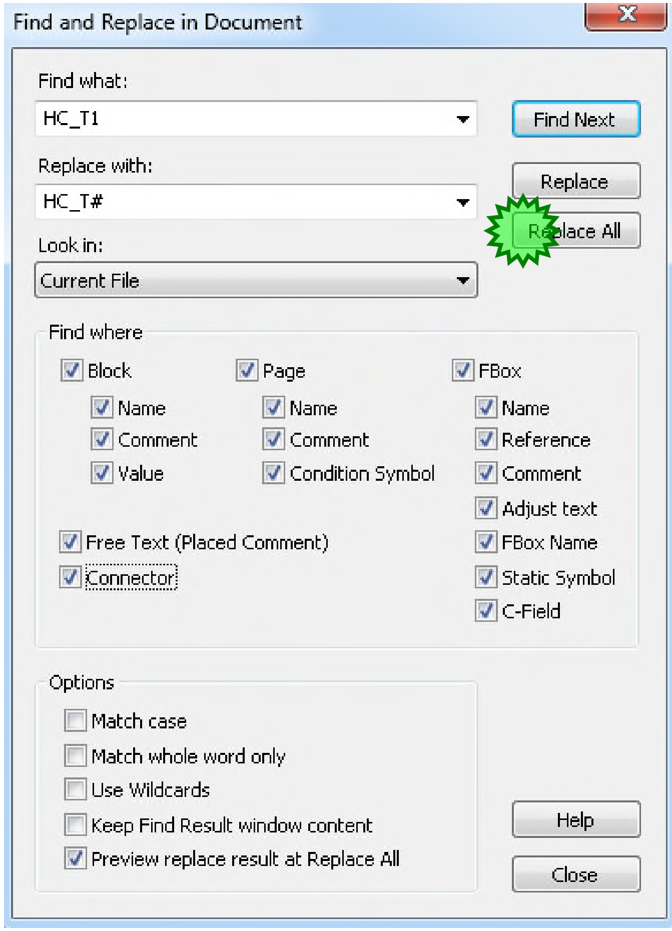


DDC Suite 2.5 / PG5 Building Advanced

Adapting templates and creating in the Selector

We enter the name we are searching for (HZG_T1) and the name we wish to replace it with (HZG_T#). This should apply to the entire file and is executed in all blocks for page names, FBoxes, free texts and connectors.

So the selection should appear as follows:



Find and Replace in Document

Find what: HC_T1

Replace with: HC_T#

Look in: Current File

Find where

- ☑ Block
  - ☑ Name
  - ☑ Comment
  - ☑ Value
- ☑ Page
  - ☑ Name
  - ☑ Comment
  - ☑ Condition Symbol
- ☑ FBox
  - ☑ Name
  - ☑ Reference
  - ☑ Comment
  - ☑ Adjust text
  - ☑ FBox Name
  - ☑ Static Symbol
  - ☑ C-Field
- ☑ Free Text (Placed Comment)
- ☑ Connector

Options

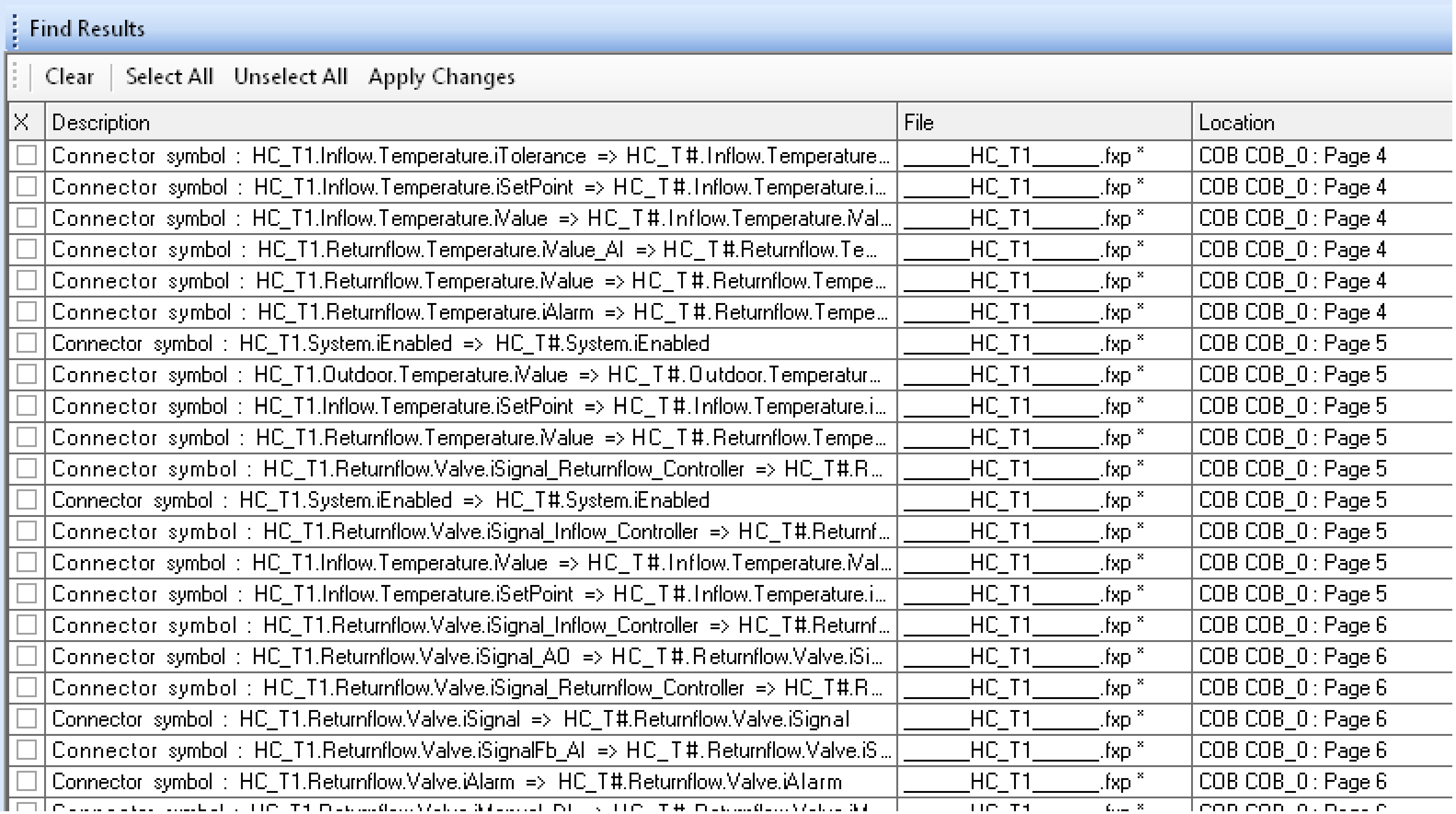
- □ Match case
- □ Match whole word only
- □ Use Wildcards
- □ Keep Find Result window content
- ☑ Preview replace result at Replace All

Then click on Replace All.

DDC Suite 2.5 / PG5 Building Advanced

Adapting templates and creating in the Selector

A window called “Find Results” is displayed. In it, we can now see a line for each change.



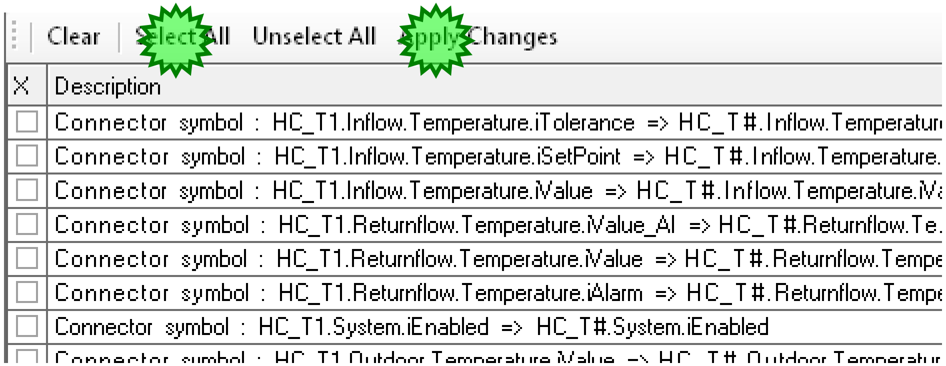
X	Description	File	Location
☐	Connector symbol : HC_T1.Inflow.Temperature.iTolerance => HC_T#.Inflow.Temperature...	______HC_T1______.fxp *	COB COB_0 : Page 4
☐	Connector symbol : HC_T1.Inflow.Temperature.iSetPoint => HC_T#.Inflow.Temperature.i...	______HC_T1______.fxp *	COB COB_0 : Page 4
☐	Connector symbol : HC_T1.Inflow.Temperature.iValue => HC_T#.Inflow.Temperature.iVal...	______HC_T1______.fxp *	COB COB_0 : Page 4
☐	Connector symbol : HC_T1.Returnflow.Temperature.iValue_AI => HC_T#.Returnflow.Te...	______HC_T1______.fxp *	COB COB_0 : Page 4
☐	Connector symbol : HC_T1.Returnflow.Temperature.iValue => HC_T#.Returnflow.Tempe...	______HC_T1______.fxp *	COB COB_0 : Page 4
☐	Connector symbol : HC_T1.Returnflow.Temperature.iAlarm => HC_T#.Returnflow.Tempe...	______HC_T1______.fxp *	COB COB_0 : Page 4
☐	Connector symbol : HC_T1.System.iEnabled => HC_T#.System.iEnabled	______HC_T1______.fxp *	COB COB_0 : Page 5
☐	Connector symbol : HC_T1.Outdoor.Temperature.iValue => HC_T#.Outdoor.Temperatur...	______HC_T1______.fxp *	COB COB_0 : Page 5
☐	Connector symbol : HC_T1.Inflow.Temperature.iSetPoint => HC_T#.Inflow.Temperature.i...	______HC_T1______.fxp *	COB COB_0 : Page 5
☐	Connector symbol : HC_T1.Returnflow.Temperature.iValue => HC_T#.Returnflow.Tempe...	______HC_T1______.fxp *	COB COB_0 : Page 5
☐	Connector symbol : HC_T1.Returnflow.Valve.iSignal_Returnflow_Controller => HC_T#.R...	______HC_T1______.fxp *	COB COB_0 : Page 5
☐	Connector symbol : HC_T1.System.iEnabled => HC_T#.System.iEnabled	______HC_T1______.fxp *	COB COB_0 : Page 5
☐	Connector symbol : HC_T1.Returnflow.Valve.iSignal_Inflow_Controller => HC_T#.Returnf...	______HC_T1______.fxp *	COB COB_0 : Page 5
☐	Connector symbol : HC_T1.Inflow.Temperature.iValue => HC_T#.Inflow.Temperature.iVal...	______HC_T1______.fxp *	COB COB_0 : Page 5
☐	Connector symbol : HC_T1.Inflow.Temperature.iSetPoint => HC_T#.Inflow.Temperature.i...	______HC_T1______.fxp *	COB COB_0 : Page 5
☐	Connector symbol : HC_T1.Returnflow.Valve.iSignal_Inflow_Controller => HC_T#.Returnf...	______HC_T1______.fxp *	COB COB_0 : Page 6
☐	Connector symbol : HC_T1.Returnflow.Valve.iSignal_AO => HC_T#.Returnflow.Valve.iSi...	______HC_T1______.fxp *	COB COB_0 : Page 6
☐	Connector symbol : HC_T1.Returnflow.Valve.iSignal_Returnflow_Controller => HC_T#.R...	______HC_T1______.fxp *	COB COB_0 : Page 6
☐	Connector symbol : HC_T1.Returnflow.Valve.iSignal => HC_T#.Returnflow.Valve.iSignal	______HC_T1______.fxp *	COB COB_0 : Page 6
☐	Connector symbol : HC_T1.Returnflow.Valve.iSignalFb_AI => HC_T#.Returnflow.Valve.iS...	______HC_T1______.fxp *	COB COB_0 : Page 6
☐	Connector symbol : HC_T1.Returnflow.Valve.iAlarm => HC_T#.Returnflow.Valve.iAlarm	______HC_T1______.fxp *	COB COB_0 : Page 6
☐	Connector symbol : HC_T1.Returnflow.Valve.iManual_DI => HC_T#.Returnflow.Valve.iM...	______HC_T1______.fxp *	COB COB_0 : Page 6

If this window does not appear automatically, it can be called up in the menu View/Find Results .

DDC Suite 2.5 / PG5 Building Advanced

Adapting templates and creating in the Selector

We can select all of these lines directly via Select All and Apply Changes.
This selects all lines and applies all changes.

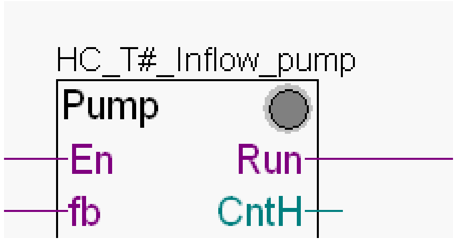


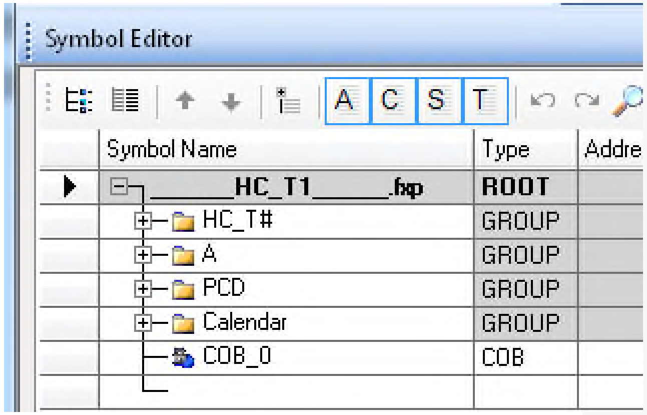
X	Description
□	Connector symbol : HC_T1.Inflow.Temperature.iTolerance => HC_T#.Inflow.Temperatur
□	Connector symbol : HC_T1.Inflow.Temperature.iSetPoint => HC_T#.Inflow.Temperature.
□	Connector symbol : HC_T1.Inflow.Temperature.iValue => HC_T#.Inflow.Temperature.iVa
□	Connector symbol : HC_T1.Returnflow.Temperature.iValue_AI => HC_T#.Returnflow.Te.
□	Connector symbol : HC_T1.Returnflow.Temperature.iValue => HC_T#.Returnflow.Tempe
□	Connector symbol : HC_T1.Returnflow.Temperature.iAlarm => HC_T#.Returnflow.Tempe
□	Connector symbol : HC_T1.System.iEnabled => HC_T#.System.iEnabled
□	Connector symbol : HC_T1.Outdoor.Temperature.iValue => HC_T#.Outdoor.Temperatur

DDC Suite 2.5 / PG5 Building Advanced

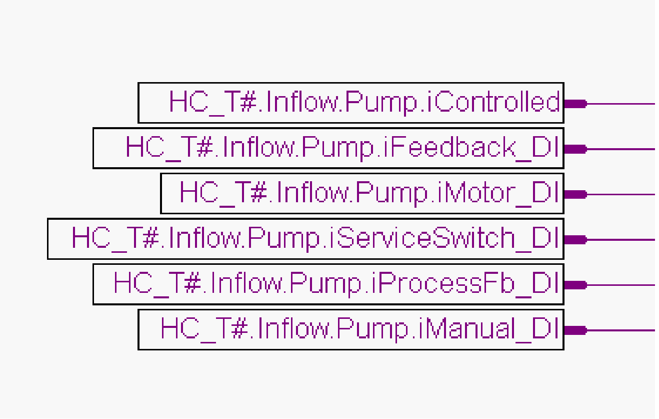
Adapting templates and creating in the Selector

So, all changes have now been applied to FBox names, symbols, groups…

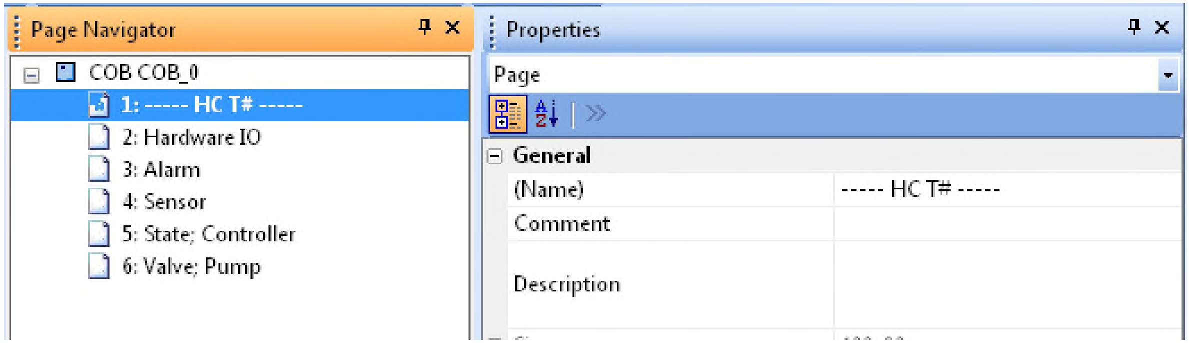



Symbol Editor

Symbol Name	Type	Addre
_____HC_T1_____.fxp	ROOT	
HC_T#	GROUP	
A	GROUP	
PCD	GROUP	
Calendar	GROUP	
COB_0	COB	


HC_T#.Inflow.Pump.iControlled
HC_T#.Inflow.Pump.iFeedback_DI
HC_T#.Inflow.Pump.iMotor_DI
HC_T#.Inflow.Pump.iServiceSwitch_DI
HC_T#.Inflow.Pump.iProcessFb_DI
HC_T#.Inflow.Pump.iManual_DI

Unfortunately, the page name in COB does not have an underline between HC and T1, so we need to correct this manually.


Page Navigator

COB COB_0
- 1: ----- HC T# -----
- 2: Hardware IO
- 3: Alarm
- 4: Sensor
- 5: State; Controller
- 6: Valve; Pump

Properties

Page

General

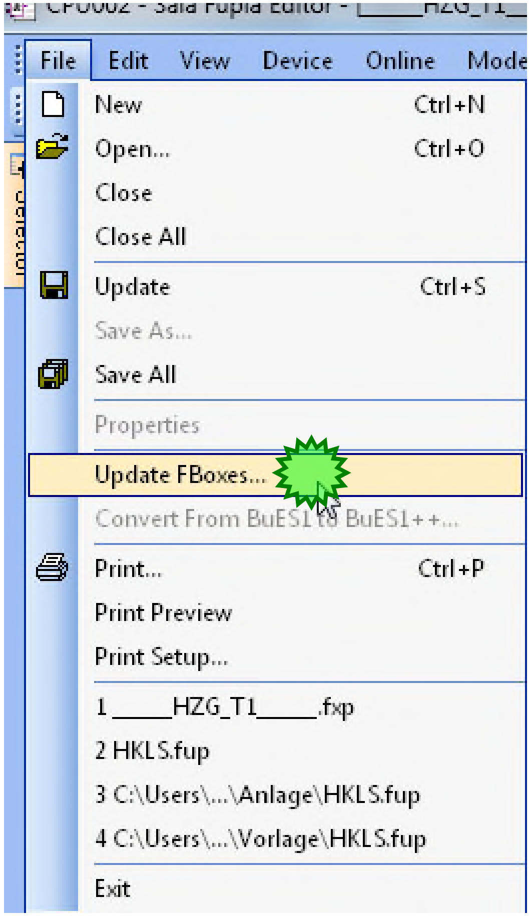
(Name)	----- HC T# -----
Comment	
Description	

DDC Suite 2.5 / PG5 Building Advanced

Adapting templates and creating in the Selector

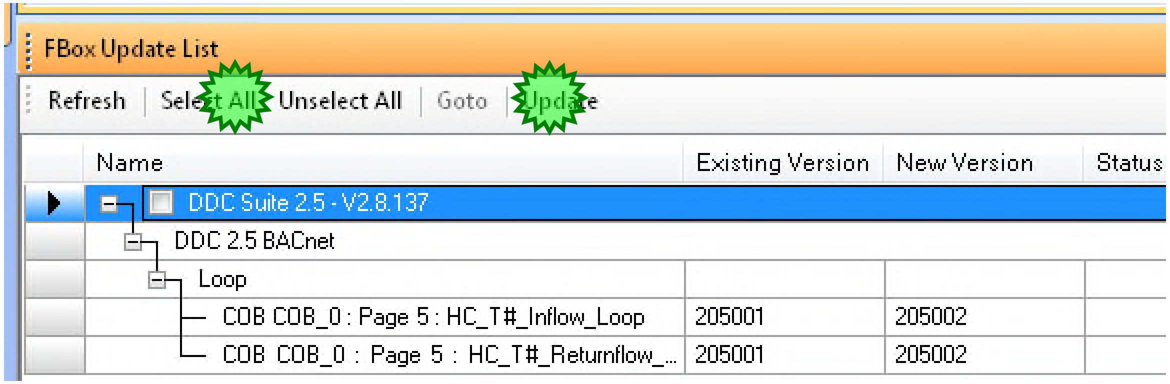
To do this, we can run another update for any FBoxes that are not up to date. Depending on the settings in the Fupla Editor, these are shown in different colours. In any case, there is a function that compares and adapts the version of the FBoxes throughout the application with the versions of the libraries.

This function can be found in the menu File/Update FBoxes



Here, too, we obtain an Update List with the results.

Click on Select All to select the FBox and then click on Update.

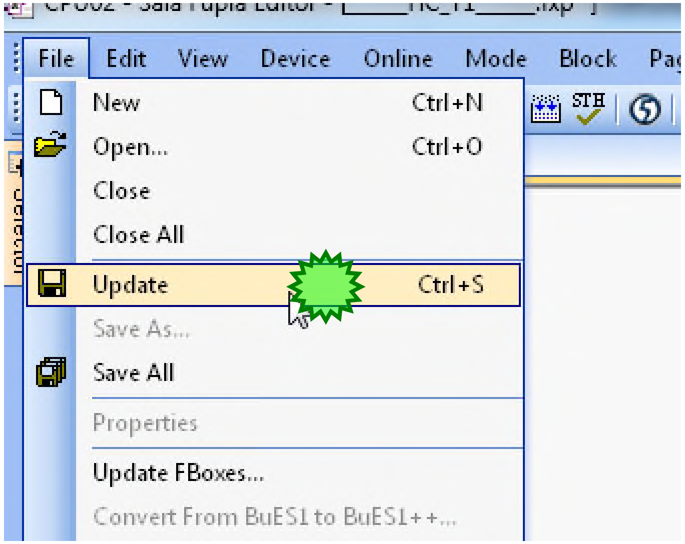


Name	Existing Version	New Version	Status
☐ DDC Suite 2.5 - V2.8.137			
DDC 2.5 BACnet			
Loop			
COB COB_0 : Page 5 : HC_T#_Inflow_Loop	205001	205002	
COB COB_0 : Page 5 : HC_T#_Returnflow_...	205001	205002	

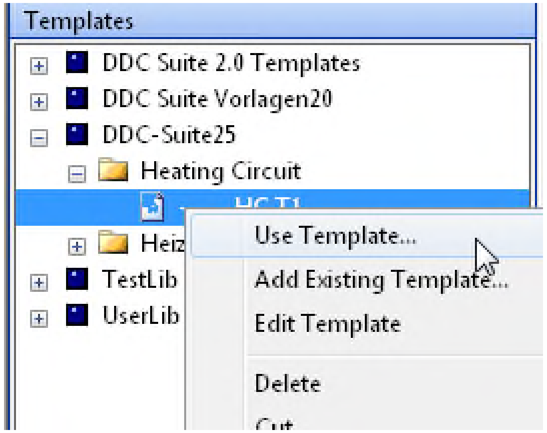
DDC Suite 2.5 / PG5 Building Advanced

Adapting templates and creating in the Selector

Finally, we need to save everything which is always done via File/Update for a template.



With a double-click or a right-click on our template, followed by the command Use Template, I can now use this template. The Import dialogue then opens, which we have already discussed.



PG5 Building Advanced / DDC Suite 2.5 Documentation

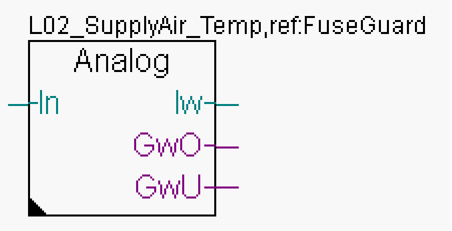
SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

Documentation

The functions of DDC Suite FBoxes are object-oriented. Therefore, each FBox contains a function, such as “measured value”, and all necessary data points.

This makes it possible to obtain a clear description with all the parameters of the FBox, such as:



Recording of the measured value with calibration, filtering and threshold monitoring. The connected analogue value can be prepared according to the type.

PCD2.W220 NI1000 DIN: The raw value is supplied by the card (Standard/Analogmodule/PCD2.W220) and the physical value is calculated here
PCD2.W340 NI1000 DIN: The raw value is supplied by the card (Standard/Analogmodule/PCD2.W340) and the physical value is calculated here
The physical value is already available at the input contact
Conversion: Any desired value (usually from an active sensor) is converted based on a linearisation.

The recorded measured value can be calibrated through specification of a correction. Finally, the measured value is filtered. It is also possible to define how often the measured value should be read, and the smoothing factor specifies the amount incorporated in the new measured value in the event of a measured value change. Example: Current measured value 10.0 °C, new measured value 14.3 °C, Smoothing factor 10.

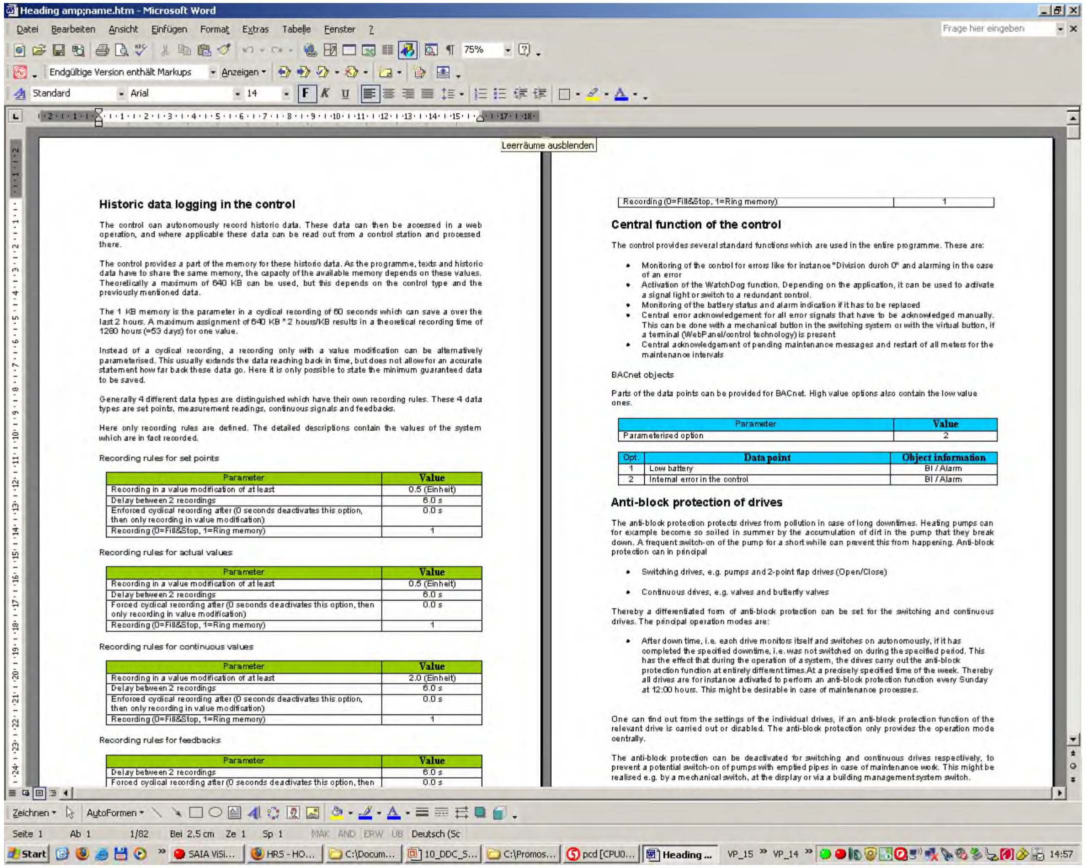
DDC Suite 2.5 / PG5 Building Advanced

Documentation

This could be a detailed description of the FBox Help, but usually this is too detailed and contains too many options for use of the FBox.

The objective is to achieve a documentation file that can be handed over to the end customer or planner with a general description and helpful settings. And this document should be updated with each Build so it is always “up to date” with the description and all settings.

The document can also be supplemented with additional general information and images from SWeb or ViSi.Plus.


Heading amp;name.htm - Microsoft Word
Datei Bearbeiten Ansicht Einfügen Format Extras Tabelle Fenster ?
Frage hier eingeben
75%
Endgültige Version enthält Markups
Anzeigen
Standard
Arial
14
Leerräume ausblenden
Zeichnen
AutoFormen
Seite 1 Ab 1 1/82 Bei 2,5 cm Ze 1 Sp 1 MAK AND ERW ÜB Deutsch (Sc
Start
SAIA ViSi...
HRS - HO...
C:\Docum...
10_DDC_S...
C:\Promos...
pcd [CPU0...
Heading ...
VP_15
VP_14
14:57

Historic data logging in the control

The control can autonomously record historic data. These data can then be accessed in a web operation, and where applicable these data can be read out from a control station and processed there.

The control provides a part of the memory for these historic data. As the programme, texts and historic data have to share the same memory, the capacty of the available memory depends on these values. Theoretically a maximum of 640 KB can be used, but this depends on the control type and the previously mentioned data.

The 1 KB memory is the parameter in a cyclical recording of 60 seconds which can save a over the last 2 hours. A maximum assignment of 640 KB * 2 hours/KB results in a theoretical recording time of 1280 hours (=53 days) for one value.

Instead of a cyclical recording, a recording only with a value modification can be alternatively parameterised. This usually extends the data reaching back in time, but does not allow for an accurate statement how far back these data go. Here it is only possible to state the minimum guaranteed data to be saved.

Generally 4 different data types are distinguished which have their own recording rules. These 4 data types are set points, measurement readings, continuous signals and feedbacks.

Here only recording rules are defined. The detailed descriptions contain the values of the system which are in fact recorded.

Recording rules for set points

Parameter	Value
Recording in a value modification of at least	0.5 (Einheit)
Delay between 2 recordings	6,0 s
Enforced cyclical recording after (0 seconds deactivates this option, then only recording in value modification)	0,0 s
Recording (0=Fill&Stop, 1=Ring memory)	1

Recording rules for actual values

Parameter	Value
Recording in a value modification of at least	0.5 (Einheit)
Delay between 2 recordings	6,0 s
Forced cyclical recording after (0 seconds deactivates this option, then only recording in value modification)	0,0 s
Recording (0=Fill&Stop, 1=Ring memory)	1

Recording rules for continuous values

Parameter	Value
Recording in a value modification of at least	2.0 (Einheit)
Delay between 2 recordings	6,0 s
Enforced cyclical recording after (0 seconds deactivates this option, then only recording in value modification)	0,0 s
Recording (0=Fill&Stop, 1=Ring memory)	1

Recording rules for feedbacks

Parameter	Value
Delay between 2 recordings	6,0 s
Forced cyclical recording after (0 seconds deactivates this option, then	0,0 s
Recording (0=Fill&Stop, 1=Ring memory)	1

Central function of the control

The control provides several standard functions which are used in the entire programme. These are:

- Monitoring of the control for errors like for instance "Division durch 0" and alarming in the case of an error
- Activation of the WatchDog function. Depending on the application, it can be used to activate a signal light or switch to a redundant control.
- Monitoring of the battery status and alarm indication if it has to be replaced
- Central error acknowledgement for all error signals that have to be acknowledged manually. This can be done with a mechanical button in the switching system or with the virtual button, if a terminal (WebPanel/control technology) is present
- Central acknowledgement of pending maintenance messages and restart of all meters for the maintenance intervals

BACnet objects

Parts of the data points can be provided for BACnet. High value options also contain the low value ones.

Parameter	Value
Parameterised option	2

Opt.	Data point	Object information
1	Low battery	BI / Alarm
2	Internal error in the control	BI / Alarm

Anti-block protection of drives

The anti-block protection protects drives from pollution in case of long downtimes. Heating pumps can for example become so soiled in summer by the accumulation of dirt in the pump that they break down. A frequent switch-on of the pump for a short while can prevent this from happening. Anti-block protection can in principal

- Switching drives, e.g. pumps and 2-point flap drives (Open/Close)

- Continuous drives, e.g. valves and butterfly valves

Thereby a differentiated form of anti-block protection can be set for the switching and continuous drives. The principal operation modes are:

- After down time, i.e. each drive monitors itself and switches on autonomously, if it has completed the specified downtime, i.e. was not switched on during the specified period. This has the effect that during the operation of a system, the drives carry out the anti-block protection function at entirely different times.At a precisely specified time of the week. Thereby all drives are for instance activated to perform an anti-block protection function every Sunday at 12:00 hours. This might be desirable in case of maintenance processes.

One can find out from the settings of the individual drives, if an anti-block protection function of the relevant drive is carried out or disabled. The anti-block protection only provides the operation mode centrally.

The anti-block protection can be deactivated for switching and continuous drives respectively, to prevent a potential switch-on of pumps with emptied pipes in case of maintenance work. This might be realised e.g. by a mechanical switch, at the display or via a building management system switch.

DDC Suite 2.5 / PG5 Building Advanced

Documentation

DDC Suite FBoxes are able to do this. Each FBox supports an external file.

- If the file is not available, no documentation is generated by the FBox.
- If the file is available, then it contains the definitions for the documentation.

Therefore, the external file activates the documentation.

There are two types of file

- Files that are analysed by the FBoxes during the Build – these cannot be modified
- Source files that can be edited with MS Word, for example, and saved in HTML format

The first type of file is structured with strict naming conventions

- DOC_ - indicates that the file contains documentation information
- DDC_ - indicates that the file is used with DDC Suite FBoxes
- “Family_”, e.g. Alarming – indicates the DDC Suite family
- “FBox”, e.g. 1Alarm – describes the FBox
- .src – file extension

Example: DOC_DDC_Alarming_1Alarm.src

You do not need to know these file names or create them yourself.

DDC Suite 2.5 / PG5 Building Advanced

Documentation

The source file is structured with strict naming conventions

- DOC_ - indicates that the file contains documentation information
- DDC_ - indicates that the file is used with DDC Suite FBoxes
- “Family_”, e.g. Alarming – indicates the DDC Suite family
- “FBox”, e.g. 1Alarm – describes the FBox
- AddOn “Main” - general part, must be present
- AddOn “HDLog” - this part contains a description of the historical data (optional)
- AddOn “Alarm” - this part contains a description of the alarm data points (optional)
- AddOn “BACnet” - this part contains a description of the BACnet data points (optional)
- .src – file extension

Thus, an FBox can have up to 4 source files (DOC_DDC_FamilyFBox_Main.html, DOC_DDC_FamilyFBox_HDLog.html, DOC_DDC_FamilyFBox_Alarm.html, DOC_DDC_FamilyFBox_BACnet.html)

You do not need to know these file names or create them yourself.

And these source files must be converted into a file that can be analysed and processed by the FBox during the Build. The DDC HTMFile AddOn Tool does this for us.

DDC Suite 2.5 / PG5 Building Advanced

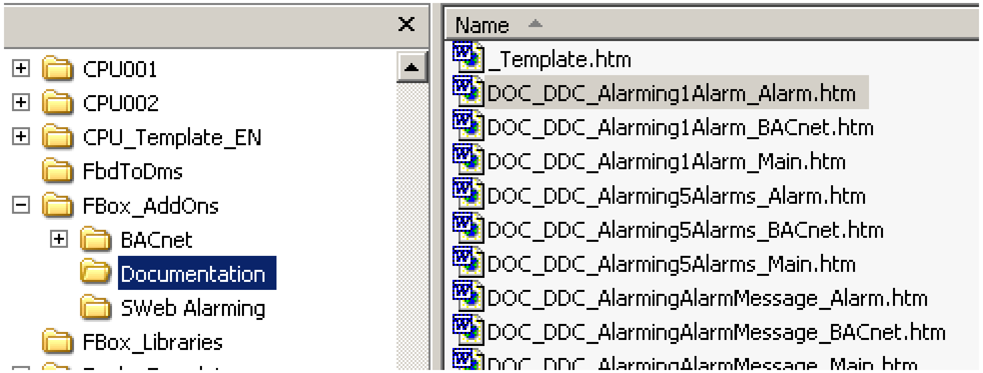
Documentation

The HTML files supplied can be found in the DDC Suite project directory “FBox_AddON” and, there, in the “Documentation” sub-directory).

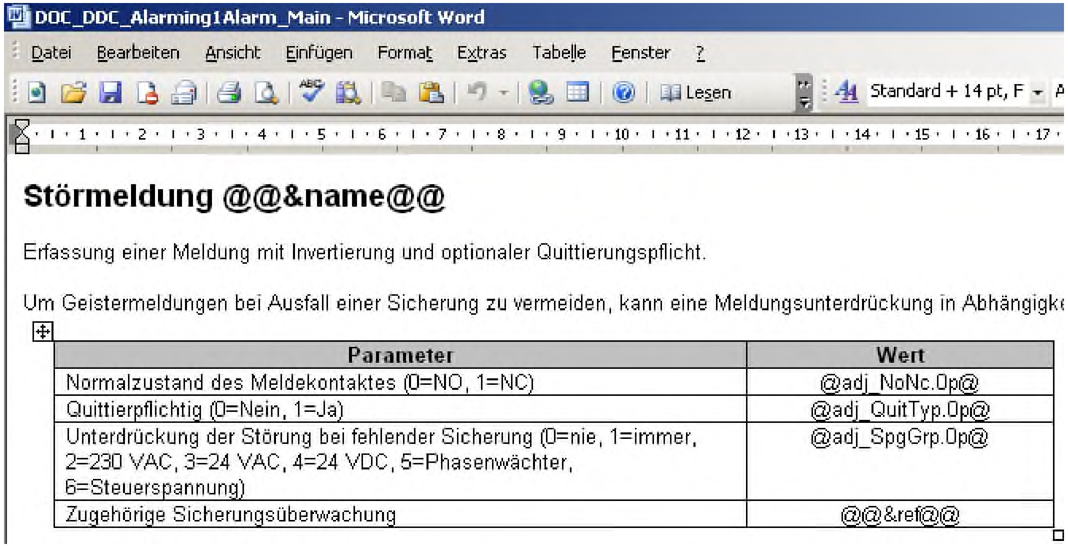
It is possible to modify the text, format or colour of these files, e.g. with MS Word, and also to define whether or not parameters are displayed.

There are a couple of special definitions:

- @@&name@@ shows the “Name” FBox property later
- @@&name@@ shows the “Reference” FBox property later
- @adj_SYMBOL@ shows a parameter (AddOn .0p or .1p is the definition of whether the value is displayed with one or no decimal points)



CPU001
CPU002
CPU_Template_EN
FbdToDms
FBox_AddOns
BACnet
Documentation
SWeb Alarming
FBox_Libraries
Name
_Template.htm
DOC_DDC_Alarming1Alarm_Alarm.htm
DOC_DDC_Alarming1Alarm_BACnet.htm
DOC_DDC_Alarming1Alarm_Main.htm
DOC_DDC_Alarming5Alarms_Alarm.htm
DOC_DDC_Alarming5Alarms_BACnet.htm
DOC_DDC_Alarming5Alarms_Main.htm
DOC_DDC_AlarmingAlarmMessage_Alarm.htm
DOC_DDC_AlarmingAlarmMessage_BACnet.htm
DOC_DDC_AlarmingAlarmMessage_Main.htm



Störmeldung @@&name@@

Erfassung einer Meldung mit Invertierung und optionaler Quittierungspflicht.

Um Geistermeldungen bei Ausfall einer Sicherung zu vermeiden, kann eine Meldungsunterdrückung in Abhängigke

Parameter	Wert
Normalzustand des Meldekontaktes (0=NO, 1=NC)	@adj_NoNc.0p@
Quittierpflichtig (0=Nein, 1=Ja)	@adj_QuitTyp.0p@
Unterdrückung der Störung bei fehlender Sicherung (0=nie, 1=immer, 2=230 VAC, 3=24 VAC, 4=24 VDC, 5=Phasenwächter, 6=Steuerspannung)	@adj_SpgGrp.0p@
Zugehörige Sicherungsüberwachung	@@&ref@@

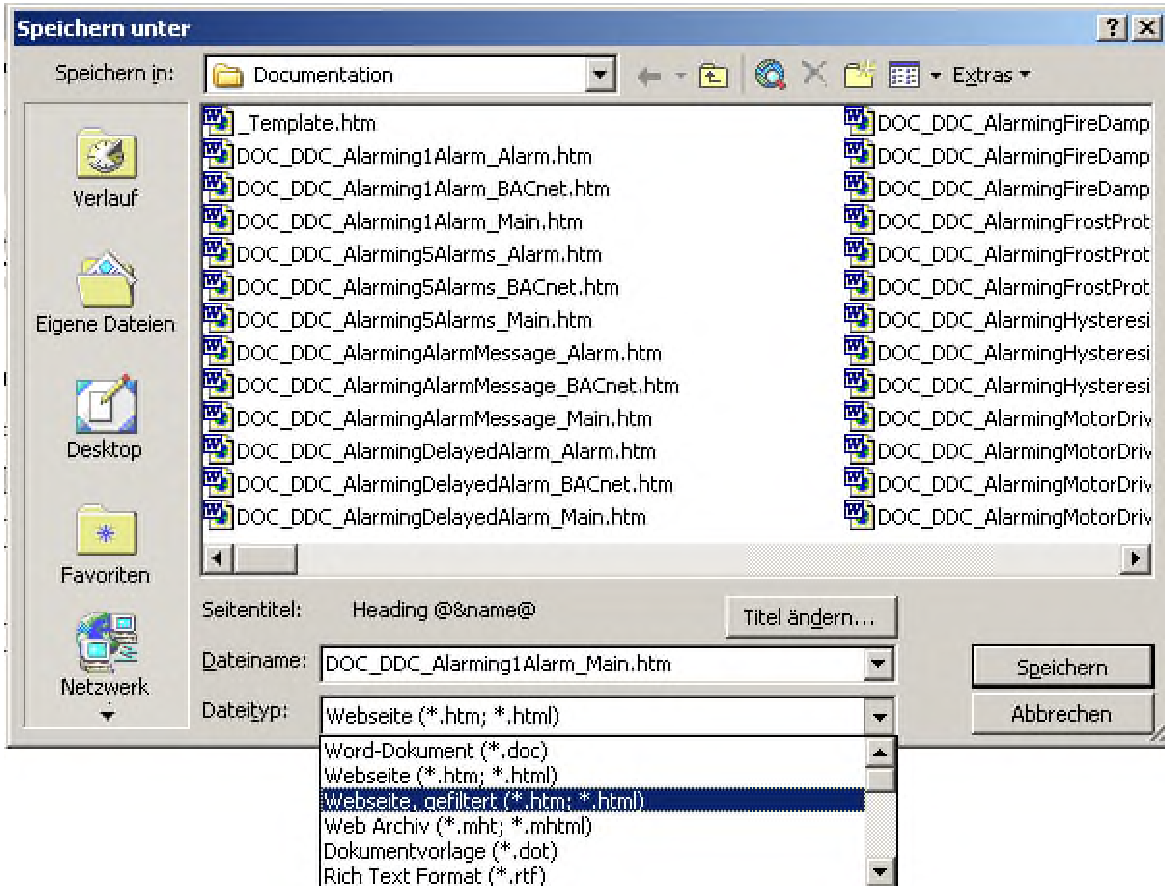
DDC Suite 2.5 / PG5 Building Advanced

Documentation

After making changes, you must save the file – but in a special format.

In the menu, select “File % Save as” and then select the file type “Web Page, filtered (*.htm).

This generates a small HTML file – if you save it as a standard HTML file it will not work!



Speichern in: Documentation

_Template.htm
DOC_DDC_Alarming1Alarm_Alarm.htm
DOC_DDC_Alarming1Alarm_BACnet.htm
DOC_DDC_Alarming1Alarm_Main.htm
DOC_DDC_Alarming5Alarms_Alarm.htm
DOC_DDC_Alarming5Alarms_BACnet.htm
DOC_DDC_Alarming5Alarms_Main.htm
DOC_DDC_AlarmingAlarmMessage_Alarm.htm
DOC_DDC_AlarmingAlarmMessage_BACnet.htm
DOC_DDC_AlarmingAlarmMessage_Main.htm
DOC_DDC_AlarmingDelayedAlarm_Alarm.htm
DOC_DDC_AlarmingDelayedAlarm_BACnet.htm
DOC_DDC_AlarmingDelayedAlarm_Main.htm
DOC_DDC_AlarmingFireDamp
DOC_DDC_AlarmingFireDamp
DOC_DDC_AlarmingFireDamp
DOC_DDC_AlarmingFrostProt
DOC_DDC_AlarmingFrostProt
DOC_DDC_AlarmingFrostProt
DOC_DDC_AlarmingHysteresi
DOC_DDC_AlarmingHysteresi
DOC_DDC_AlarmingHysteresi
DOC_DDC_AlarmingMotorDriv
DOC_DDC_AlarmingMotorDriv
DOC_DDC_AlarmingMotorDriv
DOC_DDC_AlarmingMotorDriv

Seitentitel: Heading @&name@

Dateiname: DOC_DDC_Alarming1Alarm_Main.htm

Dateityp: Webseite (*.htm; *.html)

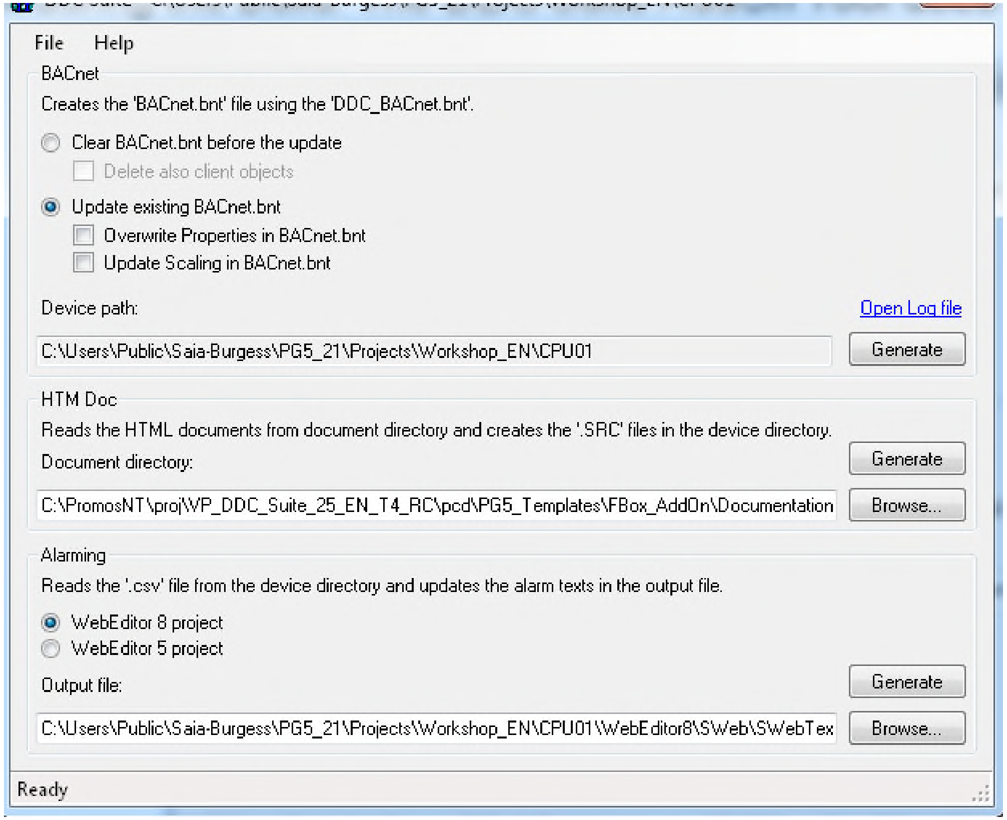
Word-Dokument (*.doc)
Webseite (*.htm; *.html)
Webseite, gefiltert (*.htm; *.html)
Web Archiv (*.mht; *.mhtml)
Dokumentvorlage (*.dot)
Rich Text Format (*.rtf)

DDC Suite 2.5 / PG5 Building Advanced

Documentation

After modifying the source files to your requirements, up to 4 source files that are used by the FBox must be combined into an *.SRC file.

And these source files have to be converted into a file that can be analysed and processed by the FBox during the Build. The DDC Suite AddOn Tool does this for us.



BACnet

Creates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.

○ Clear BACnet.bnt before the update

□ Delete also client objects

● Update existing BACnet.bnt

□ Overwrite Properties in BACnet.bnt

□ Update Scaling in BACnet.bnt

Device path:

C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop_EN\CPU01

HTM Doc

Reads the HTML documents from document directory and creates the '.SRC' files in the device directory.

Document directory:

C:\PromosNT\proj\VP_DDC_Suite_25_EN_T4_RC\pcd\PG5_Templates\FBox_AddOn\Documentation

Alarming

Reads the '.csv' file from the device directory and updates the alarm texts in the output file.

● WebEditor 8 project

○ WebEditor 5 project

Output file:

C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop_EN\CPU01\WebEditor8\SWeb\SWebTex

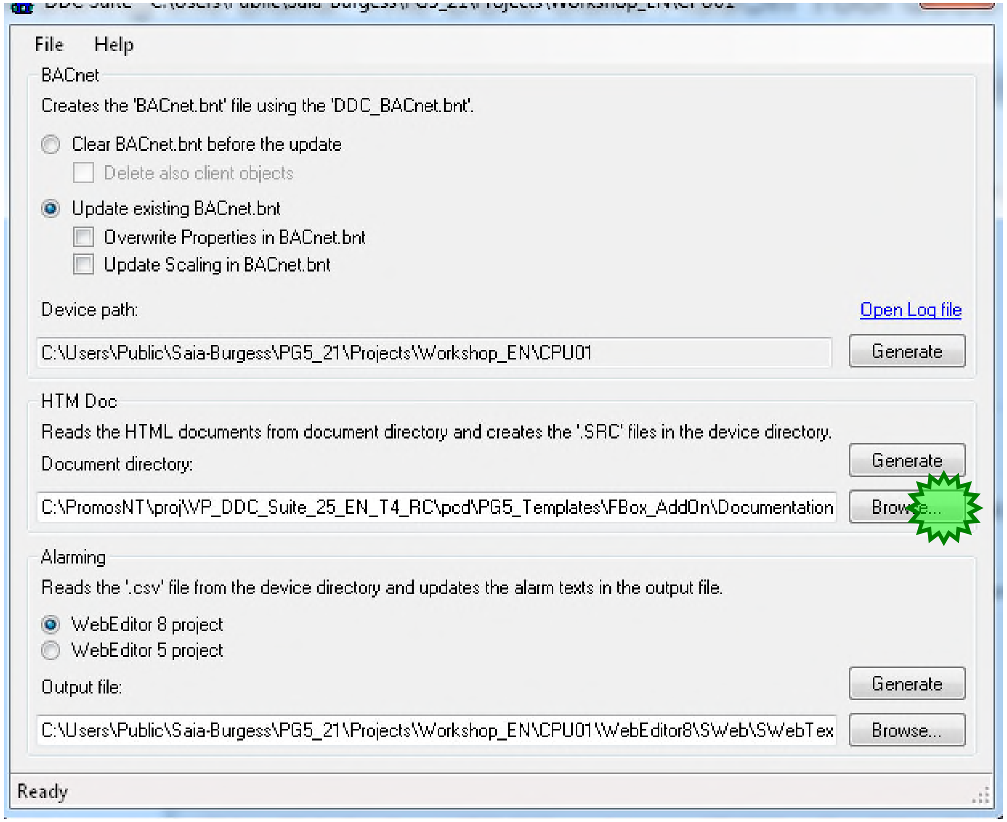
Ready

DDC Suite 2.5 / PG5 Building Advanced

Documentation

First we must define where the source files – HTML files – are located.

Click on Browse and navigate in your project to the “FBox_AddOns” sub-directory and, there, to “Documentation”.



BACnet

Creates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.

○ Clear BACnet.bnt before the update

□ Delete also client objects

● Update existing BACnet.bnt

□ Overwrite Properties in BACnet.bnt

□ Update Scaling in BACnet.bnt

Device path:

C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop_EN\CPU01

HTM Doc

Reads the HTML documents from document directory and creates the '.SRC' files in the device directory.

Document directory:

C:\PromosNT\proj\VP_DDC_Suite_25_EN_T4_RC\pcd\PG5_Templates\FBox_AddOn\Documentation

Alarming

Reads the '.csv' file from the device directory and updates the alarm texts in the output file.

● WebEditor 8 project

○ WebEditor 5 project

Output file:

C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop_EN\CPU01\WebEditor8\SWeb\SWebTex

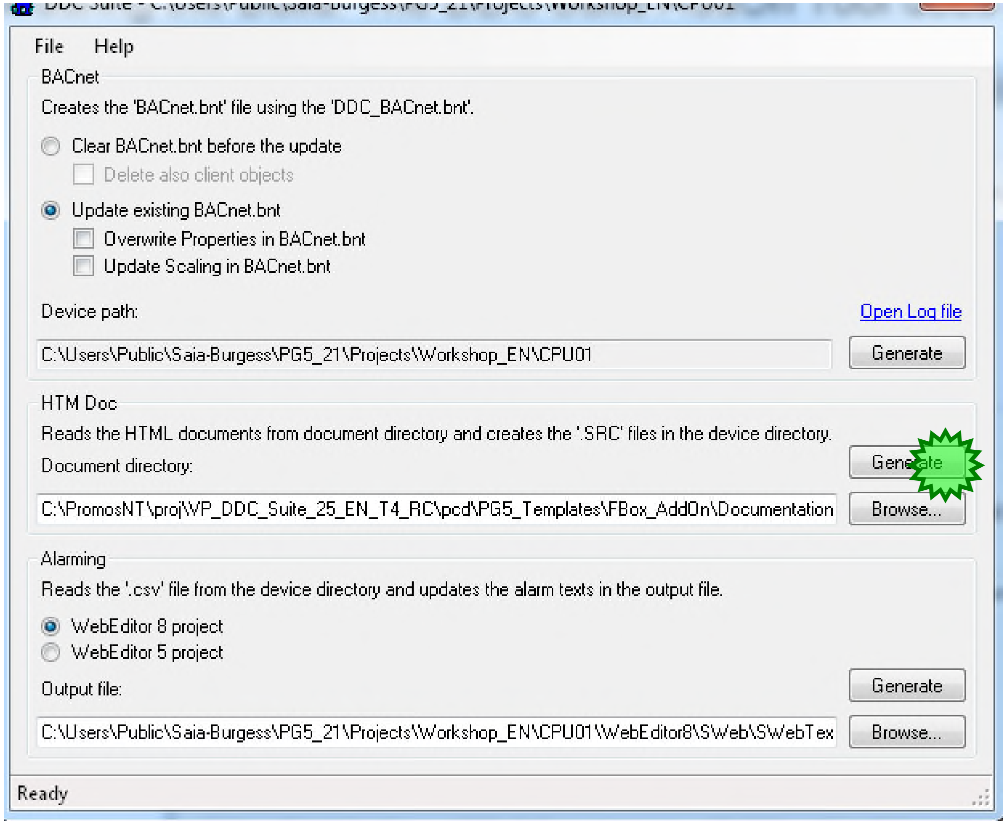
Ready

DDC Suite 2.5 / PG5 Building Advanced

Documentation

Click on Generate. This will take some time – the tool must convert up to 4 HTML files per FBox into an SRC file and save it in a special format.

Now let's start a "Rebuild all" in the PG5 Project Manager.



DDC Suite - C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop_EN\CPU01

BACnet

Creates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.

○ Clear BACnet.bnt before the update

□ Delete also client objects

● Update existing BACnet.bnt

□ Overwrite Properties in BACnet.bnt

□ Update Scaling in BACnet.bnt

Device path:

C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop_EN\CPU01

HTM Doc

Reads the HTML documents from document directory and creates the '.SRC' files in the device directory.

Document directory:

C:\PromosNT\proj\VP_DDC_Suite_25_EN_T4_RC\pcd\PG5_Templates\FBox_AddOn\Documentation

Alarming

Reads the '.csv' file from the device directory and updates the alarm texts in the output file.

● WebEditor 8 project

○ WebEditor 5 project

Output file:

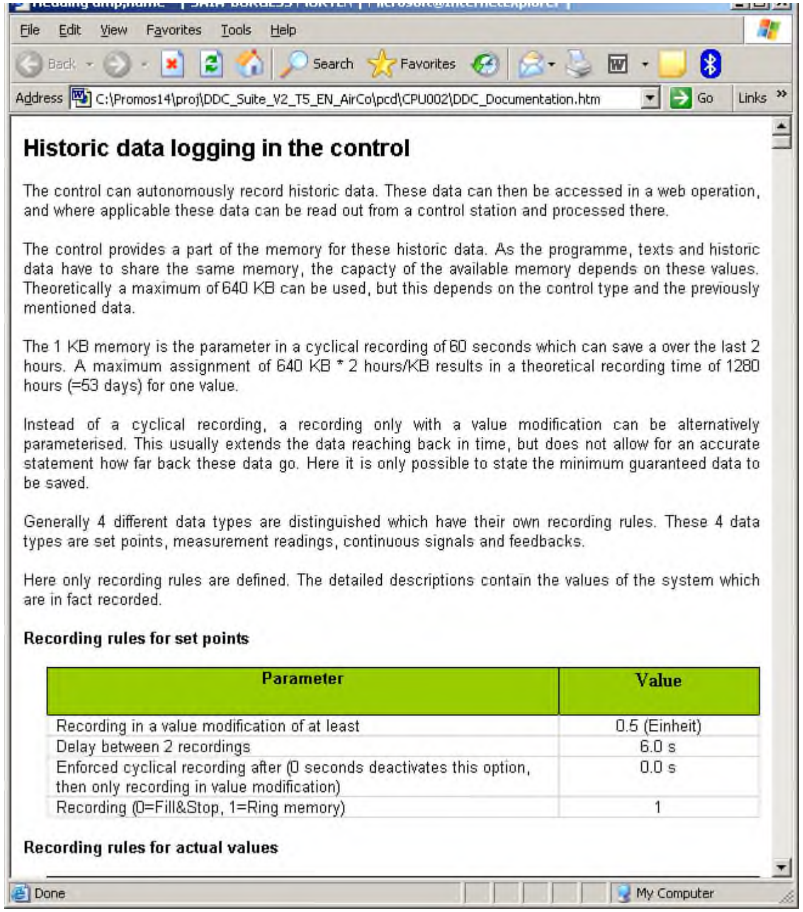
C:\Users\Public\Saia-Burgess\PG5_21\Projects\Workshop_EN\CPU01\WebEditor8\SWeb\SWebTex

Ready

DDC Suite 2.5 / PG5 Building Advanced

Documentation

Open the document by double-clicking – by default it is displayed in your default browser.



Historic data logging in the control

The control can autonomously record historic data. These data can then be accessed in a web operation, and where applicable these data can be read out from a control station and processed there.

The control provides a part of the memory for these historic data. As the programme, texts and historic data have to share the same memory, the capacty of the available memory depends on these values. Theoretically a maximum of 640 KB can be used, but this depends on the control type and the previously mentioned data.

The 1 KB memory is the parameter in a cyclical recording of 60 seconds which can save a over the last 2 hours. A maximum assignment of 640 KB * 2 hours/KB results in a theoretical recording time of 1280 hours (=53 days) for one value.

Instead of a cyclical recording, a recording only with a value modification can be alternatively parameterised. This usually extends the data reaching back in time, but does not allow for an accurate statement how far back these data go. Here it is only possible to state the minimum guaranteed data to be saved.

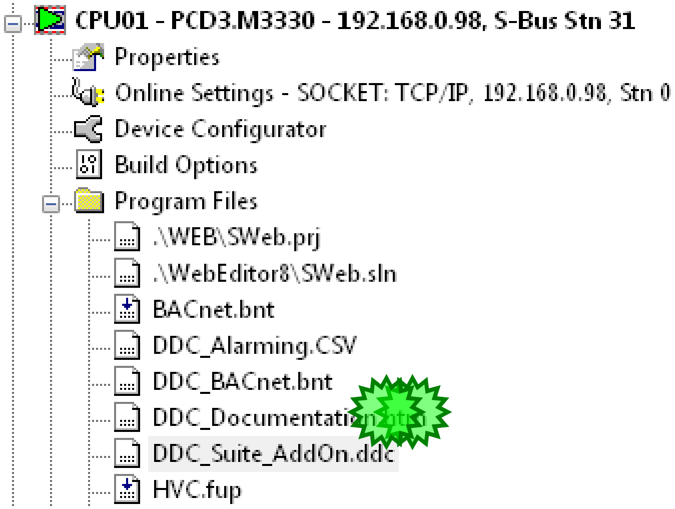
Generally 4 different data types are distinguished which have their own recording rules. These 4 data types are set points, measurement readings, continuous signals and feedbacks.

Here only recording rules are defined. The detailed descriptions contain the values of the system which are in fact recorded.

Recording rules for set points

Parameter	Value
Recording in a value modification of at least	0.5 (Einheit)
Delay between 2 recordings	6.0 s
Enforced cyclical recording after (0 seconds deactivates this option, then only recording in value modification)	0.0 s
Recording (0=Fill&Stop, 1=Ring memory)	1

Recording rules for actual values



CPU01 - PCD3.M3330 - 192.168.0.98, S-Bus Stn 31
- Properties
- Online Settings - SOCKET: TCP/IP, 192.168.0.98, Stn 0
- Device Configurator
- Build Options
- Program Files
  - .\WEB\SWeb.prj
  - .\WebEditor8\SWeb.sln
  - BACnet.bnt
  - DDC_Alarming.CSV
  - DDC_BACnet.bnt
  - DDC_Documentation.htm
  - DDC_Suite_AddOn.ddc
  - HVC.fup

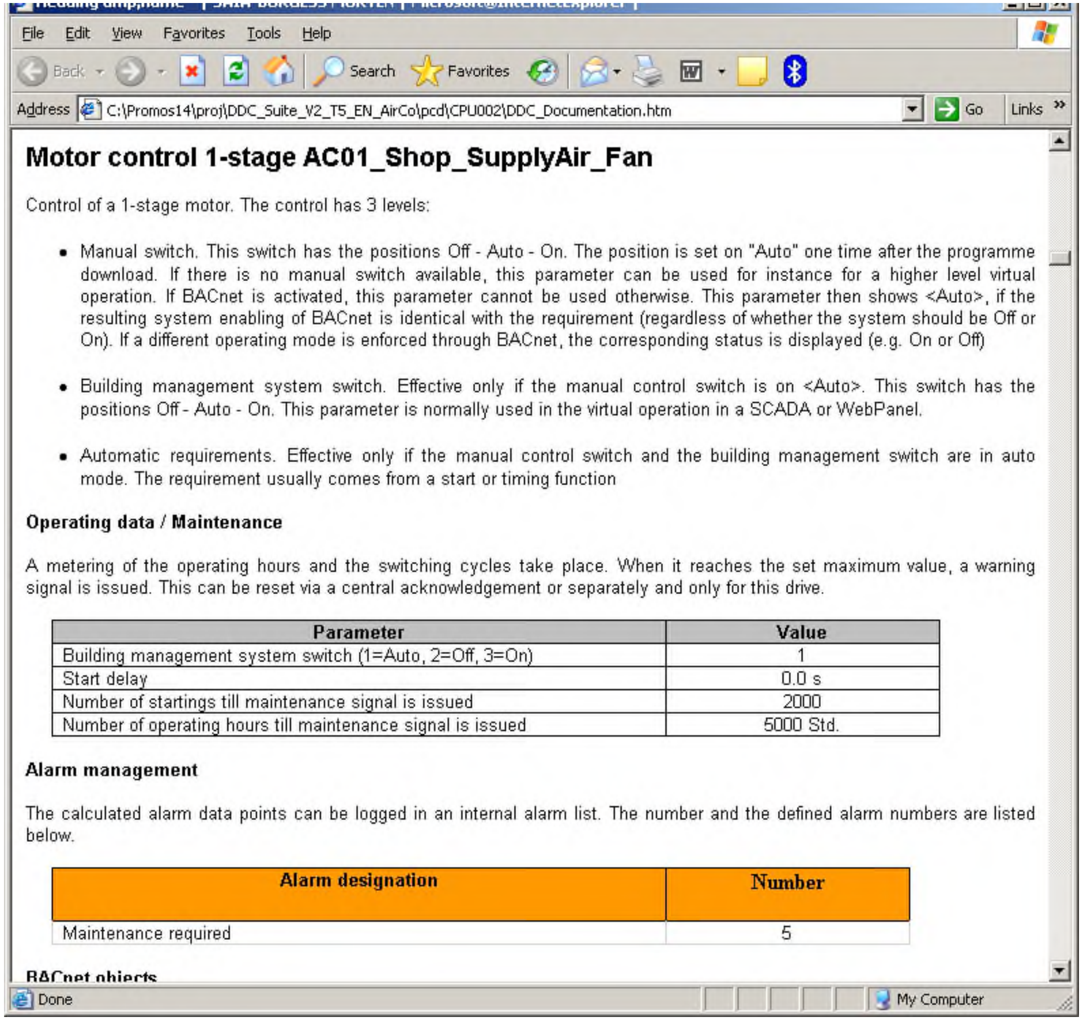
DDC Suite 2.5 / PG5 Building Advanced

Documentation

We can see that the Name FBox property is displayed in the same way as the general parameters (grey table).

In addition – depending on the configured functions – you can see

- Alarm information (orange table)
- Historical data definition (green table)
- BACnet configuration (blue table)



File Edit View Favorites Tools Help
Back Search Favorites
Address C:\Promos14\proj\DDC_Suite_V2_T5_EN_AirCo\pcd\CPU002\DDC_Documentation.htm
Go
Links »
Done
My Computer

Motor control 1-stage AC01_Shop_SupplyAir_Fan

Control of a 1-stage motor. The control has 3 levels:

- Manual switch. This switch has the positions Off - Auto - On. The position is set on "Auto" one time after the programme download. If there is no manual switch available, this parameter can be used for instance for a higher level virtual operation. If BACnet is activated, this parameter cannot be used otherwise. This parameter then shows <Auto>, if the resulting system enabling of BACnet is identical with the requirement (regardless of whether the system should be Off or On). If a different operating mode is enforced through BACnet, the corresponding status is displayed (e.g. On or Off)
- Building management system switch. Effective only if the manual control switch is on <Auto>. This switch has the positions Off - Auto - On. This parameter is normally used in the virtual operation in a SCADA or WebPanel.
- Automatic requirements. Effective only if the manual control switch and the building management switch are in auto mode. The requirement usually comes from a start or timing function

Operating data / Maintenance

A metering of the operating hours and the switching cycles take place. When it reaches the set maximum value, a warning signal is issued. This can be reset via a central acknowledgement or separately and only for this drive.

Parameter	Value
Building management system switch (1=Auto, 2=Off, 3=On)	1
Start delay	0.0 s
Number of startings till maintenance signal is issued	2000
Number of operating hours till maintenance signal is issued	5000 Std.

Alarm management

The calculated alarm data points can be logged in an internal alarm list. The number and the defined alarm numbers are listed below.

Alarm designation	Number
Maintenance required	5

BACnet objects

DDC Suite 2.5 / PG5 Building Advanced

Documentation

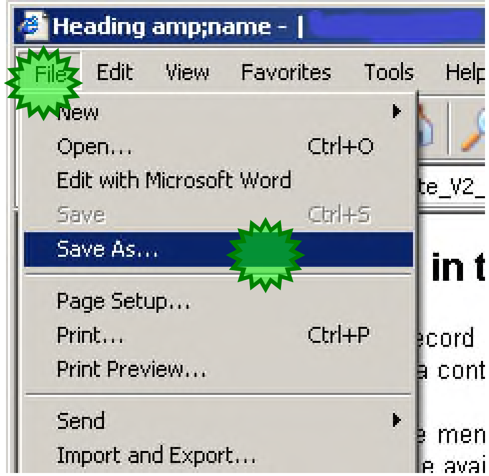
If we want to edit this file, we must save it from Internet Explorer, for example.

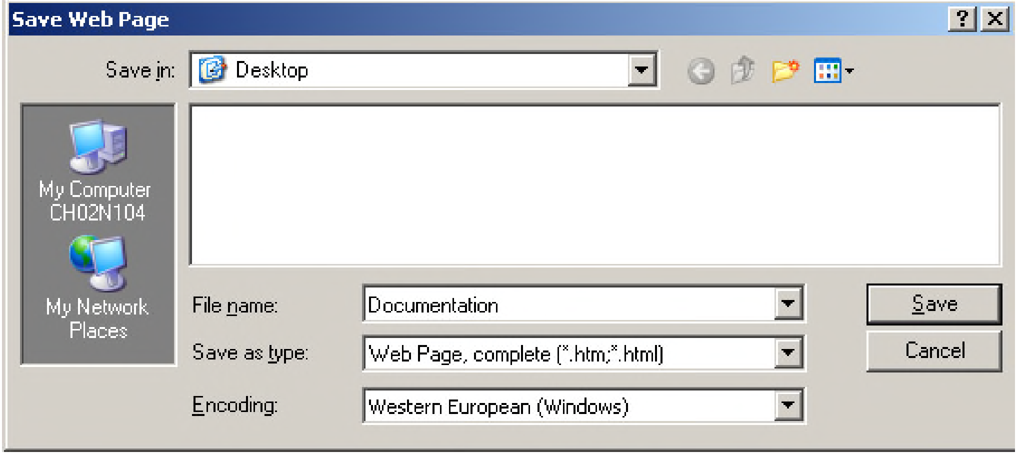
MS IE shows all parts of all FBoxes – MS Word only shows the first FBox part….

Therefore, we must select “Save as”. Save it on the desktop as “Documentation”

and complete as type Web Page,

close MS IE and open the saved file with MS Word – or your preferred word processor.





Save in: Desktop

File name: Documentation

Save as type: Web Page, complete (*.htm;*.html)

Encoding: Western European (Windows)

System descriptions

sbc
SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

Documentation

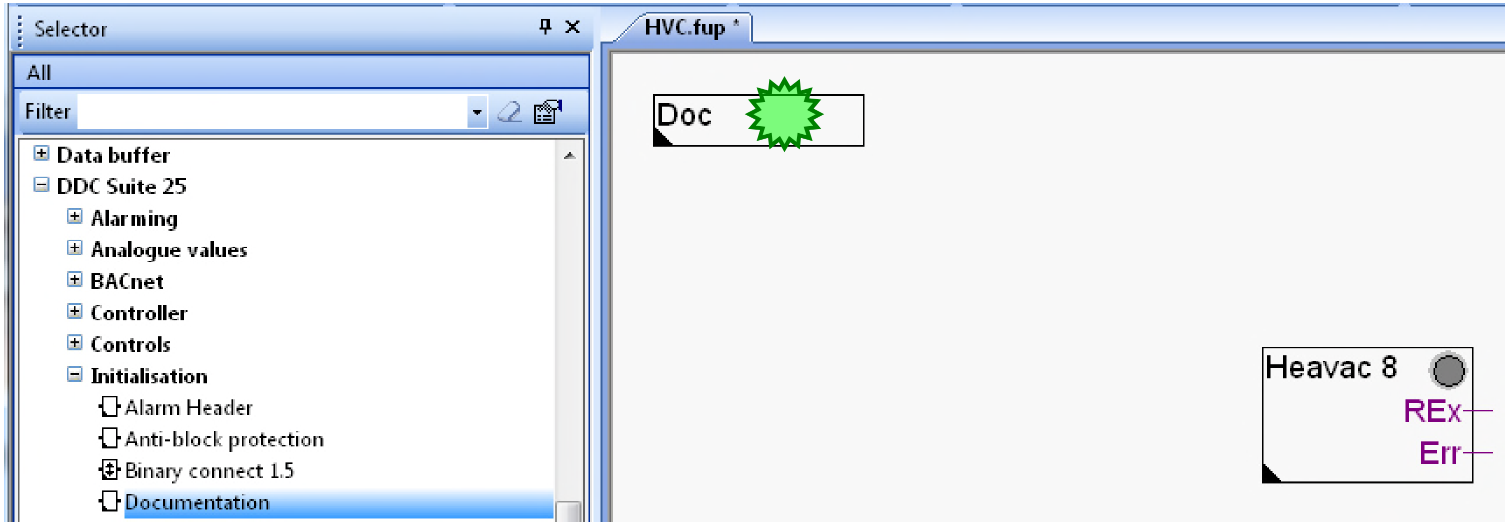
Now you can add general information, such as

Ventilation

This ventilation is controlled by the room temperature sensor and has a cooler, mixed air and heater...

If you wish to generate this kind of information with Fupla, you must use this special “Documentation” FBox which can be found in the “DDC Suite 25 Initialisation” family.

Open Fupla, on the first page of “COB Initialisation” you can find already the Documentaion Fbox.



DDC Suite 2.5 / PG5 Building Advanced

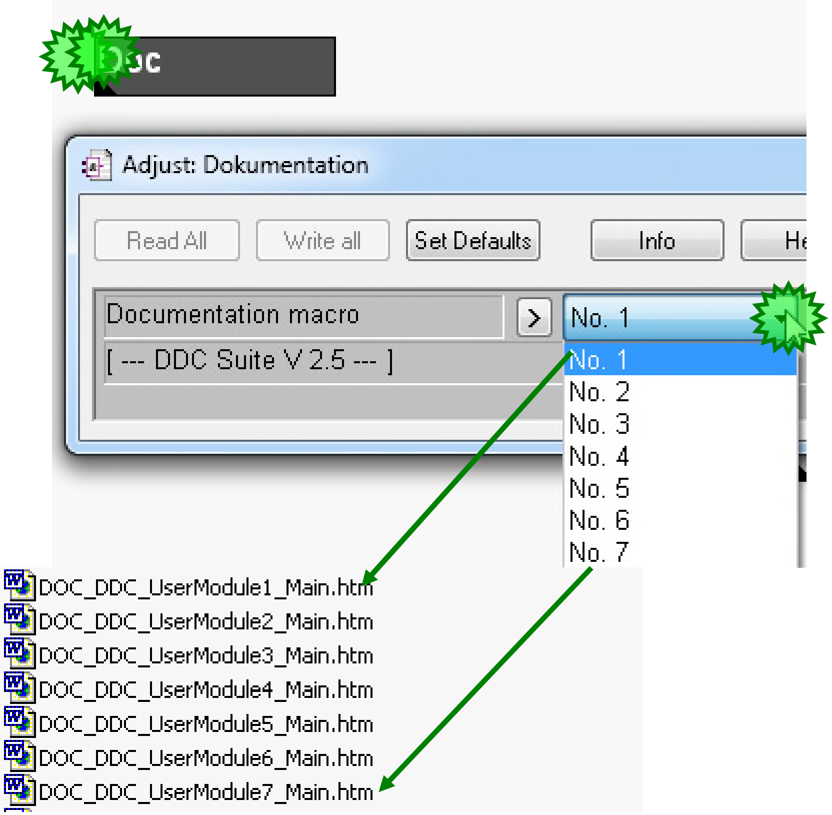
Documentation

This FBox supports up to 20 user-defined documentation files that are also located in the directory with the HTML files and are named as follows

DOC_DDC_UserModule(1..20)_Main.htm

UserModule 1 is already used for general descriptions of the format. Let’s see what happens.

Select “No.1”, save and build the programme.



Documentation macro: No. 1

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

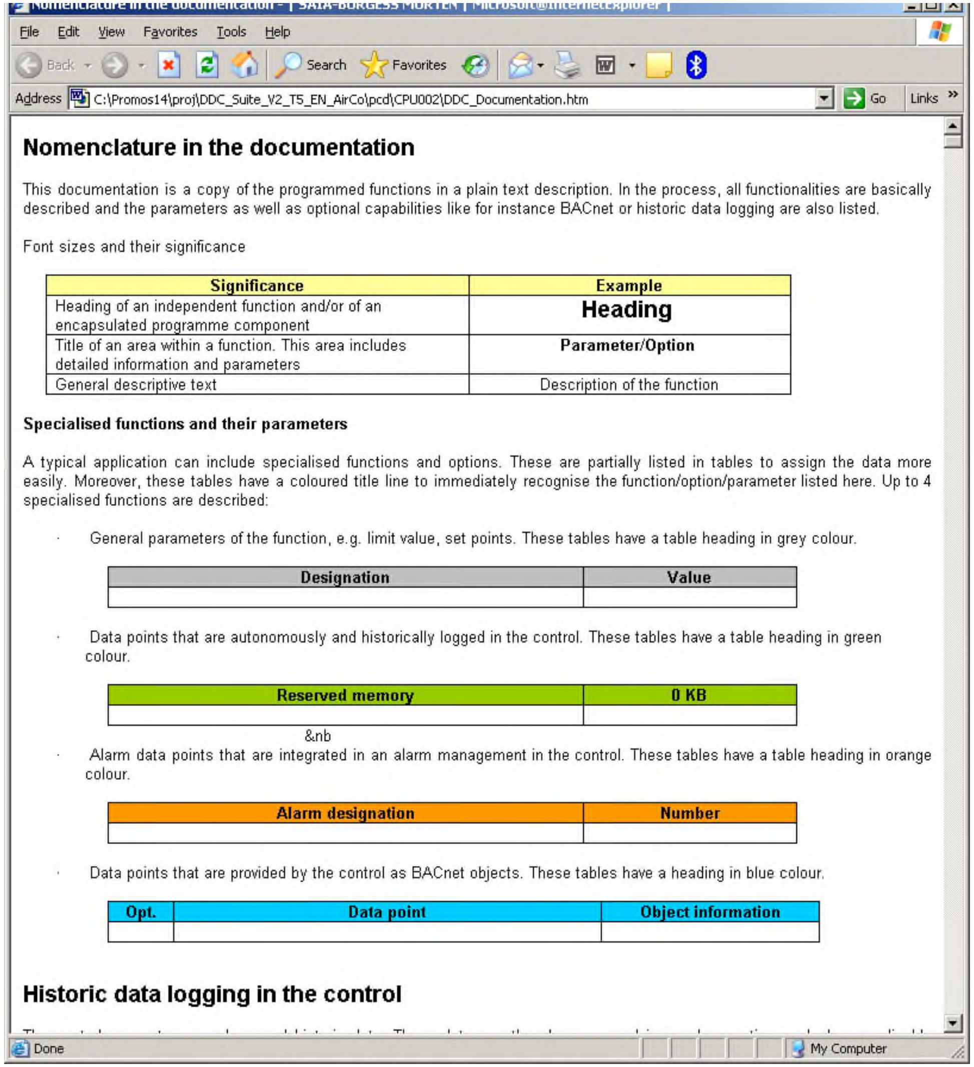
DOC_DDC_UserModule1_Main.htm
DOC_DDC_UserModule2_Main.htm
DOC_DDC_UserModule3_Main.htm
DOC_DDC_UserModule4_Main.htm
DOC_DDC_UserModule5_Main.htm
DOC_DDC_UserModule6_Main.htm
DOC_DDC_UserModule7_Main.htm

DDC Suite 2.5 / PG5 Building Advanced

Documentation

Open the DDC_Documentation.htm file and we can see a new description (UserModule 1) has been inserted at this position.

If you use this mechanism at the start of every system (e.g. first page of L01, first page of HZG_T1 …, etc.), you can generate a separate, general description for each system and then only need to insert images in the document.


Nomenclature in the documentation - | SAIA-BURGESS MORTEN | Microsoft®InternetExplorer |
File
Edit
View
Favorites
Tools
Help
Back
Search
Favorites
Address
Go
Links
Done
My Computer

Address: C:\Promos14\proj\DDC_Suite_V2_T5_EN_AirCo\pcd\CPU002\DDC_Documentation.htm

Nomenclature in the documentation

This documentation is a copy of the programmed functions in a plain text description. In the process, all functionalities are basically described and the parameters as well as optional capabilities like for instance BACnet or historic data logging are also listed.

Font sizes and their significance

Significance	Example
Heading of an independent function and/or of an encapsulated programme component	Heading
Title of an area within a function. This area includes detailed information and parameters	Parameter/Option
General descriptive text	Description of the function

Specialised functions and their parameters

A typical application can include specialised functions and options. These are partially listed in tables to assign the data more easily. Moreover, these tables have a coloured title line to immediately recognise the function/option/parameter listed here. Up to 4 specialised functions are described:

- General parameters of the function, e.g. limit value, set points. These tables have a table heading in grey colour.

Designation	Value

- Data points that are autonomously and historically logged in the control. These tables have a table heading in green colour.

Reserved memory	0 KB

&nb

- Alarm data points that are integrated in an alarm management in the control. These tables have a table heading in orange colour.

Alarm designation	Number

- Data points that are provided by the control as BACnet objects. These tables have a heading in blue colour.

Opt.	Data point	Object information

Historic data logging in the control

Input/output assignment

SAIA BURGESS CONTROLS

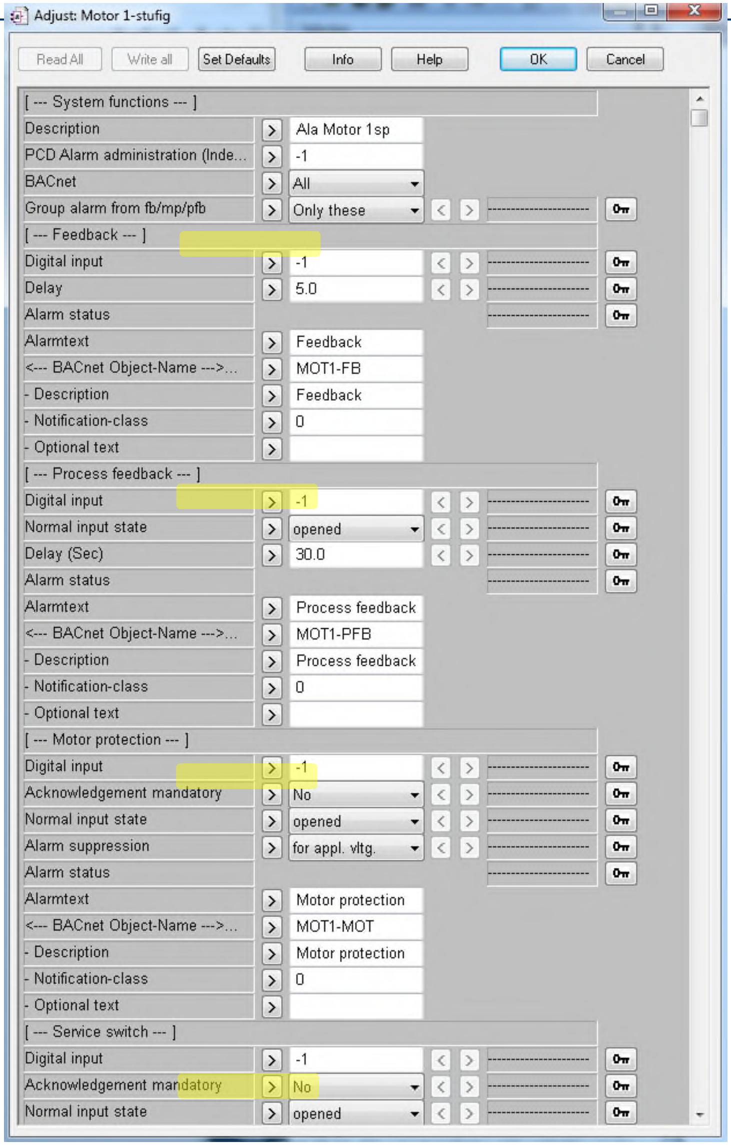
DDC Suite 2.5 / PG5 Building Advanced

Documentation

Remember – We can assign the digital inputs and outputs in the FBox Adjust windows during programming or online during commissioning.

This prevents additional downloads in the event of hardware defects during commissioning.

But how do we get an overview of the assignment of digital inputs and outputs?



[--- System functions ---]	
Description	Ala Motor 1sp
PCD Alarm administration (Inde...	-1
BACnet	All
Group alarm from fb/mp/pfb	Only these
[--- Feedback ---]	
Digital input	-1
Delay	5.0
Alarm status	
Alarmtext	Feedback
<--- BACnet Object-Name --->...	MOT1-FB
- Description	Feedback
- Notification-class	0
- Optional text	
[--- Process feedback ---]	
Digital input	-1
Normal input state	opened
Delay (Sec)	30.0
Alarm status	
Alarmtext	Process feedback
<--- BACnet Object-Name --->...	MOT1-PFB
- Description	Process feedback
- Notification-class	0
- Optional text	
[--- Motor protection ---]	
Digital input	-1
Acknowledgement mandatory	No
Normal input state	opened
Alarm suppression	for appl. vltg.
Alarm status	
Alarmtext	Motor protection
<--- BACnet Object-Name --->...	MOT1-MOT
- Description	Motor protection
- Notification-class	0
- Optional text	
[--- Service switch ---]	
Digital input	-1
Acknowledgement mandatory	No
Normal input state	opened

DDC Suite 2.5 / PG5 Building Advanced

Documentation

After a new Build, DDC Suite generates an additional file in the CPU directory. This is easiest to access via the Project Manager Tools/Explorer

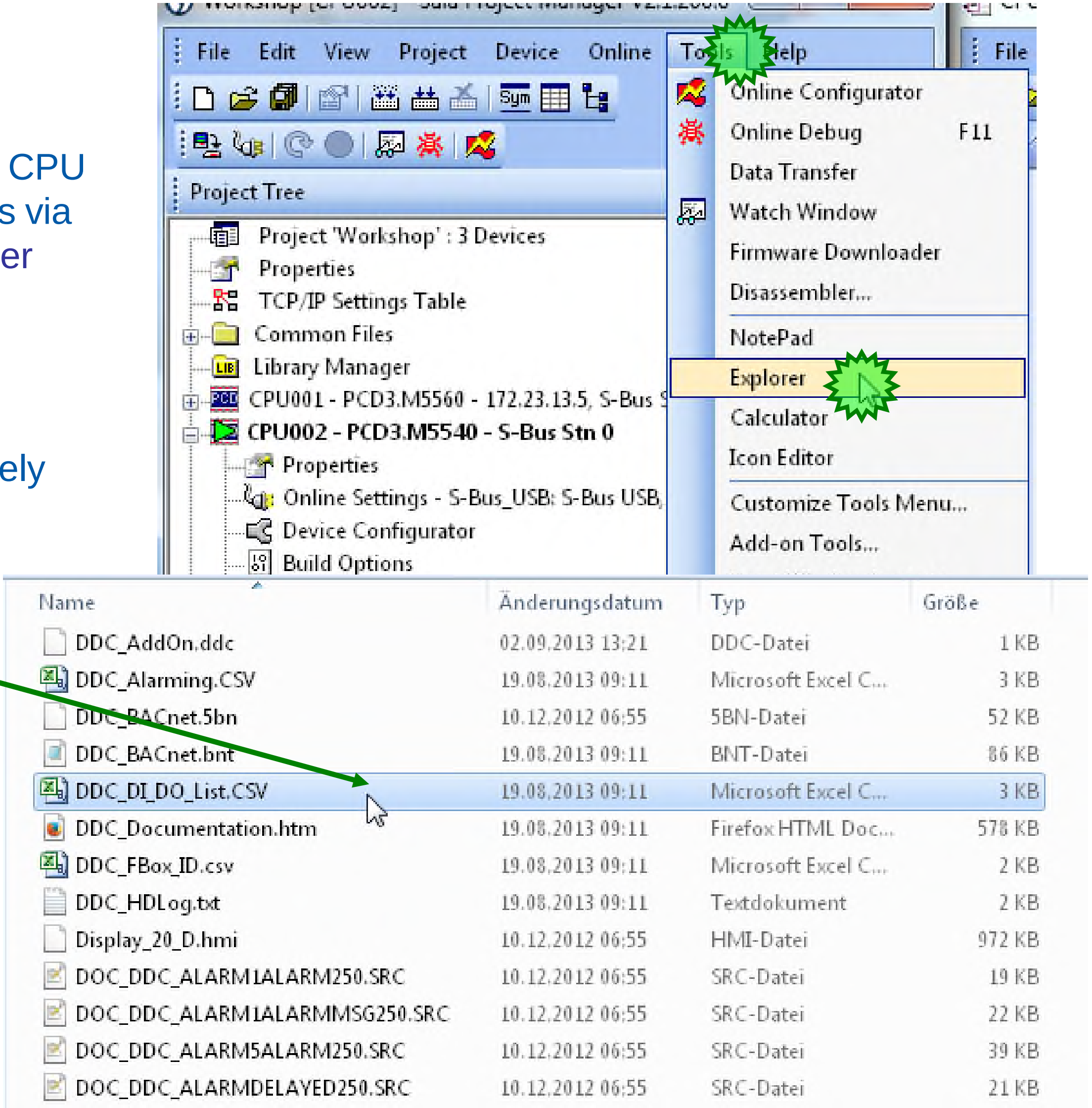
In the project folder, we immediately find the file with the name

DDC_DI_DI_List.csv

This file can be viewed with

MS Excel, for example,

and edited.



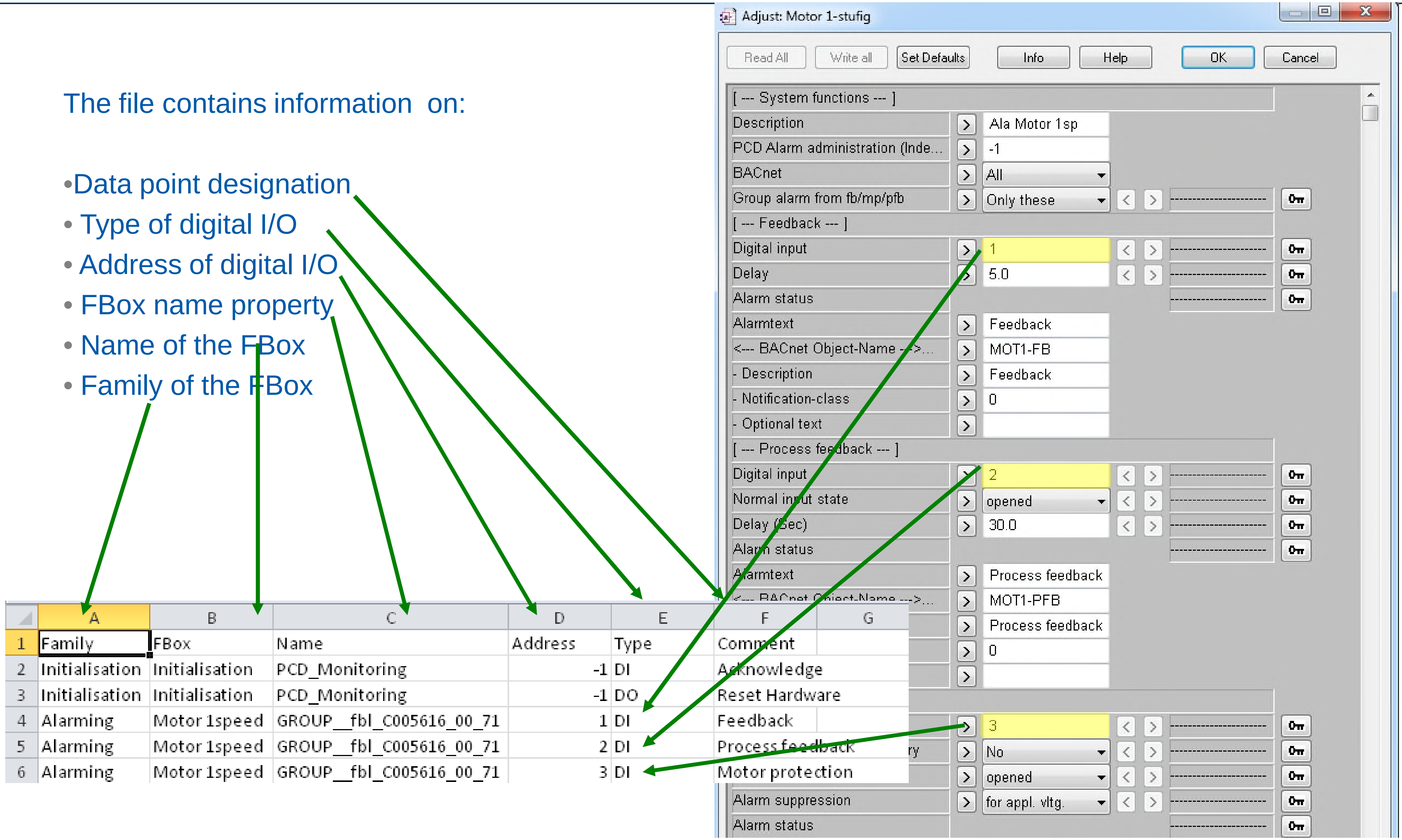
Name	Änderungsdatum	Typ	Größe
DDC_AddOn.ddc	02.09.2013 13:21	DDC-Datei	1 KB
DDC_Alarming.CSV	19.08.2013 09:11	Microsoft Excel C...	3 KB
DDC_BACnet.5bn	10.12.2012 06:55	5BN-Datei	52 KB
DDC_BACnet.bnt	19.08.2013 09:11	BNT-Datei	86 KB
DDC_DI_DO_List.CSV	19.08.2013 09:11	Microsoft Excel C...	3 KB
DDC_Documentation.htm	19.08.2013 09:11	Firefox HTML Doc...	578 KB
DDC_FBox_ID.csv	19.08.2013 09:11	Microsoft Excel C...	2 KB
DDC_HDLog.txt	19.08.2013 09:11	Textdokument	2 KB
Display_20_D.hmi	10.12.2012 06:55	HMI-Datei	972 KB
DOC_DDC_ALARM1ALARM250.SRC	10.12.2012 06:55	SRC-Datei	19 KB
DOC_DDC_ALARM1ALARMMSG250.SRC	10.12.2012 06:55	SRC-Datei	22 KB
DOC_DDC_ALARM5ALARM250.SRC	10.12.2012 06:55	SRC-Datei	39 KB
DOC_DDC_ALARMDELAYED250.SRC	10.12.2012 06:55	SRC-Datei	21 KB

DDC Suite 2.5 / PG5 Building Advanced

Documentation

The file contains information on:

- Data point designation
- Type of digital I/O
- Address of digital I/O
- FBox name property
- Name of the FBox
- Family of the FBox



Adjust: Motor 1-stufig

[--- System functions ---]	
Description	Ala Motor 1sp
PCD Alarm administration (Inde...	-1
BACnet	All
Group alarm from fb/mp/pfb	Only these
[--- Feedback ---]	
Digital input	1
Delay	5.0
Alarm status	
Alarmtext	Feedback
<--- BACnet Object-Name --->...	MOT1-FB
- Description	Feedback
- Notification-class	0
- Optional text	
[--- Process feedback ---]	
Digital input	2
Normal input state	opened
Delay (Sec)	30.0
Alarm status	
Alarmtext	Process feedback
<--- BACnet Object-Name --->...	MOT1-PFB
	Process feedback
	0
	3
...ry	No
	opened
Alarm suppression	for appl. vltg.
Alarm status	

	A	B	C	D	E	F	G
1	Family	FBox	Name	Address	Type	Comment	
2	Initialisation	Initialisation	PCD_Monitoring	-1	DI	Acknowledge	
3	Initialisation	Initialisation	PCD_Monitoring	-1	DO	Reset Hardware	
4	Alarming	Motor 1speed	GROUP__fbl_C005616_00_71	1	DI	Feedback	
5	Alarming	Motor 1speed	GROUP__fbl_C005616_00_71	2	DI	Process feedback	
6	Alarming	Motor 1speed	GROUP__fbl_C005616_00_71	3	DI	Motor protection	

PG5 Building Advanced / DDC Suite 2.5

DDC Suite and Visi.Plus

SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

DDC Suite 2.5 / PG5 Building Advanced

Syntax and remarks of actions during workshop

Please follow the teacher’s 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 Visi.Plus 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
- have to be a super programmer (but no problem if you are :-)

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

DDC Suite 2.5 / PG5 Building Advanced

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

Installation of Visi.Plus

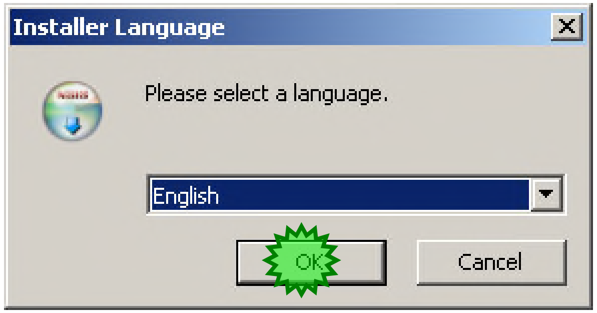
sbc
SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Setup can be downloaded from here:

http://www.saia-support.com/en/product-index/Visiplus/



Installer Language

Please select a language.

English

Start installer SetupVP_1.6.1.25.exe (version number may differ in case of newer versions) and select language.

A password is not anymore needed for unzipping.

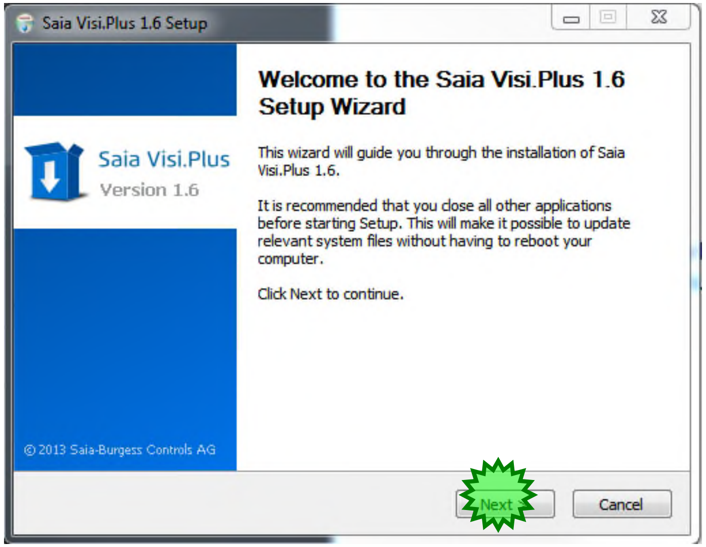
The password is “saia” for older installers.

The developer is company MST (Müller System Technik / Belp – near Bern)

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Click on “Welcome …” dialog at button Next to continue



Saia Visi.Plus 1.6 Setup

Saia Visi.Plus
Version 1.6

© 2013 Saia-Burgess Controls AG

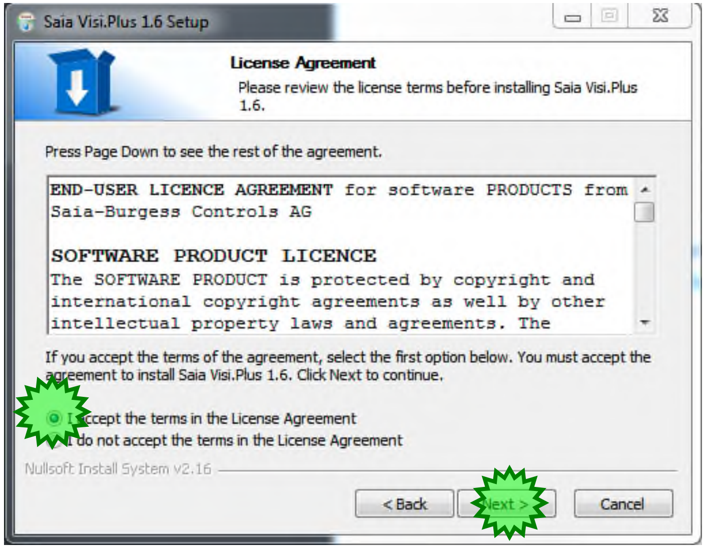
Welcome to the Saia Visi.Plus 1.6 Setup Wizard

This wizard will guide you through the installation of Saia Visi.Plus 1.6.

It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.

Click Next to continue.

Select option I accept the terms in the License Agreement and click on button Next.



Saia Visi.Plus 1.6 Setup

License Agreement

Please review the license terms before installing Saia Visi.Plus 1.6.

Press Page Down to see the rest of the agreement.

```
END-USER LICENCE AGREEMENT for software PRODUCTS from
Saia-Burgess Controls AG

SOFTWARE PRODUCT LICENCE
The SOFTWARE PRODUCT is protected by copyright and
international copyright agreements as well by other
intellectual property laws and agreements. The
```

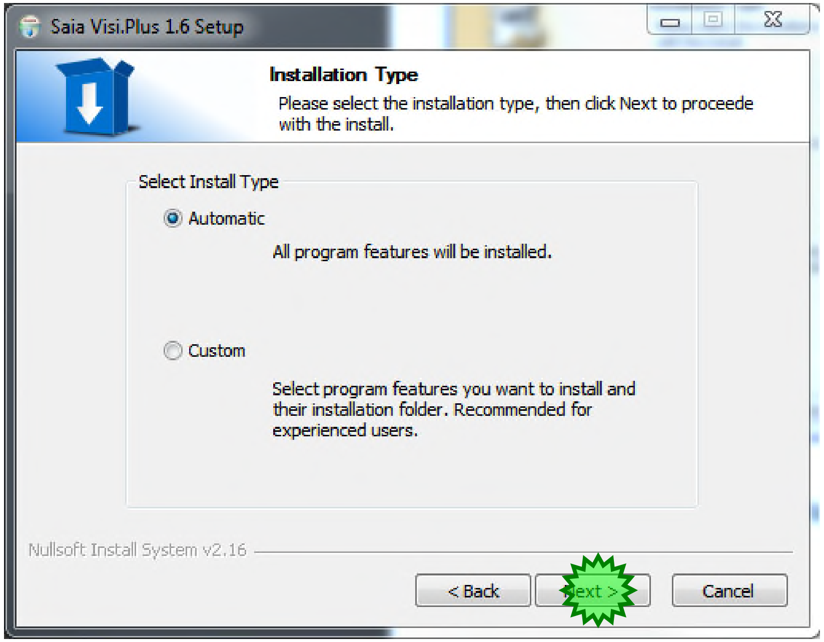
If you accept the terms of the agreement, select the first option below. You must accept the agreement to install Saia Visi.Plus 1.6. Click Next to continue.

● I accept the terms in the License Agreement
○ I do not accept the terms in the License Agreement

Nullsoft Install System v2.16

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus



Saia Visi.Plus 1.6 Setup

Installation Type

Please select the installation type, then click Next to proceede with the install.

Select Install Type

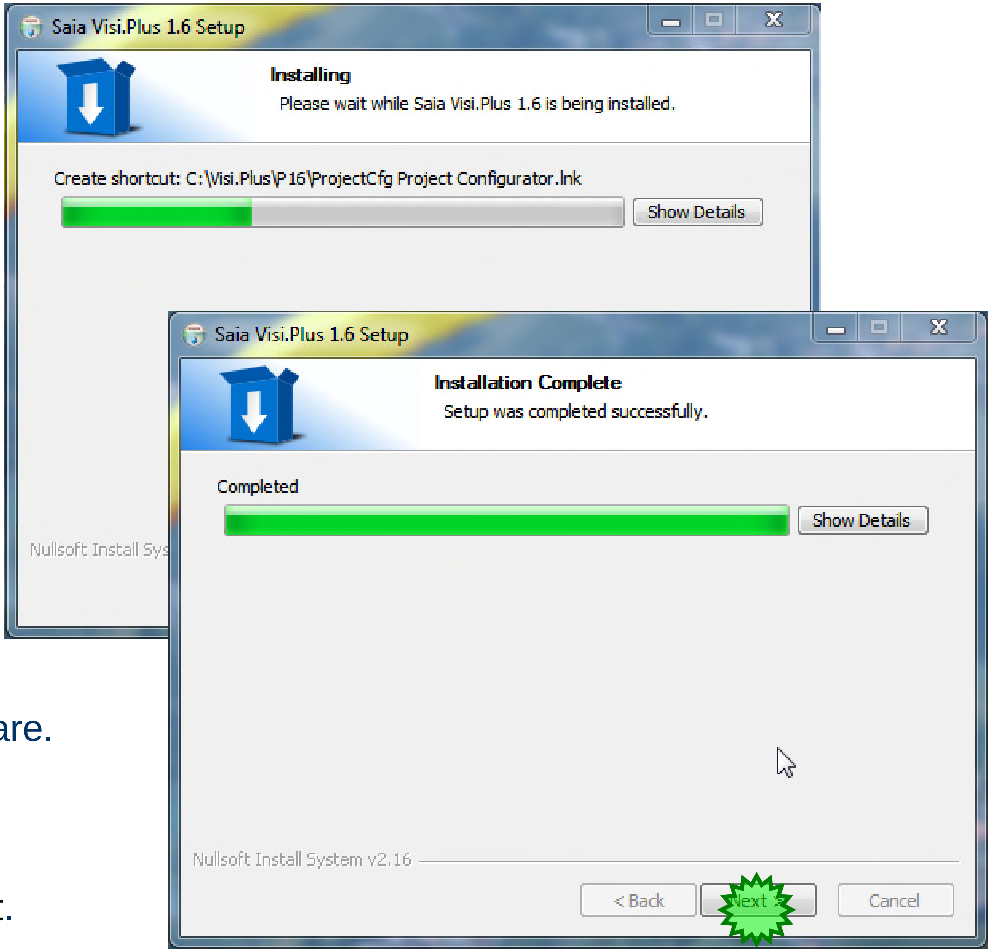
● Automatic

All program features will be installed.

○ Custom

Select program features you want to install and their installation folder. Recommended for experienced users.

Nullsoft Install System v2.16



Saia Visi.Plus 1.6 Setup

Installing

Please wait while Saia Visi.Plus 1.6 is being installed.

Create shortcut: C:\Visi.Plus\P16\ProjectCfg Project Configurator.lnk

Saia Visi.Plus 1.6 Setup

Installation Complete

Setup was completed successfully.

Completed

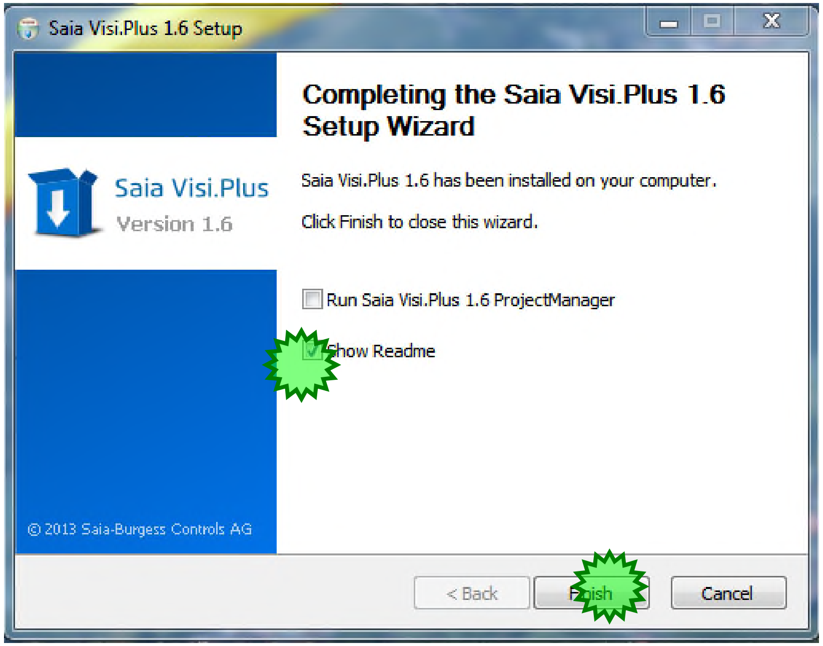
Nullsoft Install System v2.16

Visi.Plus is starting to install software.

When finished click on button Next.

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus



Saia Visi.Plus 1.6 Setup

Completing the Saia Visi.Plus 1.6 Setup Wizard

Saia Visi.Plus 1.6 has been installed on your computer.

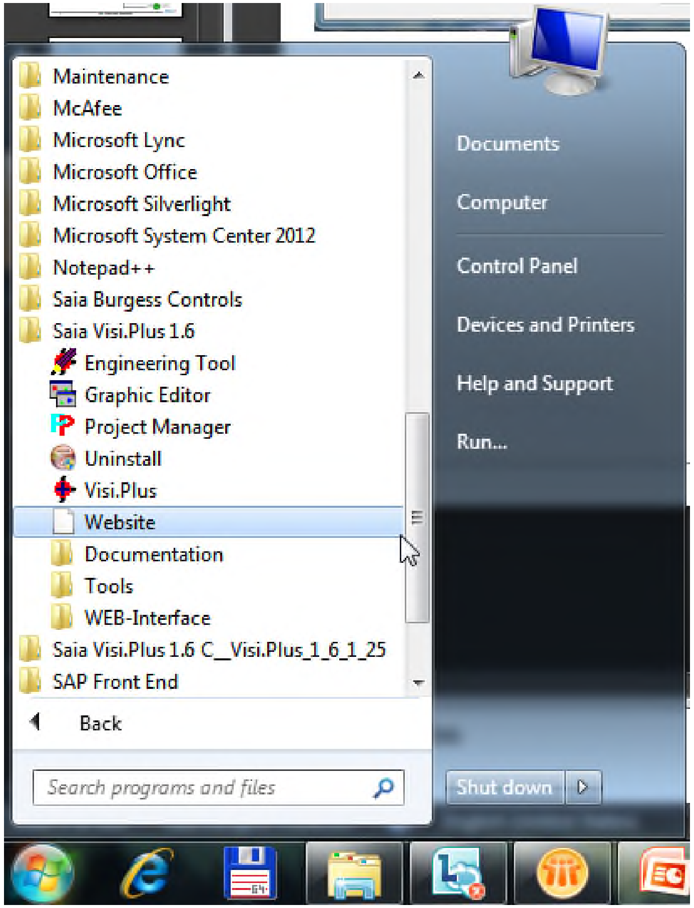
Click Finish to close this wizard.

□ Run Saia Visi.Plus 1.6 ProjectManager

☑ Show Readme

At least deactivate checkbox Show Readme and click on button Finish.

Installation is completed.



You can access Visi.Plus software via

- Start
- All Programs
- Saia Visi.Plus 1.6

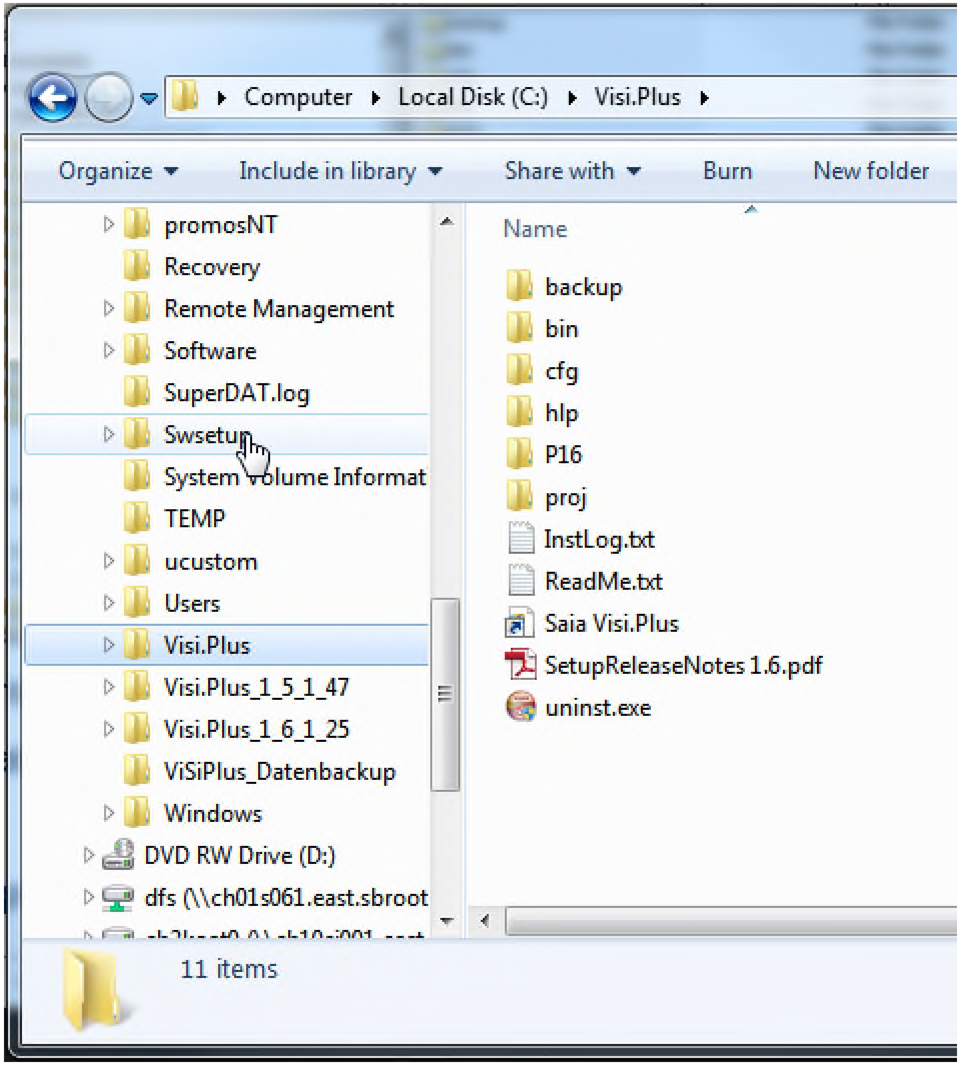
DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Or via file explorer within C:\Visi.Plus

This folder contains subfolders:

- bin: folder with all executable modules from Visi.Plus
- cfg: some predefined files for special features – we don't use them
- hlp: help files and documentation
- proj: project folder – herein all Visi.Plus projects are located



Computer ▸ Local Disk (C:) ▸ Visi.Plus ▸

Organize ▾ Include in library ▾ Share with ▾ Burn New folder

promosNT
Recovery
Remote Management
Software
SuperDAT.log
Swsetup
System Volume Informat
TEMP
ucustom
Users
Visi.Plus
Visi.Plus_1_5_1_47
Visi.Plus_1_6_1_25
ViSiPlus_Datenbackup
Windows
DVD RW Drive (D:)
dfs (\\ch01s061.east.sbroot

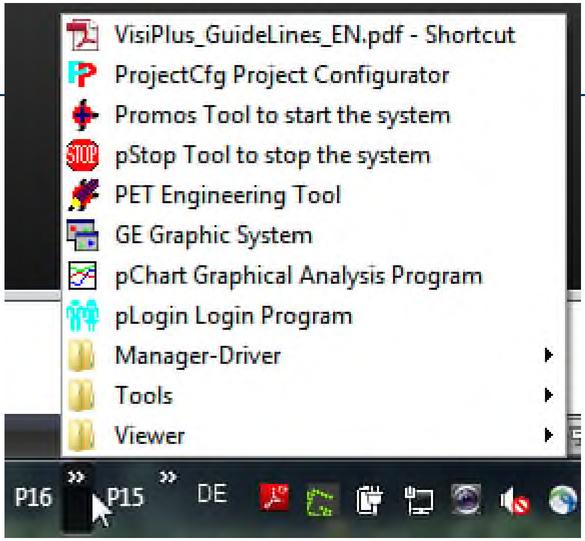
Name
backup
bin
cfg
hlp
P16
proj
InstLog.txt
ReadMe.txt
Saia Visi.Plus
SetupReleaseNotes 1.6.pdf
uninst.exe

11 items

Start Visi.Plus

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

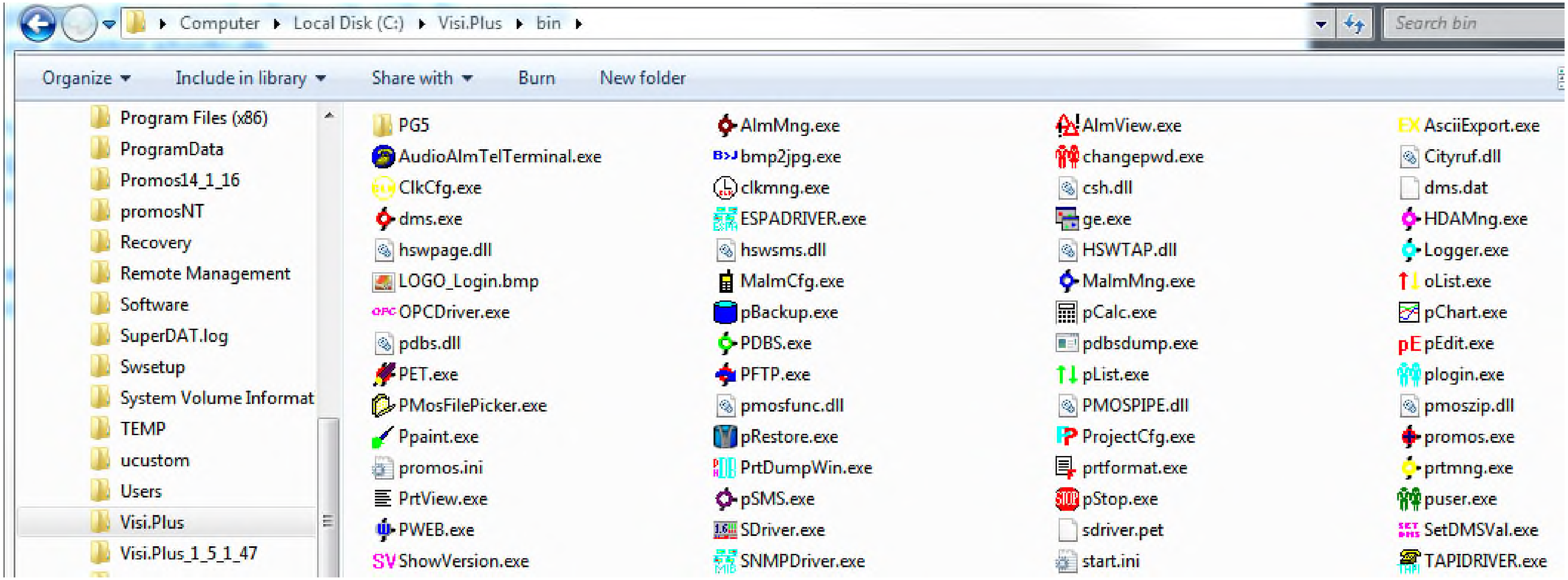

VisiPlus_GuideLines_EN.pdf - Shortcut
ProjectCfg Project Configurator
Promos Tool to start the system
pStop Tool to stop the system
PET Engineering Tool
GE Graphic System
pChart Graphical Analysis Program
pLogin Login Program
Manager-Driver
Tools
Viewer
P16
P15
DE

I recommend to access Visi.Plus modules via file explorer or if you work often with Visi.Plus create some desktop shortcuts.

It is also possible to add the C:\Visi.Plus\P16 folder as desktop toolbar.

Why? Visi.Plus is a modular software and during engineering it’s not necessary to start always all modules – this will cost time during start up.

Therefore we will start only the modules which are necessary to work with.



DDC Suite 2.5 / PG5 Building Advanced

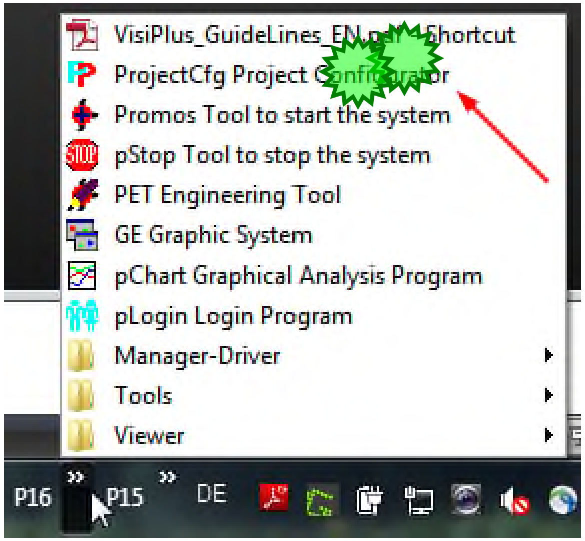
DDC Suite and Visi.Plus

Start ProjectCfg.exe

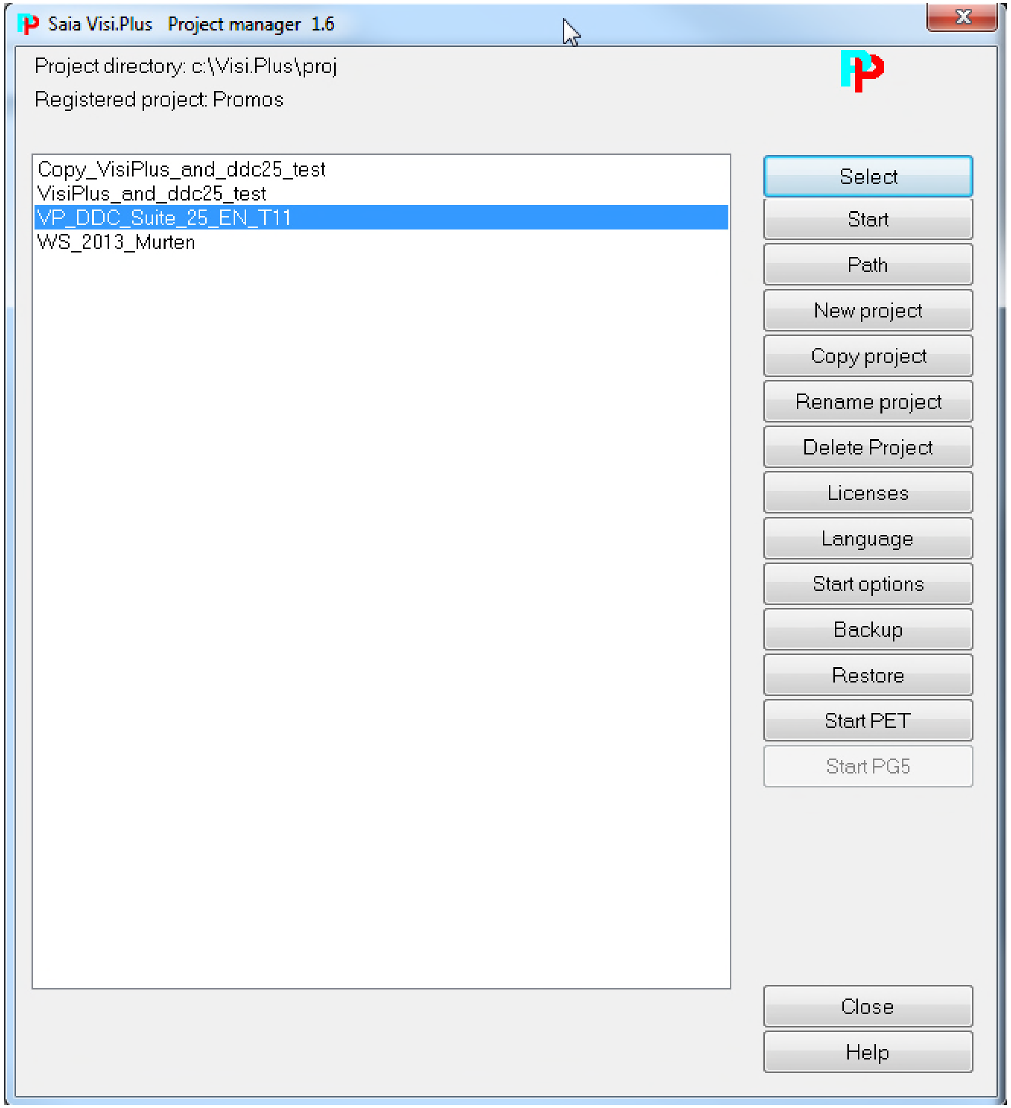
- this is the project manager of Visi.Plus.

Within the project manager you can

- define the default project to work with
- start a project
- create, copy, rename or delete a project
- manage license and start options
- backup and restore a project
- a quick start of PG5
- a quick start of PET (engineering tool of Visi.Plus)



VisiPlus_GuideLines_EN.pdf - Shortcut
ProjectCfg Project Configurator
Promos Tool to start the system
pStop Tool to stop the system
PET Engineering Tool
GE Graphic System
pChart Graphical Analysis Program
pLogin Login Program
Manager-Driver
Tools
Viewer
P16
P15
DE



Project directory: c:\Visi.Plus\proj

Registered project: Promos

Copy_VisiPlus_and_ddc25_test
VisiPlus_and_ddc25_test
VP_DDC_Suite_25_EN_T11
WS_2013_Murten

Creating a new project

SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

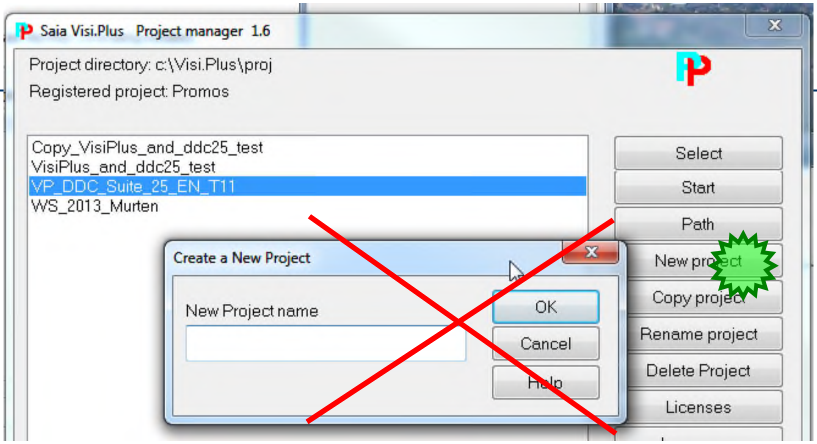
A new Visi.Plus DDC Suite 2.5 project could be started within project manager via „New project “. But then the user has to integrate manually all he‘d like to use, e.g. HMI, BACnet, graphics, screens, pictures and so on.

We recommend to start a new project via „Restore“, that means we are using a predefined DDC Suite 2.5 template projects where a lot of settings, pages, templates are already prepared.

Therefore those template projects include everything what can be used in a project, e.g., Fupla template pages, SWeb template objects, graphical icons etc.

SI can include FBox libraries to the template thereby a project backup will be a little bit larger (e.g. >20 MB) but changes in future in this project may have no compatibility problem, e.g. if in meantime a FBox library has totally changed.

Of course – our template project can be customized with 3rd party libraries and backed up as new template project.



Saia Visi.Plus   Project manager 1.6

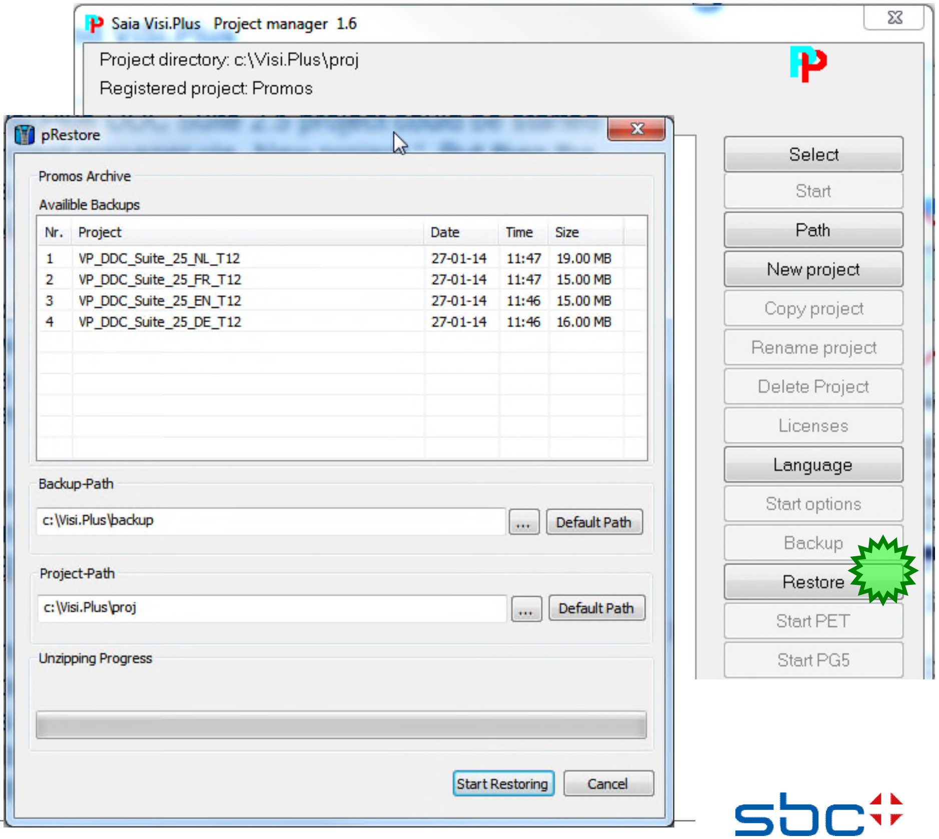
Project directory: c:\Visi.Plus\proj

Registered project: Promos

Copy_VisiPlus_and_ddc25_test
VisiPlus_and_ddc25_test
VP_DDC_Suite_25_EN_T11
WS_2013_Murten

Create a New Project

New Project name



Saia Visi.Plus   Project manager 1.6

Project directory: c:\Visi.Plus\proj

Registered project: Promos

pRestore

Promos Archive

Availible Backups

Nr.	Project	Date	Time	Size
1	VP_DDC_Suite_25_NL_T12	27-01-14	11:47	19.00 MB
2	VP_DDC_Suite_25_FR_T12	27-01-14	11:47	15.00 MB
3	VP_DDC_Suite_25_EN_T12	27-01-14	11:46	15.00 MB
4	VP_DDC_Suite_25_DE_T12	27-01-14	11:46	16.00 MB

Backup-Path

c:\Visi.Plus\backup

Project-Path

c:\Visi.Plus\proj

Unzipping Progress

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

So we are starting with „Restore " – by selecting a project template. Depending on template version or location we have to navigate to the correct folder …

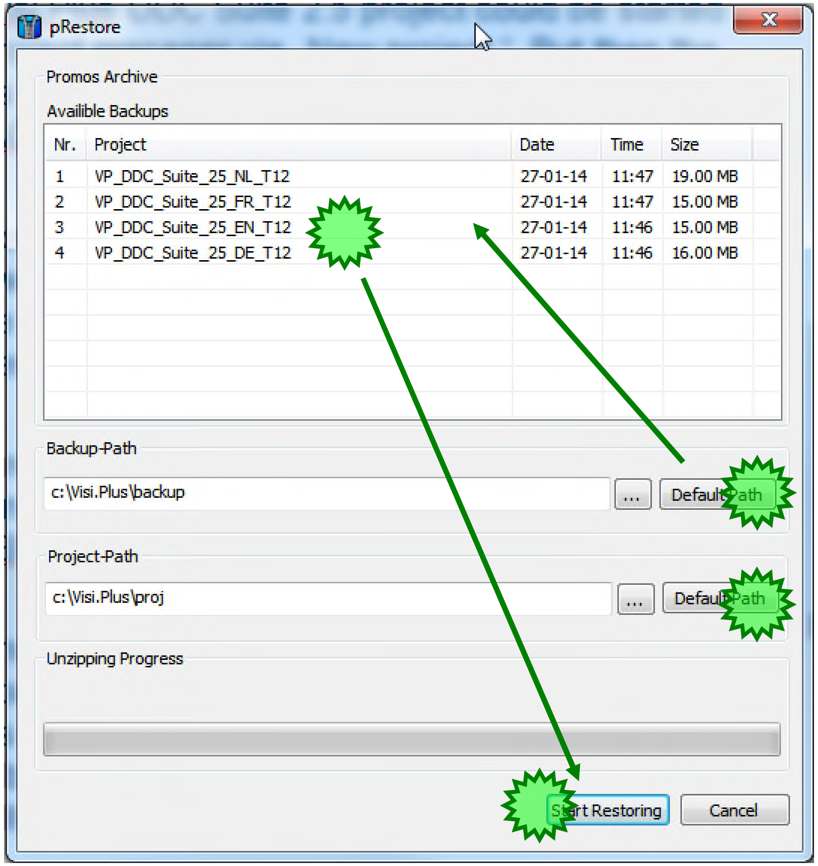
At first start we have to press the Default Path buttons to get the default valid path for Project and the Backup folder.

If the templates are located an other folder than the default one we have to navigate there select the folder.

Then we have to select the template (backup file) which we want to restore VP_DDC_Suite_25_T12 and press Start Restoring.

(From Visi.Plus version 1.6.1.25 the **VP_DDC_Suite_25_XX_YY** templates are available in the backup folder of Visi.Plus (C:\Visi.Plus\backup) after installation.)

(Get the newest templates from SBC Support homepage http://www.saia-support.com/en/product-index/pg5-controls-suite/pg5-21-suite/ddc-suite-25/)



Nr.	Project	Date	Time	Size
1	VP_DDC_Suite_25_NL_T12	27-01-14	11:47	19.00 MB
2	VP_DDC_Suite_25_FR_T12	27-01-14	11:47	15.00 MB
3	VP_DDC_Suite_25_EN_T12	27-01-14	11:46	15.00 MB
4	VP_DDC_Suite_25_DE_T12	27-01-14	11:46	16.00 MB

Backup-Path: c:\Visi.Plus\backup

Project-Path: c:\Visi.Plus\proj

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

After restoring the template it make sense to rename or copy it. (The template can be any time again restored.)

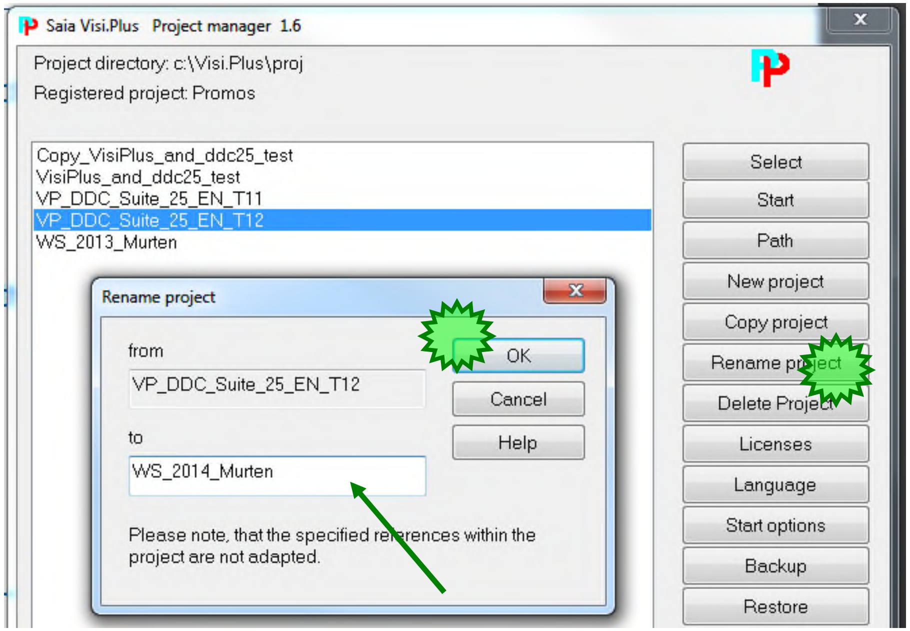
Then the project with the new name must be highlighted with mouse click, and the Select button must be pressed getting the project registered.

When we start Visi.Plus modules manually one by one (DMS, PET, Alarm Manager etc.) the data, configurations and settings will be taken from the registered project.

It is possible to start the complete project with the button Start than Visi.Plus starts all the modules which are checked in the Start Options menu.

Of course these are not the way the end user has to start Visi.Plus! Therefore we have a project starter module which we can start automatically after Windows stared.

I recommend to use the method I show for engineering – because is more comfortable.



Saia Visi.Plus Project manager 1.6

Project directory: c:\Visi.Plus\proj
Registered project: Promos

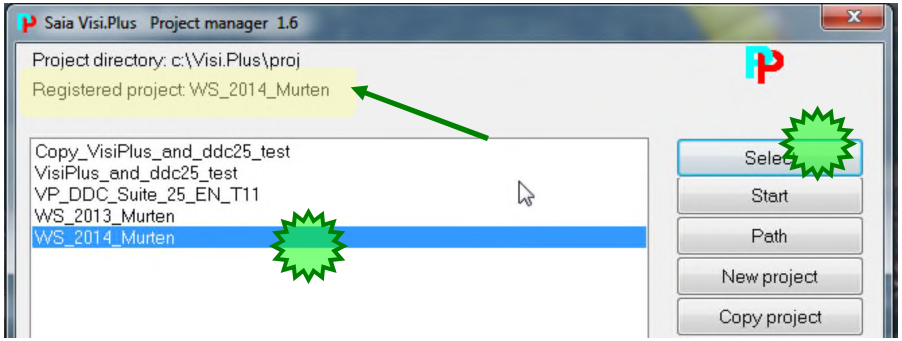
Copy_VisiPlus_and_ddc25_test
VisiPlus_and_ddc25_test
VP_DDC_Suite_25_EN_T11
VP_DDC_Suite_25_EN_T12
WS_2013_Murten

Rename project

from
VP_DDC_Suite_25_EN_T12

to
WS_2014_Murten

Please note, that the specified references within the project are not adapted.



Saia Visi.Plus Project manager 1.6

Project directory: c:\Visi.Plus\proj
Registered project: WS_2014_Murten

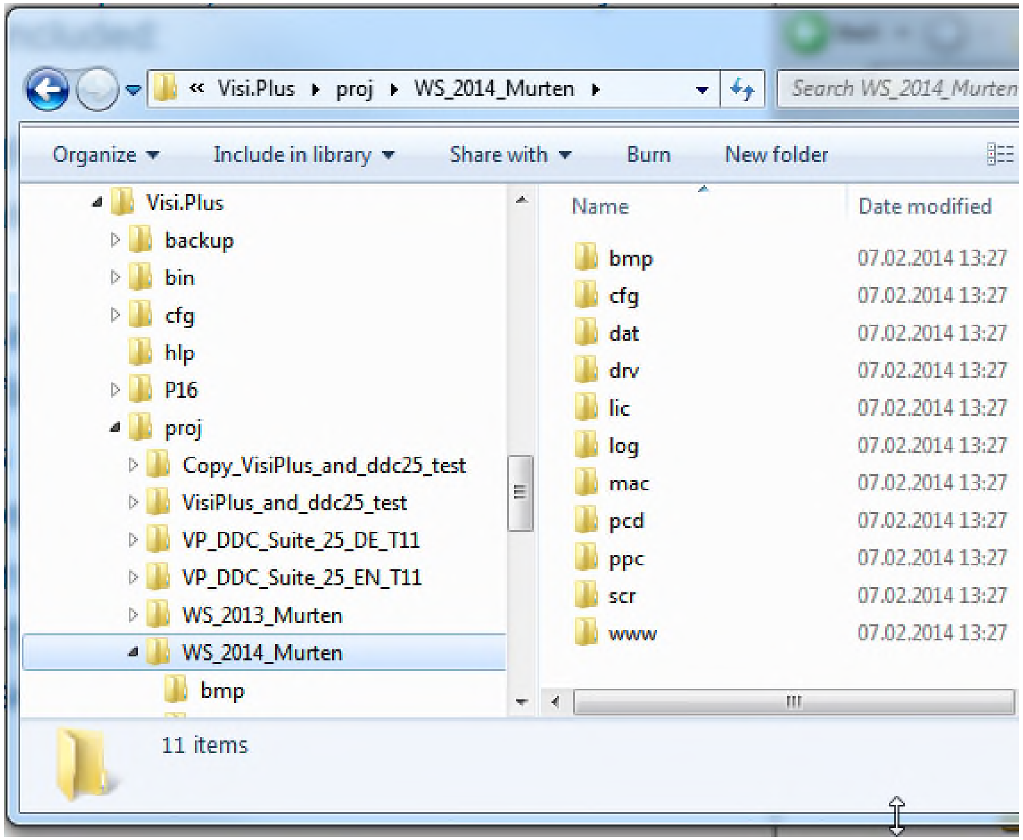
Copy_VisiPlus_and_ddc25_test
VisiPlus_and_ddc25_test
VP_DDC_Suite_25_EN_T11
WS_2013_Murten
WS_2014_Murten

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

If we have a look into our workshop project (use Windows File Explorer) we'll see that already some folders are included:

- bmp: all BMP or JPG* files must be located here
- cfg: data base files, language depending files
- dat: historic data files
- drv: driver settings
- lic: license file
- log: log files
- mac: macros to be used/created in graphic editor
- pcd: PG5 project
- src: screen file, all pages and pop up windows
- www: web server files



- Visi.Plus
  - backup
  - bin
  - cfg
  - hlp
  - P16
  - proj
    - Copy_VisiPlus_and_ddc25_test
    - VisiPlus_and_ddc25_test
    - VP_DDC_Suite_25_DE_T11
    - VP_DDC_Suite_25_EN_T11
    - WS_2013_Murten
    - WS_2014_Murten
      - bmp

Name	Date modified
bmp	07.02.2014 13:27
cfg	07.02.2014 13:27
dat	07.02.2014 13:27
drv	07.02.2014 13:27
lic	07.02.2014 13:27
log	07.02.2014 13:27
mac	07.02.2014 13:27
pcd	07.02.2014 13:27
ppc	07.02.2014 13:27
scr	07.02.2014 13:27
www	07.02.2014 13:27

11 items

* - It makes sense to have all images in JPG format. The Webserver of Visi.Plus can only use images in JPG format. The BMP files must be converted by hand to JPG.

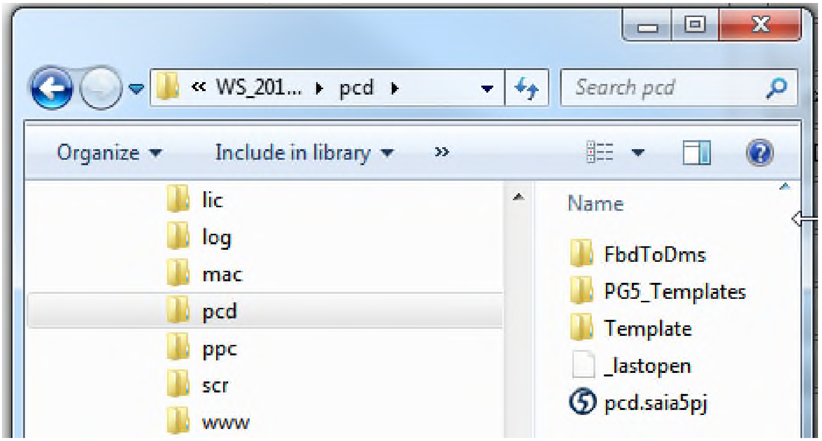
DDC Suite 2.5 / PG5 Building Advanced

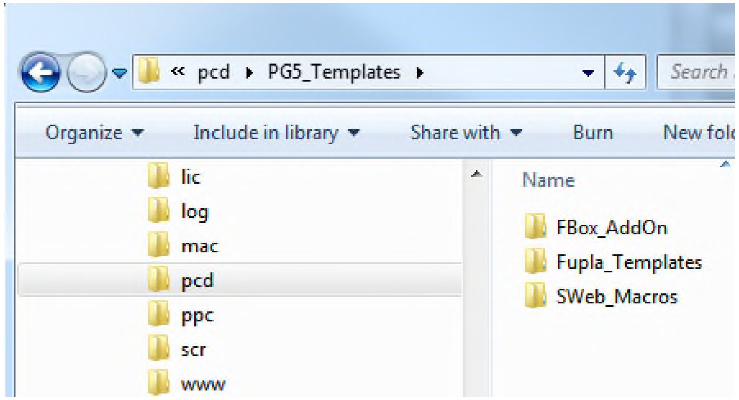
DDC Suite and Visi.Plus

If we have a look into the folder pcd we'll see that already a complete PG5 project is embedded:

- Template : a CPU template which should be used for each new CPU we have to add in this project. (When you open PG5 2.1 this template is shown in red colour to indicate that it is read only.)
- FbdToDms : Containing some information about symbol importing if a Visi.Plus SCADA system should be used
- PG5_Templates : here you'll find some predefined templates for PG5 in the following subfolders

- FBox_AddOns : Containing some files for some language depending definitions and also some additional features
- Fupla_Templates : here you'll find some predefined Fupla pages or systems, to be imported into Fupla
- Sweb_Objects : Graphical objects, objects for Fbox adjust parameters, pages (SWebEditor 5 format) for SWeb applications designed with SWebEditor.





DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Why do we Have this folder structure?

A Visi.Plus project does not only contain some pictures and graphics – it should also contain the PG5 project itself because Visi.Plus can import a lot of information out of a PG5 project!

And Visi.Plus project manager will backup all sub folders within the Visi.Plus project – so if you backup your project you'll have always a complete backup – and not only the part of PG5 or Visi.Plus. This makes your project consistent.

The PG5 project within a Visi.Plus project must always be defined as **pcd** !

Visi.Plus is looking always to a PG5 project called **pcd** within the **/pcd** folder !

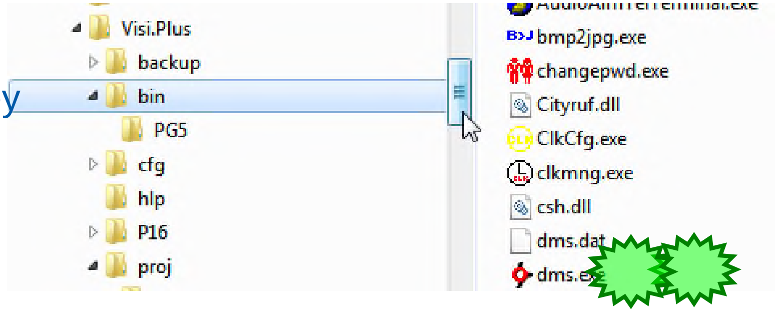
If you rename the PG5 project or you move it to an other folder Visi.Plus cannot find the PG5 project anymore – this is a hard restriction.

Basic settings

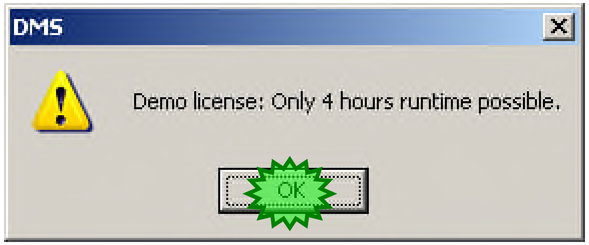
DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Start module dms.exe from C:\Visi.Plus\bin folder. **DMS** is the shortcut for **D**ata **M**anagement **S**ystem – the core of Visi.Plus. Without running DMS you're not able to start other modules – they try to connect to a DMS in any way (DMS can also run in the network (LAN) on other PC).

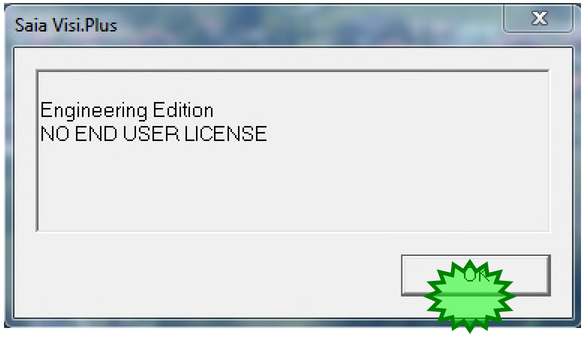


Visi.Plus is protected by a license file (containing the available modules and a serial number) and a USB dongle (also with a serial number). If the serial number from license file and USB dongle don't match you'll get a message about 1 hour runing time.


DMS

Demo license: Only 4 hours runtime possible.

For testing or engineering you do not need a demo license – you can work within 4 hours without restrictions. After 4 hours Visi.Plus will shut down – but can be restarted immediately again for next 4 hours.


Saia Visi.Plus

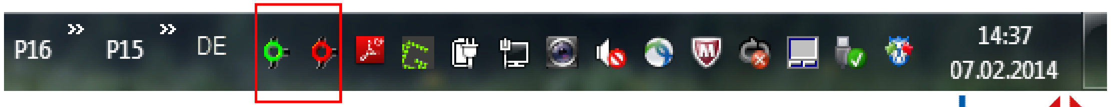
Engineering Edition
NO END USER LICENSE

Better if you have PG5 2.0 or PG5 2.1 license which includes Visi.Plus Engineering Edition license too. In this case all modules are enabled and Visi.Plus runs without stop forever but every 24 hours you get a popup message that the Visi.Plus is in Engineering mode.

DMS is a service and you normally don't have to interact with this module itself. You'll see 2 balls in task bar notification area:

-Red one is the DMS itself – this is the RAM based database

-Green one is the PDBS - this is the disk drive based database

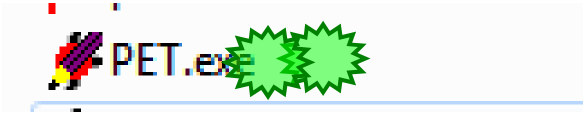


DDC Suite 2.5 / PG5 Building Advanced

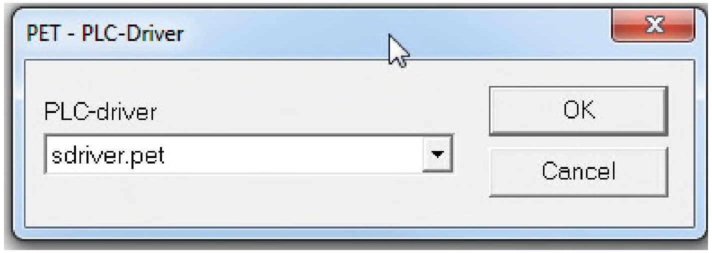
DDC Suite and Visi.Plus

Now we can start PET.exe.

PET is a shortcut for **P**rocess **E**ngineering **T**ool.

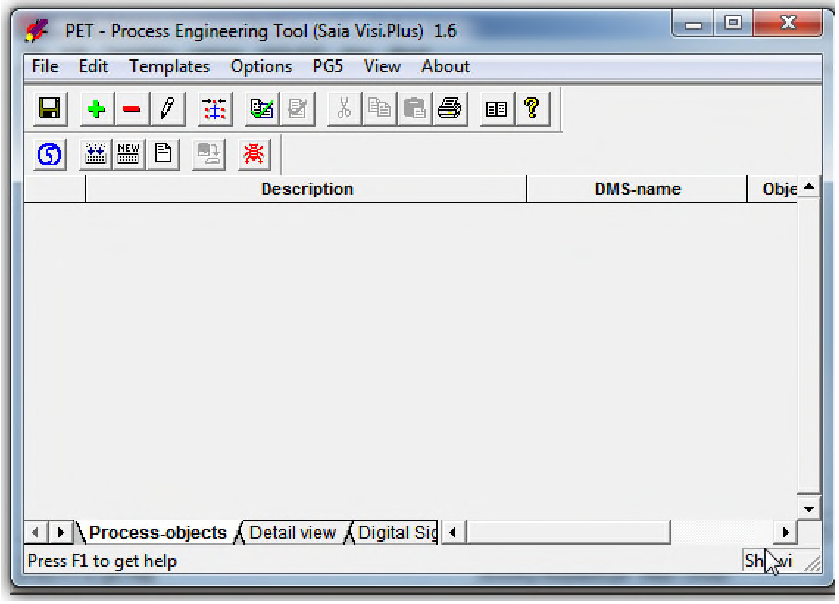

PET.exe

When starting PET first time after installation it will ask for a PLC-driver. Select the entry sdriver.pet. This file is a description for exporting symbols out of Visi.Plus.


PET - PLC-Driver

PLC-driver: sdriver.pet

Finally you see PET application.


PET - Process Engineering Tool (Saia Visi.Plus) 1.6

Press F1 to get help

DDC Suite 2.5 / PG5 Building Advanced

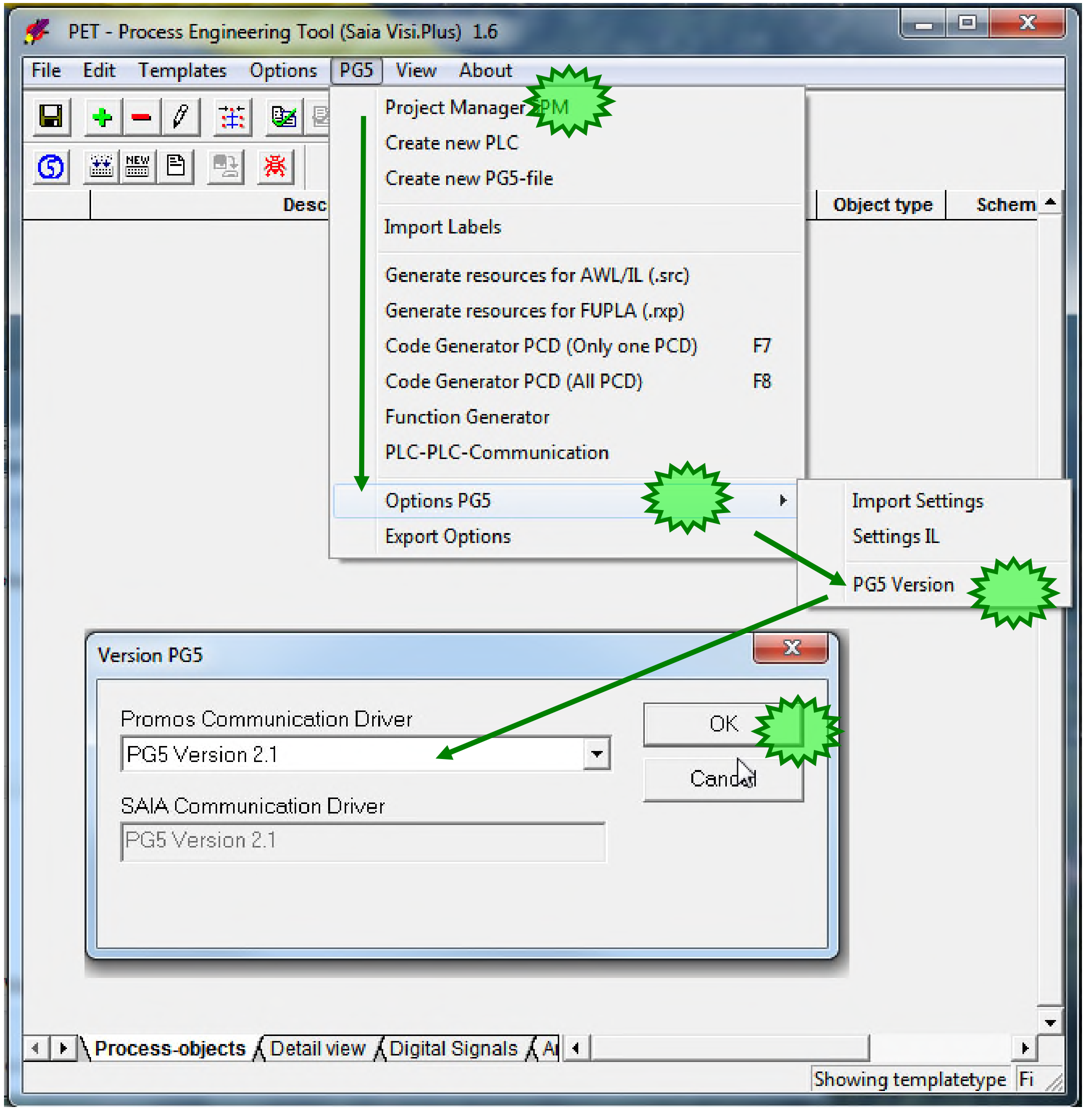
DDC Suite and Visi.Plus

Visi.Plus can manage PG5 projects so therefore we have to define first time after installation which PG5 version we'd like to use.

Therefore select from menu SAIA-PG5, in context menu Options PG5 and there PG5 Version.

Select from drop down list Promos Communication Driver entry PG5 Version 2.1 and finish by clicking on button OK.

* If we open a PG5 2.0 project with PG5 2.1 the project gets irreversible changes. Can not be anymore open with the older PG5.



Preparation

DDC Suite 2.5 / PG5 Building Advanced

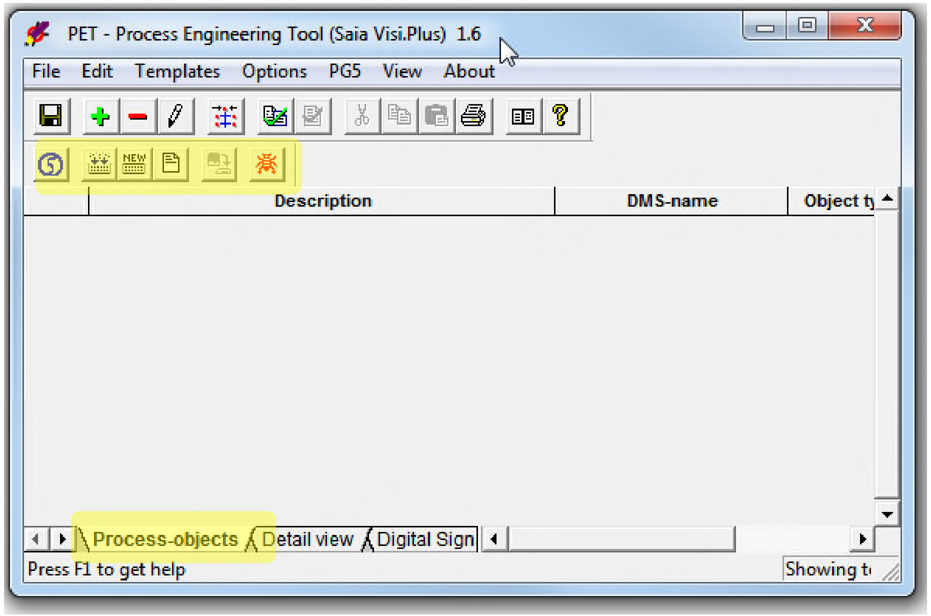
DDC Suite and Visi.Plus

The basic preparations is finished. Let us go forward.

What we can see in PET:

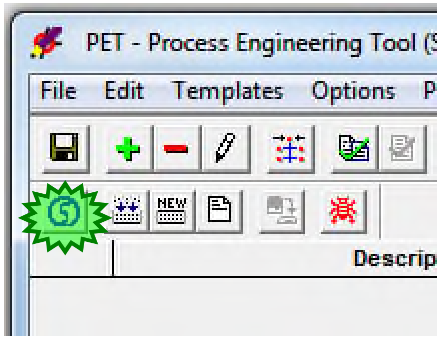
- toolbar with icons with PG5 functions

- Process objects tab where all objects from the database are listed



As we see there are no process objects – we have to create some. But this we'll do in a normal way – means engineering a Fupla and importing the data from the Fupla into Visi.Plus database.

Therefore just click on button PG5



DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

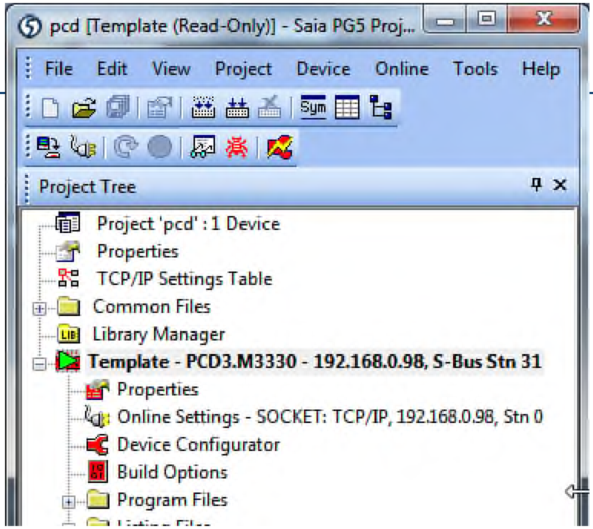
PET will start the Saia PG5 Project Manager.

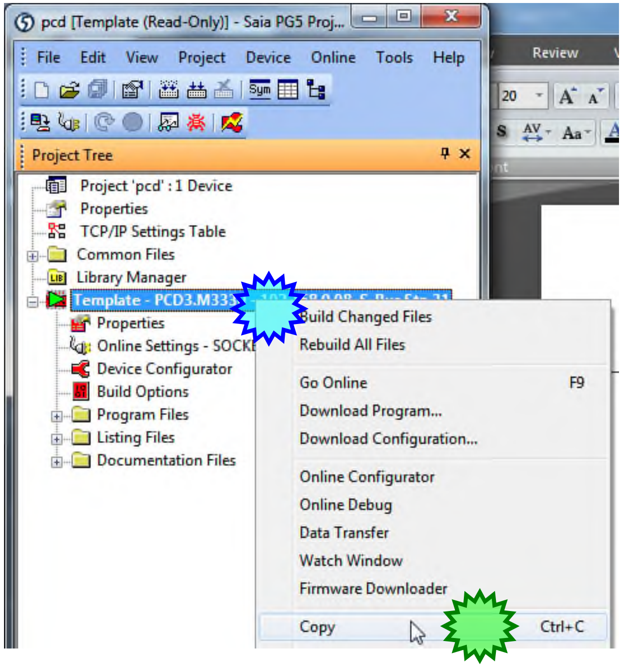
In the Project Manager the right **pcd** project is opened with the device **Template**.

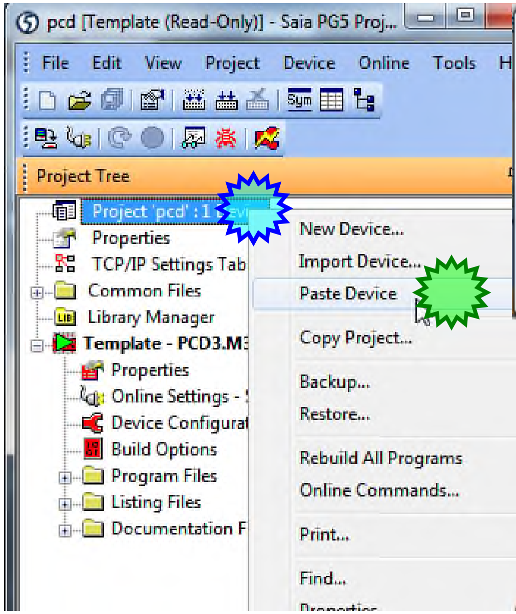
The red colour indicates that this device is **read only**.

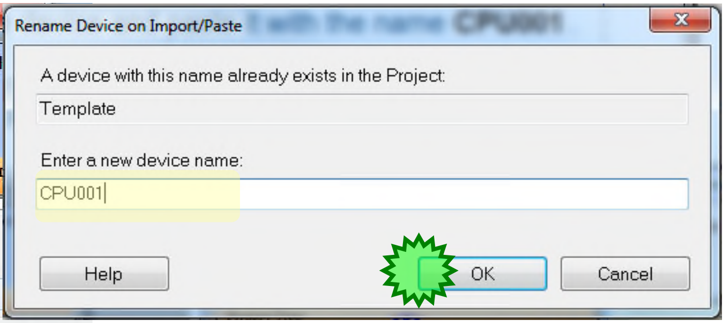
Let us copy the Template device and paste it with the name **CPU001** .

Do not convert the Web Editor project to Web Editor 8 format. Do a build and go back to the PET.


pcd [Template (Read-Only)] - Saia PG5 Proj...
File Edit View Project Device Online Tools Help
Project Tree
Project 'pcd' : 1 Device
Properties
TCP/IP Settings Table
Common Files
Library Manager
Template - PCD3.M3330 - 192.168.0.98, S-Bus Stn 31
Properties
Online Settings - SOCKET: TCP/IP, 192.168.0.98, Stn 0
Device Configurator
Build Options
Program Files





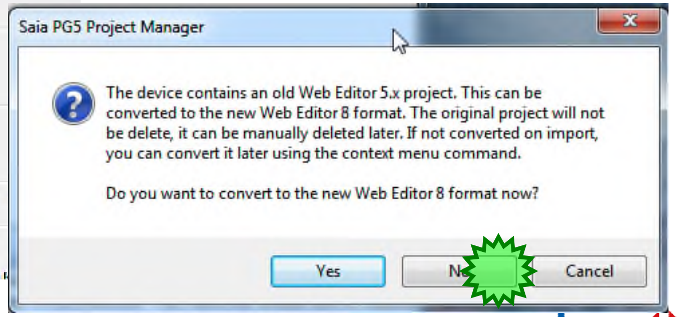

Rename Device on Import/Paste

A device with this name already exists in the Project:

Template

Enter a new device name:

CPU001


Saia PG5 Project Manager

The device contains an old Web Editor 5.x project. This can be converted to the new Web Editor 8 format. The original project will not be delete, it can be manually deleted later. If not converted on import, you can convert it later using the context menu command.

Do you want to convert to the new Web Editor 8 format now?

DDC Suite 2.5 / PG5 Building Advanced

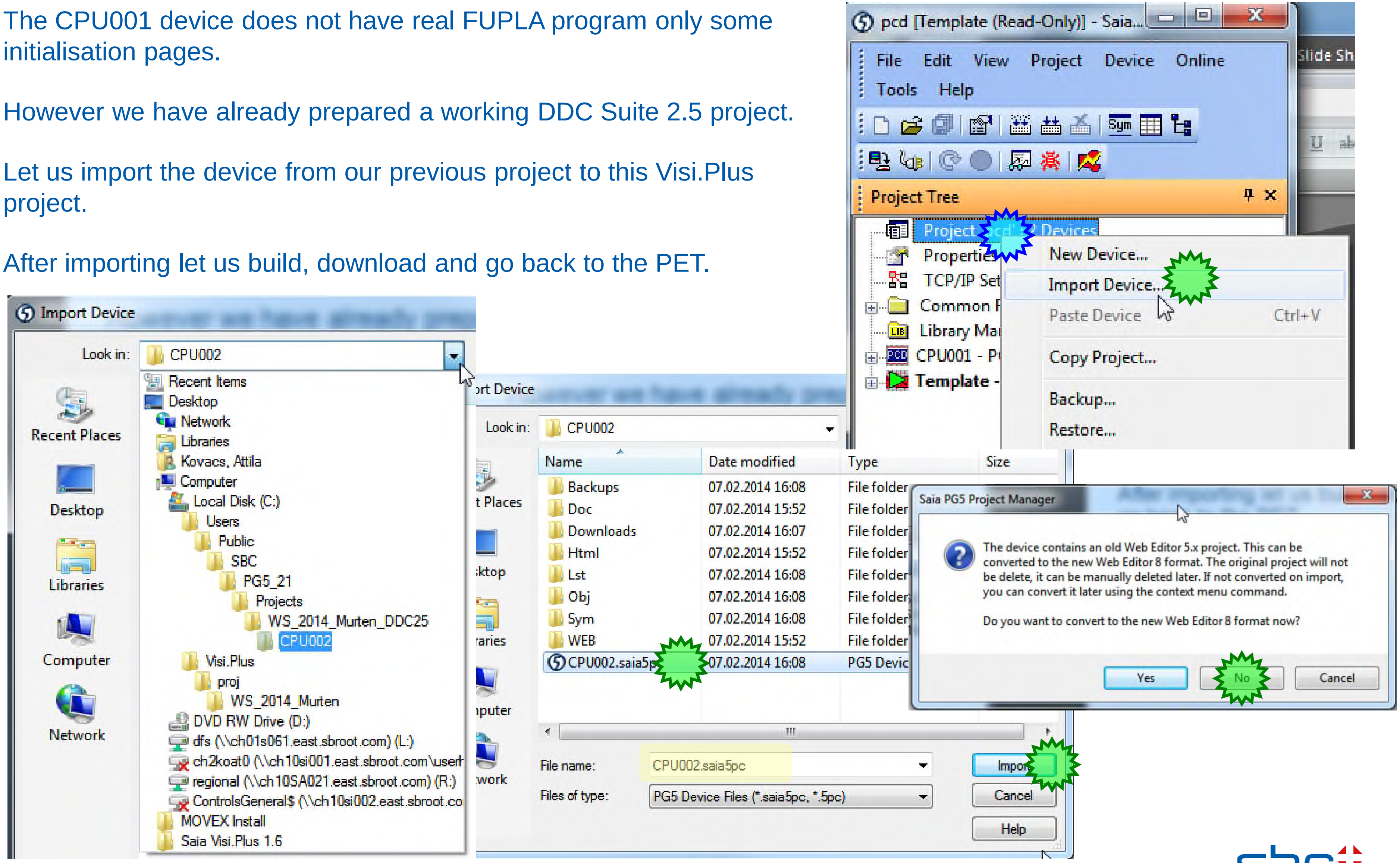
DDC Suite and Visi.Plus

The CPU001 device does not have real FUPLA program only some initialisation pages.

However we have already prepared a working DDC Suite 2.5 project.

Let us import the device from our previous project to this Visi.Plus project.

After importing let us build, download and go back to the PET.



Name	Date modified	Type
Backups	07.02.2014 16:08	File folder
Doc	07.02.2014 15:52	File folder
Downloads	07.02.2014 16:07	File folder
Html	07.02.2014 15:52	File folder
Lst	07.02.2014 16:08	File folder
Obj	07.02.2014 16:08	File folder
Sym	07.02.2014 16:08	File folder
WEB	07.02.2014 15:52	File folder
CPU002.saia5p	07.02.2014 16:08	PG5 Devic

File name: CPU002.saia5pc

Files of type: PG5 Device Files (*.saia5pc, *.5pc)

Saia PG5 Project Manager

The device contains an old Web Editor 5.x project. This can be converted to the new Web Editor 8 format. The original project will not be delete, it can be manually deleted later. If not converted on import, you can convert it later using the context menu command.

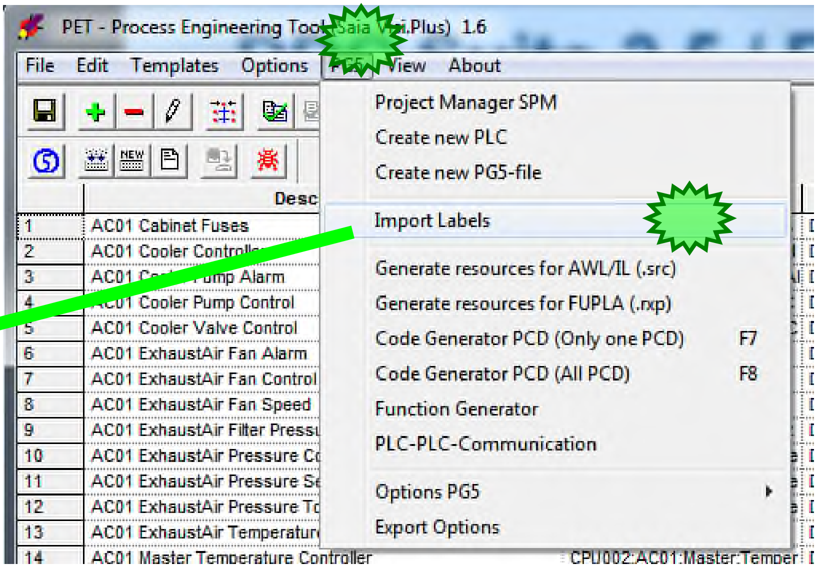
Do you want to convert to the new Web Editor 8 format now?

Importing data from Fupla

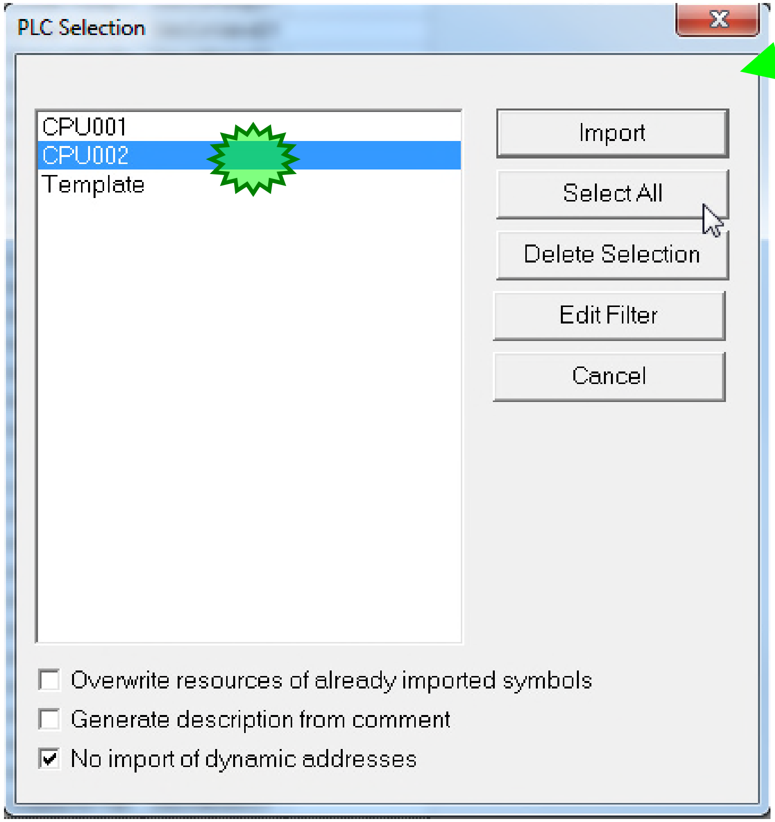
DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Be aware, that at least the Fupla has to be compiled – I recommend to build the program successfully. During compile or build a file is created which is necessary for Visi.Plus import functionality!


PET - Process Engineering Tool (Saia Visi.Plus) 1.6
File
Edit
Templates
Options
PG5
View
About
Desc
Project Manager SPM
Create new PLC
Create new PG5-file
Import Labels
Generate resources for AWL/IL (.src)
Generate resources for FUPLA (.rxp)
Code Generator PCD (Only one PCD) F7
Code Generator PCD (All PCD) F8
Function Generator
PLC-PLC-Communication
Options PG5
Export Options

	Desc
1	AC01 Cabinet Fuses
2	AC01 Cooler Controll
3	AC01 Co [illegible] mp Alarm
4	AC01 Cooler Pump Control
5	AC01 Cooler Valve Control
6	AC01 ExhaustAir Fan Alarm
7	AC01 ExhaustAir Fan Control
8	AC01 ExhaustAir Fan Speed
9	AC01 ExhaustAir Filter Pressu
10	AC01 ExhaustAir Pressure Co
11	AC01 ExhaustAir Pressure Se
12	AC01 ExhaustAir Pressure To
13	AC01 ExhaustAir Temperatur
14	AC01 Master Temperature Controller CPU002:AC01:Master:Temper



CPU001
CPU002
Template

□ Overwrite resources of already imported symbols

□ Generate description from comment

☑ No import of dynamic addresses

Select from menu SAIA-PG5 entry Import Labels.

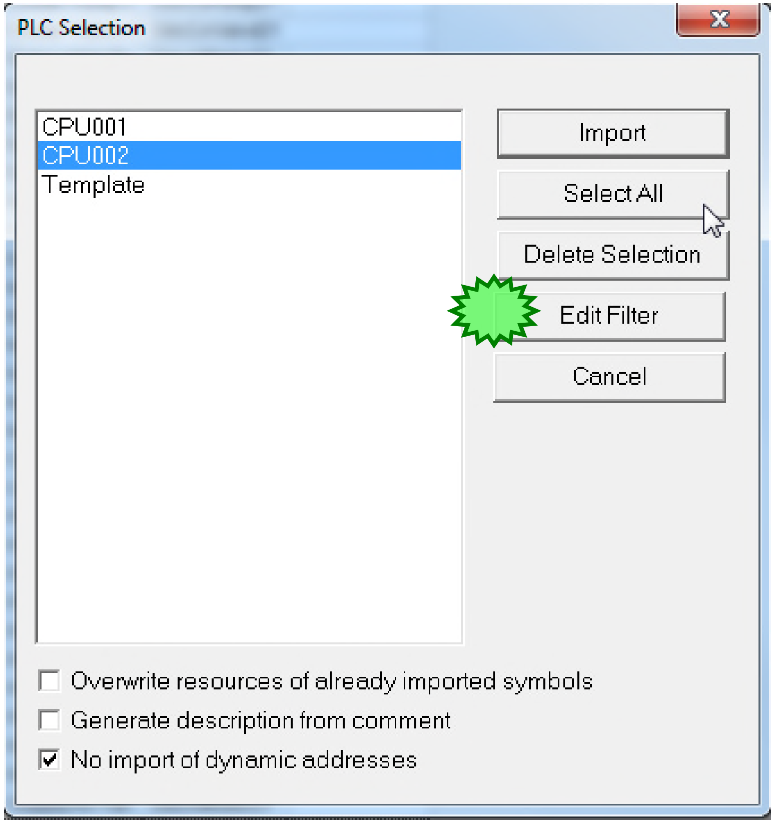
In next dialog you see that Visi.Plus also knows all CPU’s in PG5 project.

Select CPU002 from list ....

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

We can apply filters to the symbols before we import them into the PET.



□ Overwrite resources of already imported symbols

□ Generate description from comment

☑ No import of dynamic addresses

Overwrite resources of already imported symbols: - If you check this at import VP checks if the addresses are changed for those symbols which are already imported + imports the new symbols.

Generate description from comment: - It checks the symbols' comment in PG5 and creates description for the database points

No import of dynamic addresses: - The FUPLA program can have dynamic addresses (defined automatically by the compiler in the dynamic address territory) these symbols are not imported when this checkbox is checked.

This rule is not valid for symbol group object of Fboxes (like DDC Suite Fbox symbols) .

Click to Edit Filter button.

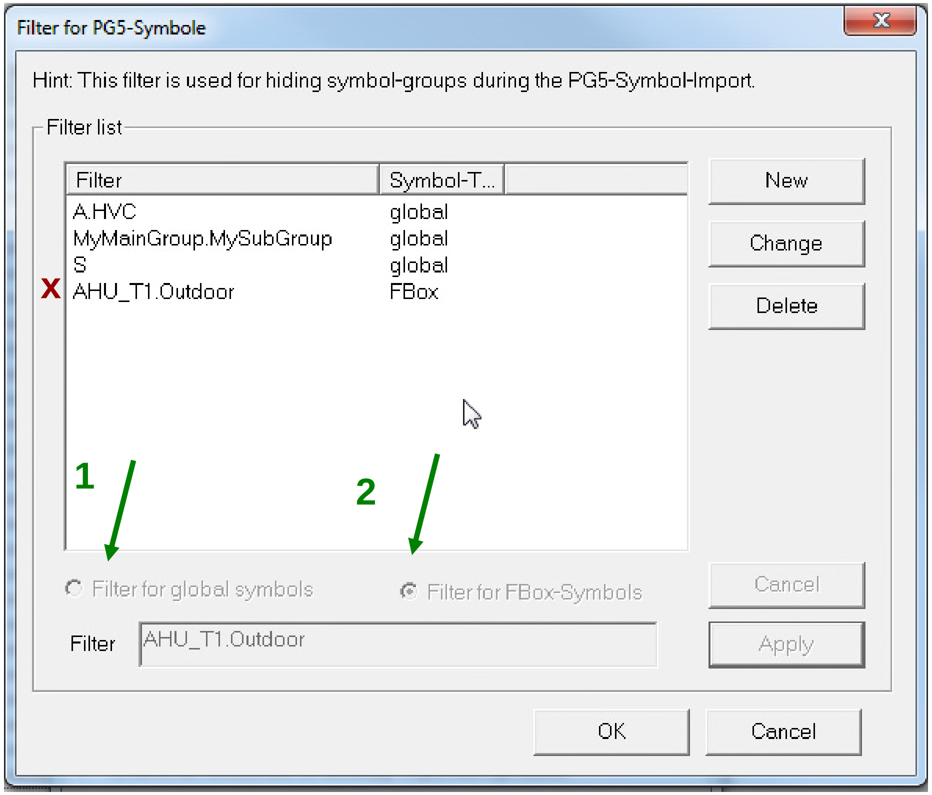
DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

We can apply filters to the symbols before we import them into the PET.

Filter can be applied for :

1. normal symbols (standalone)
2. Symbols grouped to VLO (grouped symbols for Fboxes)



Filter for PG5-Symbole

Hint: This filter is used for hiding symbol-groups during the PG5-Symbol-Import.

Filter list

	Filter	Symbol-T...
	A.HVC	global
	MyMainGroup.MySubGroup	global
	S	global
X	AHU_T1.Outdoor	FBox

○ Filter for global symbols ● Filter for FBox-Symbols

Filter: AHU_T1.Outdoor

A.HVC global: - If this filter is set the standalone symbols are not imported from the “A.HVC” symbol group. Actually the “A.HVC” is a system symbol group where the uniquely named HEAVAC Fboxes generate their symbols.

S global: - symbols are not imported from group “S”.

“S” is a system symbol group where the compiler creates symbols.

MyMainGroup.MySubGroup global : - it filters out the standalone symbols from this user defined folder.

AHU_T1.Outdoor Fbox: - it filters out the symbols which are grouped together and defined as VLO from the “AHU_T1.Outdoor” group

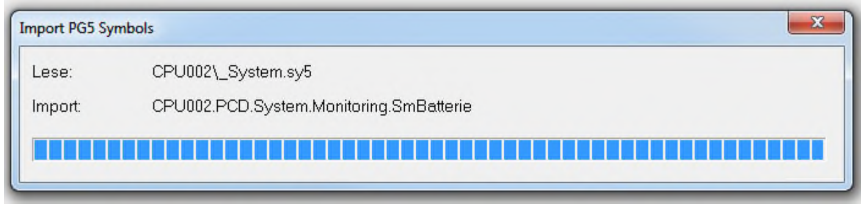
Do not apply such a Fbox filter.

Press the OK button and Import the symbols

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

A progress dialog is shown and Visi.Plus is parsing a file in PG5 project in CPU002 to find all DDC Suite FBoxes and the depending group structure.

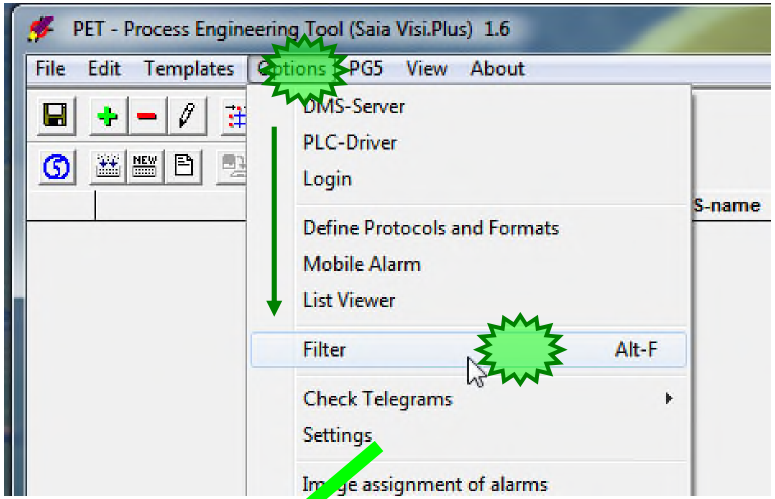


Import PG5 Symbols

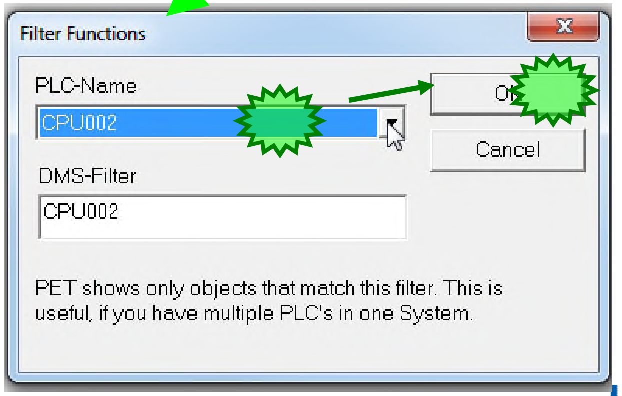
Lese: CPU002_System.sy5

Import: CPU002.PCD.System.Monitoring.SmBatterie

Maybe after import you don’t see any process objects – in this case we have to set a filter. Select Options from menu and then Filter.



Select in dialog from drop down list PLC-Name entry CPU002 and click on button OK.



Filter Functions

PLC-Name: CPU002

DMS-Filter: CPU002

PET shows only objects that match this filter. This is useful, if you have multiple PLC's in one System.

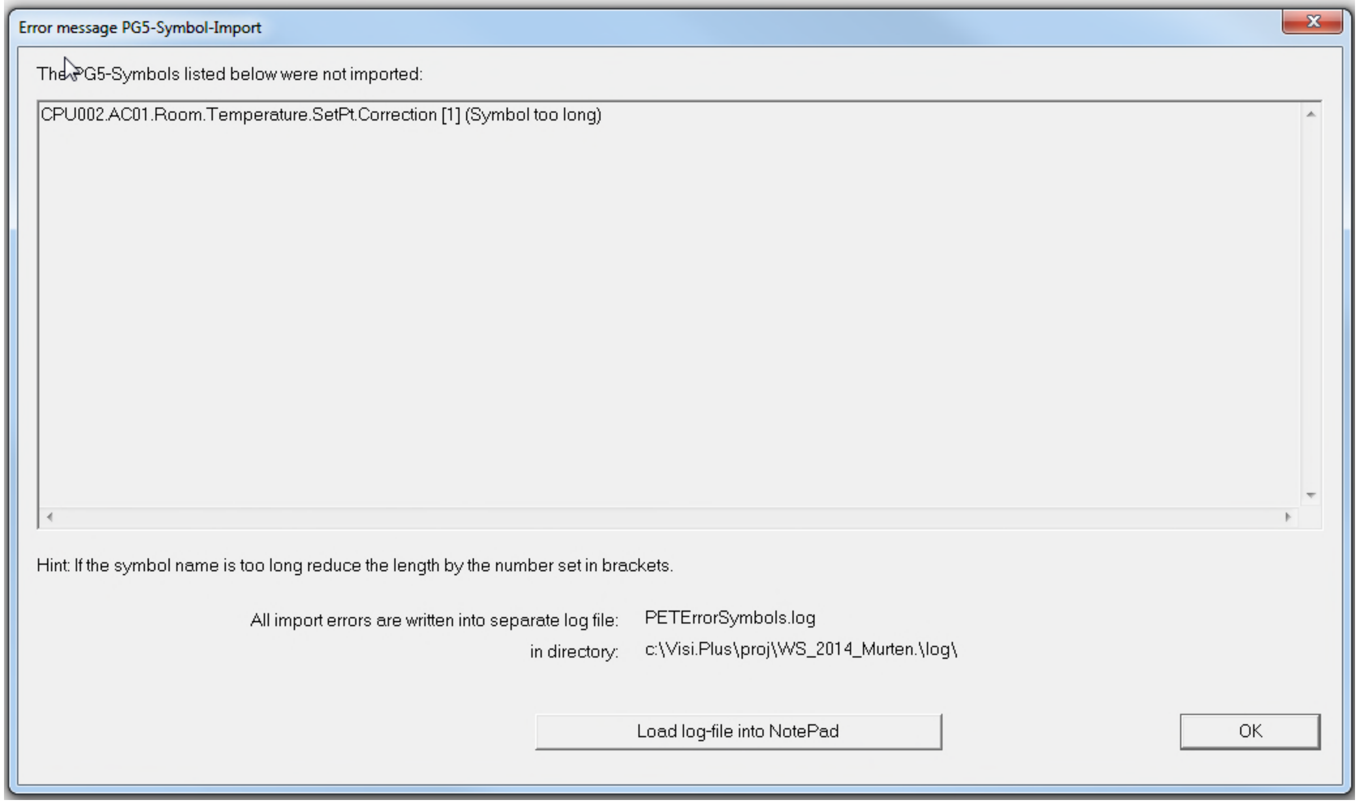
DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

At the end of the symbol import we can get a message that one or more symbol name are too long.

In Visi.Plus have a kind of rule that we can import PG5 symbols which are 40 characters long including the group structure too. (Presently Visi.Plus can handle 80 characters long Data Point names -- PG5 symbol name + addendum.)

Those symbols or the symbol groups completely - if any sub-symbol is too long - are not imported which has too long name.



The PG5-Symbols listed below were not imported:

```
CPU002.AC01.Room.Temperature.SetPt.Correction [1] (Symbol too long)
```

Hint: If the symbol name is too long reduce the length by the number set in brackets.

All import errors are written into separate log file: PETErrorSymbols.log
in directory: c:\Visi.Plus\proj\WS_2014_Murten.\log\

We have to go back to the FUPLA and reduce the length of this Symbol name.

Either

Temperature → Temp

or

Correction → Corr

We have to compile the project and import the symbols again.

Take care after the name modification the templates do not match to each other completely.

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Now we see that PET imported 119 process objects.

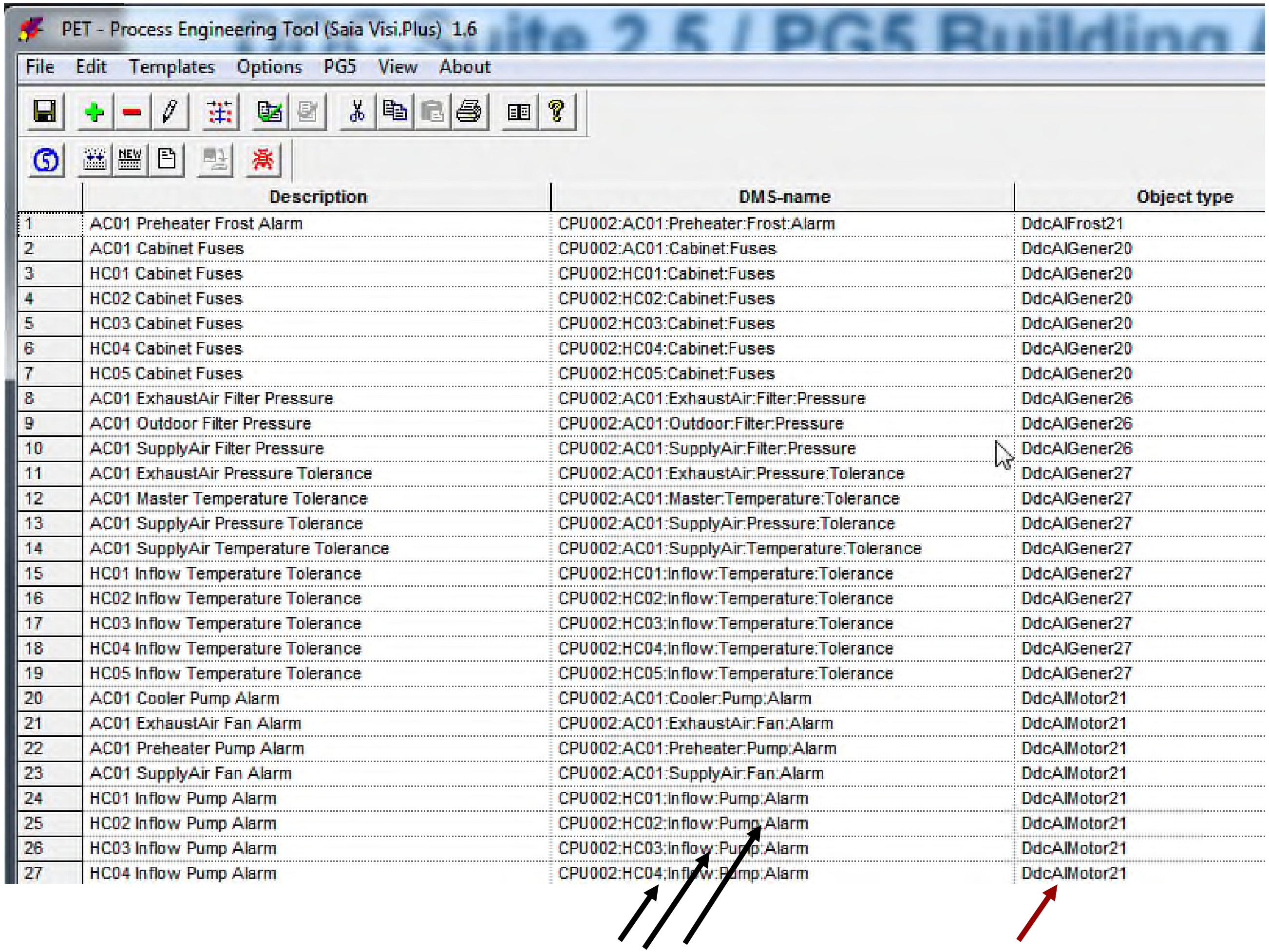
Remember we filtered out every standalone and dynamic symbols.

If you'd like – count the DDC Suite FBoxes (with internal data) in Fupla – and you'll count 119 FBoxes.

In fact – PET handles DDC Suite FBoxes as object – not as single data points.

The import is based on a "papa" object which is called VLO (Vorlagen Objekt - template).

During import we are creating instances (children) which are similar to the VLO object (papa object).



	Description	DMS-name	Object type
1	AC01 Preheater Frost Alarm	CPU002:AC01:Preheater:Frost:Alarm	DdcAlFrost21
2	AC01 Cabinet Fuses	CPU002:AC01:Cabinet:Fuses	DdcAlGener20
3	HC01 Cabinet Fuses	CPU002:HC01:Cabinet:Fuses	DdcAlGener20
4	HC02 Cabinet Fuses	CPU002:HC02:Cabinet:Fuses	DdcAlGener20
5	HC03 Cabinet Fuses	CPU002:HC03:Cabinet:Fuses	DdcAlGener20
6	HC04 Cabinet Fuses	CPU002:HC04:Cabinet:Fuses	DdcAlGener20
7	HC05 Cabinet Fuses	CPU002:HC05:Cabinet:Fuses	DdcAlGener20
8	AC01 ExhaustAir Filter Pressure	CPU002:AC01:ExhaustAir:Filter:Pressure	DdcAlGener26
9	AC01 Outdoor Filter Pressure	CPU002:AC01:Outdoor:Filter:Pressure	DdcAlGener26
10	AC01 SupplyAir Filter Pressure	CPU002:AC01:SupplyAir:Filter:Pressure	DdcAlGener26
11	AC01 ExhaustAir Pressure Tolerance	CPU002:AC01:ExhaustAir:Pressure:Tolerance	DdcAlGener27
12	AC01 Master Temperature Tolerance	CPU002:AC01:Master:Temperature:Tolerance	DdcAlGener27
13	AC01 SupplyAir Pressure Tolerance	CPU002:AC01:SupplyAir:Pressure:Tolerance	DdcAlGener27
14	AC01 SupplyAir Temperature Tolerance	CPU002:AC01:SupplyAir:Temperature:Tolerance	DdcAlGener27
15	HC01 Inflow Temperature Tolerance	CPU002:HC01:Inflow:Temperature:Tolerance	DdcAlGener27
16	HC02 Inflow Temperature Tolerance	CPU002:HC02:Inflow:Temperature:Tolerance	DdcAlGener27
17	HC03 Inflow Temperature Tolerance	CPU002:HC03:Inflow:Temperature:Tolerance	DdcAlGener27
18	HC04 Inflow Temperature Tolerance	CPU002:HC04:Inflow:Temperature:Tolerance	DdcAlGener27
19	HC05 Inflow Temperature Tolerance	CPU002:HC05:Inflow:Temperature:Tolerance	DdcAlGener27
20	AC01 Cooler Pump Alarm	CPU002:AC01:Cooler:Pump:Alarm	DdcAlMotor21
21	AC01 ExhaustAir Fan Alarm	CPU002:AC01:ExhaustAir:Fan:Alarm	DdcAlMotor21
22	AC01 Preheater Pump Alarm	CPU002:AC01:Preheater:Pump:Alarm	DdcAlMotor21
23	AC01 SupplyAir Fan Alarm	CPU002:AC01:SupplyAir:Fan:Alarm	DdcAlMotor21
24	HC01 Inflow Pump Alarm	CPU002:HC01:Inflow:Pump:Alarm	DdcAlMotor21
25	HC02 Inflow Pump Alarm	CPU002:HC02:Inflow:Pump:Alarm	DdcAlMotor21
26	HC03 Inflow Pump Alarm	CPU002:HC03:Inflow:Pump:Alarm	DdcAlMotor21
27	HC04 Inflow Pump Alarm	CPU002:HC04:Inflow:Pump:Alarm	DdcAlMotor21

Instances

VLO object

DDC Suite 2.5 / PG5 Building Advanced

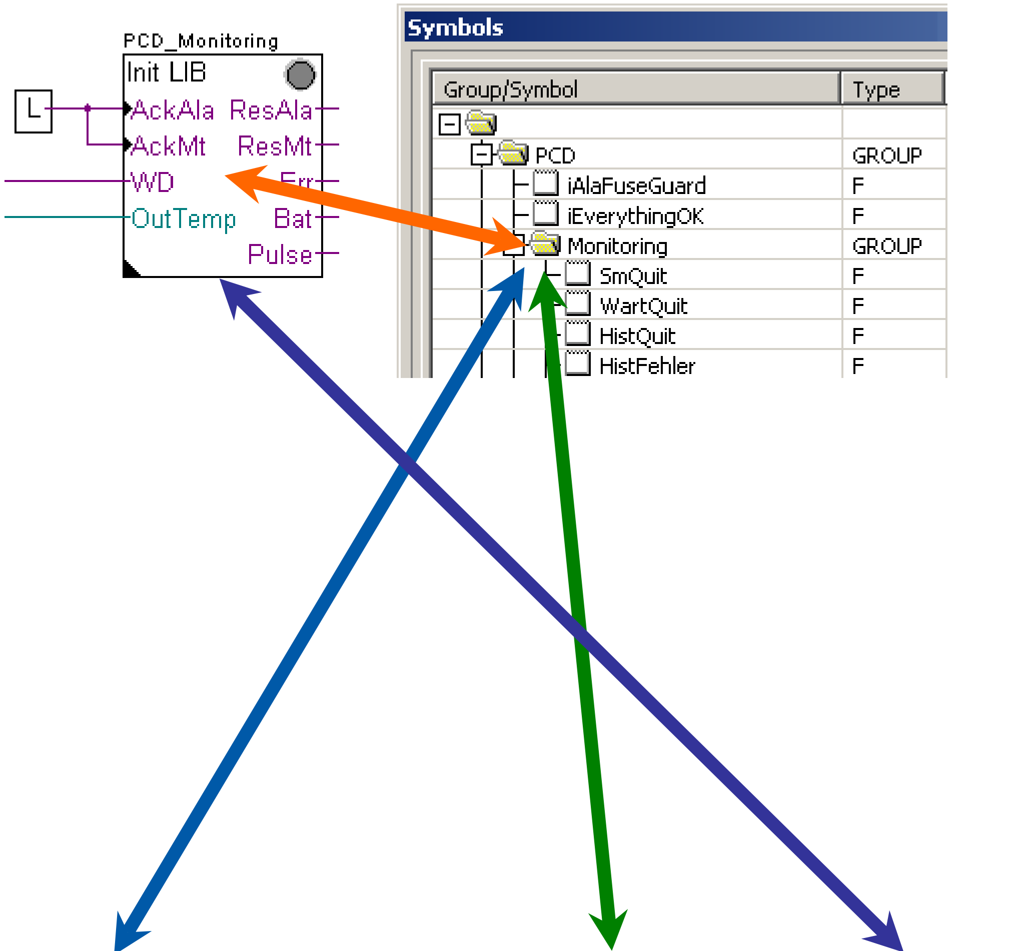
DDC Suite and Visi.Plus

1. Each FBox has corresponding symbols in a group structure. Here it's PCD.Monitoring.

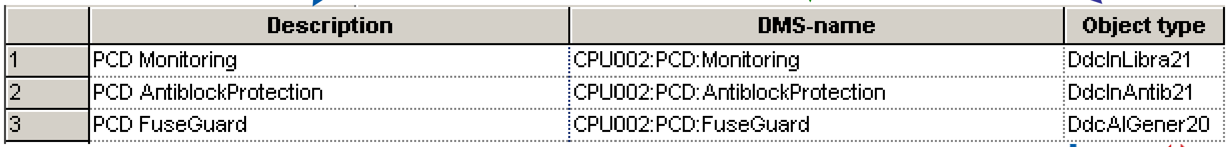
2. PET identifies during import FBox InitLIB and thru import rules PET creates an object of type DdcInLibra21 in the data base .

3. PET also identifies the corresponding group structure – and this is used to create a unique data base name – the DMS-Name. PET adds the CPU name as prefix because this group structure maybe also exists in another CPU in this project. The DMS-Name must be unique and it is write protected.

4. The Description is a text shown in tool tip or pop up windows to identify the object the end user is operating. The Description can be modified. (It is stored under the NAME addendum in the DMS.)



Group/Symbol	Type
PCD	GROUP
iAlaFuseGuard	F
iEverythingOK	F
Monitoring	GROUP
SmQuit	F
WartQuit	F
HistQuit	F
HistFehler	F



	Description	DMS-name	Object type
1	PCD Monitoring	CPU002:PCD:Monitoring	DdcInLibra21
2	PCD AntiblockProtection	CPU002:PCD:AntiblockProtection	DdcInAntib21
3	PCD FuseGuard	CPU002:PCD:FuseGuard	DdcAlGener20

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

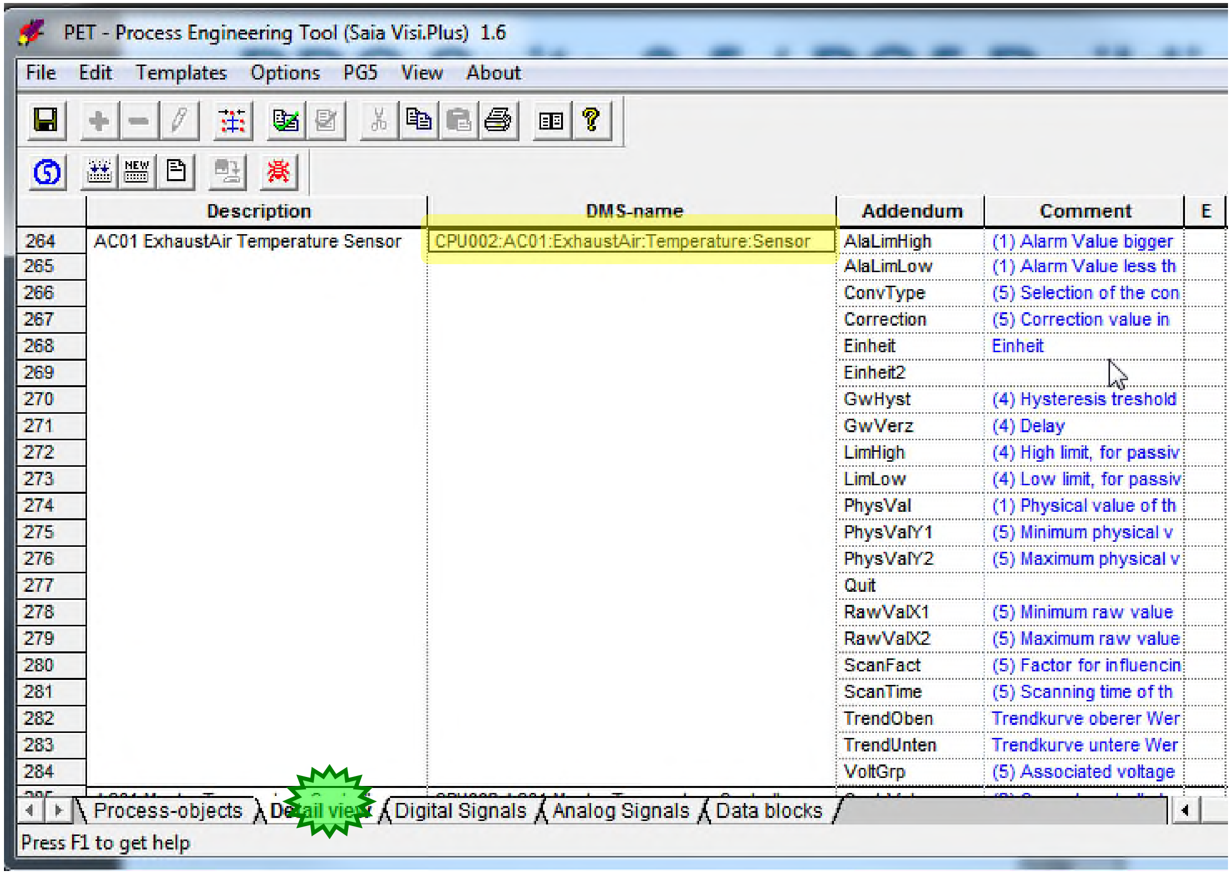
Click at tab Detail view to get more details of the objects (you also can say FBoxes).

Scroll down to line 264. The Exhaust Air:Temperature:Sensor should be the almost top line.

As you can see the Data point structure is quite the same like the smybol structure of the AC01 ExhaustAir Temperature Sensor Fbox.

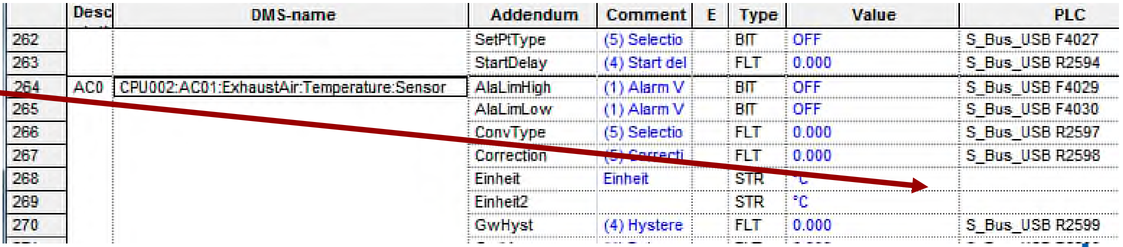
There are data points which are internal points (not communicated) inside of the object.

Those are internals which do not have PLC address defined.



PET - Process Engineering Tool (Saia Visi.Plus) 1.6
File Edit Templates Options PG5 View About
Process-objects
Detail view
Digital Signals
Analog Signals
Data blocks
Press F1 to get help

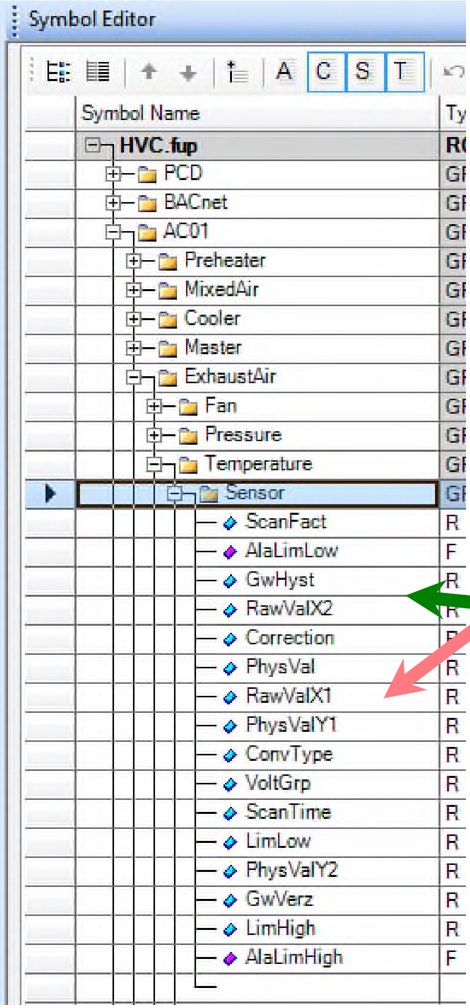
	Description	DMS-name	Addendum	Comment	E
264	AC01 ExhaustAir Temperature Sensor	CPU002:AC01:ExhaustAir:Temperature:Sensor	AlaLimHigh	(1) Alarm Value bigger	
265			AlaLimLow	(1) Alarm Value less th	
266			ConvType	(5) Selection of the con	
267			Correction	(5) Correction value in	
268			Einheit	Einheit	
269			Einheit2		
270			GwHyst	(4) Hysteresis treshold	
271			GwVerz	(4) Delay	
272			LimHigh	(4) High limit, for passiv	
273			LimLow	(4) Low limit, for passiv	
274			PhysVal	(1) Physical value of th	
275			PhysValY1	(5) Minimum physical v	
276			PhysValY2	(5) Maximum physical v	
277			Quit		
278			RawValX1	(5) Minimum raw value	
279			RawValX2	(5) Maximum raw value	
280			ScanFact	(5) Factor for influencin	
281			ScanTime	(5) Scanning time of th	
282			TrendOben	Trendkurve oberer Wer	
283			TrendUnten	Trendkurve untere Wer	
284			VoltGrp	(5) Associated voltage	



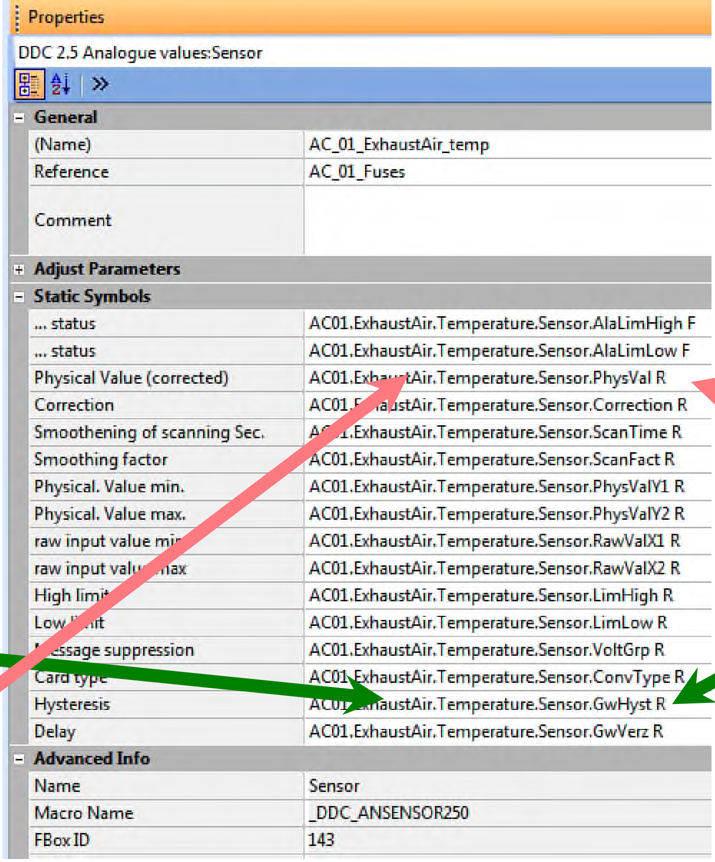
	Desc	DMS-name	Addendum	Comment	E	Type	Value	PLC
262			SetPtType	(5) Selectio		BIT	OFF	S_Bus_USB F4027
263			StartDelay	(4) Start del		FLT	0.000	S_Bus_USB R2594
264	AC0	CPU002:AC01:ExhaustAir:Temperature:Sensor	AlaLimHigh	(1) Alarm V		BIT	OFF	S_Bus_USB F4029
265			AlaLimLow	(1) Alarm V		BIT	OFF	S_Bus_USB F4030
266			ConvType	(5) Selectio		FLT	0.000	S_Bus_USB R2597
267			Correction	(5) Correcti		FLT	0.000	S_Bus_USB R2598
268			Einheit	Einheit		STR	°C	
269			Einheit2			STR	°C	
270			GwHyst	(4) Hystere		FLT	0.000	S_Bus_USB R2599

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus



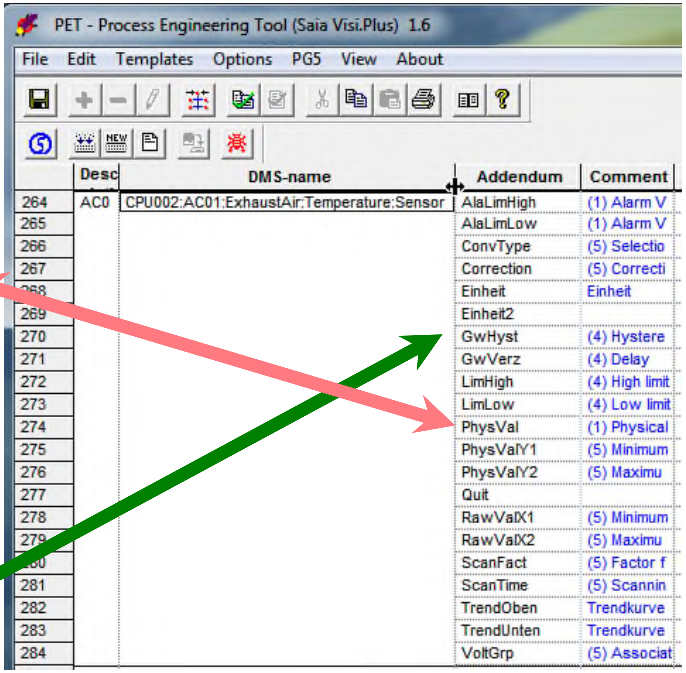
Symbol Name	Ty
HVC.fup	R(
PCD	GI
BACnet	GI
AC01	GI
Preheater	GI
MixedAir	GI
Cooler	GI
Master	GI
ExhaustAir	GI
Fan	GI
Pressure	GI
Temperature	GI
Sensor	GI
ScanFact	R
AlaLimLow	F
GwHyst	R
RawValX2	R
Correction	R
PhysVal	R
RawValX1	R
PhysValY1	R
ConvType	R
VoltGrp	R
ScanTime	R
LimLow	R
PhysValY2	R
GwVerz	R
LimHigh	R
AlaLimHigh	F



Properties

DDC 2.5 Analogue values:Sensor

General	
(Name)	AC_01_ExhaustAir_temp
Reference	AC_01_Fuses
Comment	
Adjust Parameters	
Static Symbols	
... status	AC01.ExhaustAir.Temperature.Sensor.AlaLimHigh F
... status	AC01.ExhaustAir.Temperature.Sensor.AlaLimLow F
Physical Value (corrected)	AC01.ExhaustAir.Temperature.Sensor.PhysVal R
Correction	AC01.ExhaustAir.Temperature.Sensor.Correction R
Smoothening of scanning Sec.	AC01.ExhaustAir.Temperature.Sensor.ScanTime R
Smoothing factor	AC01.ExhaustAir.Temperature.Sensor.ScanFact R
Physical. Value min.	AC01.ExhaustAir.Temperature.Sensor.PhysValY1 R
Physical. Value max.	AC01.ExhaustAir.Temperature.Sensor.PhysValY2 R
raw input value min	AC01.ExhaustAir.Temperature.Sensor.RawValX1 R
raw input value max	AC01.ExhaustAir.Temperature.Sensor.RawValX2 R
High limit	AC01.ExhaustAir.Temperature.Sensor.LimHigh R
Low limit	AC01.ExhaustAir.Temperature.Sensor.LimLow R
Message suppression	AC01.ExhaustAir.Temperature.Sensor.VoltGrp R
Card type	AC01.ExhaustAir.Temperature.Sensor.ConvType R
Hysteresis	AC01.ExhaustAir.Temperature.Sensor.GwHyst R
Delay	AC01.ExhaustAir.Temperature.Sensor.GwVerz R
Advanced Info	
Name	Sensor
Macro Name	_DDC_ANSENSOR250
FBox ID	143



	Desc	DMS-name	Addendum	Comment
264	AC0	CPU002:AC01:ExhaustAir:Temperature:Sensor	AlaLimHigh	(1) Alarm V
265			AlaLimLow	(1) Alarm V
266			ConvType	(5) Selectio
267			Correction	(5) Correcti
268			Einheit	Einheit
269			Einheit2	
270			GwHyst	(4) Hystere
271			GwVerz	(4) Delay
272			LimHigh	(4) High limit
273			LimLow	(4) Low limit
274			PhysVal	(1) Physical
275			PhysValY1	(5) Minimum
276			PhysValY2	(5) Maximu
277			Quit	
278			RawValX1	(5) Minimum
279			RawValX2	(5) Maximu
280			ScanFact	(5) Factor f
281			ScanTime	(5) Scannin
282			TrendOben	Trendkurve
283			TrendUnten	Trendkurve
284			VoltGrp	(5) Associat

You see that all symbols from a FBox are also in PET available.

And through the import rules they get in PET automatically a default trending or alarming definition.

That means by importing you get automatically configured Trending and Alarming in Visi.Plus additionally.

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

To make it clear – with using this template (VLO) functionality:

- within up to 98% of all cases you don't have to parameterize manually data points for trending or alarming in Visi.Plus with DDC Suite FBoxes

- if you use always dedicated FBoxes for alarming or trending – even they produce big amount of symbols in Fupla – you never have to parameterize those functionalities in Visi.Plus

- of course you have to modify the default alarm texts or priorities – but this can be done "on the fly" during runtime of Visi.Plus

So this import feature within Visi.Plus saves you a lot of work!

Addressing the resources

SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

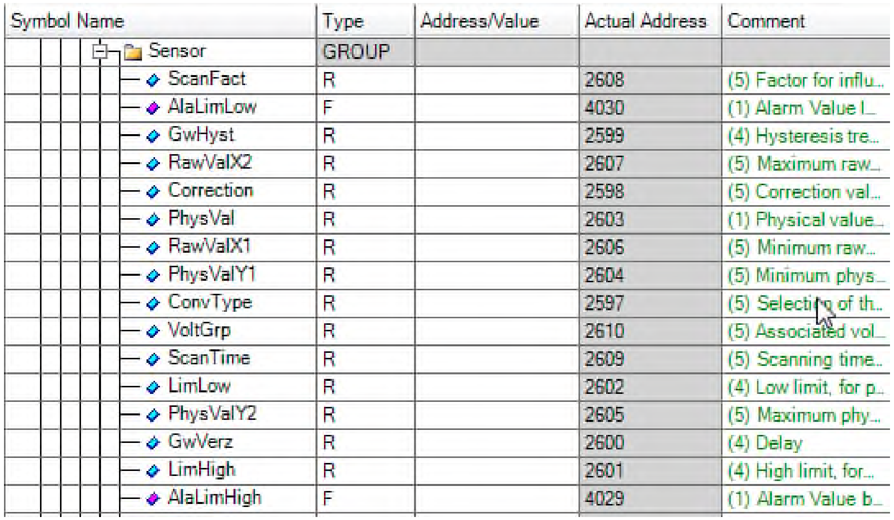
DDC Suite and Visi.Plus

Visi.Plus is getting data from a PCD via S-Bus communication. Therefore each data point must have a unique address like R 123 or F 234. Visi.Plus does not check the symbol names, only the media address.

By default the symbols in Symbol Editor have no address.

However all the symbols always get address but from the dynamic territory. (Actual Address)

Visi.Plus is able to use the addresses defined in the dynamic range.



Symbol Name	Type	Address/Value	Actual Address	Comment
Sensor	GROUP			
ScanFact	R		2608	(5) Factor for influ…
AlaLimLow	F		4030	(1) Alarm Value l…
GwHyst	R		2599	(4) Hysteresis tre…
RawValX2	R		2607	(5) Maximum raw…
Correction	R		2598	(5) Correction val…
PhysVal	R		2603	(1) Physical value…
RawValX1	R		2606	(5) Minimum raw…
PhysValY1	R		2604	(5) Minimum phys…
ConvType	R		2597	(5) Selecting of th…
VoltGrp	R		2610	(5) Associated vol…
ScanTime	R		2609	(5) Scanning time…
LimLow	R		2602	(4) Low limit, for p…
PhysValY2	R		2605	(5) Maximum phy…
GwVerz	R		2600	(4) Delay
LimHigh	R		2601	(4) High limit, for…
AlaLimHigh	F		4029	(1) Alarm Value b…

But none can be sure that the dynamically allocated addresses are always remained the same !!!!

Let us do addressing	
Let's do this in PET – because here it takes 2 minutes to sort and address all data points. No matter if you address 100 or 10.000 data points.	It is possible to do the addressing in PG5 when someone switches the Address Assign mode on.
Disadvantage is the symbol import and export between Visi.Plus and PG5 can easily lead to error.	It is a bit complicated. Although it is advantageous, there is one way symbol import from PG5 to Visi.Plus.

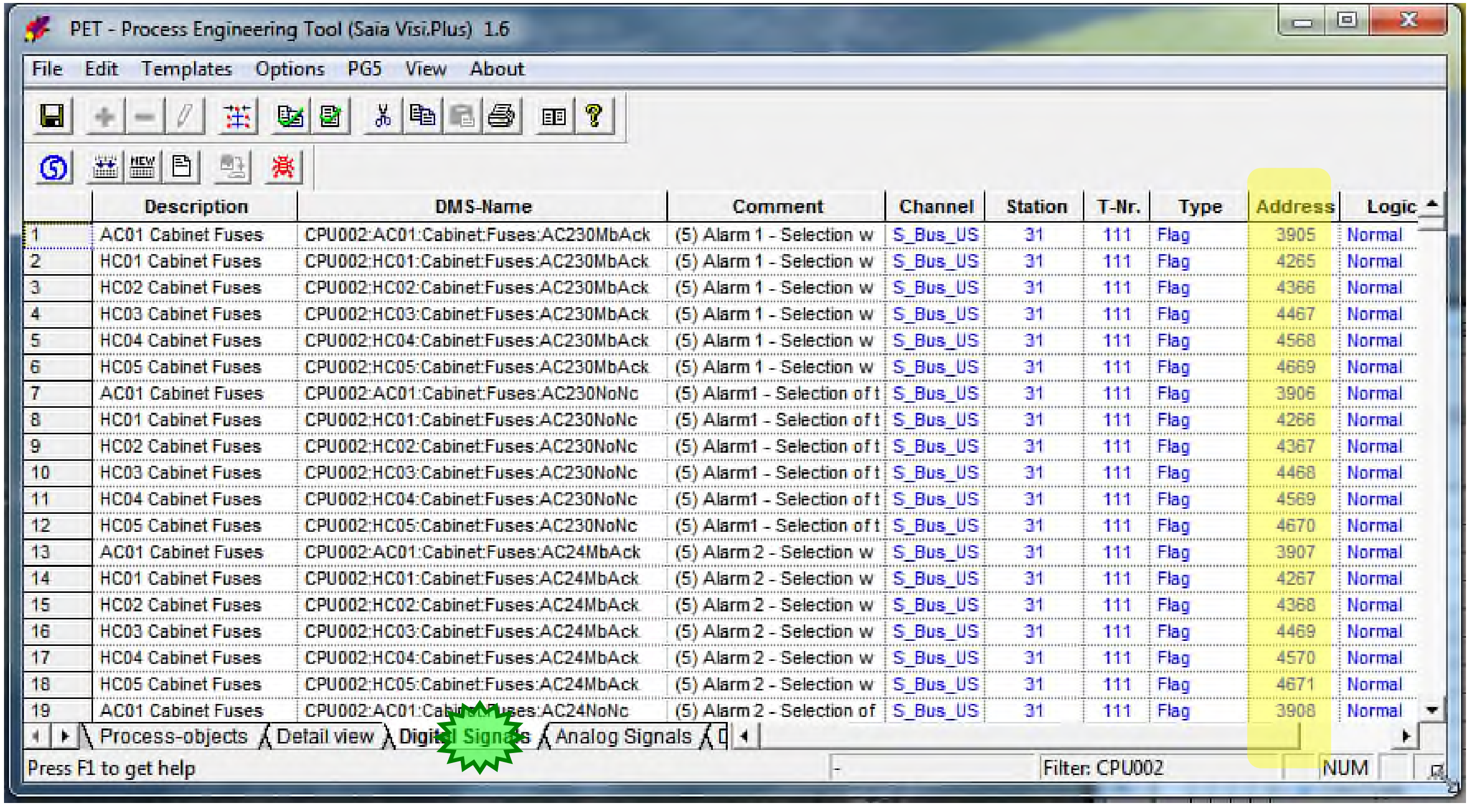
DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Let us do the addressing in the PET.

Activate tab Digital Signals. Here you'll find all flags to be communicated with PCD. You also see that PET already took over the Channel settings and S-Bus station number. It makes sense to create unique channel per PCD.

But the addresses are coming from the dynamic address space - because in Symbol Editor no static address has been defined.



	Description	DMS-Name	Comment	Channel	Station	T-Nr.	Type	Address	Logic
1	AC01 Cabinet Fuses	CPU002:AC01:Cabinet:Fuses:AC230MbAck	(5) Alarm 1 - Selection w	S_Bus_US	31	111	Flag	3905	Normal
2	HC01 Cabinet Fuses	CPU002:HC01:Cabinet:Fuses:AC230MbAck	(5) Alarm 1 - Selection w	S_Bus_US	31	111	Flag	4265	Normal
3	HC02 Cabinet Fuses	CPU002:HC02:Cabinet:Fuses:AC230MbAck	(5) Alarm 1 - Selection w	S_Bus_US	31	111	Flag	4366	Normal
4	HC03 Cabinet Fuses	CPU002:HC03:Cabinet:Fuses:AC230MbAck	(5) Alarm 1 - Selection w	S_Bus_US	31	111	Flag	4467	Normal
5	HC04 Cabinet Fuses	CPU002:HC04:Cabinet:Fuses:AC230MbAck	(5) Alarm 1 - Selection w	S_Bus_US	31	111	Flag	4568	Normal
6	HC05 Cabinet Fuses	CPU002:HC05:Cabinet:Fuses:AC230MbAck	(5) Alarm 1 - Selection w	S_Bus_US	31	111	Flag	4669	Normal
7	AC01 Cabinet Fuses	CPU002:AC01:Cabinet:Fuses:AC230NoNc	(5) Alarm1 - Selection of t	S_Bus_US	31	111	Flag	3906	Normal
8	HC01 Cabinet Fuses	CPU002:HC01:Cabinet:Fuses:AC230NoNc	(5) Alarm1 - Selection of t	S_Bus_US	31	111	Flag	4266	Normal
9	HC02 Cabinet Fuses	CPU002:HC02:Cabinet:Fuses:AC230NoNc	(5) Alarm1 - Selection of t	S_Bus_US	31	111	Flag	4367	Normal
10	HC03 Cabinet Fuses	CPU002:HC03:Cabinet:Fuses:AC230NoNc	(5) Alarm1 - Selection of t	S_Bus_US	31	111	Flag	4468	Normal
11	HC04 Cabinet Fuses	CPU002:HC04:Cabinet:Fuses:AC230NoNc	(5) Alarm1 - Selection of t	S_Bus_US	31	111	Flag	4569	Normal
12	HC05 Cabinet Fuses	CPU002:HC05:Cabinet:Fuses:AC230NoNc	(5) Alarm1 - Selection of t	S_Bus_US	31	111	Flag	4670	Normal
13	AC01 Cabinet Fuses	CPU002:AC01:Cabinet:Fuses:AC24MbAck	(5) Alarm 2 - Selection w	S_Bus_US	31	111	Flag	3907	Normal
14	HC01 Cabinet Fuses	CPU002:HC01:Cabinet:Fuses:AC24MbAck	(5) Alarm 2 - Selection w	S_Bus_US	31	111	Flag	4267	Normal
15	HC02 Cabinet Fuses	CPU002:HC02:Cabinet:Fuses:AC24MbAck	(5) Alarm 2 - Selection w	S_Bus_US	31	111	Flag	4368	Normal
16	HC03 Cabinet Fuses	CPU002:HC03:Cabinet:Fuses:AC24MbAck	(5) Alarm 2 - Selection w	S_Bus_US	31	111	Flag	4469	Normal
17	HC04 Cabinet Fuses	CPU002:HC04:Cabinet:Fuses:AC24MbAck	(5) Alarm 2 - Selection w	S_Bus_US	31	111	Flag	4570	Normal
18	HC05 Cabinet Fuses	CPU002:HC05:Cabinet:Fuses:AC24MbAck	(5) Alarm 2 - Selection w	S_Bus_US	31	111	Flag	4671	Normal
19	AC01 Cabinet Fuses	CPU002:AC01:Cabinet:Fuses:AC24NoNc	(5) Alarm 2 - Selection of	S_Bus_US	31	111	Flag	3908	Normal

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Within this workshop we do not have a lot of data points and USB communication is quite fast – it means that we can get all information within 1 second into Visi.Plus if we are online.

But if this will be a big application with 10 PCD and each PCD with up to 5 air conditions than you can imagine that it may take probably some second if an alarm is detected by Visi.Plus. Therefore we should organise the data points into groups (telegrams) to optimize the communication load.

This is already prepared, just double click on column header “Comment”.

You see that the comment contains a number from (1) to (5) in brackets. These numbers indicate a kind of priority which can be adapted in the communication philosophy, e.g.

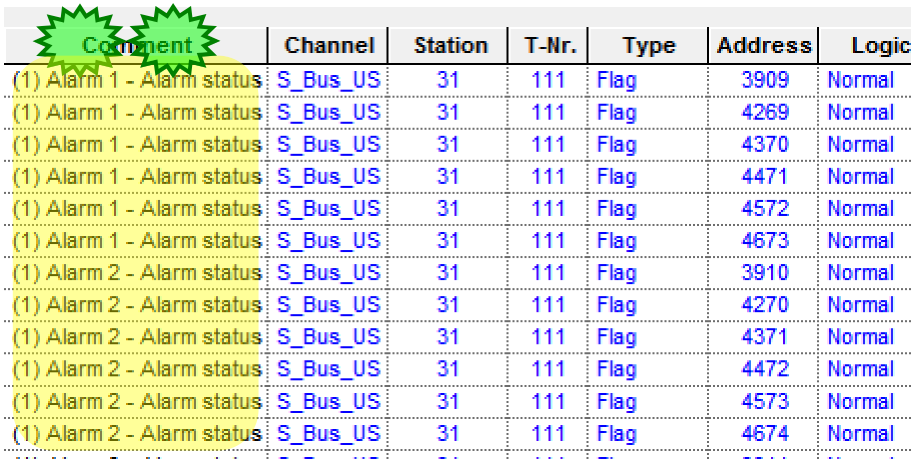
(1) communicate as fast and often as possible (alarm/view values) to have “real time” behaviour

(2) once per 5 second, e.g. feedback information having by default some delay

(3) once per minute (or less), e.g. working hours or clock status

(4) only at start up, rarely or never, e.g. SetPoints (they must be updated if parallel HMI or Sweb are in use)

(5) only at start up and then never, always commissioning data points (open/closed and so on)

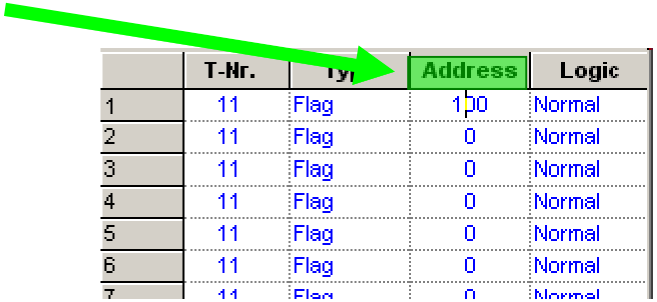


Comment	Channel	Station	T-Nr.	Type	Address	Logic
(1) Alarm 1 - Alarm status	S_Bus_US	31	111	Flag	3909	Normal
(1) Alarm 1 - Alarm status	S_Bus_US	31	111	Flag	4269	Normal
(1) Alarm 1 - Alarm status	S_Bus_US	31	111	Flag	4370	Normal
(1) Alarm 1 - Alarm status	S_Bus_US	31	111	Flag	4471	Normal
(1) Alarm 1 - Alarm status	S_Bus_US	31	111	Flag	4572	Normal
(1) Alarm 1 - Alarm status	S_Bus_US	31	111	Flag	4673	Normal
(1) Alarm 2 - Alarm status	S_Bus_US	31	111	Flag	3910	Normal
(1) Alarm 2 - Alarm status	S_Bus_US	31	111	Flag	4270	Normal
(1) Alarm 2 - Alarm status	S_Bus_US	31	111	Flag	4371	Normal
(1) Alarm 2 - Alarm status	S_Bus_US	31	111	Flag	4472	Normal
(1) Alarm 2 - Alarm status	S_Bus_US	31	111	Flag	4573	Normal
(1) Alarm 2 - Alarm status	S_Bus_US	31	111	Flag	4674	Normal

DDC Suite 2.5 / PG5 Building Advanced

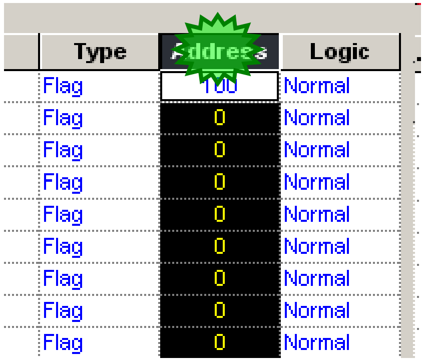
DDC Suite and Visi.Plus

Now let’s define the real address. Scroll up to first line and type in 100 in Column Address / Row 1



	T-Nr.	Ty	Address	Logic
1	11	Flag	100	Normal
2	11	Flag	0	Normal
3	11	Flag	0	Normal
4	11	Flag	0	Normal
5	11	Flag	0	Normal
6	11	Flag	0	Normal
7	11	Flag	0	Normal

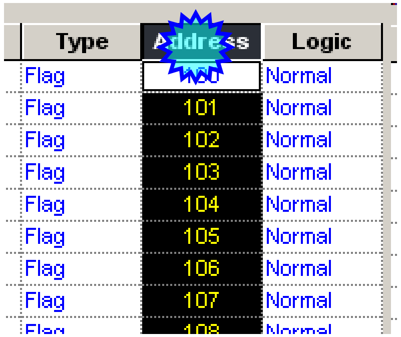
Click on column header Address – the whole column is getting selected.



Type	Address	Logic
Flag	100	Normal
Flag	0	Normal
Flag	0	Normal
Flag	0	Normal
Flag	0	Normal
Flag	0	Normal
Flag	0	Normal
Flag	0	Normal
Flag	0	Normal

Click with right mouse button on column header Address – all flags getting ascending numbered.

That’s quite easy ☺



Type	Address	Logic
Flag	100	Normal
Flag	101	Normal
Flag	102	Normal
Flag	103	Normal
Flag	104	Normal
Flag	105	Normal
Flag	106	Normal
Flag	107	Normal
Flag	108	Normal

It is also possible to define the addresses ranges that there are gaps between them.

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

The next step is to give telegram numbers for the addresses.

The telegram numbers should be vary according to the priority defined in the comment filed.

There is a restriction. In one telegram there can be 4000 addresses (more or less in consecutive order). If the addresses are out of this border the sDriver will give you warning message.

Search for the priority (2) → setup the telegram number to 110

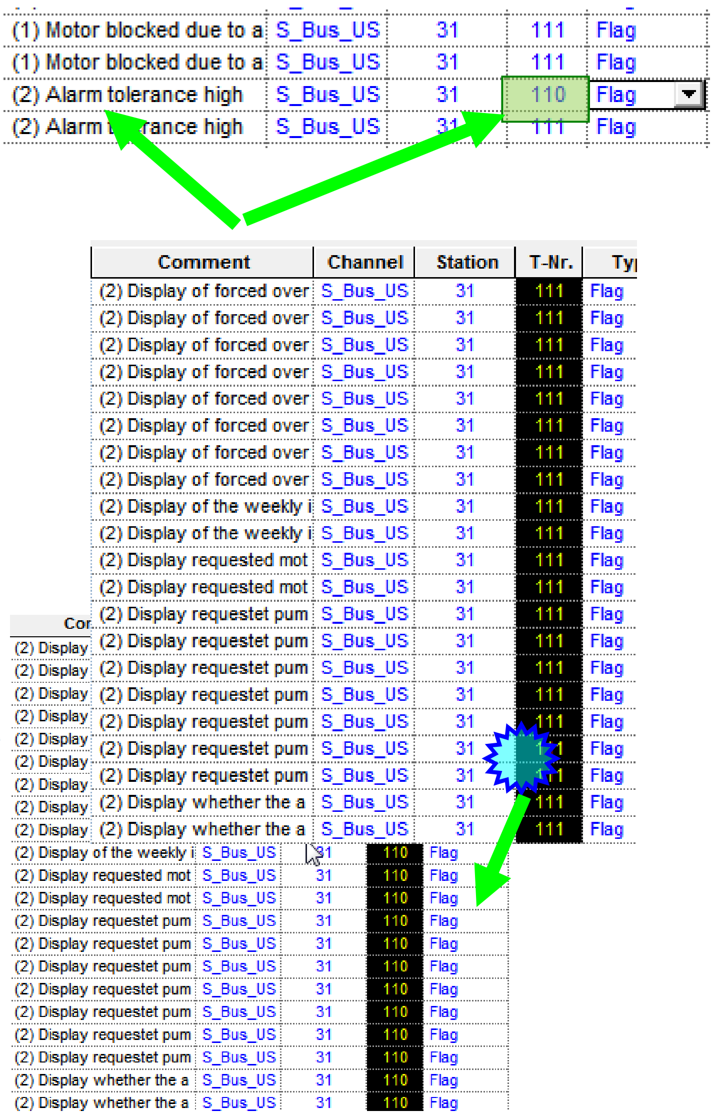
Select the telegrams which belongs to the priority (2)

Right mouse click to the selected are (black), and the telegrams should change to 110 for priority (2)

Priority (3) – telegram 109

Priority (4) - telegram 108

Priority (5) – telegram 107



(1) Motor blocked due to a	S_Bus_US	31	111	Flag
(1) Motor blocked due to a	S_Bus_US	31	111	Flag
(2) Alarm tolerance high	S_Bus_US	31	110	Flag
(2) Alarm tolerance high	S_Bus_US	31	111	Flag

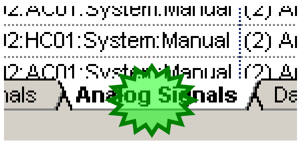
Comment	Channel	Station	T-Nr.	Ty
(2) Display of forced over	S_Bus_US	31	111	Flag
(2) Display of forced over	S_Bus_US	31	111	Flag
(2) Display of forced over	S_Bus_US	31	111	Flag
(2) Display of forced over	S_Bus_US	31	111	Flag
(2) Display of forced over	S_Bus_US	31	111	Flag
(2) Display of forced over	S_Bus_US	31	111	Flag
(2) Display of forced over	S_Bus_US	31	111	Flag
(2) Display of forced over	S_Bus_US	31	111	Flag
(2) Display of the weekly i	S_Bus_US	31	111	Flag
(2) Display of the weekly i	S_Bus_US	31	111	Flag
(2) Display requested mot	S_Bus_US	31	111	Flag
(2) Display requested mot	S_Bus_US	31	111	Flag
(2) Display requestet pum	S_Bus_US	31	111	Flag
(2) Display requestet pum	S_Bus_US	31	111	Flag
(2) Display requestet pum	S_Bus_US	31	111	Flag
(2) Display requestet pum	S_Bus_US	31	111	Flag
(2) Display requestet pum	S_Bus_US	31	111	Flag
(2) Display requestet pum	S_Bus_US	31	1	Flag
(2) Display requestet pum	S_Bus_US	31	1	Flag
(2) Display whether the a	S_Bus_US	31	111	Flag
(2) Display whether the a	S_Bus_US	31	111	Flag

Cor				
(2) Display				
(2) Display				
(2) Display				
(2) Display				
(2) Display				
(2) Display				
(2) Display				
(2) Display				
(2) Display of the weekly i	S_Bus_US	31	110	Flag
(2) Display requested mot	S_Bus_US	31	110	Flag
(2) Display requested mot	S_Bus_US	31	110	Flag
(2) Display requestet pum	S_Bus_US	31	110	Flag
(2) Display requestet pum	S_Bus_US	31	110	Flag
(2) Display requestet pum	S_Bus_US	31	110	Flag
(2) Display requestet pum	S_Bus_US	31	110	Flag
(2) Display requestet pum	S_Bus_US	31	110	Flag
(2) Display requestet pum	S_Bus_US	31	110	Flag
(2) Display requestet pum	S_Bus_US	31	110	Flag
(2) Display whether the a	S_Bus_US	31	110	Flag
(2) Display whether the a	S_Bus_US	31	110	Flag

DDC Suite 2.5 / PG5 Building Advanced

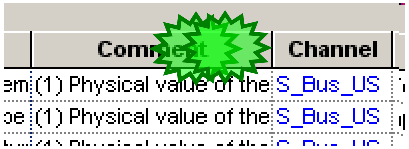
DDC Suite and Visi.Plus

We have to repeat the same procedure at tab Analog Signals. Herein all registers are listed. Activate tab.



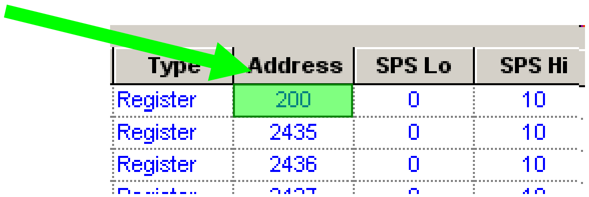
l2:AC01:System:Manual (2) Ai
l2:HC01:System:Manual (2) Ai
l2:AC01:System:Manual (2) Ai

Double click at column header Comment to sort by communication priority



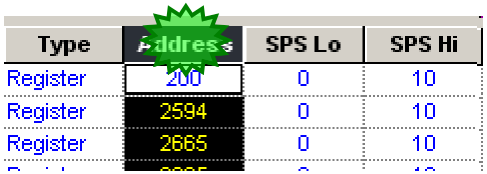
Comment	Channel
(1) Physical value of the	S_Bus_US
(1) Physical value of the	S_Bus_US

Now let’s define the real address. Scroll up to first line and type in 200 in Column Address / Row 1



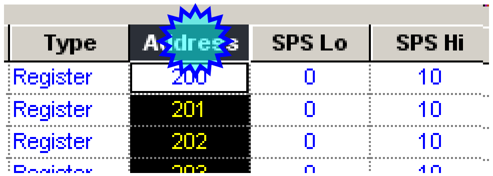
Type	Address	SPS Lo	SPS Hi
Register	200	0	10
Register	2435	0	10
Register	2436	0	10

Click on column header Address – the whole column is getting selected.



Type	Address	SPS Lo	SPS Hi
Register	200	0	10
Register	2594	0	10
Register	2665	0	10

Click with right mouse button on column header Address – all registers getting ascending numbered.



Type	Address	SPS Lo	SPS Hi
Register	200	0	10
Register	201	0	10
Register	202	0	10

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

The next step is to give telegram numbers for the addresses.

The telegram numbers should be vary according to the priority defined in the comment filed.

There is a restriction. In one telegram there can be 4000 addresses (more or less in consecutive order). If the addresses are out of this border the sDriver will give you warning message.

Search for the priority (2) → setup the telegram number to 115

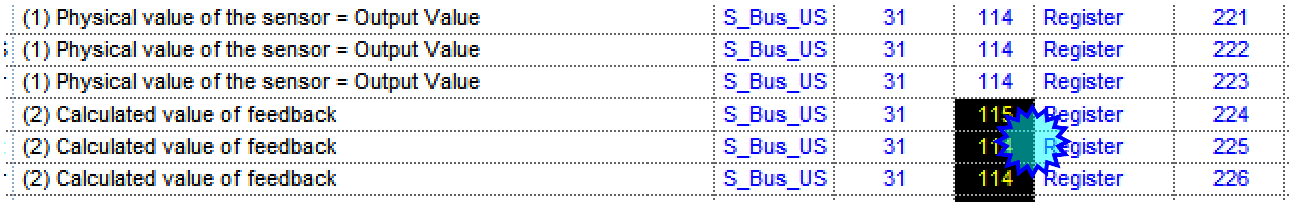
Select the telegrams which belongs to the priority (2)

Right mouse click to the selected are (black), and the telegrams should change to 110 for priority (2)

Priority (3) – telegram 116; Priority (4) - telegram 117; Priority (5) – telegram 118

It is forbidden to give the same telegram to two different type of media (flags←→register) !!! Visi.Plus can not handle this.

The telegrams defined here in the PET are just logical groups sending request to sDriver to communicate.



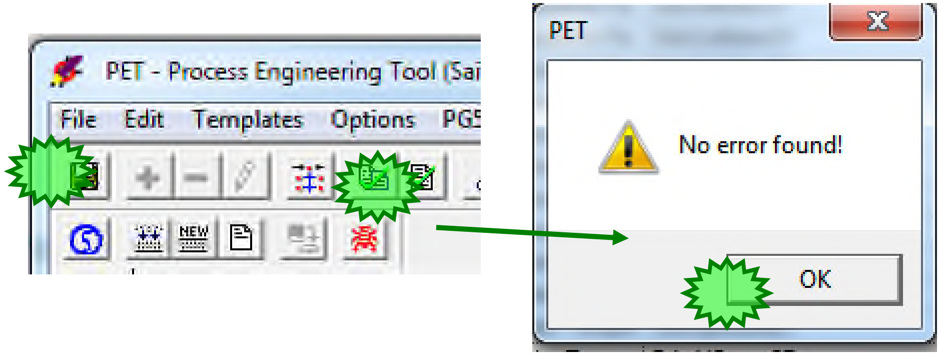
(1) Physical value of the sensor = Output Value	S_Bus_US	31	114	Register	221
(1) Physical value of the sensor = Output Value	S_Bus_US	31	114	Register	222
(1) Physical value of the sensor = Output Value	S_Bus_US	31	114	Register	223
(2) Calculated value of feedback	S_Bus_US	31	115	Register	224
(2) Calculated value of feedback	S_Bus_US	31	11[illegible]	Register	225
(2) Calculated value of feedback	S_Bus_US	31	114	Register	226

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Do a telegram check to be sure there is no problem in the PET.

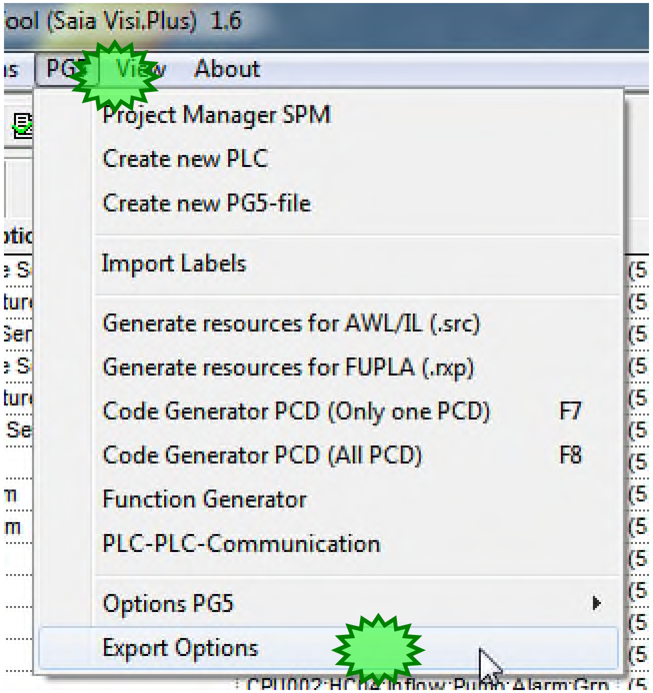
Finally save your work by a click to disk symbol.



No error found!

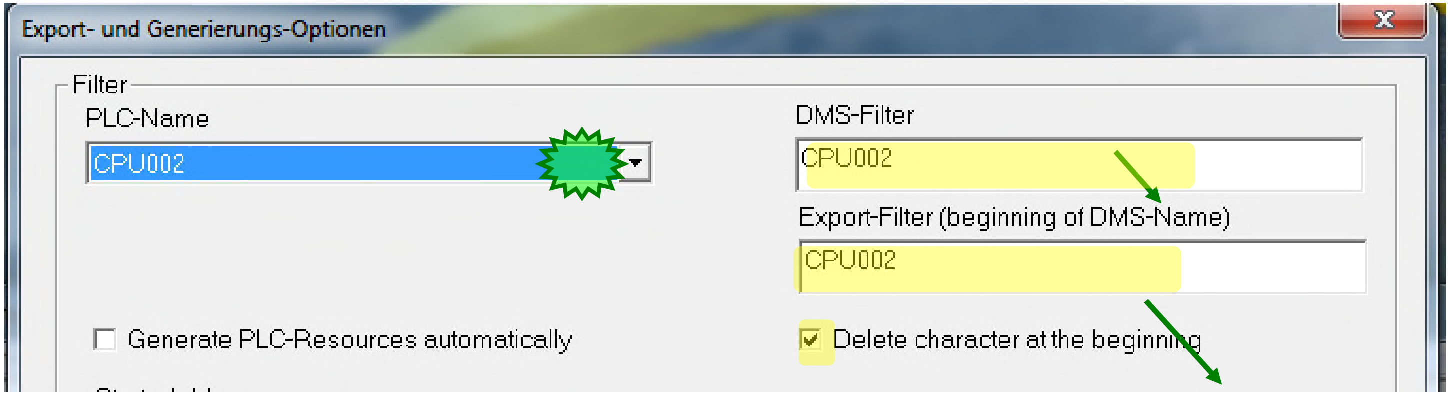
Now we must get the new address definitions back into PG5 Symbol Editor.

Select from menu SAIA-PG5 entry Export Options.


ool (Saia Visi.Plus) 1.6
PG5
View
About
Project Manager SPM
Create new PLC
Create new PG5-file
Import Labels
Generate resources for AWL/IL (.src)
Generate resources for FUPLA (.rxp)
Code Generator PCD (Only one PCD) F7
Code Generator PCD (All PCD) F8
Function Generator
PLC-PLC-Communication
Options PG5
Export Options
CPU002:HC04:Inflow:Pump:Alarm:Grp

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus



Export- und Generierungs-Optionen

Filter

PLC-Name: CPU002

DMS-Filter: CPU002

Export-Filter (beginning of DMS-Name): CPU002

□ Generate PLC-Resources automatically

☑ Delete character at the beginning

Within this big dialog we're only interested in settings Filter. We set the filter already to CPU002 – so it should be already activated.

If not, select from drop down list entry CPU002. The text fields DMS-Filter and Export-Filter (beginning of DMS-Name) should be set automatically to CPU002 – and also the checkbox Delete character at the beginning should be activated.

Check this and click on button OK.

Now we are sure that only data points from this CPU will be exported – otherwise e.g. you'll have no or too much information in export file – and this leads into data chaos in Symbol Editor ….

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

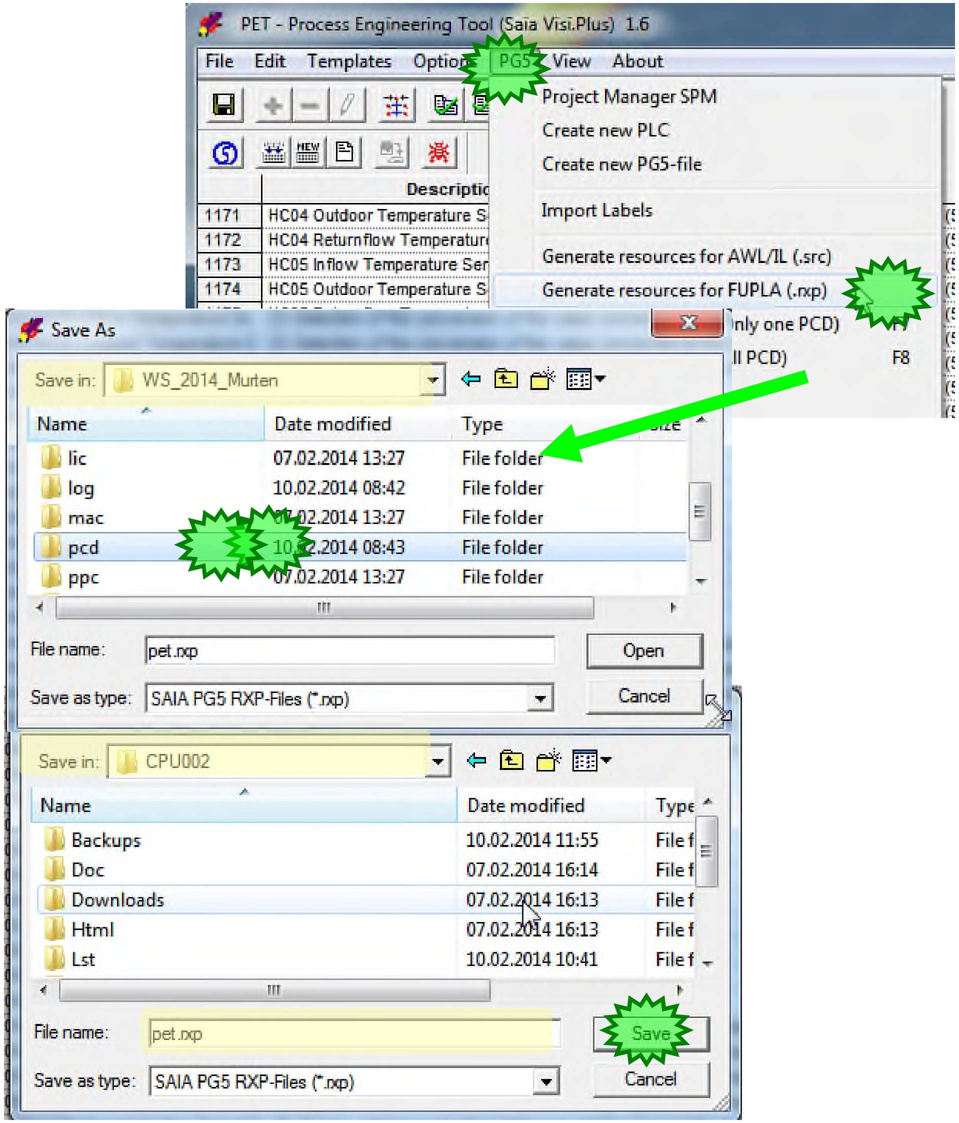
Select from menu SAIA-PG5 entry Generate resources for FUPLA (.rxp)

By default you should be located in project base folder.

Open folder pcd

Open folder CPU002 and click on button Save.

An export file pet.rxp will be created in the right place at the CPU002 where it belongs to.



	Description
1171	HC04 Outdoor Temperature S
1172	HC04 Returnflow Temperature
1173	HC05 Inflow Temperature Ser
1174	HC05 Outdoor Temperature S

Save in: WS_2014_Murten

Name	Date modified	Type
lic	07.02.2014 13:27	File folder
log	10.02.2014 08:42	File folder
mac	07.02.2014 13:27	File folder
pcd	10.02.2014 08:43	File folder
ppc	07.02.2014 13:27	File folder

File name: pet.rxp

Save as type: SAIA PG5 RXP-Files (*.rxp)

Save in: CPU002

Name	Date modified	Type
Backups	10.02.2014 11:55	File f
Doc	07.02.2014 16:14	File f
Downloads	07.02.2014 16:13	File f
Html	07.02.2014 16:13	File f
Lst	10.02.2014 10:41	File f

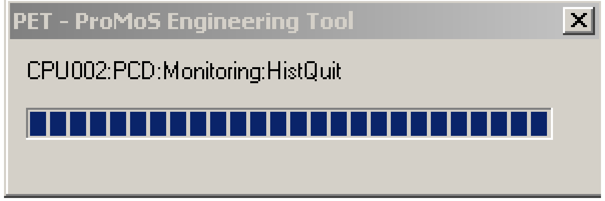
File name: pet.rxp

Save as type: SAIA PG5 RXP-Files (*.rxp)

DDC Suite 2.5 / PG5 Building Advanced

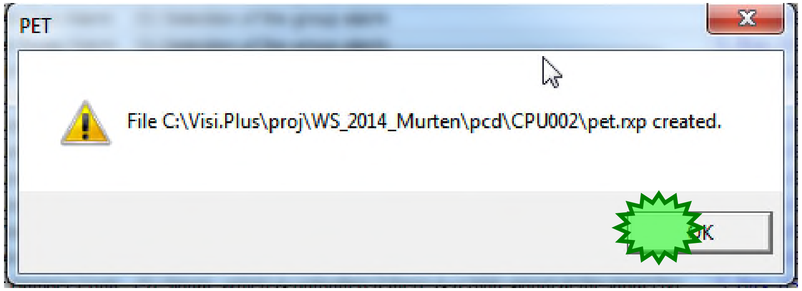
DDC Suite and Visi.Plus

You may see a progress dialog during exporting data into file



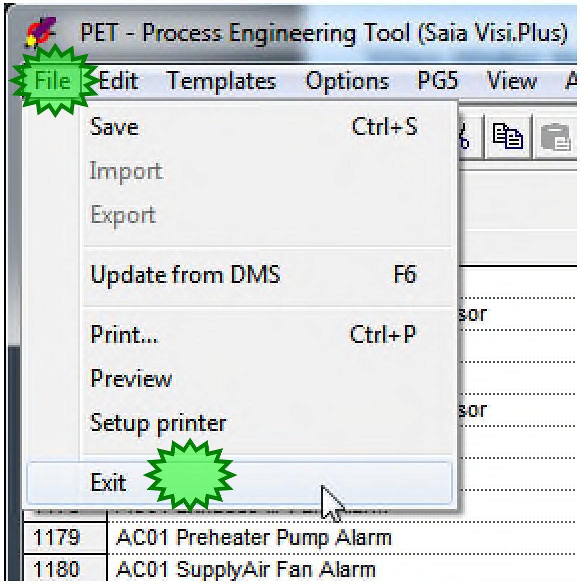
CPU002:PCD:Monitoring:HistQuit

And finally the information that the file has been created. Close dialog with OK button.



File C:\Visi.Plus\proj\WS_2014_Murten\pcd\CPU002\pet.rxp created.

That’s all what we have to do within PET. Close PET.



1179 AC01 Preheater Pump Alarm

1180 AC01 SupplyAir Fan Alarm

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

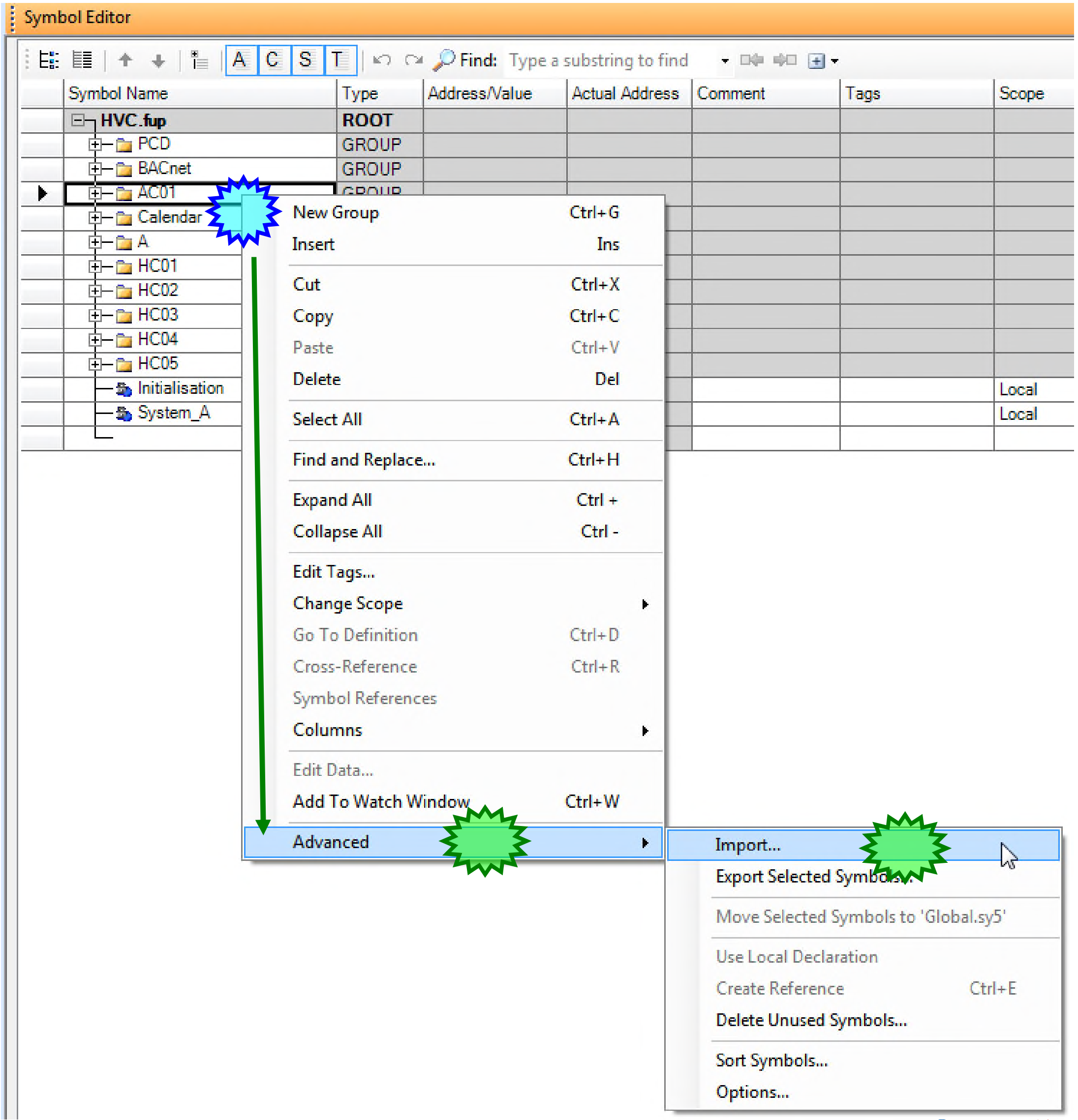
At least we have to import the resource (pet.rxp) file into PG5 Symbol Editor.

Switch to Fupla / Symbol Editor.

(The procedure is valid for PG5 V 2.1.300 but quite similar to other PG5 versions.

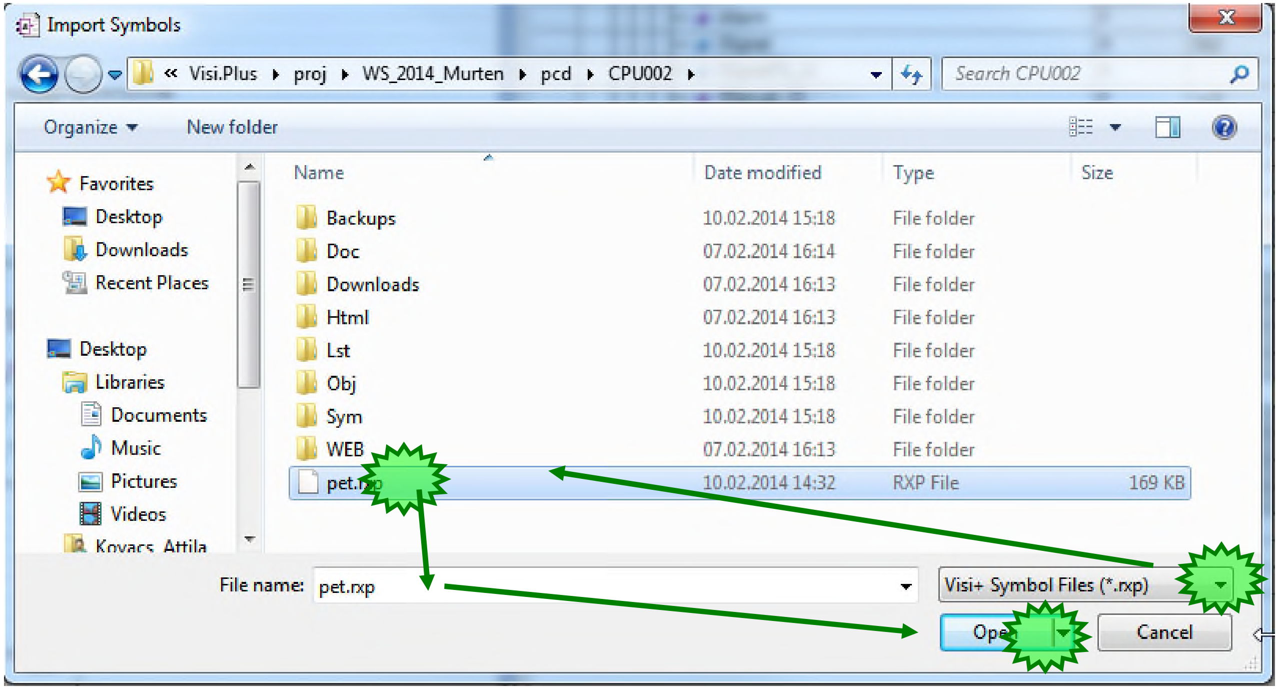
Take care sometimes the original comments of FUPLA is overwritten.)

Click with right mouse button into symbol editor, select Advanced and in sub menu entry Import Symbols…



DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus



Import Symbols

« Visi.Plus ▸ proj ▸ WS_2014_Murten ▸ pcd ▸ CPU002 ▸

Search CPU002

Organize ▾ New folder

Name	Date modified	Type	Size
Backups	10.02.2014 15:18	File folder	
Doc	07.02.2014 16:14	File folder	
Downloads	07.02.2014 16:13	File folder	
Html	07.02.2014 16:13	File folder	
Lst	10.02.2014 15:18	File folder	
Obj	10.02.2014 15:18	File folder	
Sym	10.02.2014 15:18	File folder	
WEB	07.02.2014 16:13	File folder	
pet.rxp	10.02.2014 14:32	RXP File	169 KB

File name: pet.rxp

Visi+ Symbol Files (*.rxp)

Navigate to the CPU002 folder within your project.

Within dialog Import Symbols select from drop down list Files of type entry VisiPlus Symbol Files (*.rxp)

Select file pet.rxp and start import by clicking on button Import.

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

In the next popup window it is possible to select which task the importer should do. Select Update existing symbols and only Address/Value

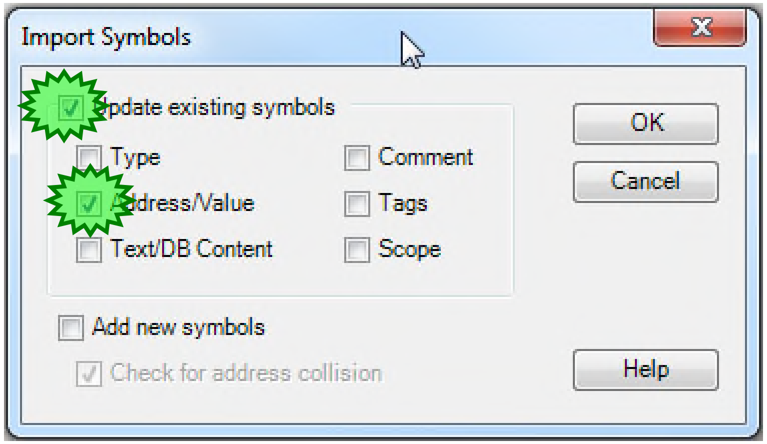
Fupla detects during import that there is already a symbol existing in symbol table with name XYZ and the same symbol exists in the file to be imported.

For sure – because we imported this information from Fupla into PET and now back – but we have given to the data points an address.

Therefore activate checkbox Do this for the next conflicts

Otherwise you have to repeat this dialog hundreds or thousand times …

And click on to the Replace button



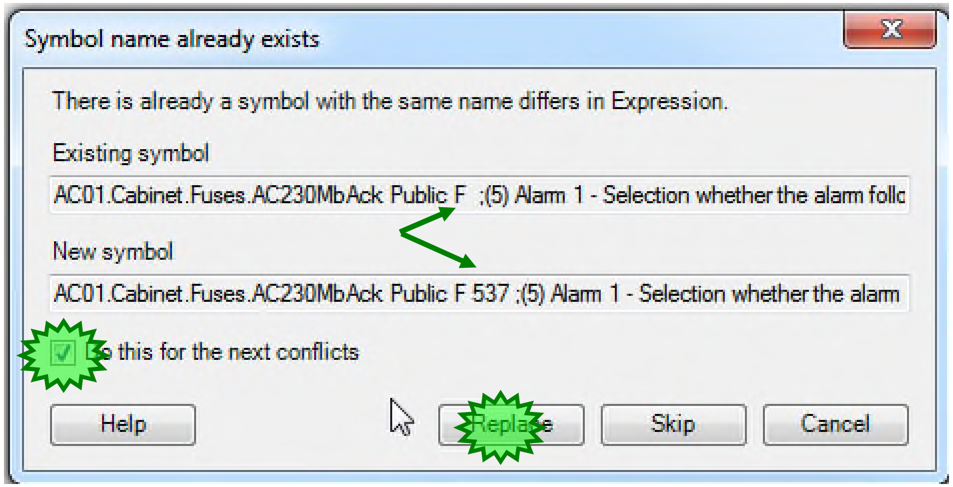
Import Symbols

☑ Update existing symbols

□ Type
☑ Address/Value
□ Text/DB Content
□ Comment
□ Tags
□ Scope

□ Add new symbols

☑ Check for address collision



Symbol name already exists

There is already a symbol with the same name differs in Expression.

Existing symbol

AC01.Cabinet.Fuses.AC230MbAck Public F ;(5) Alarm 1 - Selection whether the alarm follo

New symbol

AC01.Cabinet.Fuses.AC230MbAck Public F 537 ;(5) Alarm 1 - Selection whether the alarm

☑ Do this for the next conflicts

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

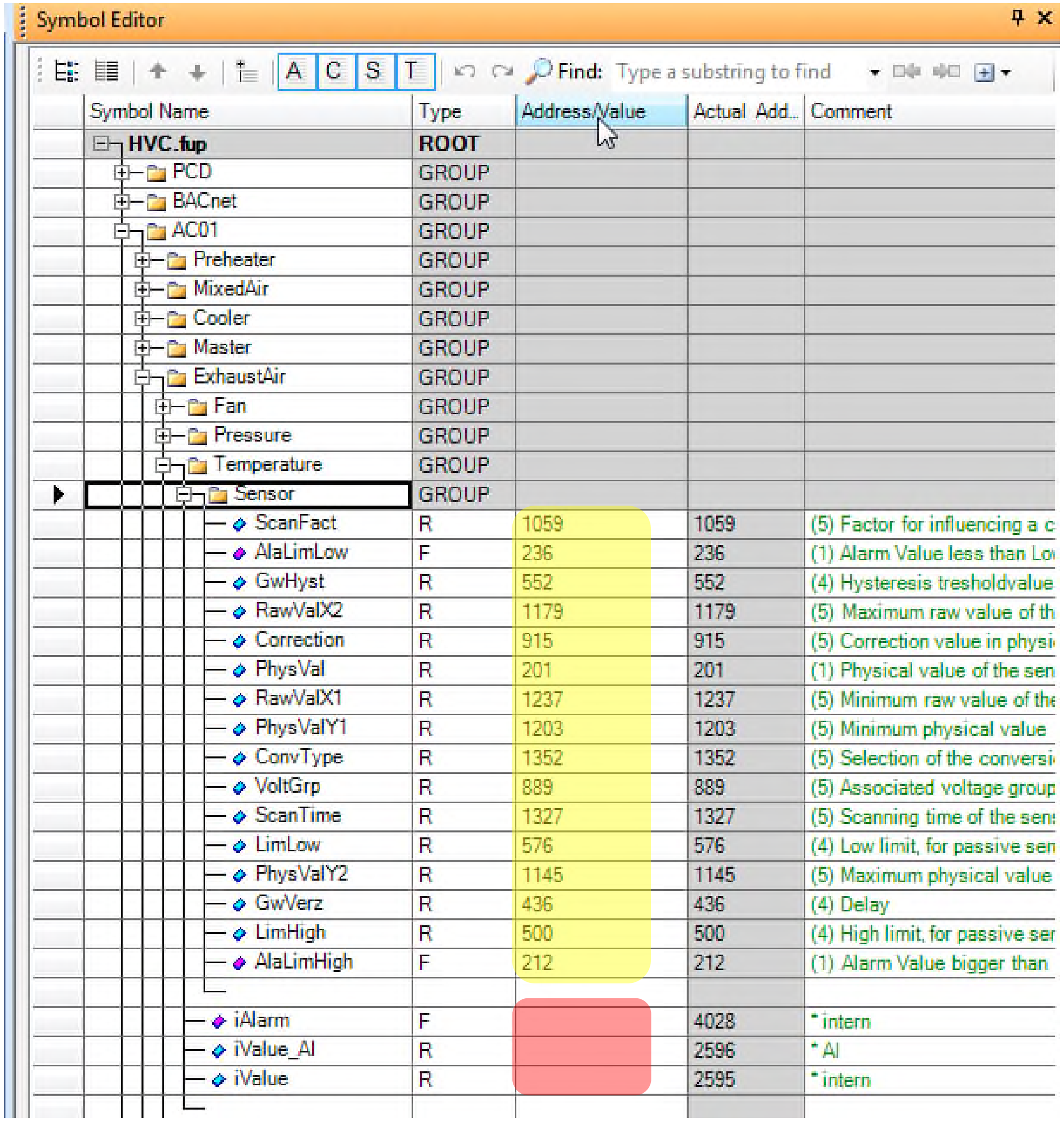
The import may take some seconds but finally you should see all groups with FBox data addressed:

You’ll see also some groups with symbols without address – they are only internal symbols used in connectors.

At least all symbols in almost all groups should be addressed.

Save, build program and download into PCD and go online with Fupla.

This symbol import procedure can be dangerous to your project, it makes sense to create a backup before – when you are working on a real project.



Symbol Name	Type	Address/Value	Actual Add...	Comment
HVC.fup	ROOT			
PCD	GROUP			
BACnet	GROUP			
AC01	GROUP			
Preheater	GROUP			
MixedAir	GROUP			
Cooler	GROUP			
Master	GROUP			
ExhaustAir	GROUP			
Fan	GROUP			
Pressure	GROUP			
Temperature	GROUP			
Sensor	GROUP			
ScanFact	R	1059	1059	(5) Factor for influencing a c
AlaLimLow	F	236	236	(1) Alarm Value less than Lo
GwHyst	R	552	552	(4) Hysteresis tresholdvalue
RawValX2	R	1179	1179	(5) Maximum raw value of th
Correction	R	915	915	(5) Correction value in physi
PhysVal	R	201	201	(1) Physical value of the sen
RawValX1	R	1237	1237	(5) Minimum raw value of the
PhysValY1	R	1203	1203	(5) Minimum physical value
ConvType	R	1352	1352	(5) Selection of the conversi
VoltGrp	R	889	889	(5) Associated voltage group
ScanTime	R	1327	1327	(5) Scanning time of the sen
LimLow	R	576	576	(4) Low limit, for passive sen
PhysValY2	R	1145	1145	(5) Maximum physical value
GwVerz	R	436	436	(4) Delay
LimHigh	R	500	500	(4) High limit, for passive ser
AlaLimHigh	F	212	212	(1) Alarm Value bigger than
iAlarm	F		4028	* intern
iValue_AI	R		2596	* AI
iValue	R		2595	* intern

Go online – with sDriver

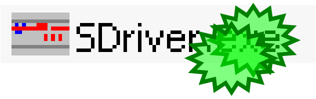
SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Until now we just imported FBoxes into Visi.Plus (via PET) – addressing data points and exporting back into Fupla.

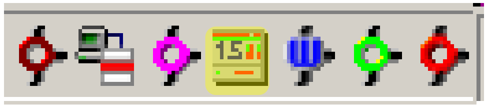
We created the Data Base in the DMS which is the core of the visualisation system.



Next step is to start the communication with the PCD and getting live data from it.

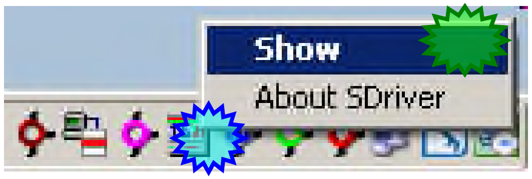
Let us start the Visi.Plus communications driver.

Start sDriver.exe from folder C:\Visi.Plus\bin



sDriver behaves like a service and available in task bar notification area.

Now we have to define the physical communication layer. Therefore we have to access the sDriver window. Click with right mouse button on the sDriver symbol in task bar and select Show.



Only Visi.Plus administrator can open it and modify its settings. The DDC Suite template is starting with Administartor user by default.

If you need to login → user: Admin password: admin

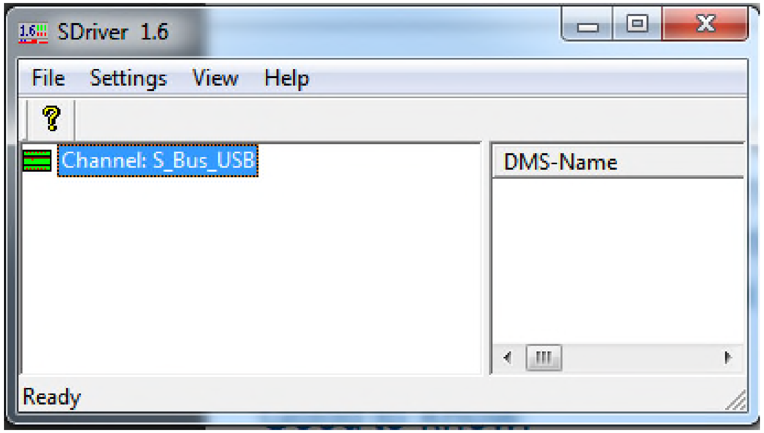
This is valid for a restored DDC Suite template project !

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

The sDriver lists up on left side of its window all the Channels defined within PET. Of course – we got this information during import from PG5 but sDriver handles this only as name. It means that the channel name can be modifiable.

Best practice is to define a channel-name which reflects to the PCD, and each PCD should get his own channel.



Channel: S_Bus_USB

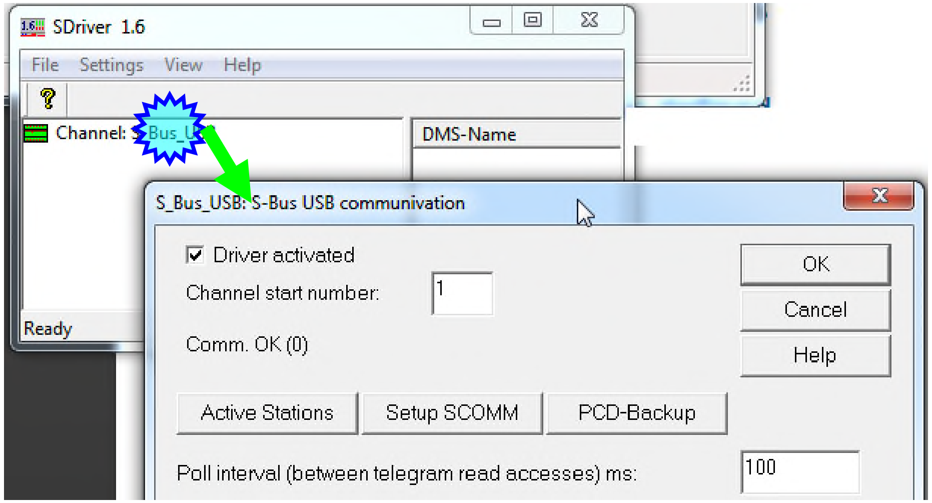
Ready

The real physical layer must be defined now.

Good to know:

- ⬜ Communication disabled
- 🟨 trying to initiate communication
- 🟩 communication established
- 🟥 communication failed

Click with right mouse button on the channel → dialog for detailed communication settings will be popped up.



S_Bus_USB: S-Bus USB communivation

☑ Driver activated

Channel start number: 1

Comm. OK (0)

Poll interval (between telegram read accesses) ms: 100

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

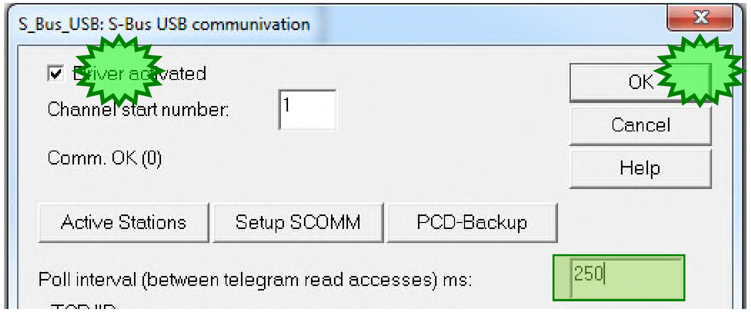
Click at button Setup SCOMM to define the physical communication layer (USB).

Select in drop down list Channel / Name entry S-Bus USB

Deactivate PGU mode

And set S-Bus Station to 52 (to your controller S-Bus add.)

Finish by clicking on button OK.



S_Bus_USB: S-Bus USB communivation

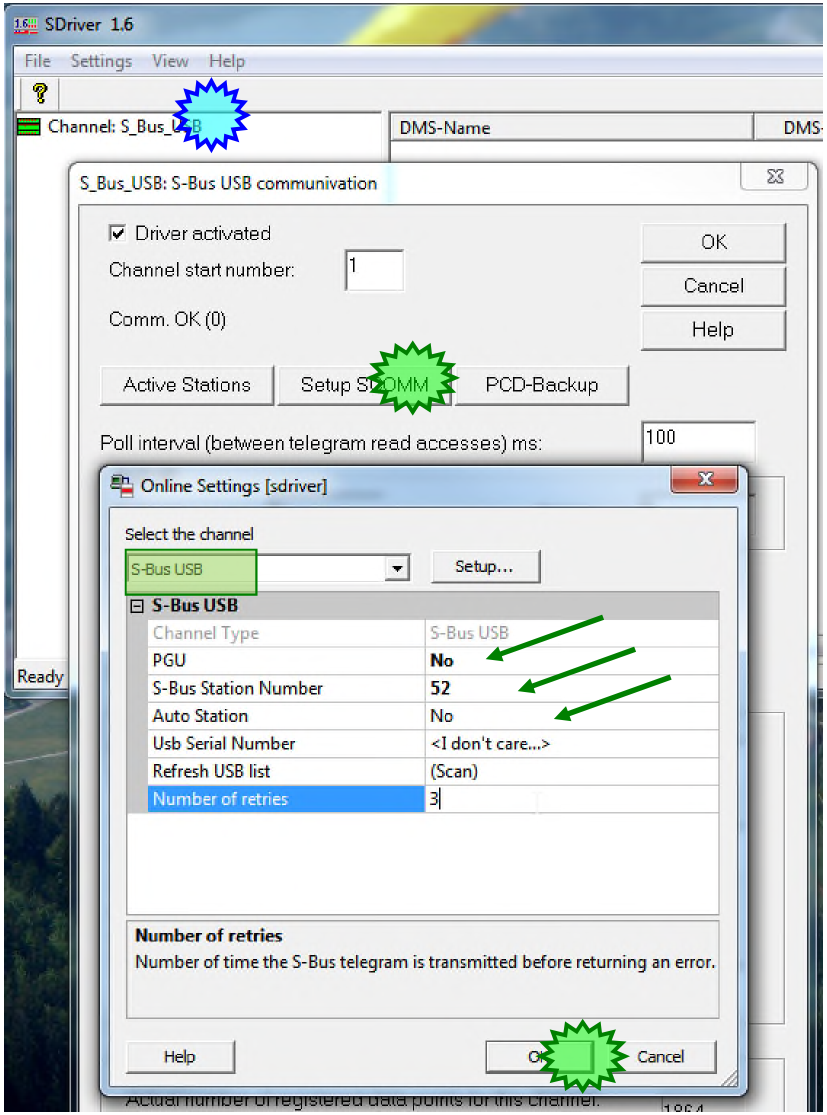
☑ Driver activated

Channel start number: 1

Comm. OK (0)

Poll interval (between telegram read accesses) ms: 250

At last, activate checkbox Driver activated, set parameter Poll interval (between telegram read accessess) ms: 250 and finish by clicking on button OK.



SDriver 1.6

Channel: S_Bus_USB

S_Bus_USB: S-Bus USB communivation

☑ Driver activated

Channel start number: 1

Comm. OK (0)

Poll interval (between telegram read accesses) ms: 100

Online Settings [sdriver]

Select the channel: S-Bus USB

⊟ S-Bus USB	
Channel Type	S-Bus USB
PGU	No
S-Bus Station Number	52
Auto Station	No
Usb Serial Number	<I don't care...>
Refresh USB list	(Scan)
Number of retries	3

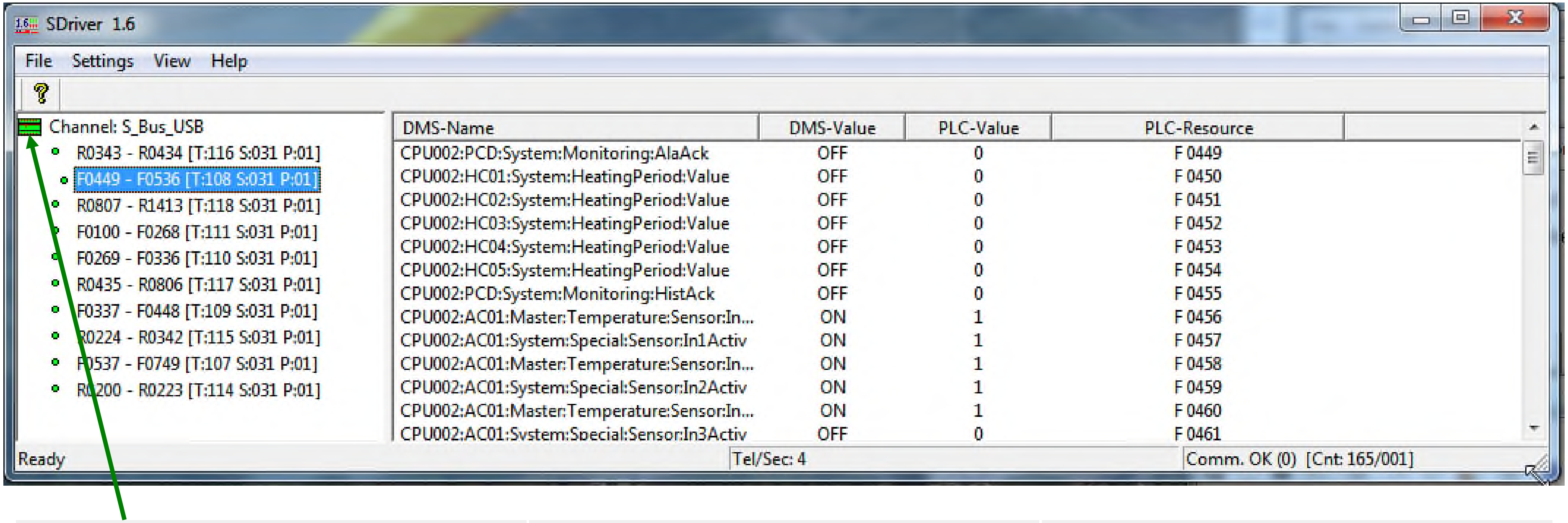
Number of retries
Number of time the S-Bus telegram is transmitted before returning an error.

Actual number of registered data points for this channel: 1864

Ready

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus



Channel: S_Bus_USB
- R0343 - R0434 [T:116 S:031 P:01]
- F0449 - F0536 [T:108 S:031 P:01]
- R0807 - R1413 [T:118 S:031 P:01]
- F0100 - F0268 [T:111 S:031 P:01]
- F0269 - F0336 [T:110 S:031 P:01]
- R0435 - R0806 [T:117 S:031 P:01]
- F0337 - F0448 [T:109 S:031 P:01]
- R0224 - R0342 [T:115 S:031 P:01]
- F0537 - F0749 [T:107 S:031 P:01]
- R0200 - R0223 [T:114 S:031 P:01]

DMS-Name	DMS-Value	PLC-Value	PLC-Resource
CPU002:PCD:System:Monitoring:AlaAck	OFF	0	F 0449
CPU002:HC01:System:HeatingPeriod:Value	OFF	0	F 0450
CPU002:HC02:System:HeatingPeriod:Value	OFF	0	F 0451
CPU002:HC03:System:HeatingPeriod:Value	OFF	0	F 0452
CPU002:HC04:System:HeatingPeriod:Value	OFF	0	F 0453
CPU002:HC05:System:HeatingPeriod:Value	OFF	0	F 0454
CPU002:PCD:System:Monitoring:HistAck	OFF	0	F 0455
CPU002:AC01:Master:Temperature:Sensor:In...	ON	1	F 0456
CPU002:AC01:System:Special:Sensor:In1Activ	ON	1	F 0457
CPU002:AC01:Master:Temperature:Sensor:In...	ON	1	F 0458
CPU002:AC01:System:Special:Sensor:In2Activ	ON	1	F 0459
CPU002:AC01:Master:Temperature:Sensor:In...	ON	1	F 0460
CPU002:AC01:System:Special:Sensor:In3Activ	OFF	0	F 0461

Ready | Tel/Sec: 4 | Comm. OK (0) [Cnt: 165/001]

After a view seconds you should see a green PCD2 symbol in channel list – you are connected to the PCD

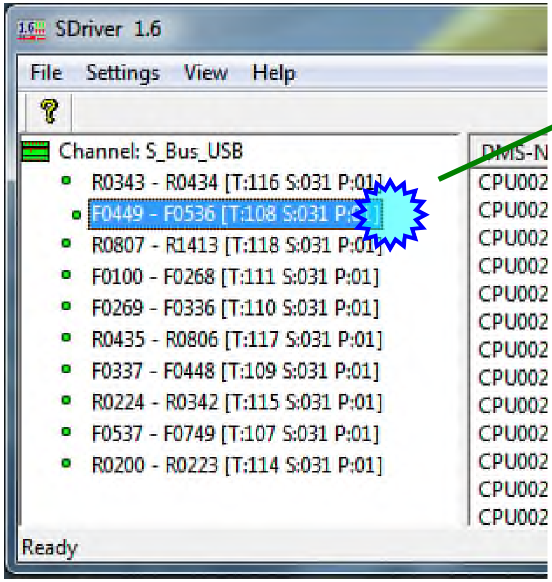
It is possible to see how many telegrams per second are sent to the controller.

It is possible to see how the communication is working in general (summary of channels). Cnt: 165/001 → 165 good telegrams / 1 bad telegram.

The main goal is to have stable communication! The good telegram numbers can increase up to 999 and starts counting from 0 again cyclically. The bad telegrams can increase until any number (max 999) when there is no communication. However when the communication is working the bad telegrams must not be increased anymore. If it is still increasing it indicates communication problem. Which must be investigated before going forward with engineering !!!

DDC Suite 2.5 / PG5 Building Advanced

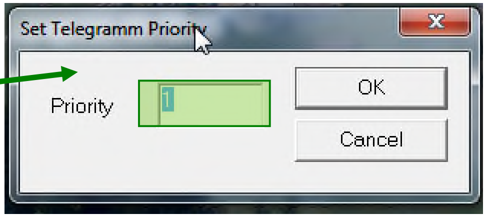
DDC Suite and Visi.Plus



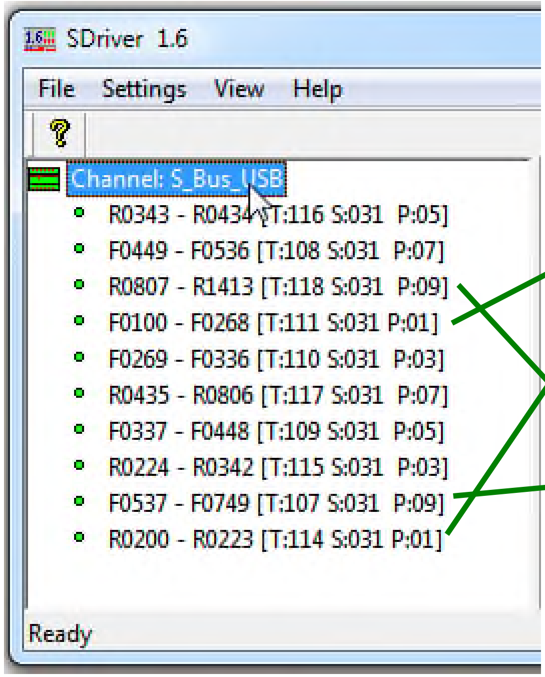
Channel: S_Bus_USB
- R0343 - R0434 [T:116 S:031 P:01]
- F0449 - F0536 [T:108 S:031 P:
- R0807 - R1413 [T:118 S:031 P:01]
- F0100 - F0268 [T:111 S:031 P:01]
- F0269 - F0336 [T:110 S:031 P:01]
- R0435 - R0806 [T:117 S:031 P:01]
- F0337 - F0448 [T:109 S:031 P:01]
- R0224 - R0342 [T:115 S:031 P:01]
- F0537 - F0749 [T:107 S:031 P:01]
- R0200 - R0223 [T:114 S:031 P:01]

CPU002
CPU002
CPU002
CPU002
CPU002
CPU002
CPU002
CPU002
CPU002
CPU002
CPU002
CPU002
CPU002

after press Enter and change priority



Priority: 1



Channel: S_Bus_USB
- R0343 - R0434 [T:116 S:031 P:05]
- F0449 - F0536 [T:108 S:031 P:07]
- R0807 - R1413 [T:118 S:031 P:09]
- F0100 - F0268 [T:111 S:031 P:01]
- F0269 - F0336 [T:110 S:031 P:03]
- R0435 - R0806 [T:117 S:031 P:07]
- F0337 - F0448 [T:109 S:031 P:05]
- R0224 - R0342 [T:115 S:031 P:03]
- F0537 - F0749 [T:107 S:031 P:09]
- R0200 - R0223 [T:114 S:031 P:01]

Communicated in every cycle

Communicated in every 9th cycle

Optionally you can setup communication speed of the telegrams. This can be done because we defined different telegrams in the PET for data which are important more than others.

Select the telegram, press the Enter and setup the priority.

Priority “0” means only at start-up of sDriver communicated.

Priority “1” means every cycle it is communicated

Priority “99” means every 99th cycle it is communicated. → close sDriver window when you are ready

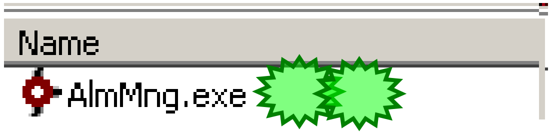
Alarm management

SAIA BURGESS CONTROLS

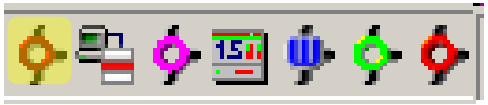
DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Let's check if we have some active alarms.

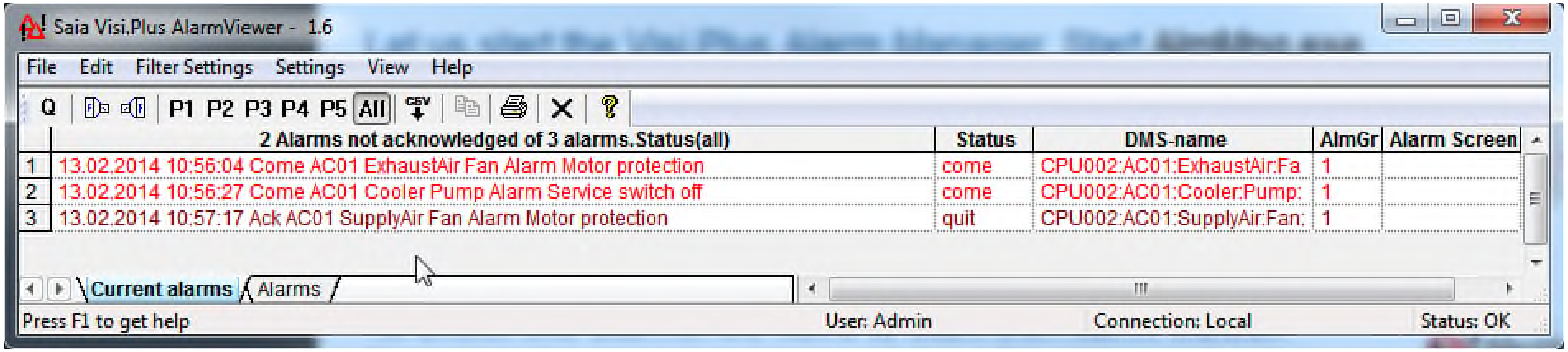


Let us start the Visi.Plus Alarm Manager. Start AlmMng.exe from folder C:\Visi.Plus\bin. AlmMng is like a service and also available in task bar notification area.
Without started Alarm Manager there is no Alarming!



To check the alarms we have to start the Alarm Viewer. Start AlmView.exe from folder C:\Visi.Plus\bin

The alarm viewer is the frontend for end-user to view/acknowledge alarms and/or search in alarm history



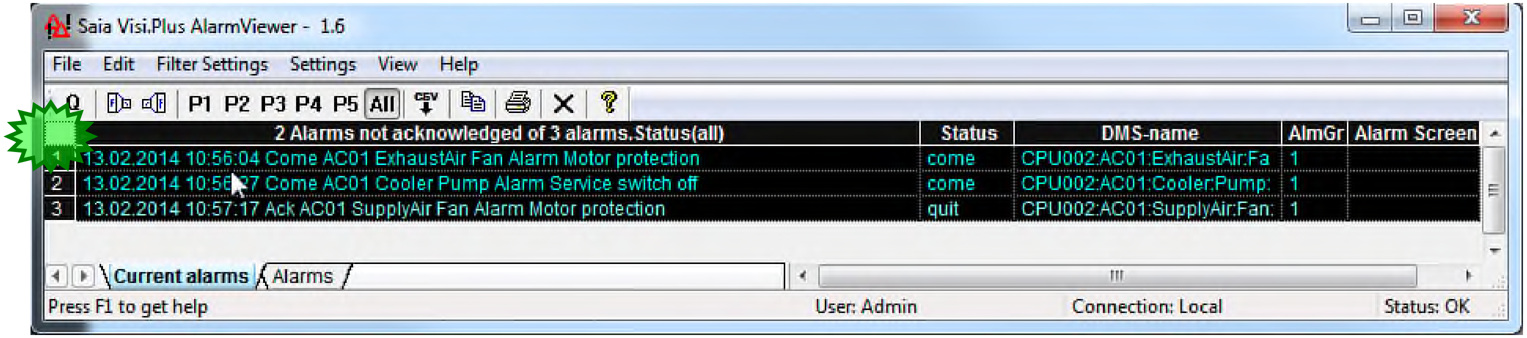
	2 Alarms not acknowledged of 3 alarms.Status(all)	Status	DMS-name	AlmGr	Alarm Screen
1	13.02.2014 10:56:04 Come AC01 ExhaustAir Fan Alarm Motor protection	come	CPU002:AC01:ExhaustAir:Fa	1	
2	13.02.2014 10:56:27 Come AC01 Cooler Pump Alarm Service switch off	come	CPU002:AC01:Cooler:Pump:	1	
3	13.02.2014 10:57:17 Ack AC01 SupplyAir Fan Alarm Motor protection	quit	CPU002:AC01:SupplyAir:Fan:	1	

Press F1 to get help User: Admin Connection: Local Status: OK

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

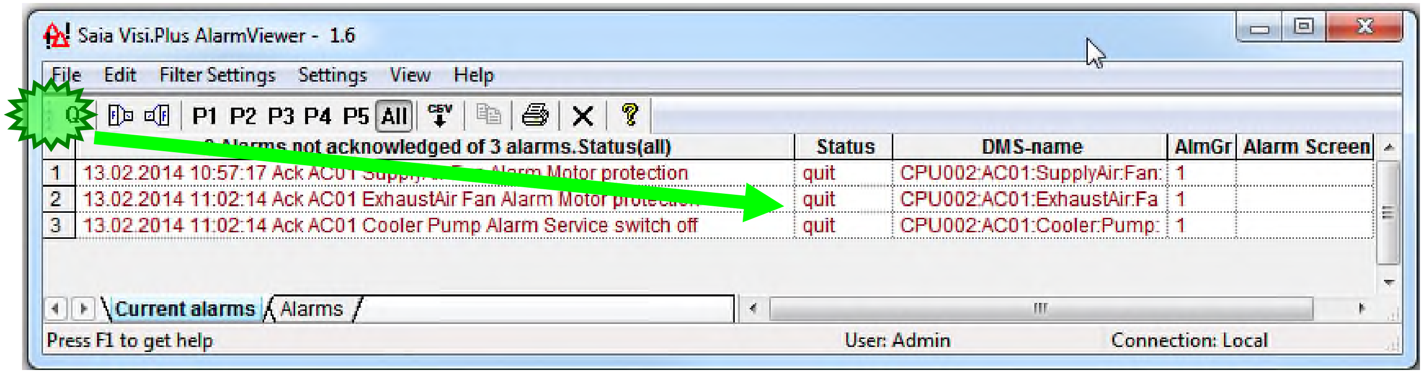
First click on column header and than on button Q to acknowledge all alarms.



	2 Alarms not acknowledged of 3 alarms.Status(all)	Status	DMS-name	AlmGr	Alarm Screen
1	13.02.2014 10:56:04 Come AC01 ExhaustAir Fan Alarm Motor protection	come	CPU002:AC01:ExhaustAir:Fa	1	
2	13.02.2014 10:56:27 Come AC01 Cooler Pump Alarm Service switch off	come	CPU002:AC01:Cooler:Pump:	1	
3	13.02.2014 10:57:17 Ack AC01 SupplyAir Fan Alarm Motor protection	quit	CPU002:AC01:SupplyAir:Fan:	1	

Press F1 to get help User: Admin Connection: Local Status: OK

All alarms should be acknowledged.



	[illegible] Alarms not acknowledged of 3 alarms.Status(all)	Status	DMS-name	AlmGr	Alarm Screen
1	13.02.2014 10:57:17 Ack AC01 SupplyAir Fan Alarm Motor protection	quit	CPU002:AC01:SupplyAir:Fan:	1	
2	13.02.2014 11:02:14 Ack AC01 ExhaustAir Fan Alarm Motor protection	quit	CPU002:AC01:ExhaustAir:Fa	1	
3	13.02.2014 11:02:14 Ack AC01 Cooler Pump Alarm Service switch off	quit	CPU002:AC01:Cooler:Pump:	1	

Press F1 to get help User: Admin Connection: Local

DDC Suite 2.5 / PG5 Building Advanced

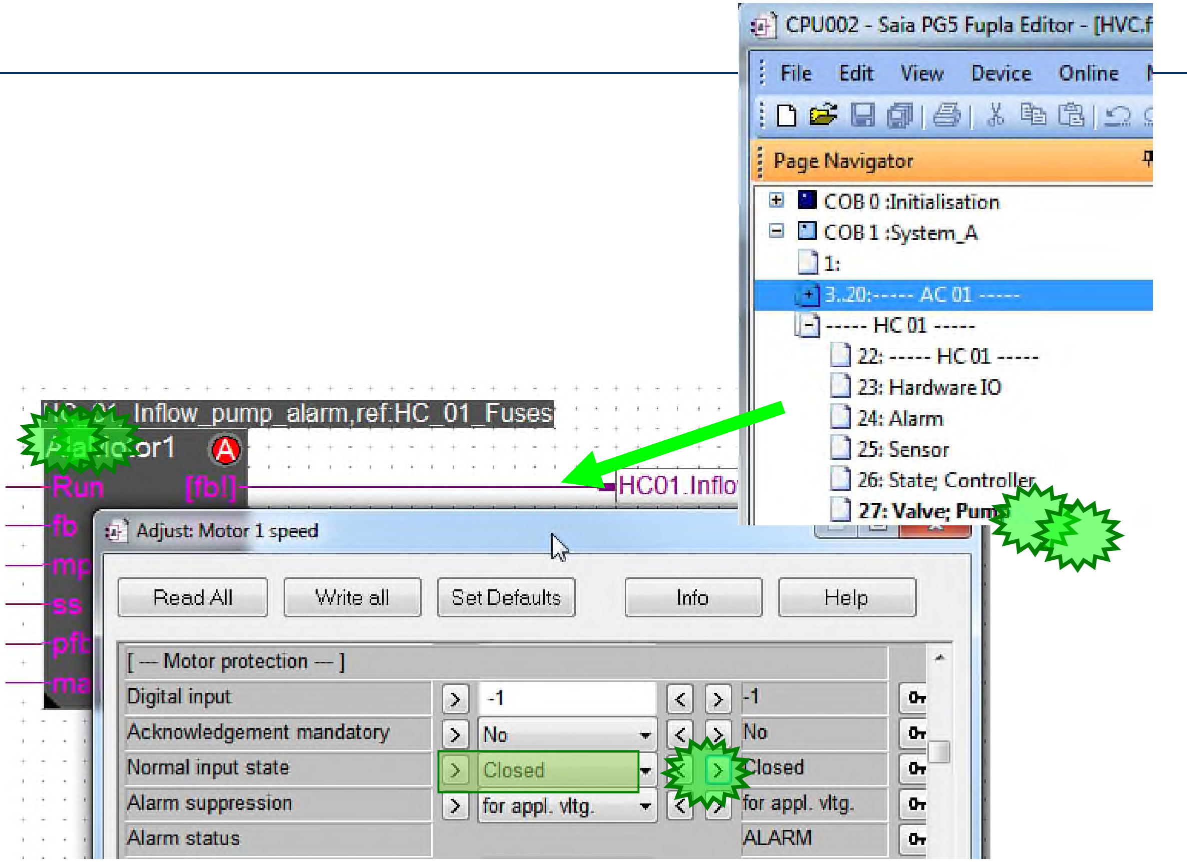
DDC Suite and Visi.Plus

Switch to Fupla and jump to page HC01; Valve / Pump.

Open adjust window from FBox AlaMotor1 and modify in group [--- Motor protection ---] parameter Normal input state from opened to Closed and write into PCD.

You will see immediately a new entry in the alarm viewer.

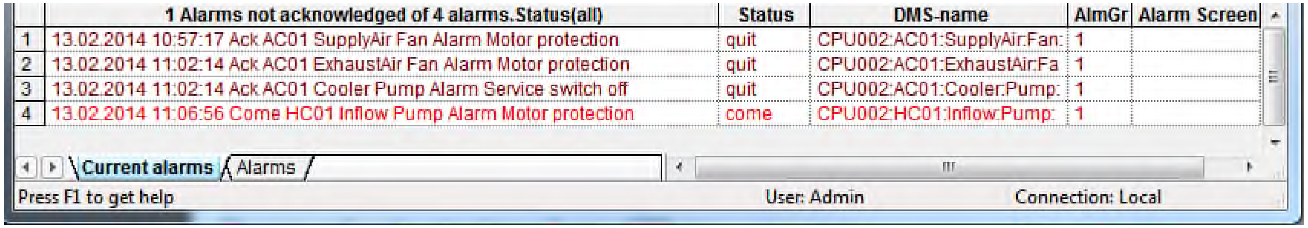
Change back the normal state and the alarm will leave and it is shown in blue.



- COB 0 :Initialisation
- COB 1 :System_A
  - 1:
  - 3..20:----- AC 01 -----
  - ----- HC 01 -----
    - 22: ----- HC 01 -----
    - 23: Hardware IO
    - 24: Alarm
    - 25: Sensor
    - 26: State; Controller
    - 27: Valve; Pump

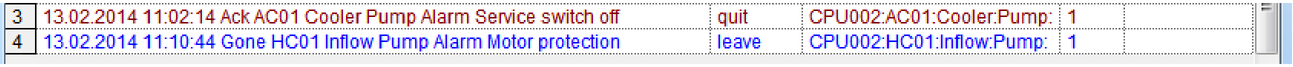
Adjust: Motor 1 speed

[--- Motor protection ---]		
Digital input	-1	-1
Acknowledgement mandatory	No	No
Normal input state	Closed	Closed
Alarm suppression	for appl. vltg.	for appl. vltg.
Alarm status		ALARM



	1 Alarms not acknowledged of 4 alarms.Status(all)	Status	DMS-name	AlmGr	Alarm Screen
1	13.02.2014 10:57:17 Ack AC01 SupplyAir Fan Alarm Motor protection	quit	CPU002:AC01:SupplyAir:Fan:	1	
2	13.02.2014 11:02:14 Ack AC01 ExhaustAir Fan Alarm Motor protection	quit	CPU002:AC01:ExhaustAir:Fa	1	
3	13.02.2014 11:02:14 Ack AC01 Cooler Pump Alarm Service switch off	quit	CPU002:AC01:Cooler:Pump:	1	
4	13.02.2014 11:06:56 Come HC01 Inflow Pump Alarm Motor protection	come	CPU002:HC01:Inflow:Pump:	1	

Press F1 to get help User: Admin Connection: Local



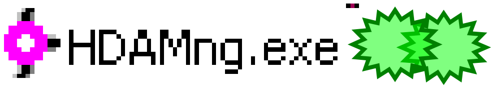
3	13.02.2014 11:02:14 Ack AC01 Cooler Pump Alarm Service switch off	quit	CPU002:AC01:Cooler:Pump:	1	
4	13.02.2014 11:10:44 Gone HC01 Inflow Pump Alarm Motor protection	leave	CPU002:HC01:Inflow:Pump:	1	

Historic data logging

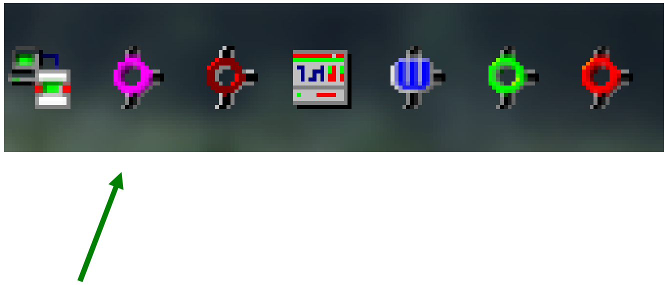
DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

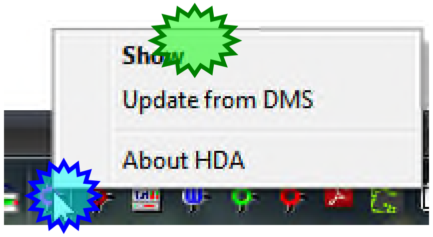
Let us start the Visi.Plus Historic Data Manager. Start HDAMng.exe from folder C:\Visi.Plus\bin. HDAMng is like a service and also available in task bar notification area. Without HDA Manager there is no historical logging.



The historic data will be automatically recorded – even if we don't see anything. The data can be viewed later on within the Visi.Plus screens or with module pCHart. Until we have enough data to view let's check if data will be recorded.



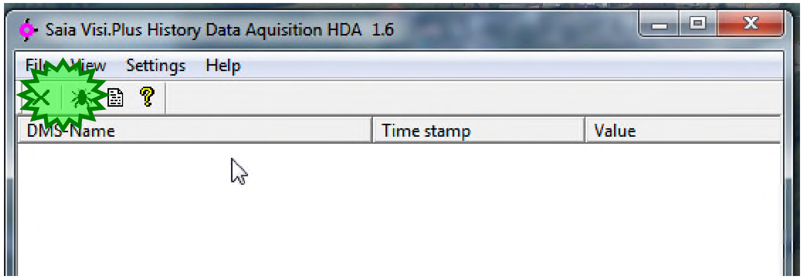
Therefore we have to access the HDAMng window. Click with right mouse button on HDAMng symbol in task bar and select Show.



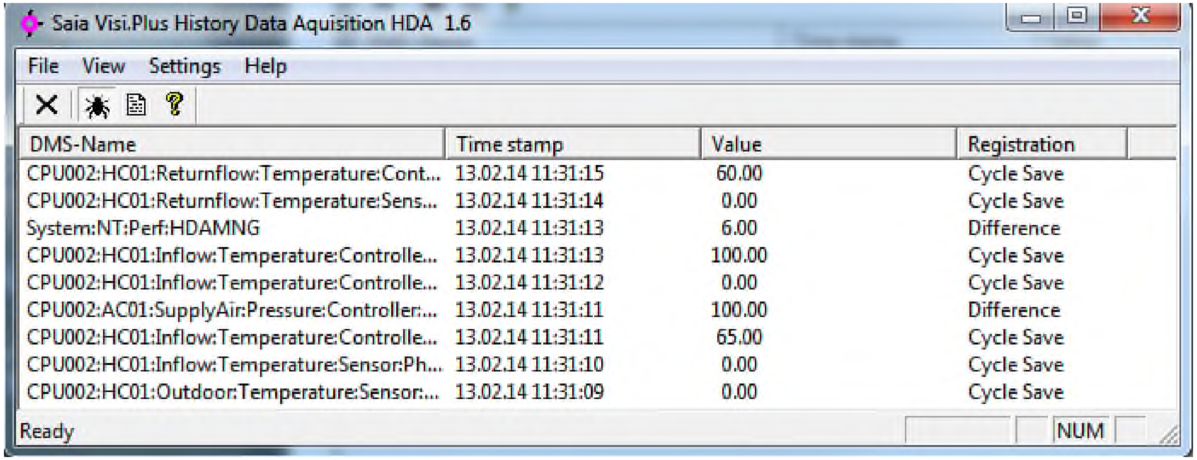
DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

First moment the window stays empty – we have to activate the debug mode by clicking on in symbol bar on “Bug” button.



At least after 60 seconds you’ll see a lot of entries recorded. By default it defined to record values after 60 seconds – additional on difference of 1.0 (unit)



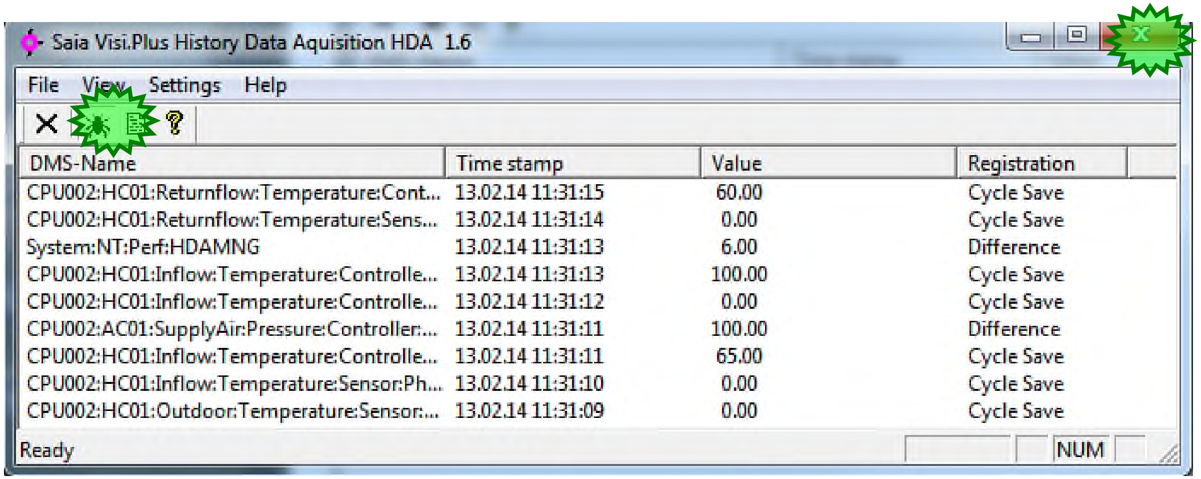
DMS-Name	Time stamp	Value	Registration
CPU002:HC01:Returnflow:Temperature:Cont...	13.02.14 11:31:15	60.00	Cycle Save
CPU002:HC01:Returnflow:Temperature:Sens...	13.02.14 11:31:14	0.00	Cycle Save
System:NT:Perf:HDAMNG	13.02.14 11:31:13	6.00	Difference
CPU002:HC01:Inflow:Temperature:Controlle...	13.02.14 11:31:13	100.00	Cycle Save
CPU002:HC01:Inflow:Temperature:Controlle...	13.02.14 11:31:12	0.00	Cycle Save
CPU002:AC01:SupplyAir:Pressure:Controller:...	13.02.14 11:31:11	100.00	Difference
CPU002:HC01:Inflow:Temperature:Controlle...	13.02.14 11:31:11	65.00	Cycle Save
CPU002:HC01:Inflow:Temperature:Sensor:Ph...	13.02.14 11:31:10	0.00	Cycle Save
CPU002:HC01:Outdoor:Temperature:Sensor:...	13.02.14 11:31:09	0.00	Cycle Save

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Deactivate debug mode by clicking again in symbol bar on “Bug” button.

Close HDAMng window. HDAMng will work in background.



DMS-Name	Time stamp	Value	Registration
CPU002:HC01:Returnflow:Temperature:Cont...	13.02.14 11:31:15	60.00	Cycle Save
CPU002:HC01:Returnflow:Temperature:Sens...	13.02.14 11:31:14	0.00	Cycle Save
System:NT:Perf:HDAMNG	13.02.14 11:31:13	6.00	Difference
CPU002:HC01:Inflow:Temperature:Controlle...	13.02.14 11:31:13	100.00	Cycle Save
CPU002:HC01:Inflow:Temperature:Controlle...	13.02.14 11:31:12	0.00	Cycle Save
CPU002:AC01:SupplyAir:Pressure:Controller:...	13.02.14 11:31:11	100.00	Difference
CPU002:HC01:Inflow:Temperature:Controlle...	13.02.14 11:31:11	65.00	Cycle Save
CPU002:HC01:Inflow:Temperature:Sensor:Ph...	13.02.14 11:31:10	0.00	Cycle Save
CPU002:HC01:Outdoor:Temperature:Sensor:...	13.02.14 11:31:09	0.00	Cycle Save

User Front-End

SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

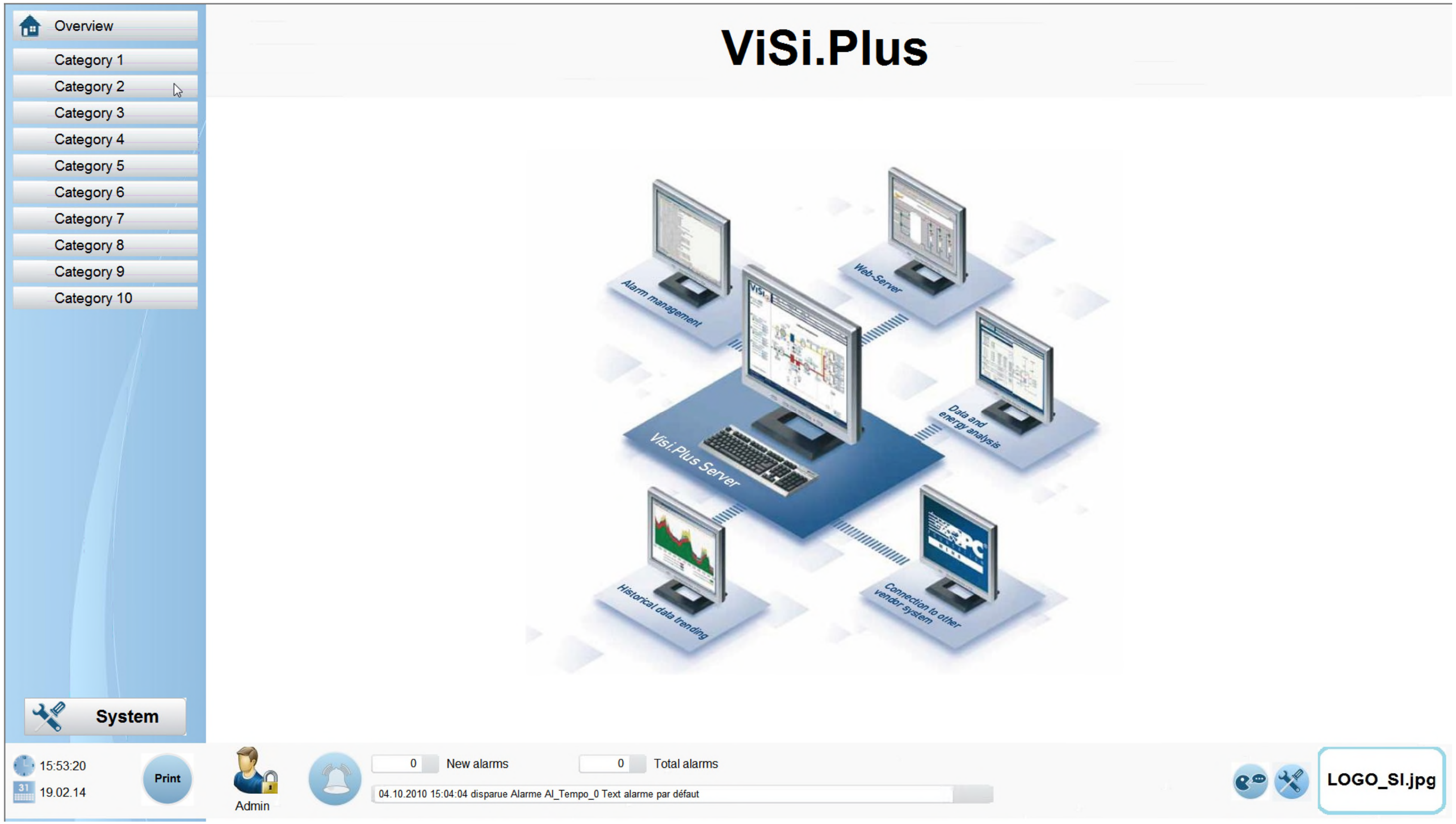
The systems must be visualized – therefore have to use the graphics editor - GE.

ge.exe

1st – lets start the Visi.Plus graphics editor. Start GE.exe from folder C:\VisiPlus\bin.

The Graphic Editor will start up in runtime mode and you'll see already a predefined start page.

We have predefined a whole navigation structure to start immediately with drawing the systems instead of thinking about "how should I do the navigation, which data must be displayed, where can I find the information if a new alarm raised .."



15:53:20
19.02.14

0 New alarms 0 Total alarms

04.10.2010 15:04:04 disparue Alarme AI_Tempo_0 Text alarme par défaut

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

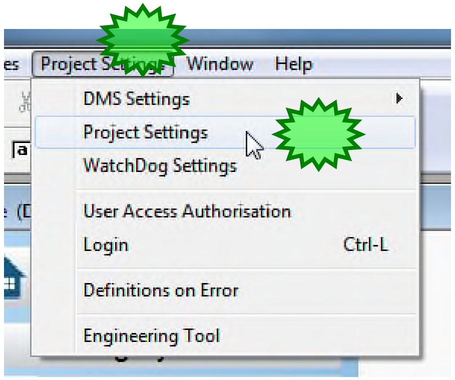
The latest DDC Suite template is made for the Full HD resolution (1920x1080). This means that you have to use a monitor which can display this resolution.

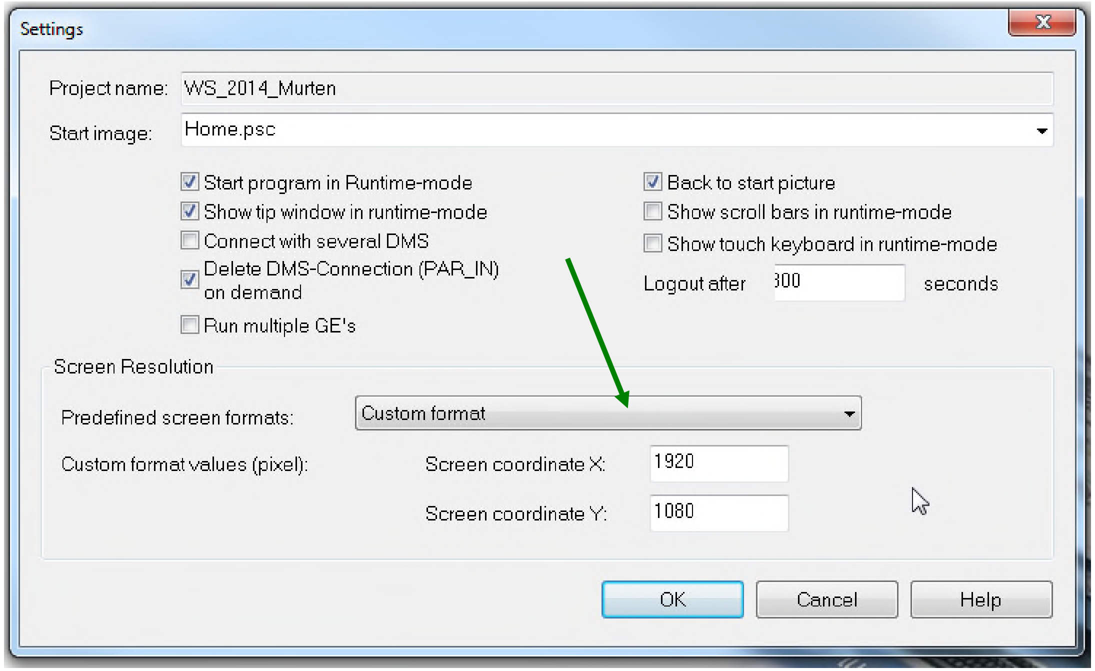
There is no scaling in Visi.Plus.

This means if you have monitor with less resolution you have to enable scroll bars. Or →

Better to adapt the template to the resolution of the monitor you want to use.

If you have multiple stations make yourself sure that the stations have the same resolution otherwise the screens on the different stations will be shown differently.





Settings

Project name: WS_2014_Murten

Start image: Home.psc

☑ Start program in Runtime-mode
☑ Show tip window in runtime-mode
☐ Connect with several DMS
☑ Delete DMS-Connection (PAR_IN) on demand
☐ Run multiple GE's

☑ Back to start picture
☐ Show scroll bars in runtime-mode
☐ Show touch keyboard in runtime-mode

Logout after 300 seconds

Screen Resolution

Predefined screen formats: Custom format

Custom format values (pixel): Screen coordinate X: 1920

Screen coordinate Y: 1080

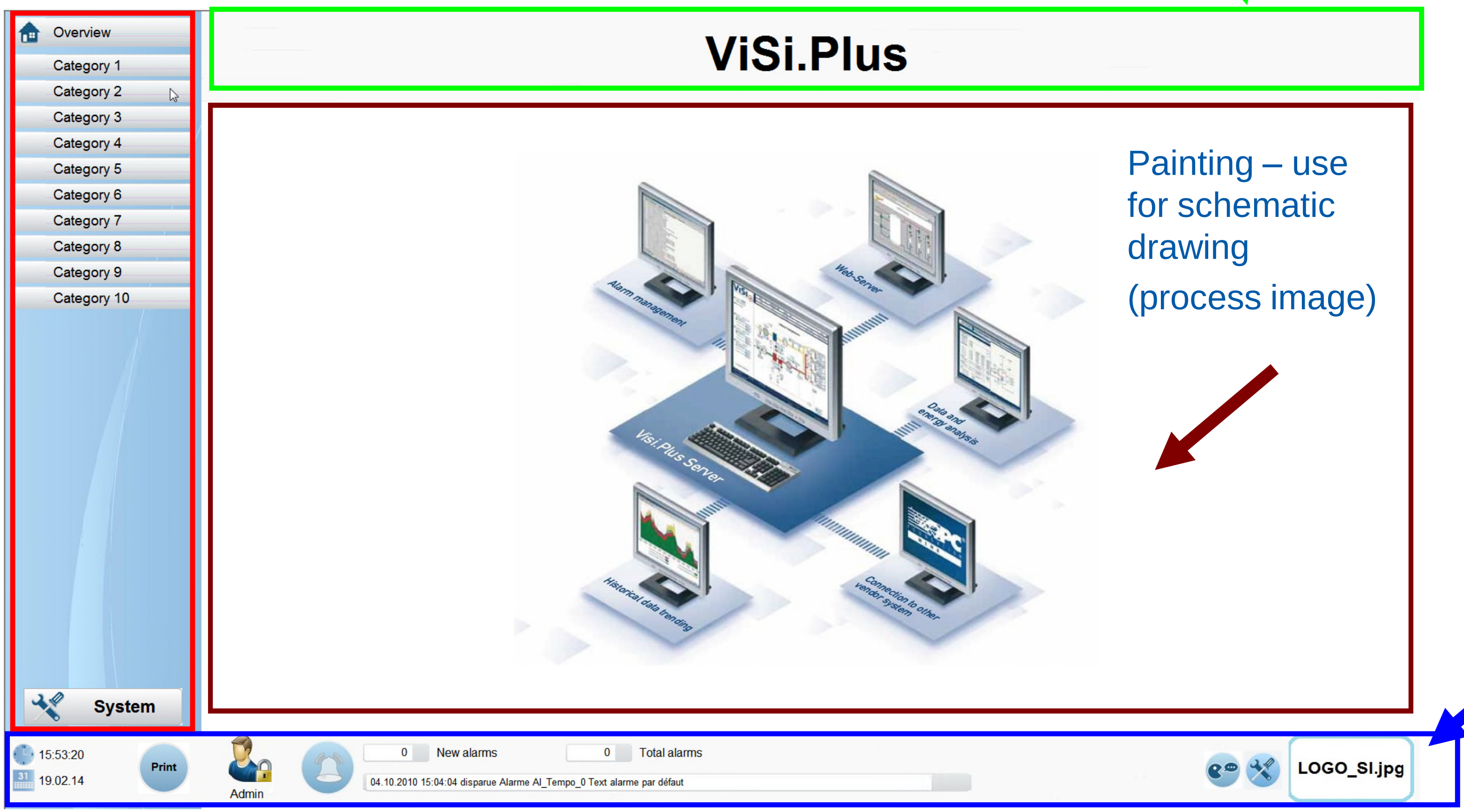
DDC Suite 2.5 / Visi.Plus Template

DDC Suite and Visi.Plus

The screen is separated in 4 areas:

Menu structure

Title bar – use for headline



Overview
Category 1
Category 2
Category 3
Category 4
Category 5
Category 6
Category 7
Category 8
Category 9
Category 10
System

ViSi.Plus

Painting – use for schematic drawing

(process image)

15:53:20
19.02.14
Print
Admin
0 New alarms
0 Total alarms
04.10.2010 15:04:04 disparue Alarme AI_Tempo_0 Text alarme par défaut
LOGO_SI.jpg

Status bar

DDC Suite 2.5 / Visi.Plus Template

DDC Suite and Visi.Plus

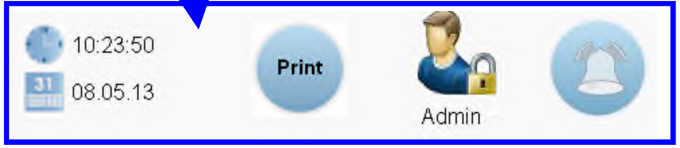
Status bar displays basic information:

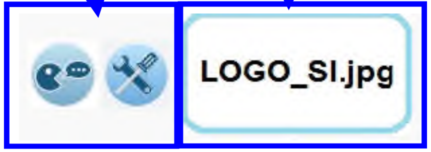
- Date and time
- Print
- User name logged on
- "User" Icon > click for login dialog or <CTRL>+<L>
- Alarm bell icon,
  grey if there is no alarm,
  red if min. 1 alarm active
  (click for alarm list view)

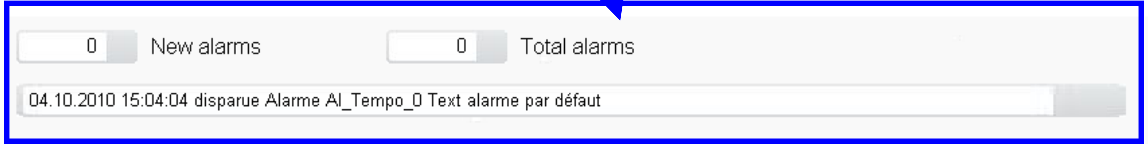
- Icon "talk" > click to setup user (both icons only visible
  if user right level 16 active)
- Icon "settings" > click to setup menu structure

- number of new
  (not yet acknowledged) alarms
  and total active alarms
- last alarm text

- Customer Logo



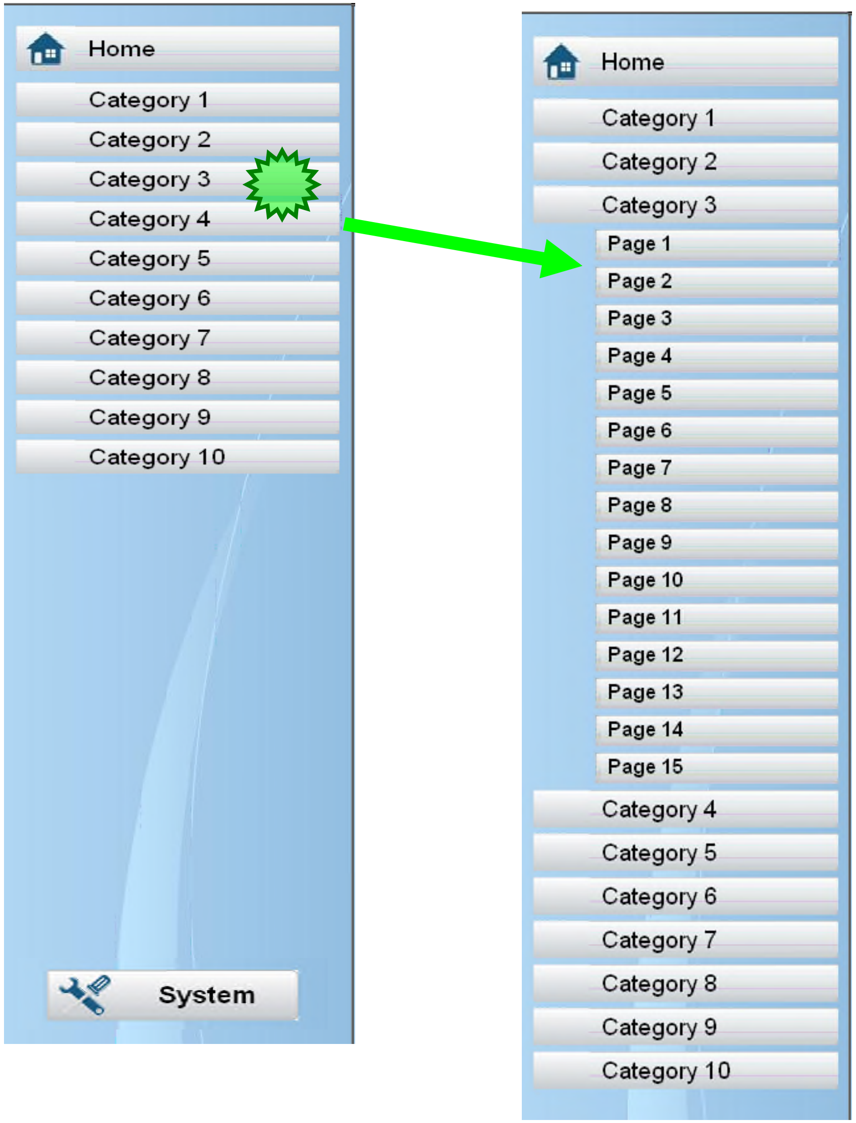




04.10.2010 15:04:04 disparue Alarme Al_Tempo_0 Text alarme par défaut

DDC Suite 2.5 / Visi.Plus Template

DDC Suite and Visi.Plus



Menu structure supports up to 10 main categories.

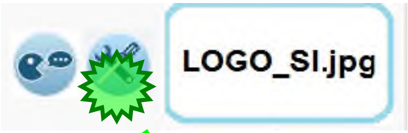
Clicking on category opens page menu.

Each category support up to 15 pages, so 150 pages are already available.

DDC Suite 2.5 / Visi.Plus Template

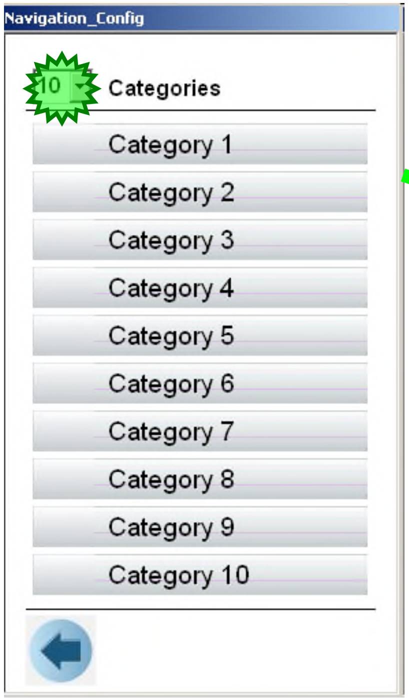
DDC Suite and Visi.Plus

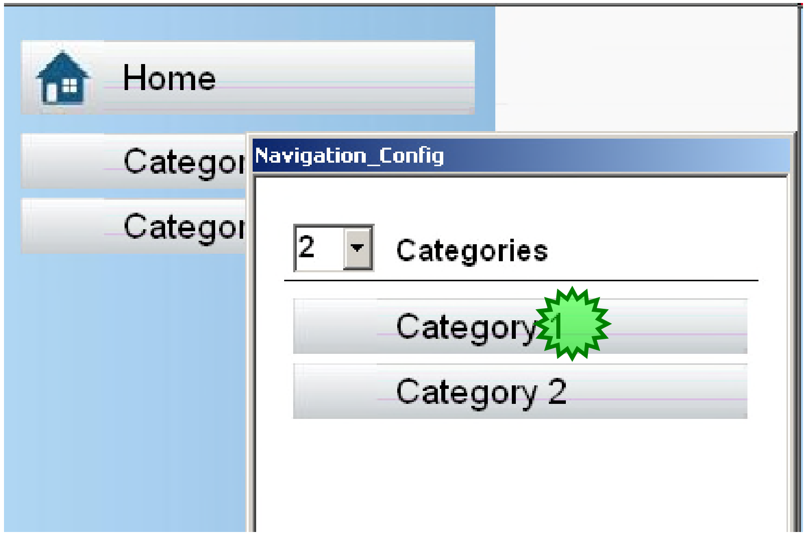
Adapting menu structure can be done in runtime mode by clicking on “settings” icon in status bar



Select number of Visible main categories. Changes will update view immediately.

Category name and pages of category can be modified by clicking on a category

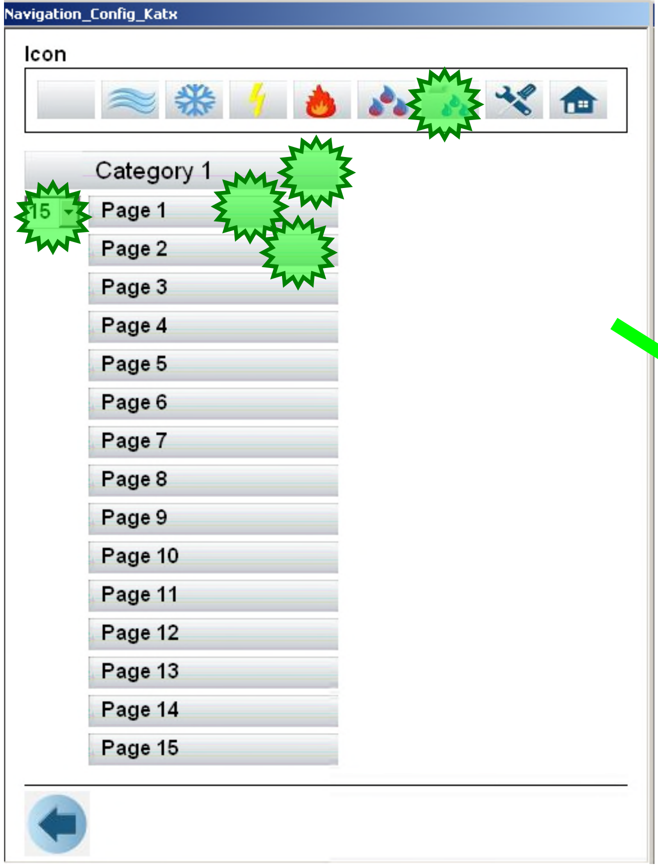




DDC Suite 2.5 / Visi.Plus Template

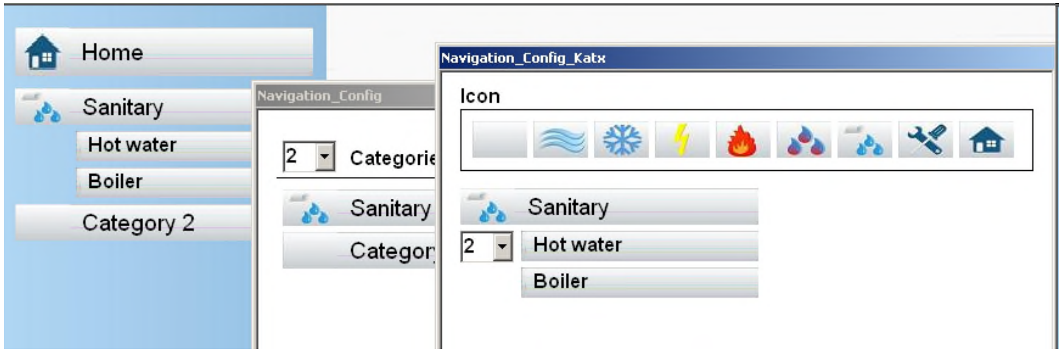
DDC Suite and Visi.Plus

Select number of Visible pages of category. Text of category and pages can be modified by clicking on texts.



An icon indicating the basic meaning (air condition, chillers, electrics …) of category can be defined by clicking on icon in icon bar.

View is updated immediately



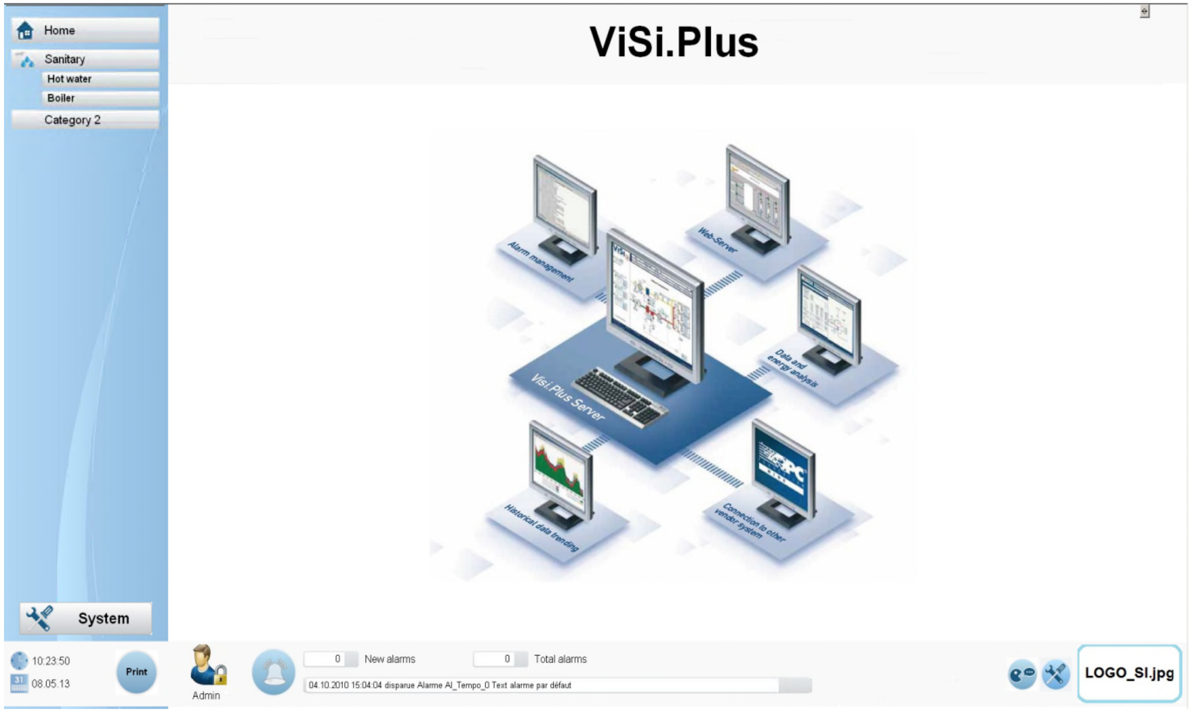
DDC Suite 2.5 / Visi.Plus Template

DDC Suite and Visi.Plus

Menu structure can be used in 2 different modes:

1, Permanent visible

- reduces area for painting
- but navigation is easy, always visible



0 New alarms 0 Total alarms

04.10.2010 15:04:04 disparue Alarme AI_Tempo_0 Text alarme par défaut

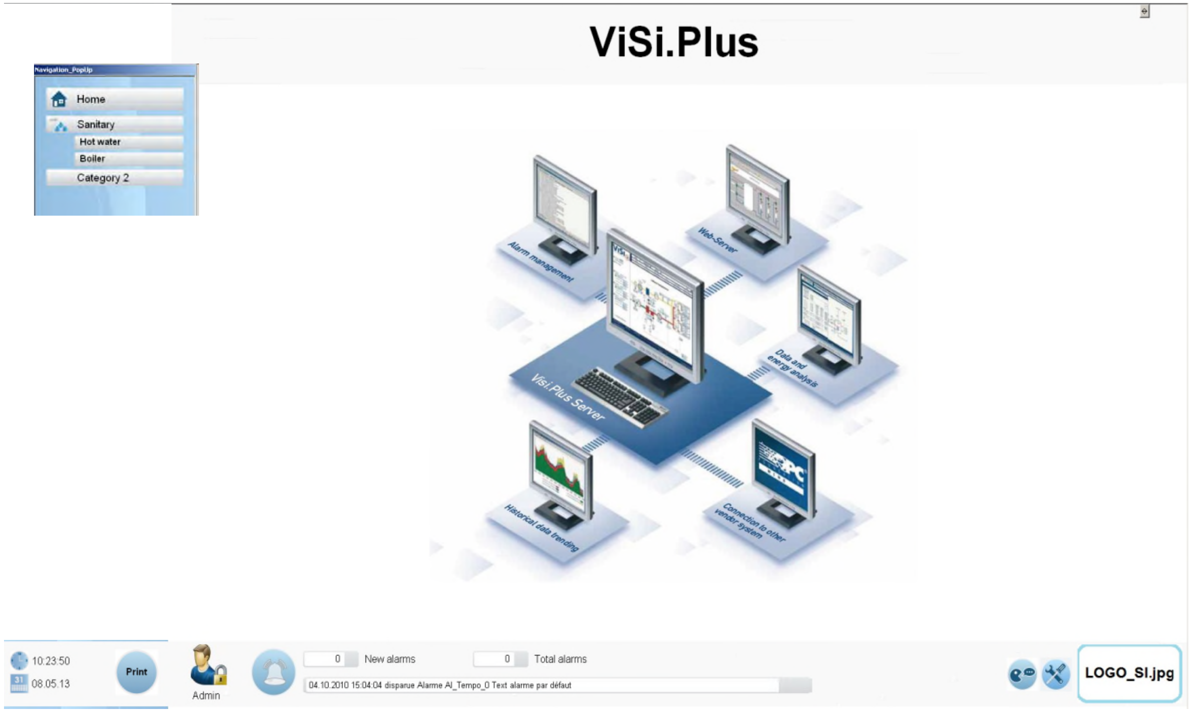
DDC Suite 2.5 / Visi.Plus Template

DDC Suite and Visi.Plus

Menu structure can be used in 2 different modes:

2, Pop up menu

- enlarges area for painting
- but navigation always via pop up window



ViSi.Plus

10:23:50
08.05.13

0 New alarms

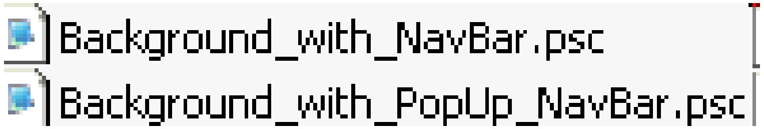
0 Total alarms

04.10.2010 15:04:04 disparue Alarme AI_Tempo_0 Text alarme par défaut

DDC Suite 2.5 / Visi.Plus Template

DDC Suite and Visi.Plus

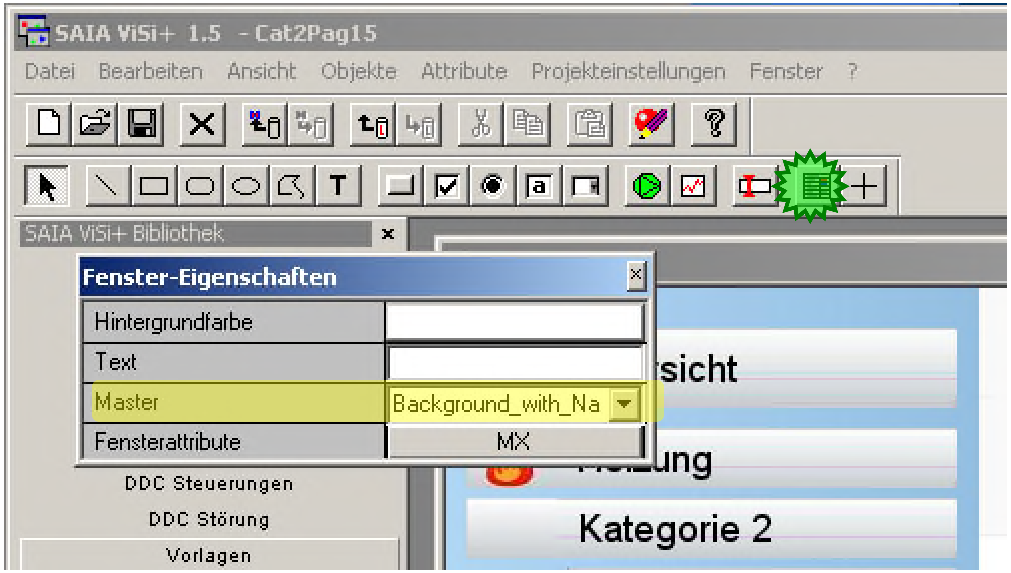
Style can be modified in edit mode. Each page is using a “Master” (= background page). 2 predefined background pages are available:



Background_with_NavBar.psc

Background_with_PopUp_NavBar.psc

Go to “Edit mode” with pressing “**E**” and click on the window and press the property button to open the Window-properties popup. Select in property “Master” the style for the pages (page by page) if you like to have not always a unique menu structure style.



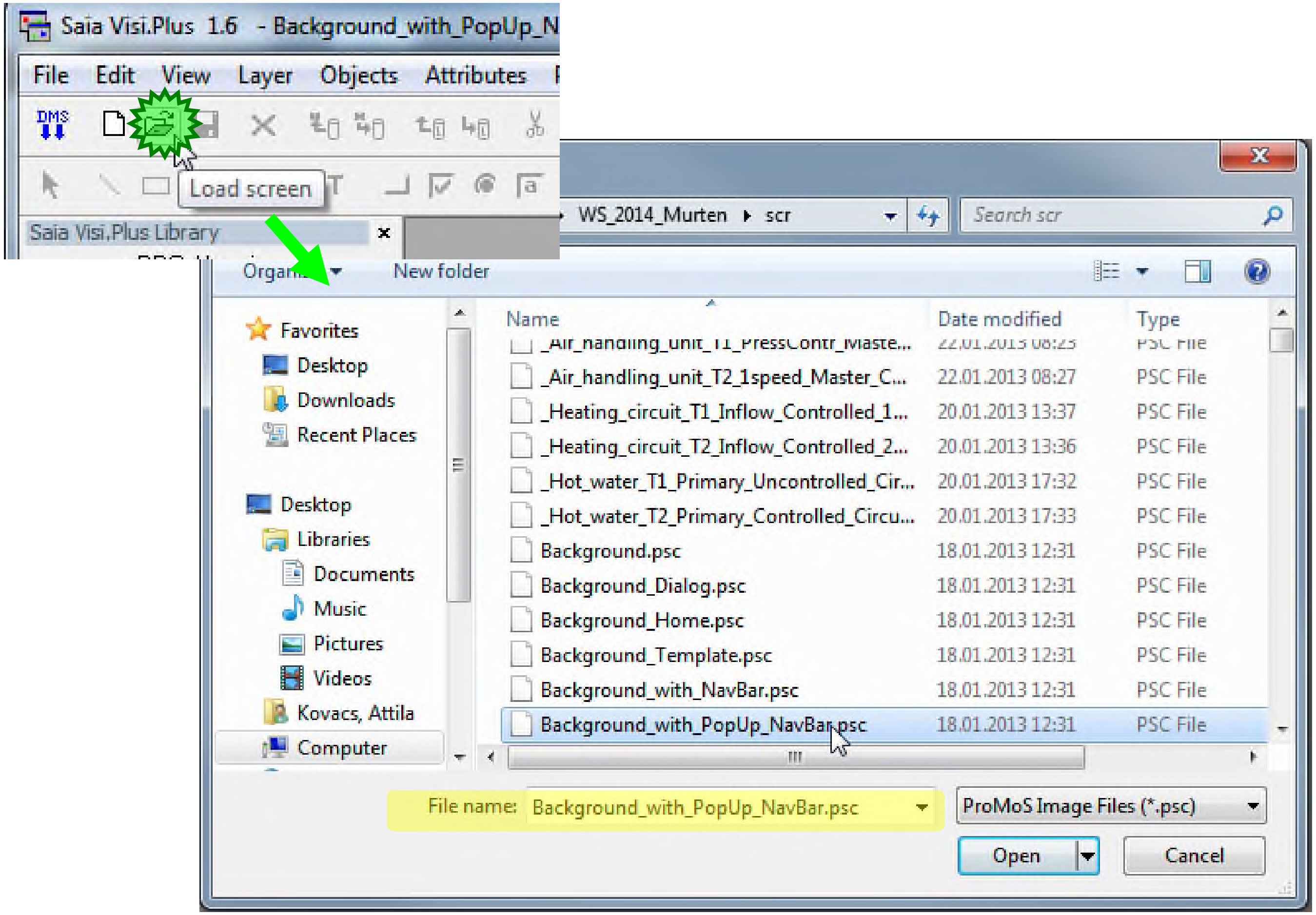
Fenster-Eigenschaften

Hintergrundfarbe	
Text	
Master	Background_with_Na
Fensterattribute	MX

DDC Suite 2.5 / Visi.Plus Template

DDC Suite and Visi.Plus

If you like to change all pages from “permanent” to “pop up” menu structure style open file “Background_with_PopUp_NavBar.psc”



Name	Date modified	Type
_Air_handling_unit_T1_PressContr_Maste...	22.01.2013 08:25	PSC File
_Air_handling_unit_T2_1speed_Master_C...	22.01.2013 08:27	PSC File
_Heating_circuit_T1_Inflow_Controlled_1...	20.01.2013 13:37	PSC File
_Heating_circuit_T2_Inflow_Controlled_2...	20.01.2013 13:36	PSC File
_Hot_water_T1_Primary_Uncontrolled_Cir...	20.01.2013 17:32	PSC File
_Hot_water_T2_Primary_Controlled_Circu...	20.01.2013 17:33	PSC File
Background.psc	18.01.2013 12:31	PSC File
Background_Dialog.psc	18.01.2013 12:31	PSC File
Background_Home.psc	18.01.2013 12:31	PSC File
Background_Template.psc	18.01.2013 12:31	PSC File
Background_with_NavBar.psc	18.01.2013 12:31	PSC File
Background_with_PopUp_NavBar.psc	18.01.2013 12:31	PSC File

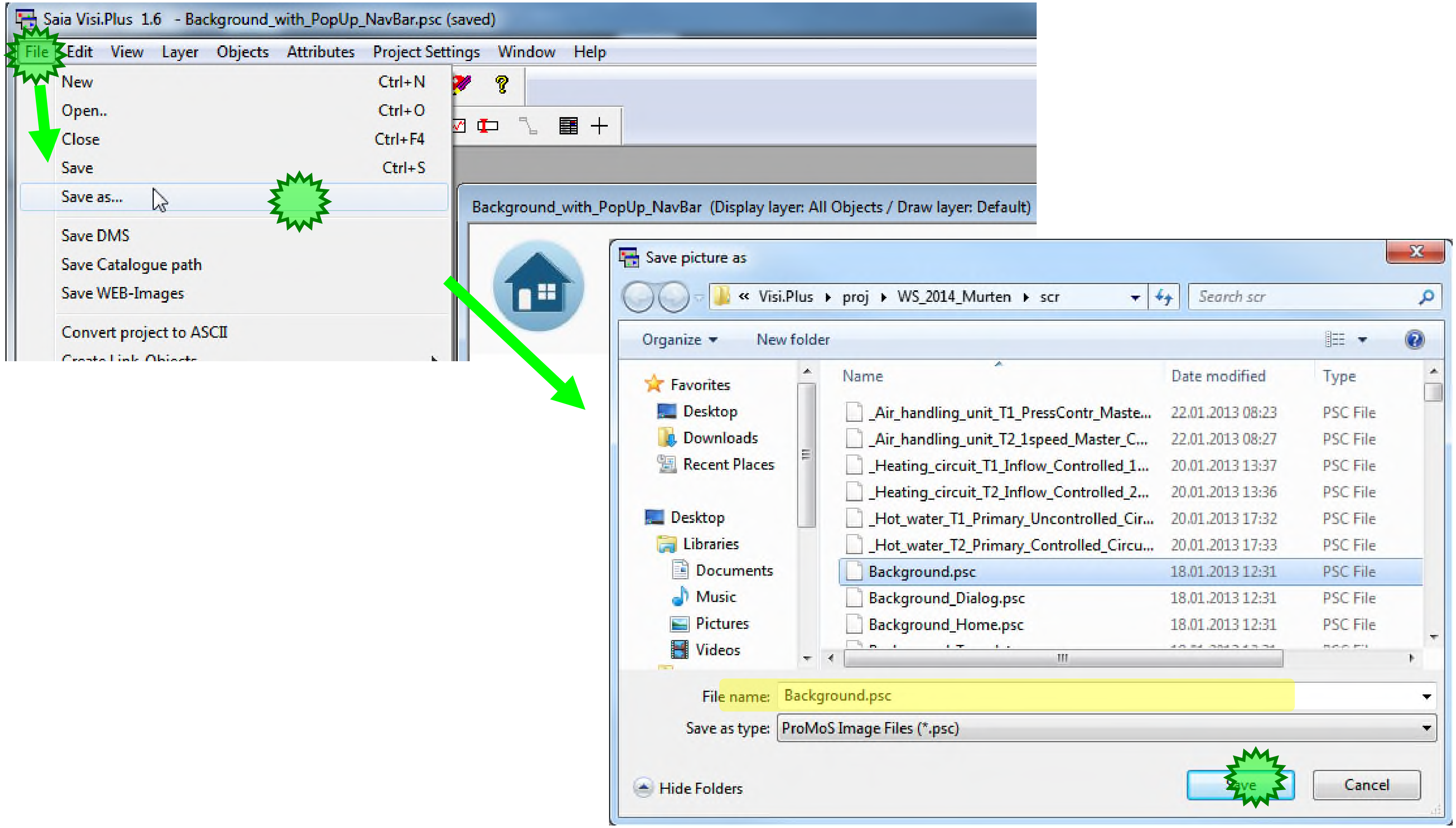
File name: Background_with_PopUp_NavBar.psc

ProMoS Image Files (*.psc)

DDC Suite 2.5 / Visi.Plus Template

DDC Suite and Visi.Plus

And save file (overwrite) as “Background.psc”



Saia Visi.Plus 1.6 - Background_with_PopUp_NavBar.psc (saved)

Background_with_PopUp_NavBar (Display layer: All Objects / Draw layer: Default)

Save picture as

File name: Background.psc

Save as type: ProMoS Image Files (*.psc)

Name	Date modified	Type
_Air_handling_unit_T1_PressContr_Maste...	22.01.2013 08:23	PSC File
_Air_handling_unit_T2_1speed_Master_C...	22.01.2013 08:27	PSC File
_Heating_circuit_T1_Inflow_Controlled_1...	20.01.2013 13:37	PSC File
_Heating_circuit_T2_Inflow_Controlled_2...	20.01.2013 13:36	PSC File
_Hot_water_T1_Primary_Uncontrolled_Cir...	20.01.2013 17:32	PSC File
_Hot_water_T2_Primary_Controlled_Circu...	20.01.2013 17:33	PSC File
Background.psc	18.01.2013 12:31	PSC File
Background_Dialog.psc	18.01.2013 12:31	PSC File
Background_Home.psc	18.01.2013 12:31	PSC File

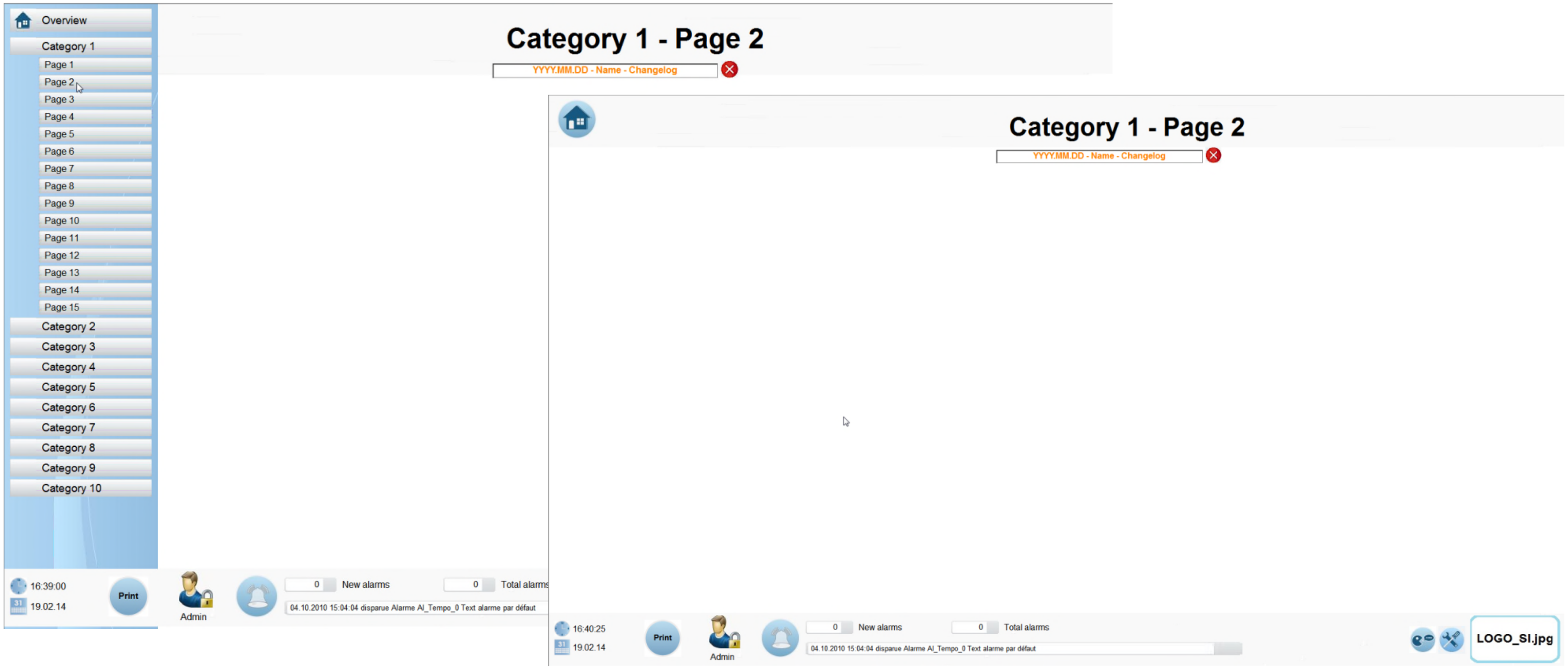
DDC Suite 2.5 / Visi.Plus Template

DDC Suite and Visi.Plus

Pages are defined to use “Background.psc” as master, so all pages are updated immediately.

Only “Home.psc” (main page) is defined to use “Background_with_NavBar.psc” to display menu structure by default, but this can also be modified.

Screen resolution for pages is predefined for 1920x1080 pixel, so if a different resolution is needed just adapt the background pages (e.g. enlarge titel/status bar or/and move status bar up/down)



Category 1 - Page 2

YYYY.MM.DD - Name - Changelog

16:39:00 19.02.14

0 New alarms 0 Total alarms

04.10.2010 15:04:04 disparue Alarme AI_Tempo_0 Text alarme par défaut

Category 1 - Page 2

YYYY.MM.DD - Name - Changelog

16:40:25 19.02.14

0 New alarms 0 Total alarms

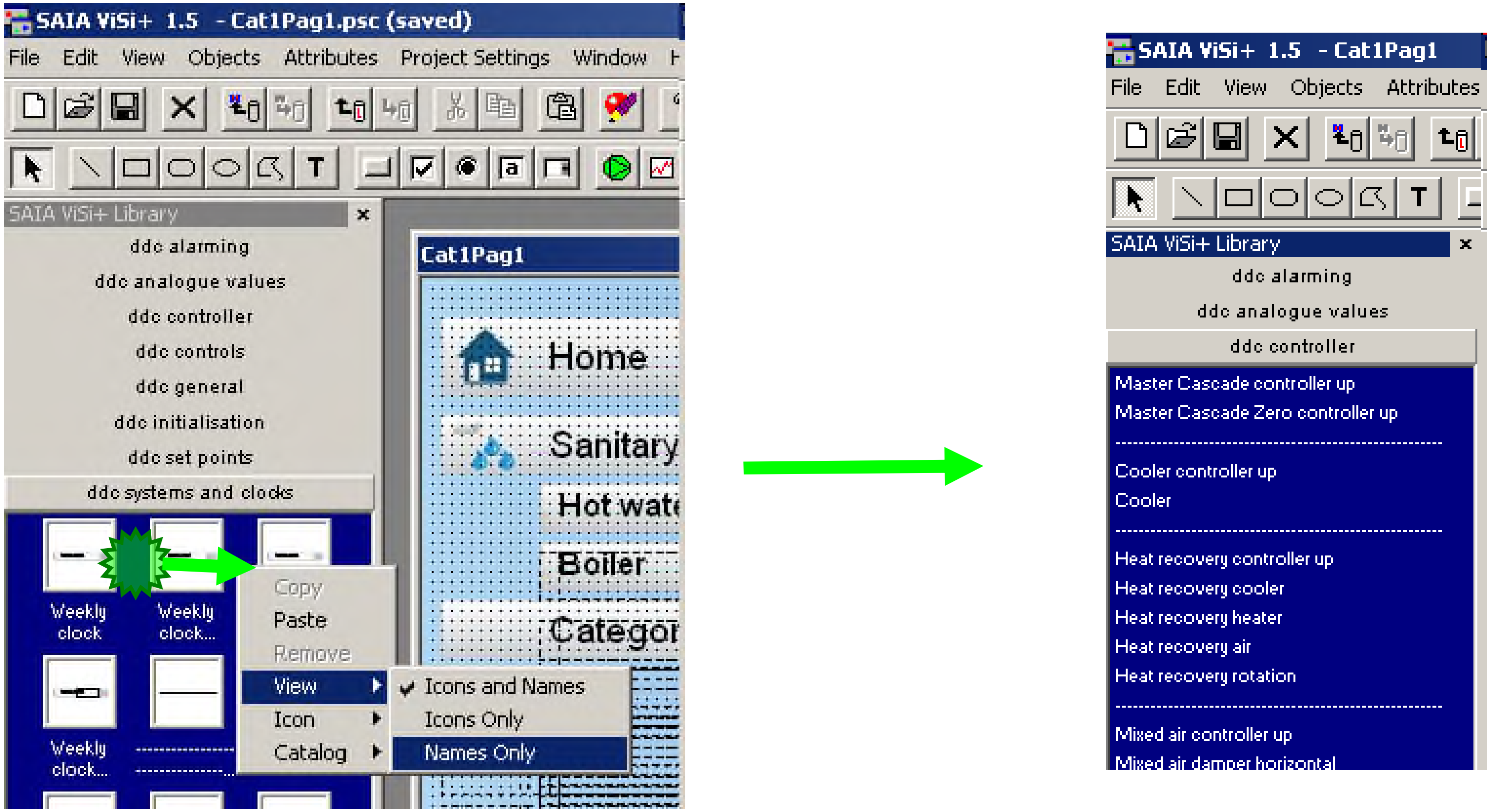
04.10.2010 15:04:04 disparue Alarme AI_Tempo_0 Text alarme par défaut

Drawing picures

DDC Suite 2.5 / Visi.Plus Template

DDC Suite and Visi.Plus

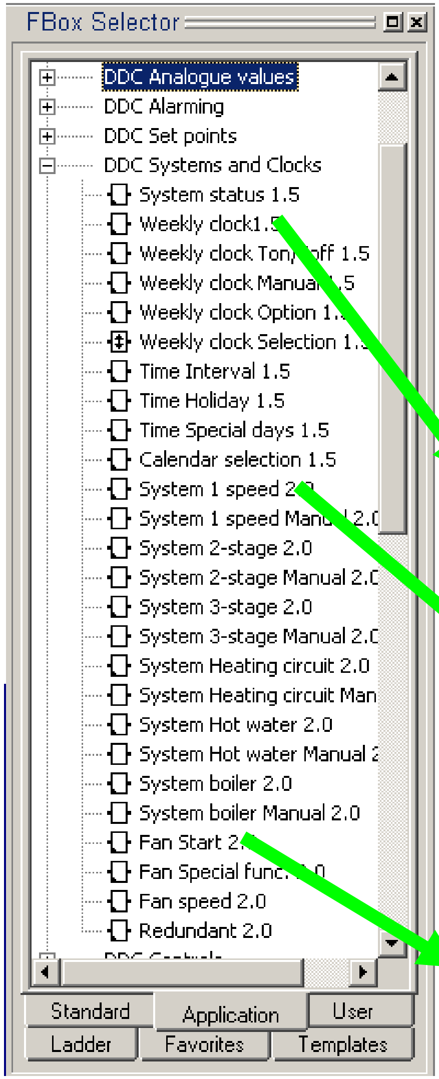
DDC Suite Fboxes offer in Visi.Plus predefined graphical objects and related adjust/pop up windows. In Edit mode you’ll see on left side a catalogue bar. The default view (icons) is not always helpful, just change view by clicking with right mouse button on empty space in catalogue bar an select from context menu “View/Names Only”.

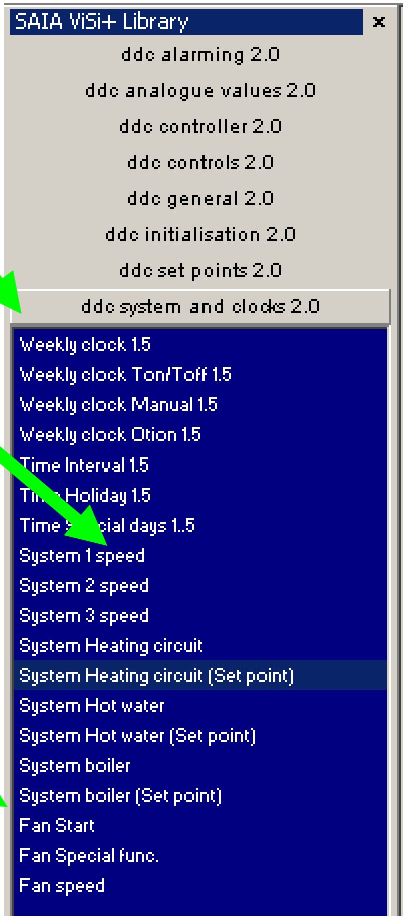


DDC Suite 2.5 / Visi.Plus Template

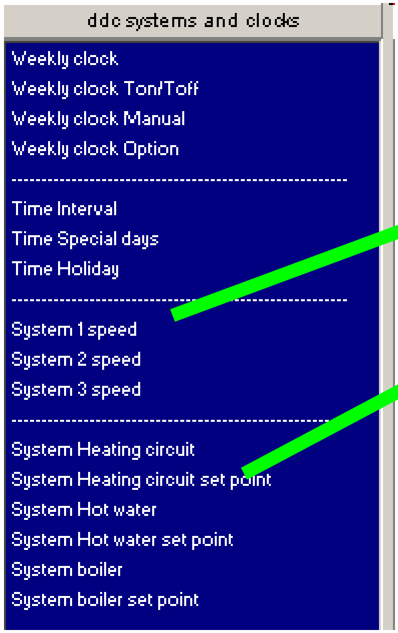
DDC Suite and Visi.Plus

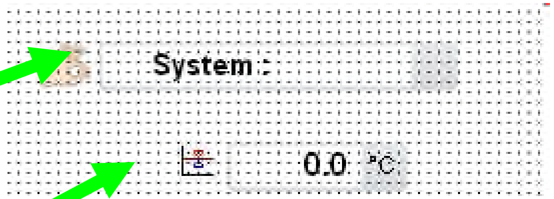
In this case the object with “short” name is the default object, displaying the main information (System On/Off ..), the “extended” (“set point”) object is just an adaption and displays in this case the set point – but both objects will show the same adjust window when clicking on it.





Catalogue bar contains also 8 families (same as FBox selector) and offers for (nearly) each FBox an object with same name of FBox selector. Sometimes you’ll find 2 or more entries for a FBox, e.g. “System Heating circuit” and “System Heating circuit set point”.

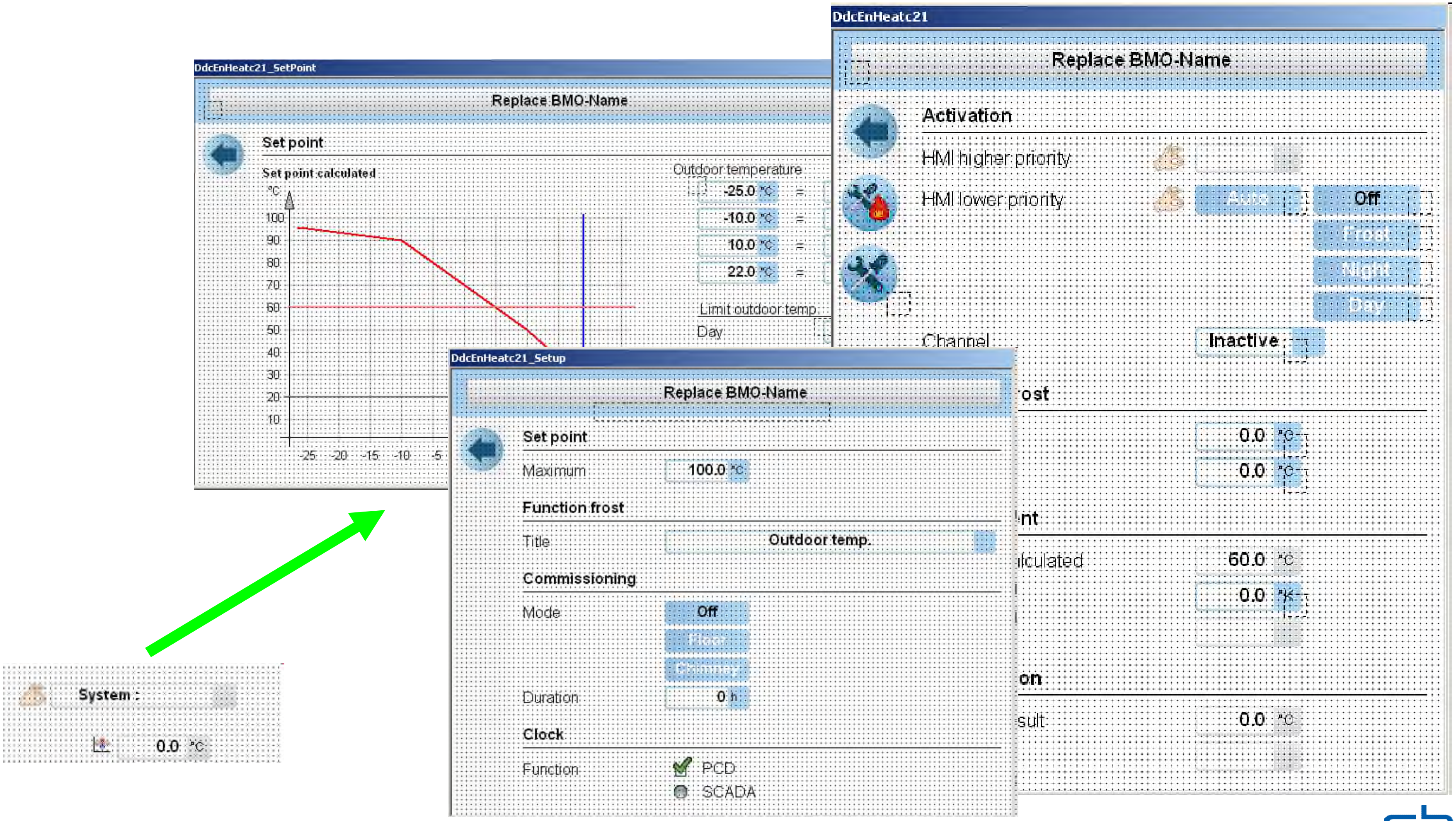




DDC Suite 2.5 / Visi.Plus Template

DDC Suite and Visi.Plus

You just have to select the corresponding object for an FBox and initialize it with the related object from Visi.Plus data base. All adjust windows are predefined, clicking on graphic object will open a pop up.



DdcEnHeatc21_SetPoint

Replace BMO-Name

Set point

Set point calculated

Outdoor temperature -25.0 °C, -10.0 °C, 10.0 °C, 22.0 °C

Limit outdoor temp.

Day

DdcEnHeatc21

Replace BMO-Name

Activation

HMI higher priority

HMI lower priority: Auto, Off, Frost, Night, Day

Channel: Inactive

…rost: 0.0 °C, 0.0 °C

…nt

…lculated: 60.0 °C, 0.0 K

…on

…sult: 0.0 °C

DdcEnHeatc21_Setup

Replace BMO-Name

Set point

Maximum: 100.0 °C

Function frost

Title: Outdoor temp.

Commissioning

Mode: Off, Floor, Chimney

Duration: 0 h

Clock

Function: ☑ PCD, ● SCADA

System :

0.0 °C

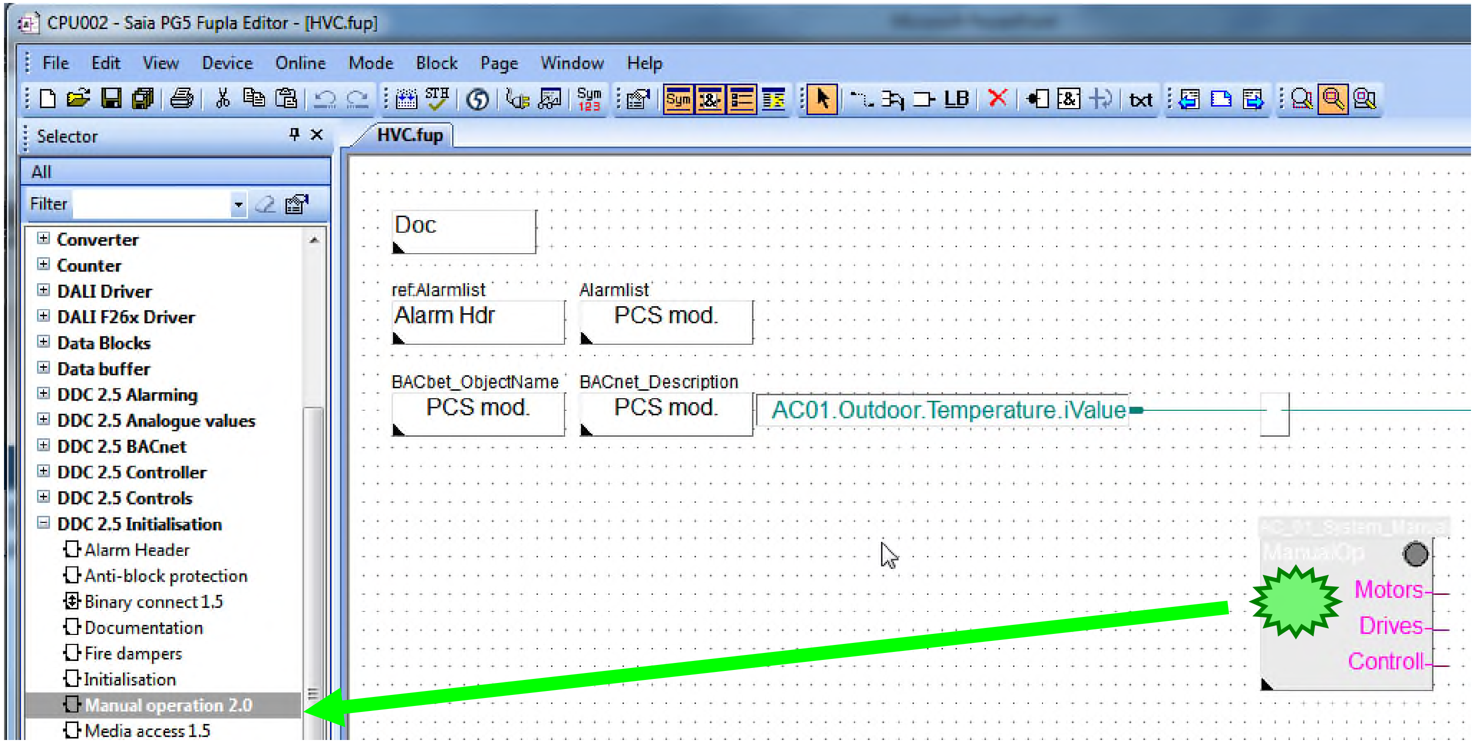
DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Let’s check the first Fupla page (--AC 01--) of our air condition.

There are 3 FBoxes to be displayed in Visi.Plus:

- Alarm header – no Visi.Plus template
- PCS mod. –no Visi.plus template
- Manual operation
- Ala Fuse
- Status



CPU002 - Saia PG5 Fupla Editor - [HVC.fup]

File Edit View Device Online Mode Block Page Window Help

Selector

All

Filter

- ⊞ Converter
- ⊞ Counter
- ⊞ DALI Driver
- ⊞ DALI F26x Driver
- ⊞ Data Blocks
- ⊞ Data buffer
- ⊞ DDC 2.5 Alarming
- ⊞ DDC 2.5 Analogue values
- ⊞ DDC 2.5 BACnet
- ⊞ DDC 2.5 Controller
- ⊞ DDC 2.5 Controls
- ⊟ DDC 2.5 Initialisation
  - Alarm Header
  - Anti-block protection
  - Binary connect 1.5
  - Documentation
  - Fire dampers
  - Initialisation
  - Manual operation 2.0
  - Media access 1.5

HVC.fup

Lets find out how the FBox is named in FBox selector. Click on FBox “ManualOP” and in FBox selector we see that “Manual Operation 2.0” is selected from family “DDC 2.5 initialisation”

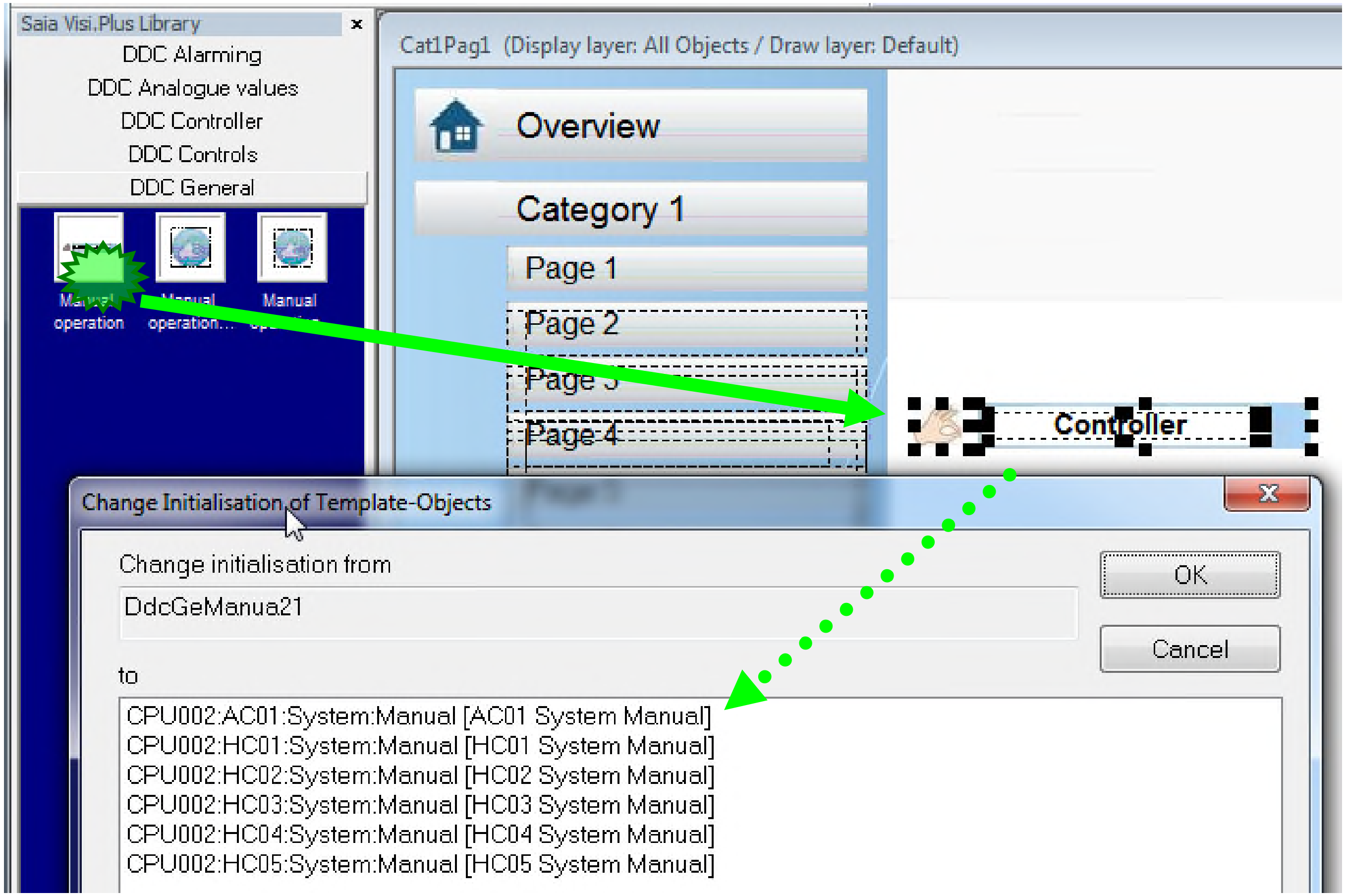
DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Lets find a related Visi.Plus object in GE. Select catalogue “DDC General” and check if there is an object “Manual operation” available.

Let us select the Air Condition → AC01 page in online and press “E” to go to edit mode.

Drag and drop the object into the page. When you drop the object a dialogue will be shown. Remember – during import data from Fupla Visi.Plus treated each FBox as object. And now Visi.Plus detects that you would like to display (some) data from FBox “Manual operation” …



Change Initialisation of Template-Objects

Change initialisation from

DdcGeManua21

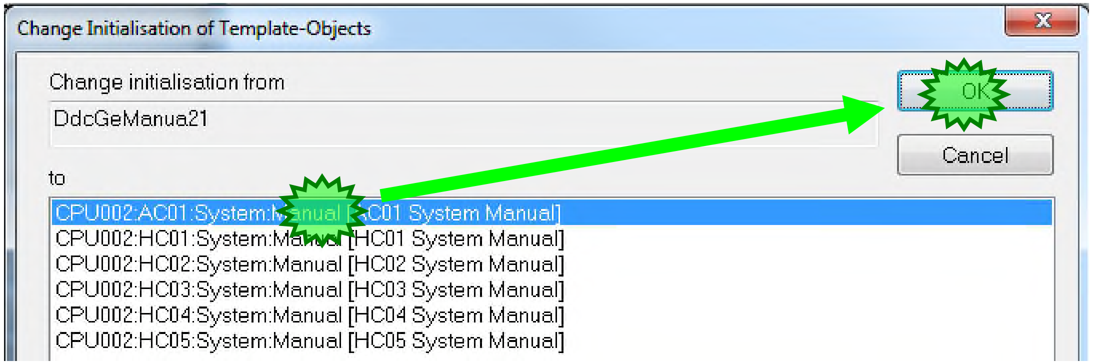
to

CPU002:AC01:System:Manual [AC01 System Manual]
CPU002:HC01:System:Manual [HC01 System Manual]
CPU002:HC02:System:Manual [HC02 System Manual]
CPU002:HC03:System:Manual [HC03 System Manual]
CPU002:HC04:System:Manual [HC04 System Manual]
CPU002:HC05:System:Manual [HC05 System Manual]

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Visi.Plus is checking its data base (which is in fact the whole Fupla data) if there is a "FBox" Manual Operation 2.0 available. A least Visi.Plus found one for Air Condition 01 (AC01) and five for Heat Circuits – listed in field "to"



Change Initialisation of Template-Objects

Change initialisation from

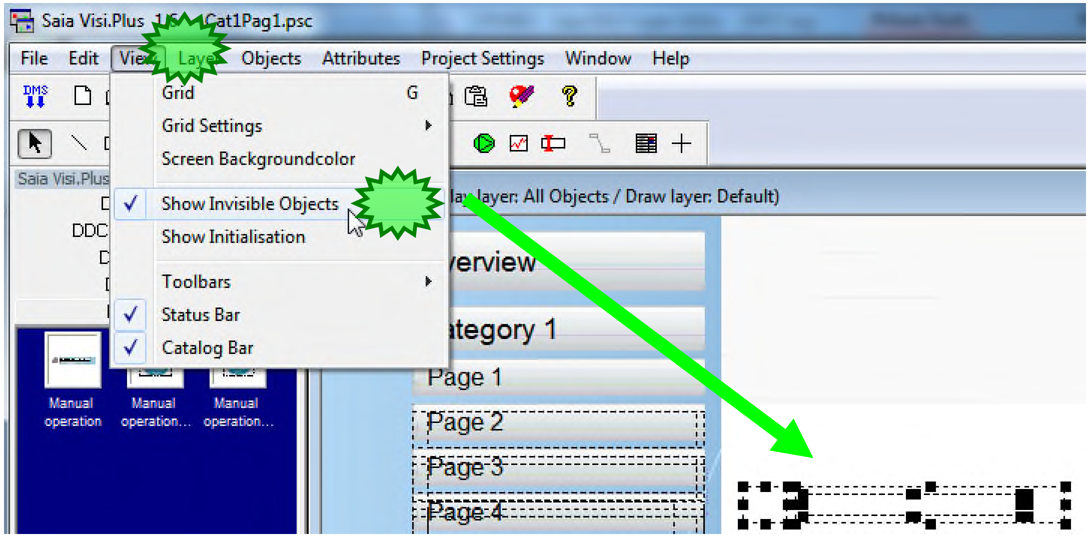
DdcGeManua21

to

CPU002:AC01:System:Manual [AC01 System Manual]
CPU002:HC01:System:Manual [HC01 System Manual]
CPU002:HC02:System:Manual [HC02 System Manual]
CPU002:HC03:System:Manual [HC03 System Manual]
CPU002:HC04:System:Manual [HC04 System Manual]
CPU002:HC05:System:Manual [HC05 System Manual]

Now we just have to assign the AC01:System:Manual FBox to this object. Click on the entry and then OK.

Move the object into the upper left area. If you click away from the object it disappears (Its Visibility property is off). To show at least the outline of the object please go to the "View menu" and check the "Show Invisible Objects".



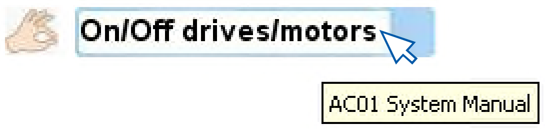
Save (short key "CTRL-S") and switch to runtime mode by pressing key "E".

In the Fupla let us switch the AC_01 Supply Air Fan to manual mode.

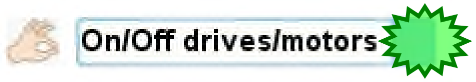
DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

When you move the mouse over the object and wait 2 seconds you'll see a tool tip – this tool tip displays the object name – and the object name is generated during import by using the group structure of the FBox symbols.



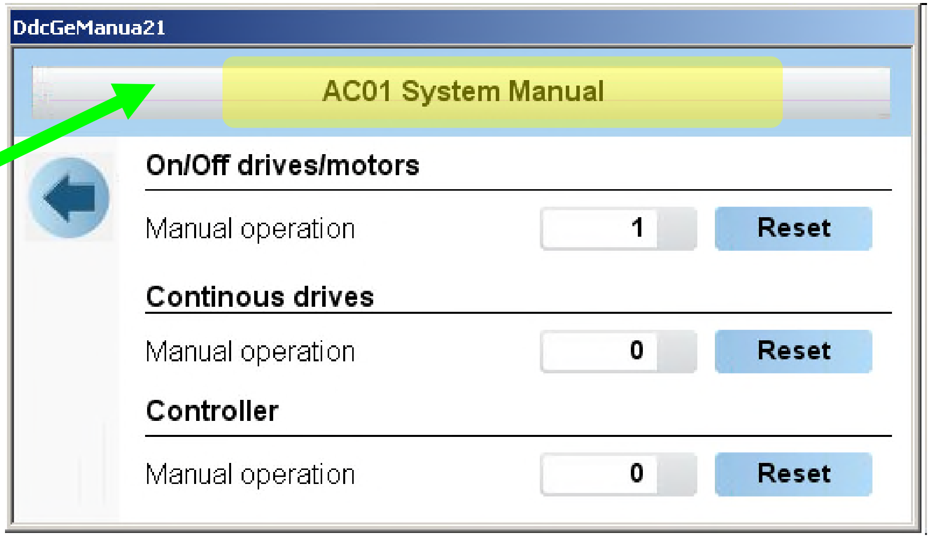
Click at the object and a pop up window appears. This is like the "Adjust Window" from Fupla – you don't have to engineer any data point to be viewed – just select an object from catalogue bar and connect it with the related FBox from you PG5 project.



All other detailed windows are predefined and managed by Visi.Plus.

Also the pop up window displays the object name = symbol group definition!

Play around to see that the Manual Operation is really connected with the Fupla FBox



DdcGeManua21

AC01 System Manual

On/Off drives/motors

Manual operation 1 Reset

Continous drives

Manual operation 0 Reset

Controller

Manual operation 0 Reset

DDC Suite 2.5 / PG5 Building Advanced

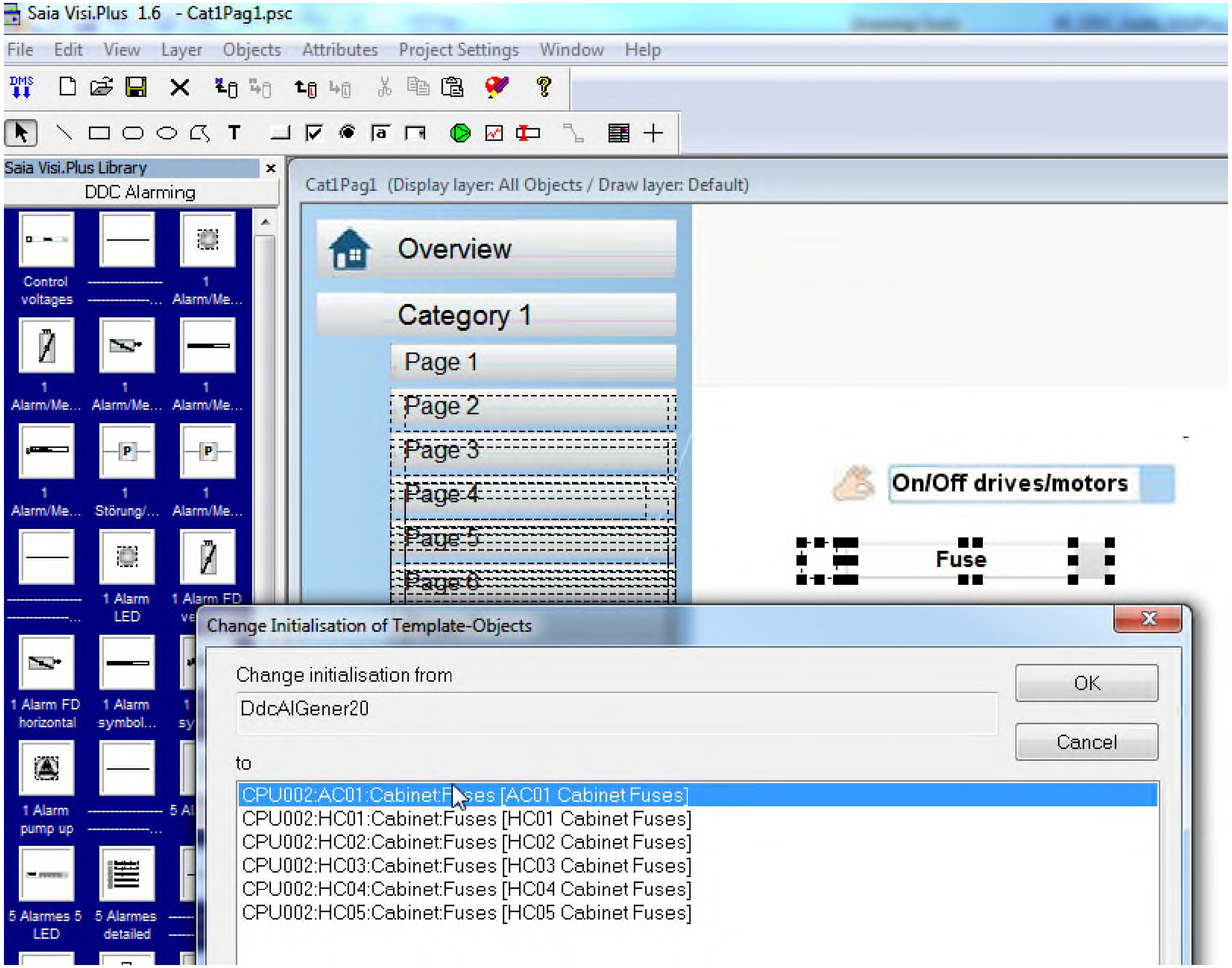
DDC Suite and Visi.Plus

Close pop up window and switch back to edit mode by pressing key “E”. Now its easy to engineer the Ala Fuse and the Status FBoxes from first page.

Now we get a list with a lot of entries. Of course all “Ala Fuse” FBoxes in Visi.Plus database will be displayed.

Drag&Drop object “Control Voltages” from “DDC >Alarming” into page and connect it with the CPU002:AC01:Cabinet:Fuses FBox.

We can select it from the list, but maybe you’ll select a Cabinet:Fuses from a wrong system.



Change Initialisation of Template-Objects

Change initialisation from

DdcAlGener20

to

CPU002:AC01:Cabinet:Fuses [AC01 Cabinet Fuses]
CPU002:HC01:Cabinet:Fuses [HC01 Cabinet Fuses]
CPU002:HC02:Cabinet:Fuses [HC02 Cabinet Fuses]
CPU002:HC03:Cabinet:Fuses [HC03 Cabinet Fuses]
CPU002:HC04:Cabinet:Fuses [HC04 Cabinet Fuses]
CPU002:HC05:Cabinet:Fuses [HC05 Cabinet Fuses]

OK
Cancel

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

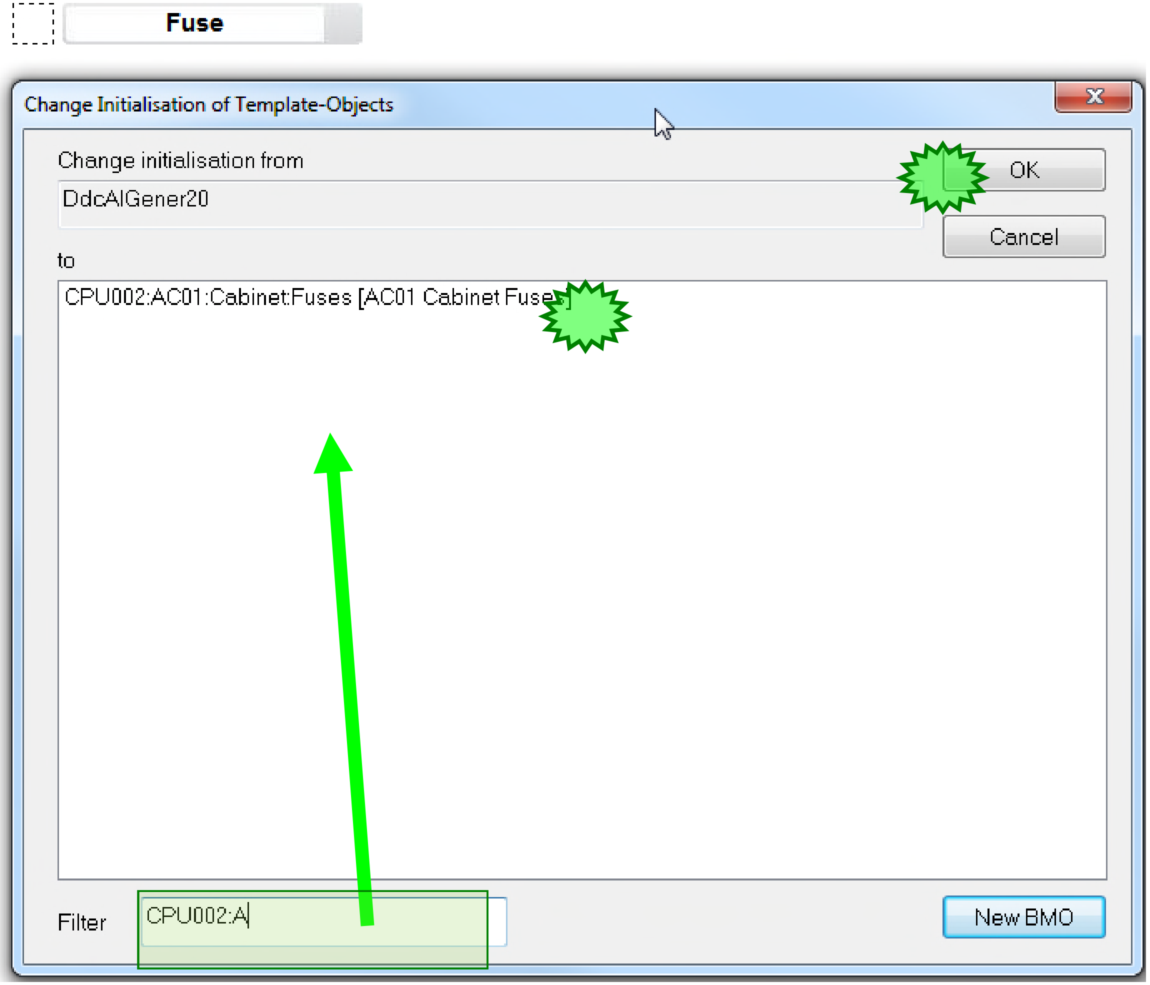
So we can set a filter in the dialog (bottom). The filter is case sensitive.

Type in CPU002:A

And you'll see only the FBoxes from the Air Condition 01.

Connect it with FBox "CPU002:AC01:Cabinet:Fuses"

Result:



Change Initialisation of Template-Objects

Change initialisation from

DdcAlGener20

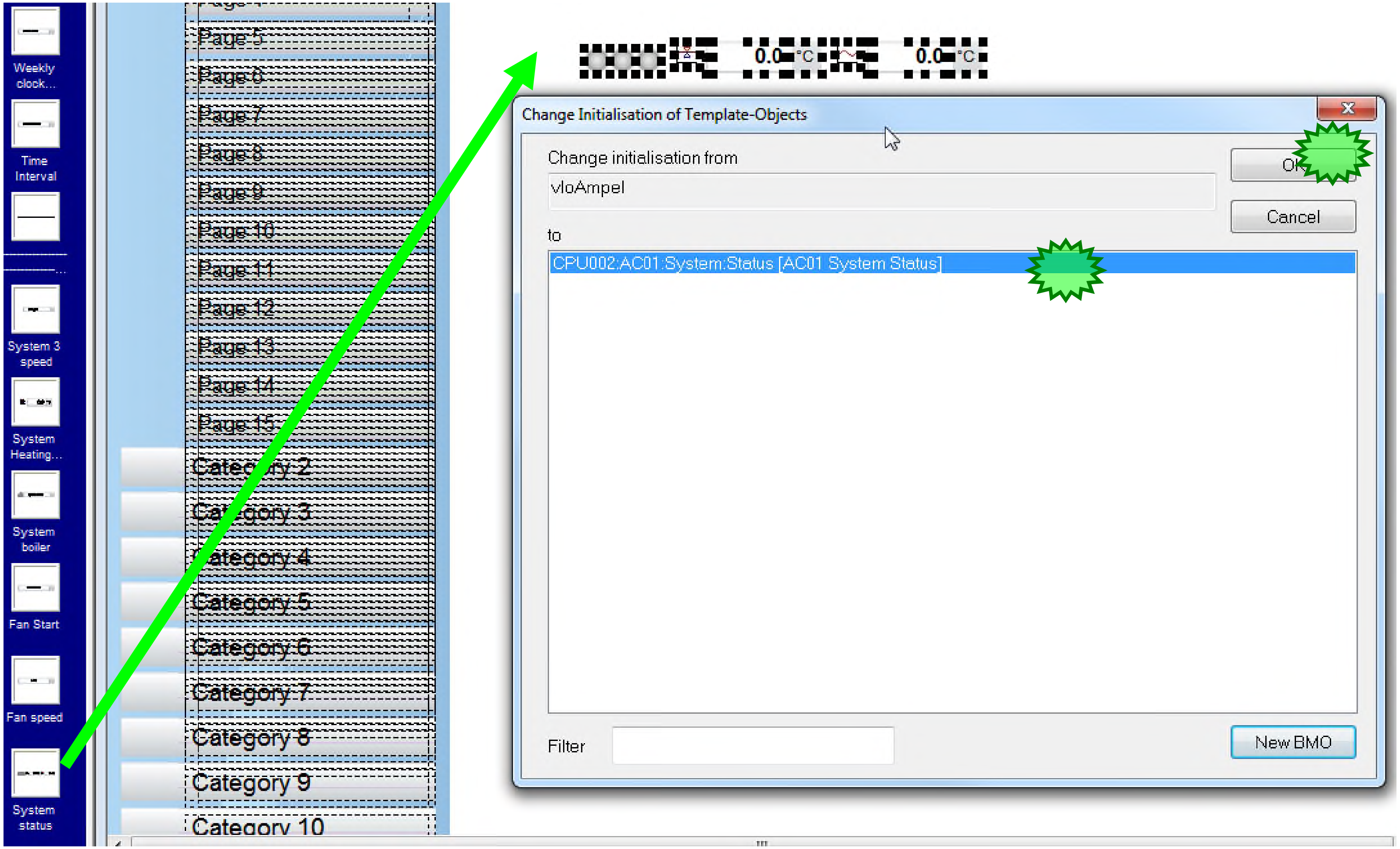
to

CPU002:AC01:Cabinet:Fuses [AC01 Cabinet Fuses]

Filter CPU002:A

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus



Change Initialisation of Template-Objects

Change initialisation from: vloAmpel

to: CPU002:AC01:System:Status [AC01 System Status]

Filter:

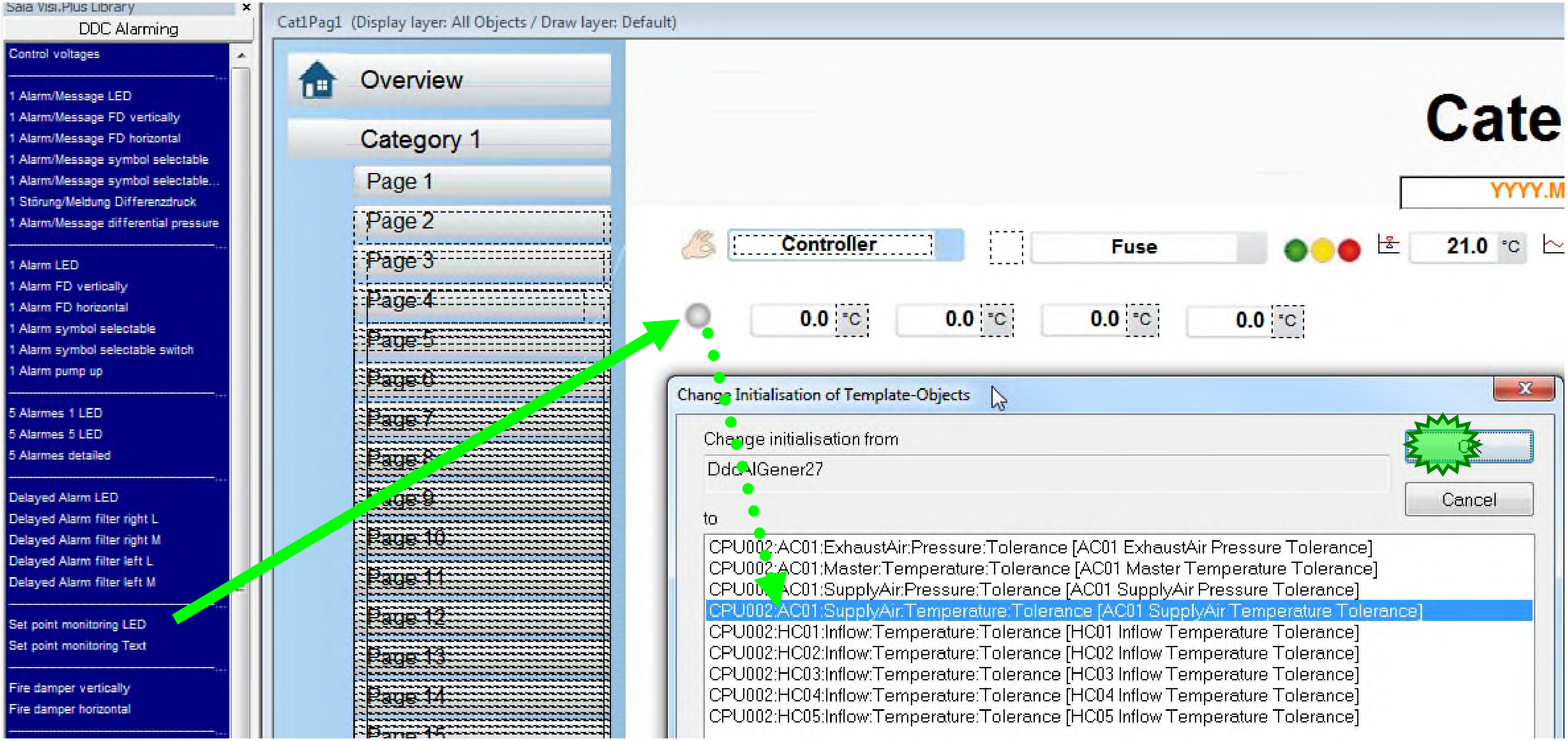
Place the:

- System status

Select from catalogue bar “DDC system and clocks” the object “System status”.

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus


Saia Visi.Plus Library
DDC Alarming
Control voltages
1 Alarm/Message LED
1 Alarm/Message FD vertically
1 Alarm/Message FD horizontal
1 Alarm/Message symbol selectable
1 Alarm/Message symbol selectable...
1 Störung/Meldung Differenzdruck
1 Alarm/Message differential pressure
1 Alarm LED
1 Alarm FD vertically
1 Alarm FD horizontal
1 Alarm symbol selectable
1 Alarm symbol selectable switch
1 Alarm pump up
5 Alarmes 1 LED
5 Alarmes 5 LED
5 Alarmes detailed
Delayed Alarm LED
Delayed Alarm filter right L
Delayed Alarm filter right M
Delayed Alarm filter left L
Delayed Alarm filter left M
Set point monitoring LED
Set point monitoring Text
Fire damper vertically
Fire damper horizontal
Cat1Pag1 (Display layer: All Objects / Draw layer: Default)
Overview
Category 1
Page 1
Page 2
Page 3
Page 4
Page 5
Page 6
Page 7
Page 8
Page 9
Page 10
Page 11
Page 12
Page 13
Page 14
Page 15
Cate
YYYY.M
Controller
Fuse
21.0 °C
0.0 °C
0.0 °C
0.0 °C
0.0 °C
OK
Cancel

Change Initialisation of Template-Objects

Change initialisation from

DdcAlGener27

to

CPU002:AC01:ExhaustAir:Pressure:Tolerance [AC01 ExhaustAir Pressure Tolerance]
CPU002:AC01:Master:Temperature:Tolerance [AC01 Master Temperature Tolerance]
CPU002:AC01:SupplyAir:Pressure:Tolerance [AC01 SupplyAir Pressure Tolerance]
CPU002:AC01:SupplyAir:Temperature:Tolerance [AC01 SupplyAir Temperature Tolerance]
CPU002:HC01:Inflow:Temperature:Tolerance [HC01 Inflow Temperature Tolerance]
CPU002:HC02:Inflow:Temperature:Tolerance [HC02 Inflow Temperature Tolerance]
CPU002:HC03:Inflow:Temperature:Tolerance [HC03 Inflow Temperature Tolerance]
CPU002:HC04:Inflow:Temperature:Tolerance [HC04 Inflow Temperature Tolerance]
CPU002:HC05:Inflow:Temperature:Tolerance [HC05 Inflow Temperature Tolerance]

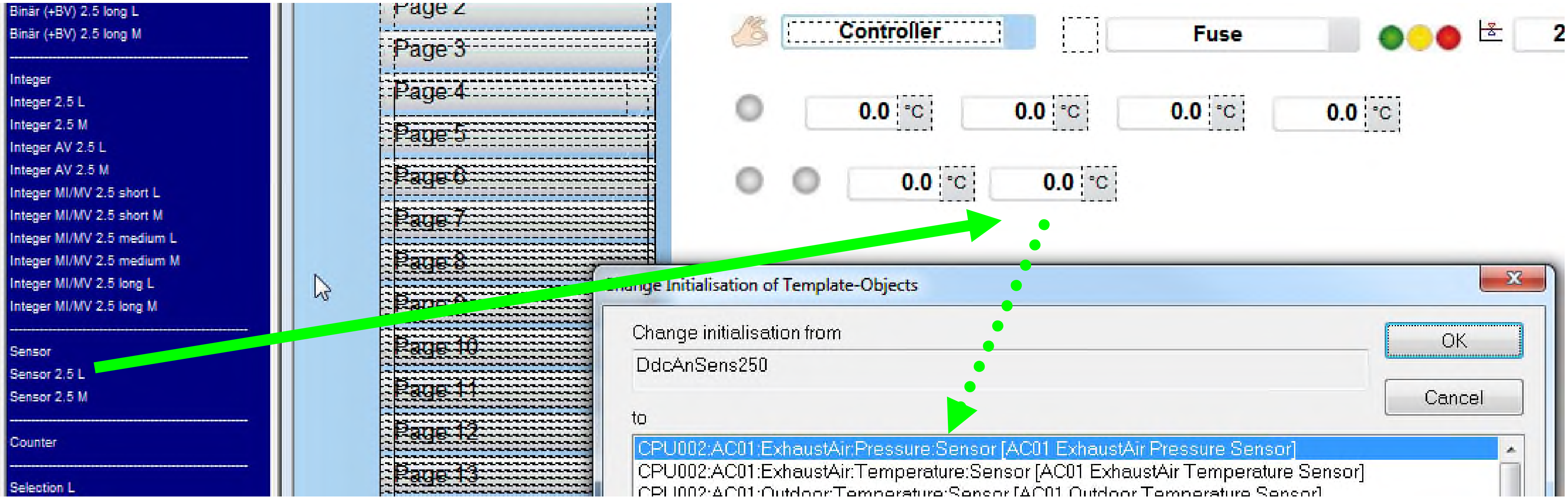
So this Fupla page is done – next page is Page 9: Sensor, Temperature. The in-between pages do not contain Fboxes which has template. So let us go to the page “Sensor”. There are 5 FBoxes there:

- 1 time “Ala SetPt” – Set point Monitoring Fbox
- 4 times “Sensor 2.5 L” Fboxes

Drag and drop from catalogue bar “DDC alarming” the object “Set point monitoring LED” once and from the “DDC Analog Value” the “Sensor 2.5 L ” 4 times.

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus



Change Initialisation of Template-Objects

Change initialisation from

DdcAnSens250

to

CPU002:AC01:ExhaustAir:Pressure:Sensor [AC01 ExhaustAir Pressure Sensor]

CPU002:AC01:ExhaustAir:Temperature:Sensor [AC01 ExhaustAir Temperature Sensor]

CPU002:AC01:Outdoor:Temperature:Sensor [AC01 Outdoor Temperature Sensor]

So this Fupla page is done – next page is Page 10: Sensor, Pressure It contains 4 Fboxes should be placed and connected as we have done before:

- 2 times “Ala SetPt” – Set point Monitoring Fbox
- 2 times “Sensor 2.5 L” Fboxes

Drag and drop from catalogue bar “DDC alarming” the object “Set point monitoring LED” twice and from the “DDC Analog Value” the “Sensor 2.5 L ” twice.

And connect them to the FBoxes.

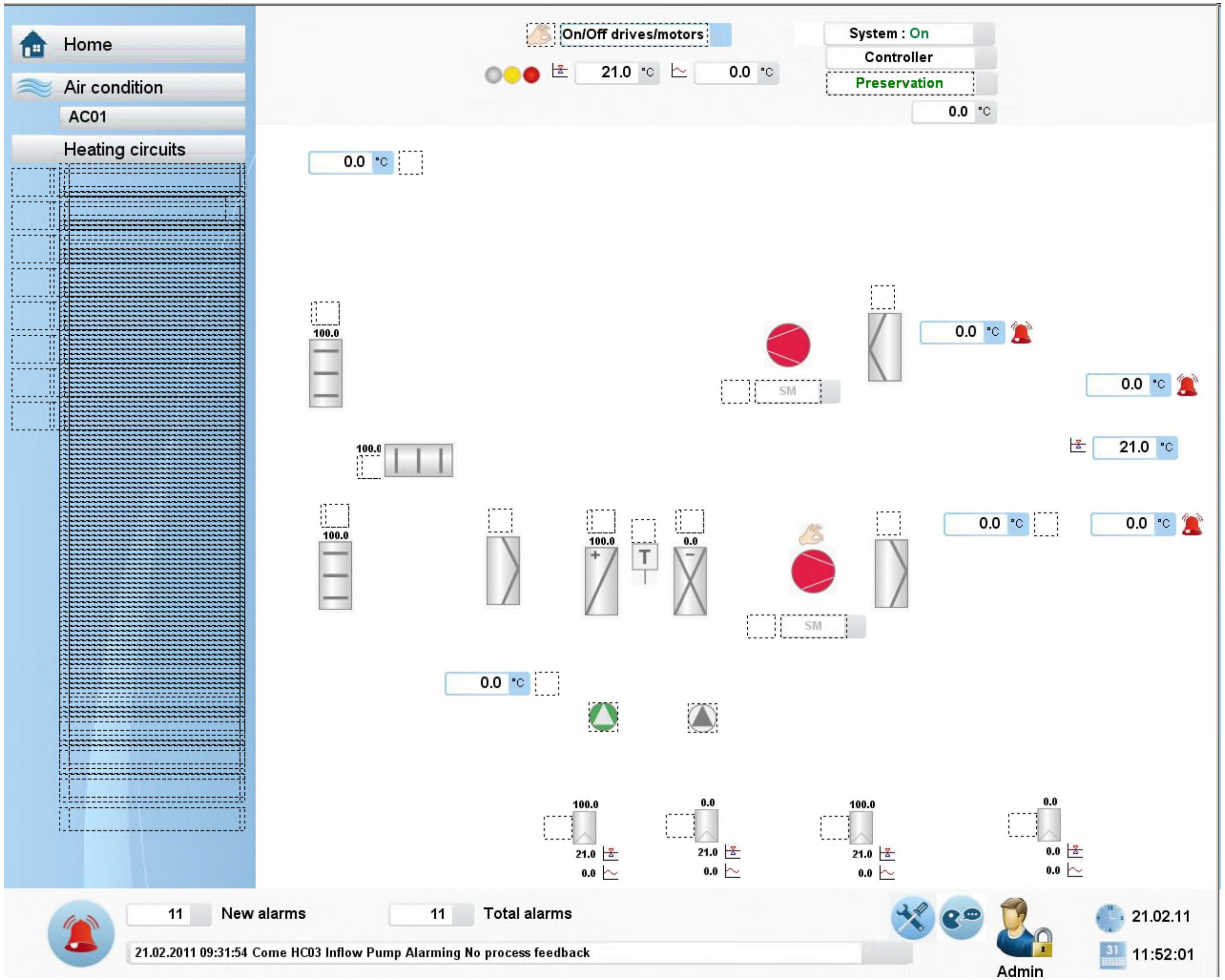
DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Go through all the Fupla pages of the Air Condition 01 and place a the corresponding graphical element for the Fboxes onto the screen.

Connect the graphical elements to the Fboxes.

Now the whole air condition is done. Switch to runtime mode an play a little bit with the objects = FBoxes to see which possibilities you have and what's already predefined within Visi.Plus e.g. historic data or alarming.



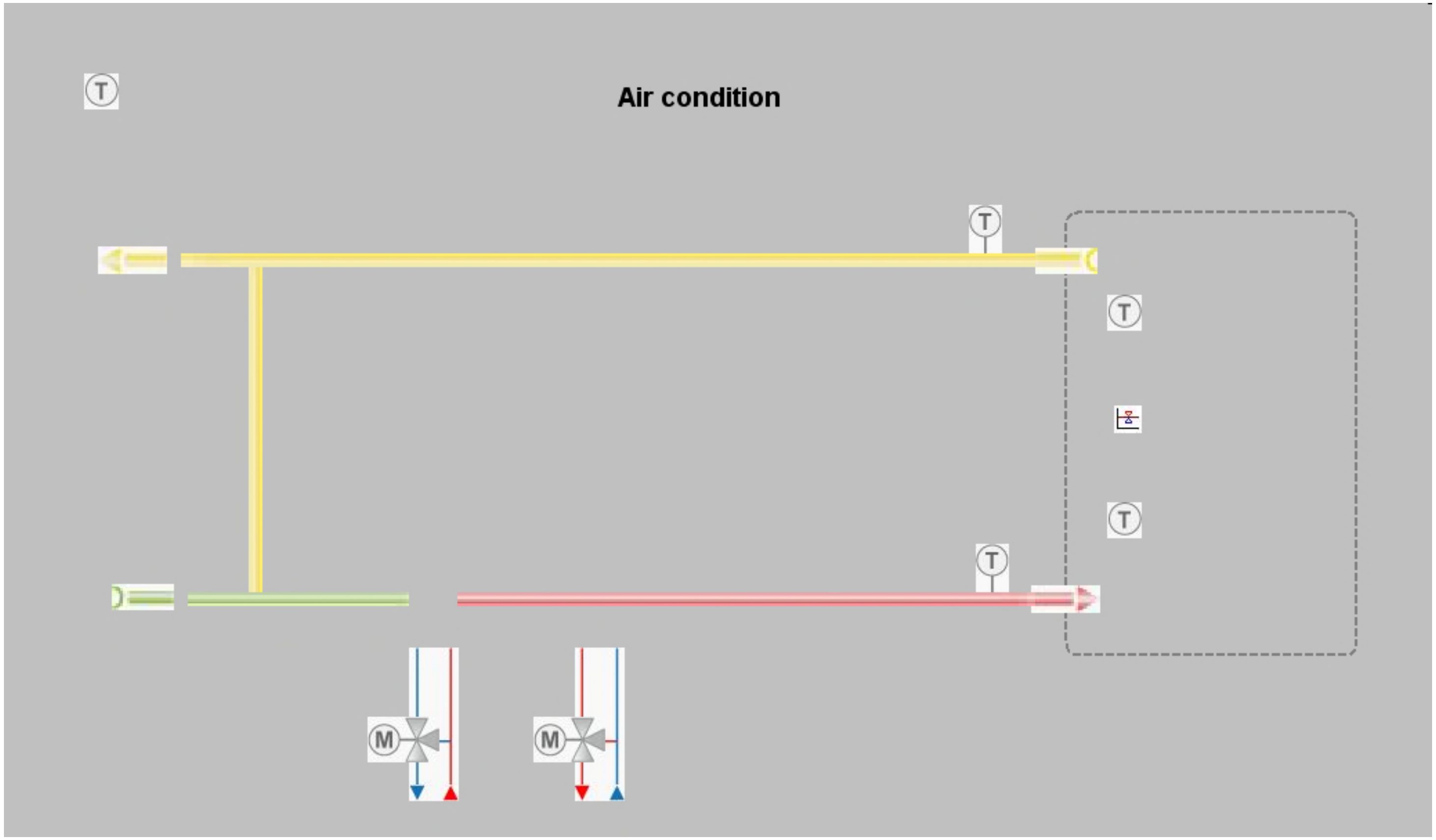
21.02.2011 09:31:54 Come HC03 Inflow Pump Alarming No process feedback

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

At the end some static drawings

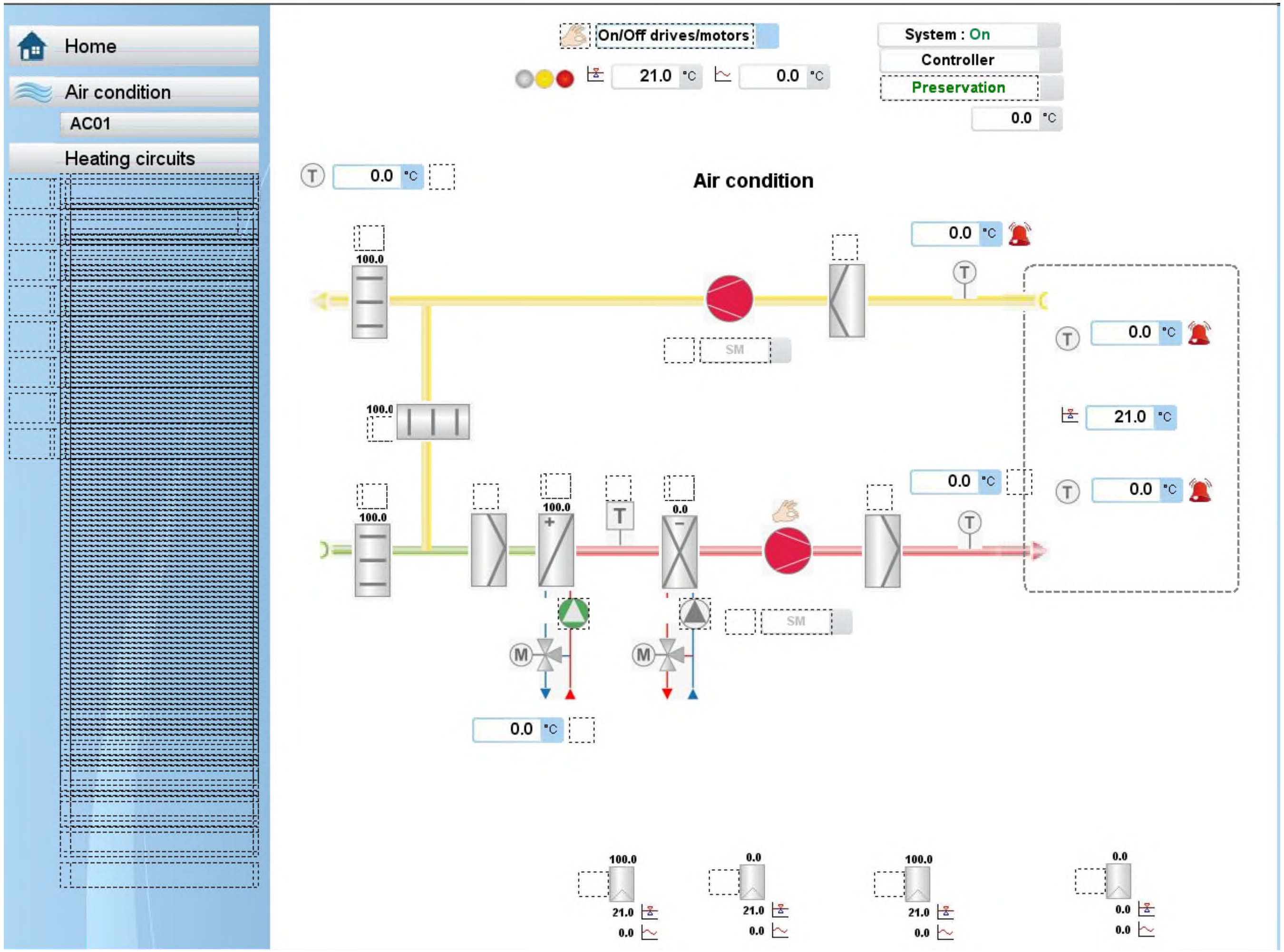
This should be placed on to the screen and should be organised nicely.



DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

If something is missing it is easy to place and connect afterwards.



Engineering with templates

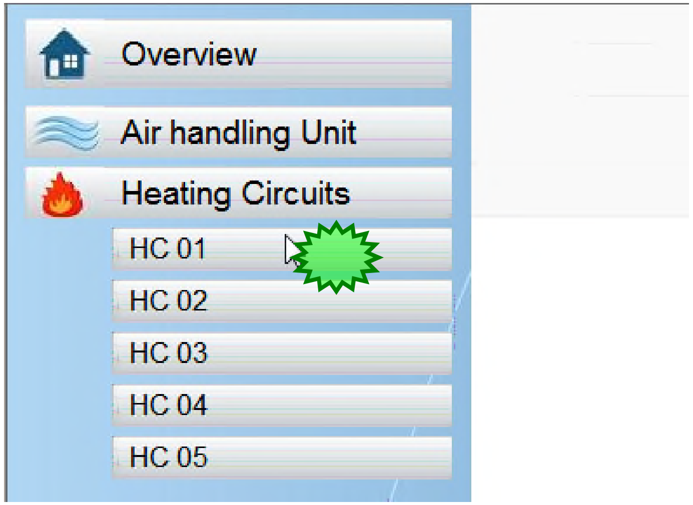
DDC Suite 2.5 / PG5 Building Advanced

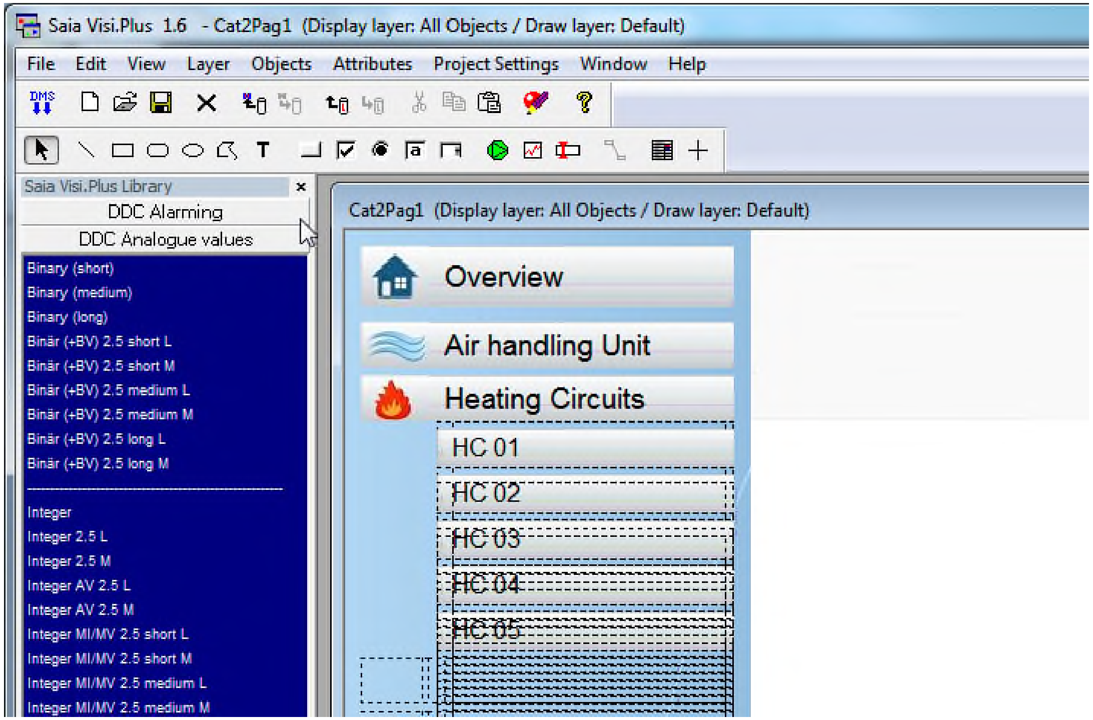
DDC Suite and Visi.Plus

The air condition was programmed in Fupla by our own and therefore we had to engineer the drawing in Visi.Plus step by step.

But we also used in Fupla a template – Heating Circuit – 5 times.

Navigate to "Home" – "Heating Circuit" and finally "HC01" and switch to edit mode.




Saia Visi.Plus 1.6 - Cat2Pag1 (Display layer: All Objects / Draw layer: Default)

As you see we are exactly on the page (Cat2Pag1.psc) where we would like to draw the process image of Heat Circuit 01.

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

In Fupla we used a template – and this template was predefined in DDC Suite.

You'll also find a related template in Visi.Plus which fits to the Heating Circuit Fupla templates.

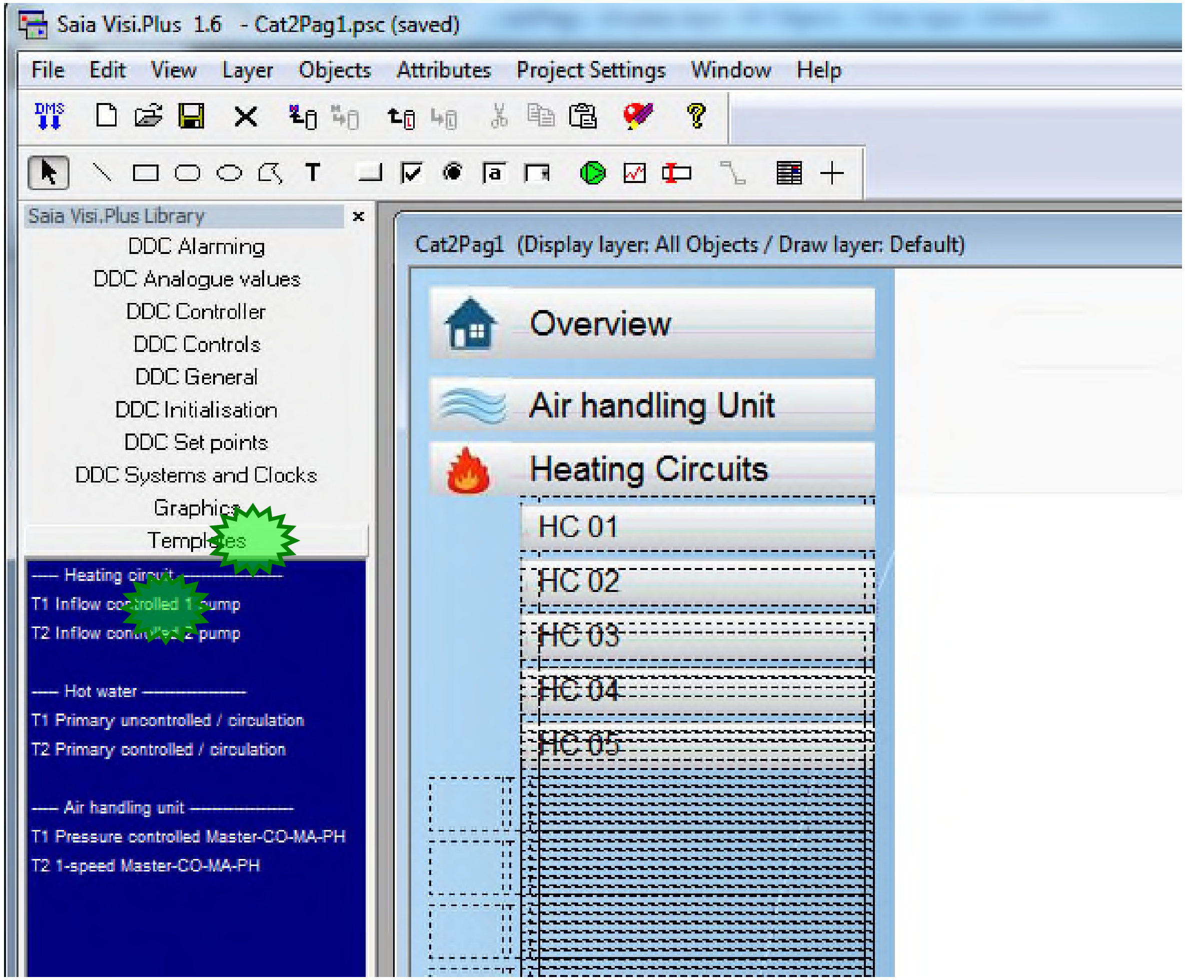
These templates can be found in the "Catalog" under the "Templates" menu.

Click on icon "T1 Inflow controlled 1 pump" and drag to the page.

Drop the template that way that yellow arrow tip is positioned to the left upmost corner of the page (0,0 position) .

Probably the template can not be positioned to the right place at once.

Don't give up! ☺



Saia Visi.Plus 1.6 - Cat2Pag1.psc (saved)
File Edit View Layer Objects Attributes Project Settings Window Help
Saia Visi.Plus Library
DDC Alarming
DDC Analogue values
DDC Controller
DDC Controls
DDC General
DDC Initialisation
DDC Set points
DDC Systems and Clocks
Graphics
Templates
---- Heating circuit ----
T1 Inflow controlled 1 pump
T2 Inflow controlled 2 pump
---- Hot water ----
T1 Primary uncontrolled / circulation
T2 Primary controlled / circulation
---- Air handling unit ----
T1 Pressure controlled Master-CO-MA-PH
T2 1-speed Master-CO-MA-PH
Cat2Pag1 (Display layer: All Objects / Draw layer: Default)
Overview
Air handling Unit
Heating Circuits
HC 01
HC 02
HC 03
HC 04
HC 05

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

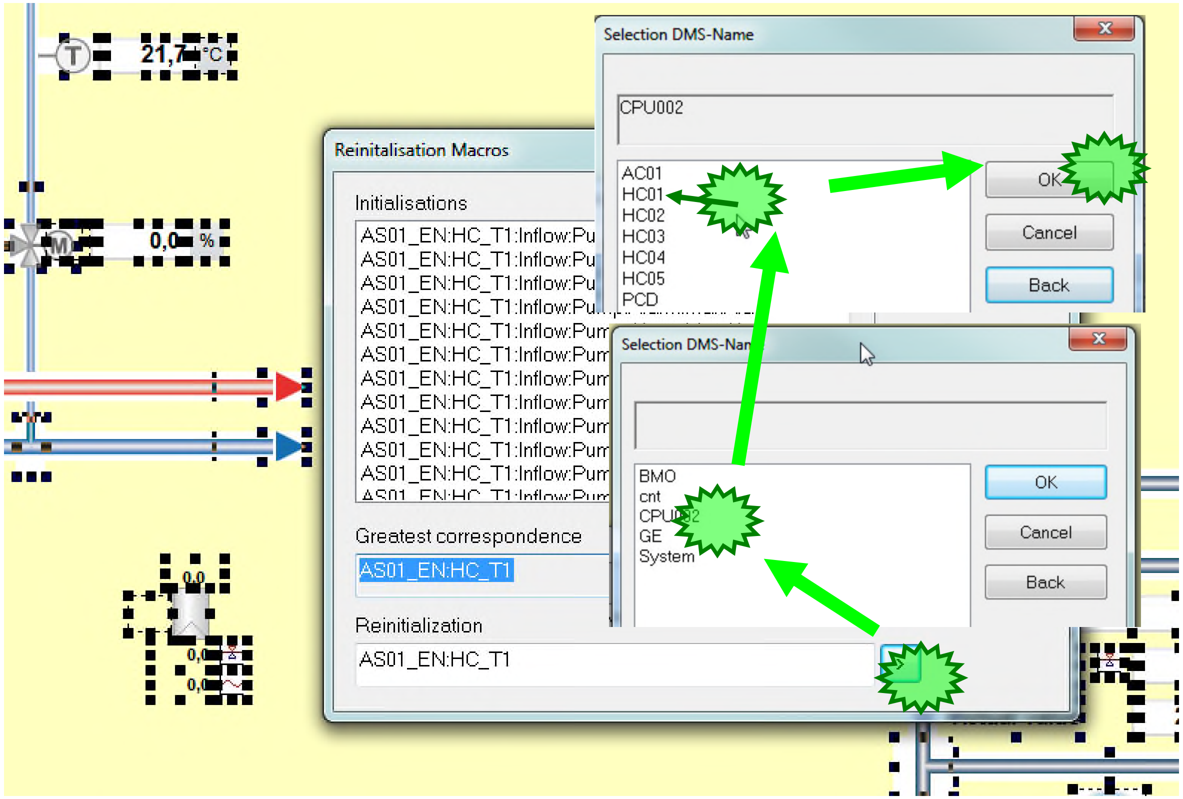
When the template is dropped to the page it is most likely not placed to the right position.

The “Re-initialisation” window pops up, where we have to do settings.

The upper part shows the present initialisations of the graphical objects.

The “greatest correspondence“ is shown in the grey text box.

And we can select the right prefix from the database to make the re-initialisation. Click to the “**>**” button



Reinitialisation Macros

Initialisations

```
AS01_EN:HC_T1:Inflow:Pu
AS01_EN:HC_T1:Inflow:Pu
AS01_EN:HC_T1:Inflow:Pu
AS01_EN:HC_T1:Inflow:Pu
AS01_EN:HC_T1:Inflow:Pum
AS01_EN:HC_T1:Inflow:Pum
AS01_EN:HC_T1:Inflow:Pum
AS01_EN:HC_T1:Inflow:Pum
AS01_EN:HC_T1:Inflow:Pum
AS01_EN:HC_T1:Inflow:Pum
AS01_EN:HC_T1:Inflow:Pum
```

Greatest correspondence: AS01_EN:HC_T1

Reinitialization: AS01_EN:HC_T1

Selection DMS-Name

CPU002

AC01
HC01
HC02
HC03
HC04
HC05
PCD

Selection DMS-Name

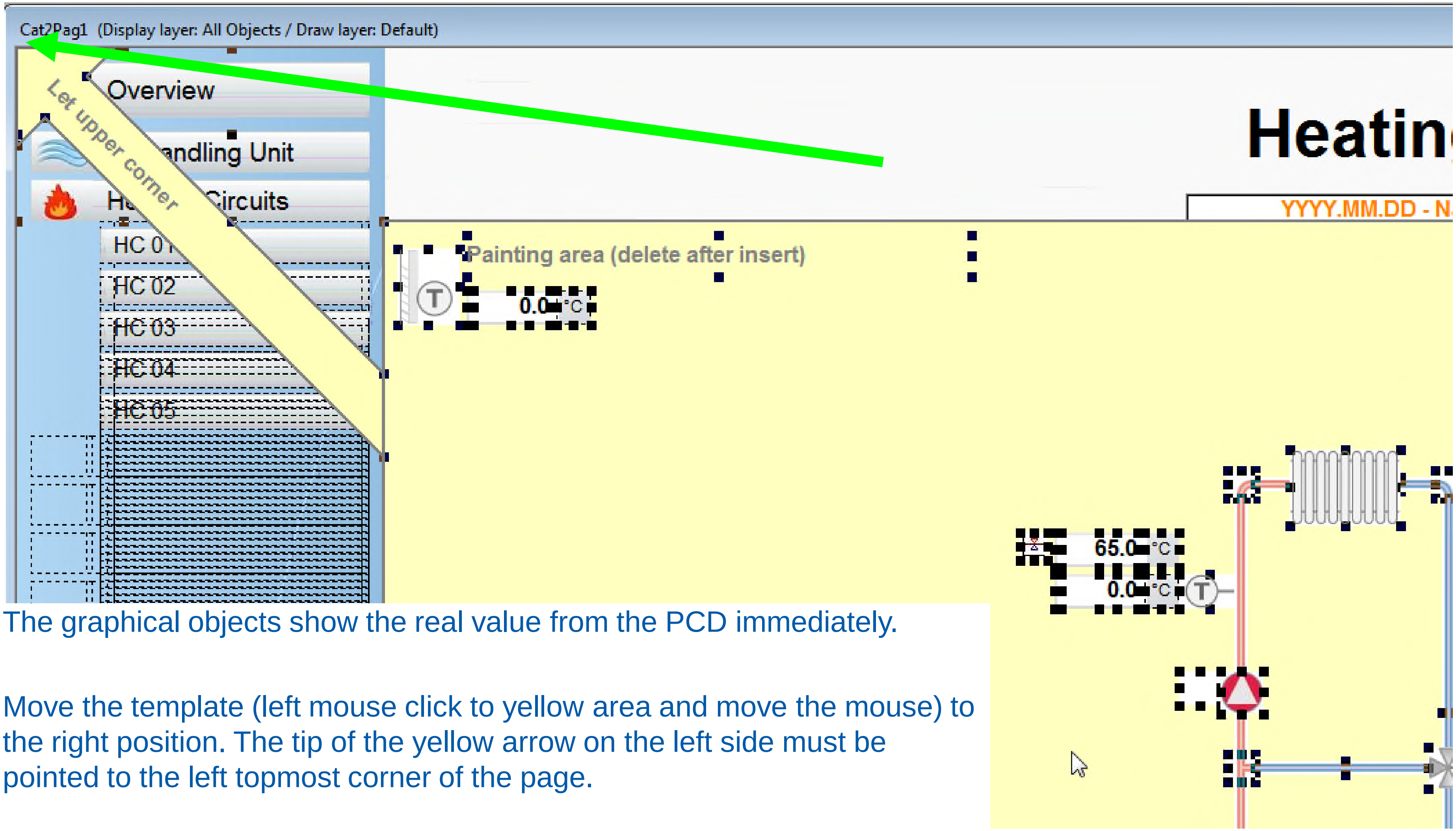
BMO
cnt
CPU002
GE
System

This new prefix we select will overwrite the prefix in the “Greatest correspondence” filed. And the graphical objects will be connected to our Heating Circuit 01 database elements (so through communication to the Heating Circuit 01 Fboxes in the PCD)

Press the “OK” buttons to make the popup window disappeared. But do not click with the mous outside of the yellow are. This would drop the highlights.

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus



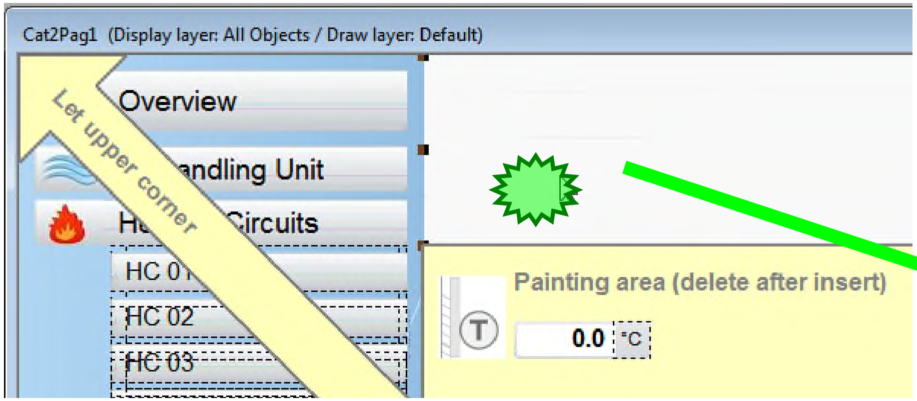
The graphical objects show the real value from the PCD immediately.

Move the template (left mouse click to yellow area and move the mouse) to the right position. The tip of the yellow arrow on the left side must be pointed to the left topmost corner of the page.

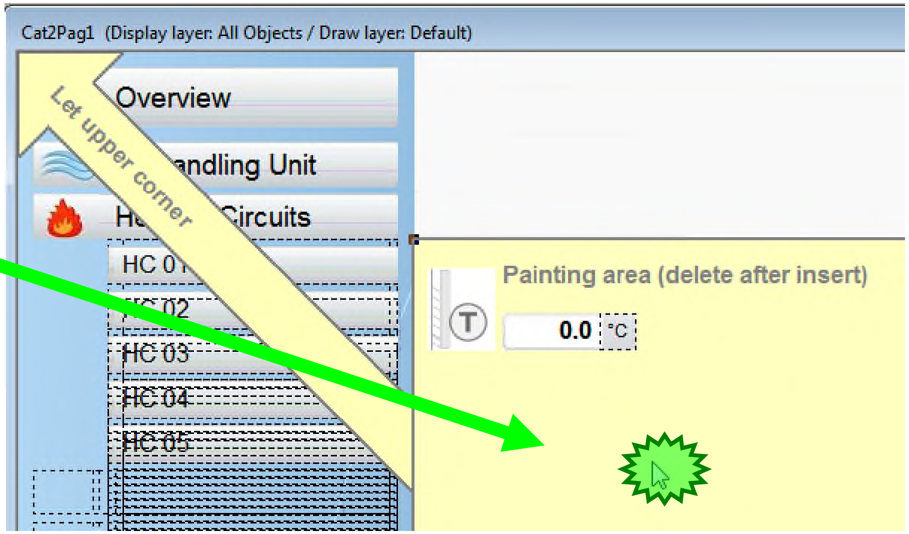
You can use the arrow buttons to move the template in a fine way.

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus


Cat2Pag1 (Display layer: All Objects / Draw layer: Default)
Let upper corner
Overview
...andling Unit
He... Circuits
HC 01
HC 02
HC 03
Painting area (delete after insert)
T
0.0 °C

Click once away from the yellow area (to the white area) to drop the selection (no more highlights in the yellow area)

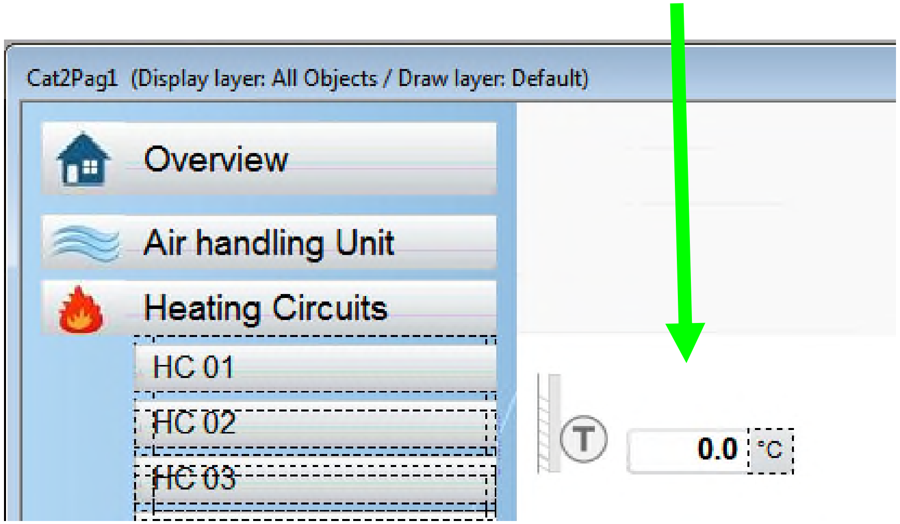

Cat2Pag1 (Display layer: All Objects / Draw layer: Default)
Let upper corner
Overview
...andling Unit
He... Circuits
HC 01
HC 02
HC 03
HC 04
HC 05
Painting area (delete after insert)
T
0.0 °C

Click back somewhere to the yellow area to select the yellow background. Do not click to any other graphical objects located in the yellow area.

Press the delete button to delete the yellow background.

Save the screen because you are ready! ☺ ☺

Go back to online mode and check the elements if they are initialised to the right database objects and working well.



DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

You can repeat this procedure for the next 4 Heating Circuits too. This template technique will improve your engineering speed very much.

Or

You can create and reuse “Macros”. It is possible to create graphical macro’s in Visi.Plus and you can reuse your own macros as many times as you want .

Engineering with graphical macros

SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

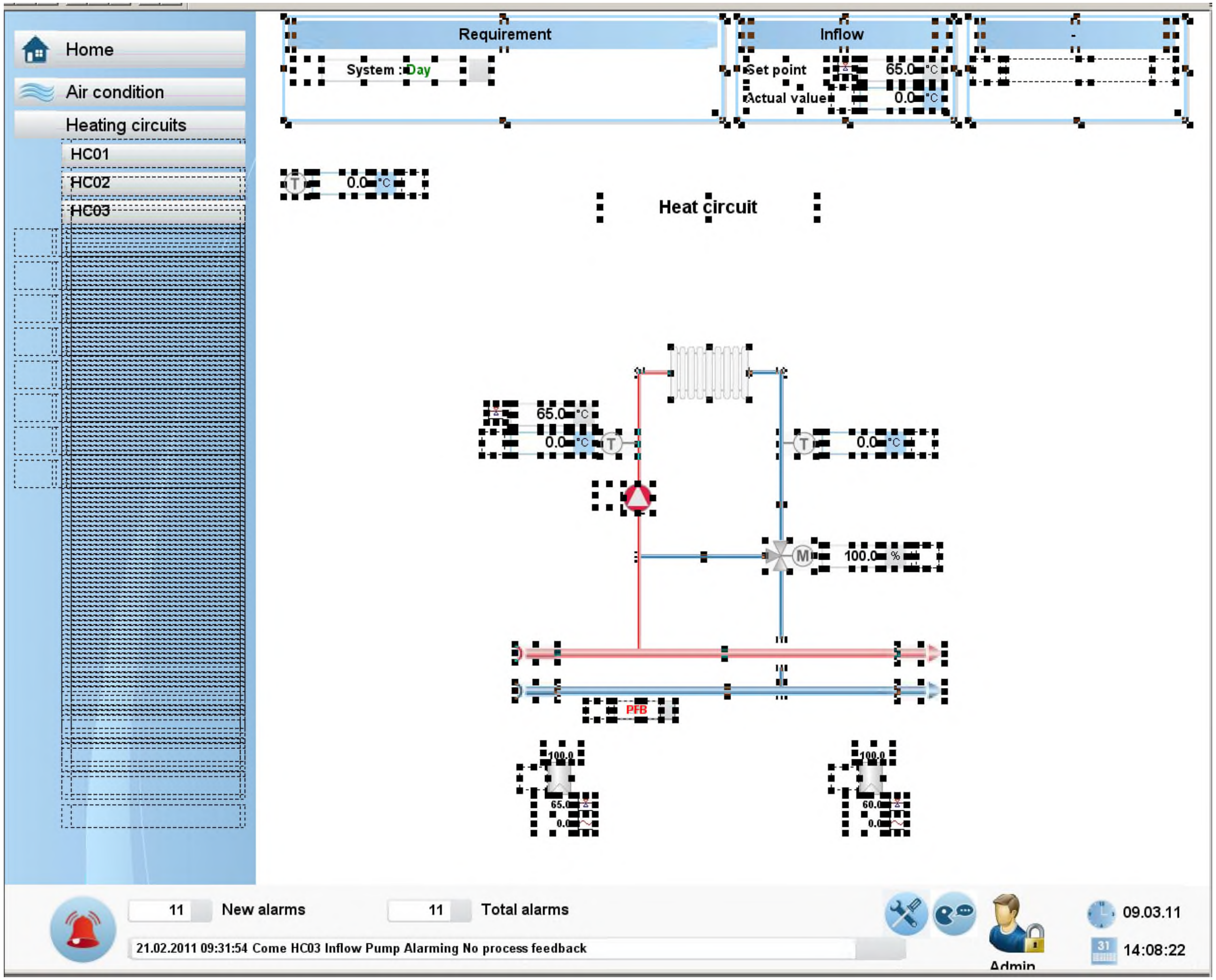
DDC Suite and Visi.Plus

Be sure that all objects are connected to the correct FBox of HC01.

Mark all (don’t use CTRL+A) objects, use key “Shift” to add objects to selection.

Be sure that you have marked all objects and graphics of HC01.

(as the screen shows you.)



21.02.2011 09:31:54 Come HC03 Inflow Pump Alarming No process feedback

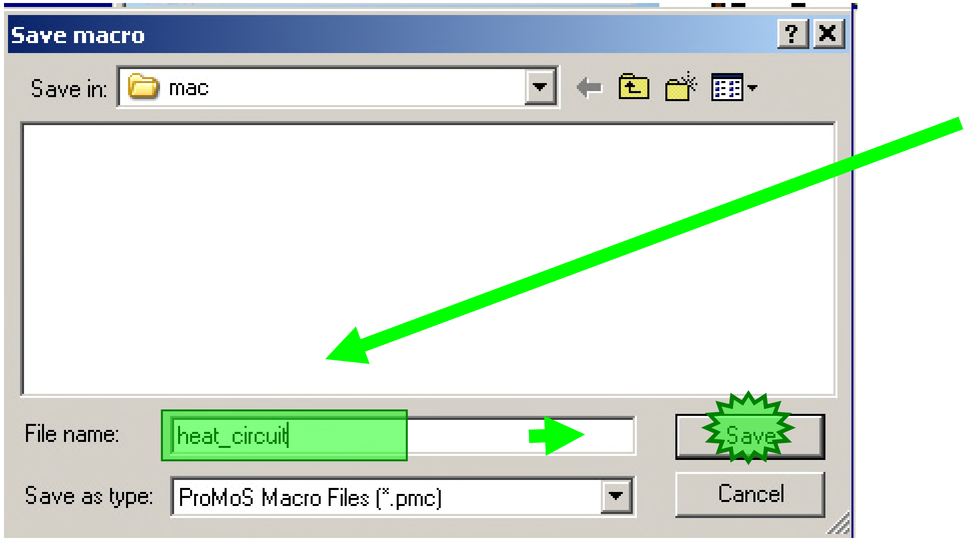
DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Click on icon “Save macro” (or File menu / Save macro).

Type in heat_circuit

and click on button Save

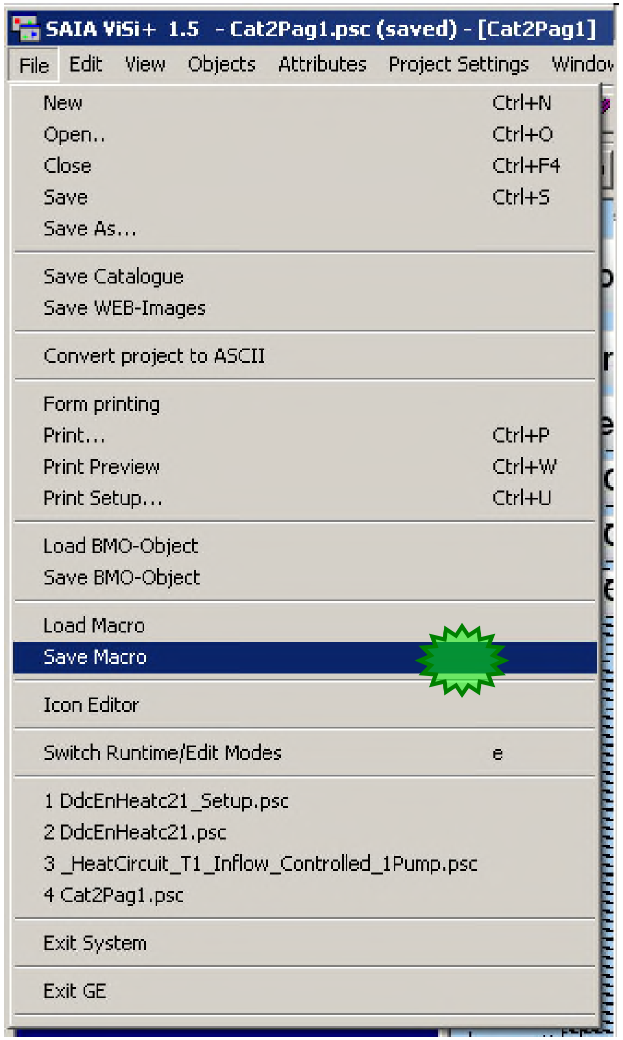


Save macro

Save in: mac

File name: heat_circuit

Save as type: ProMoS Macro Files (*.pmc)



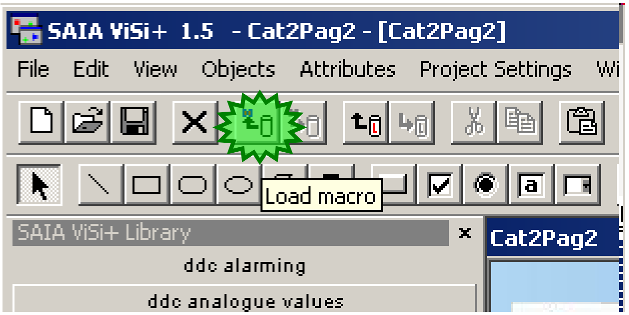
SAIA ViSi+ 1.5 - Cat2Pag1.psc (saved) - [Cat2Pag1]

DDC Suite 2.5 / PG5 Building Advanced

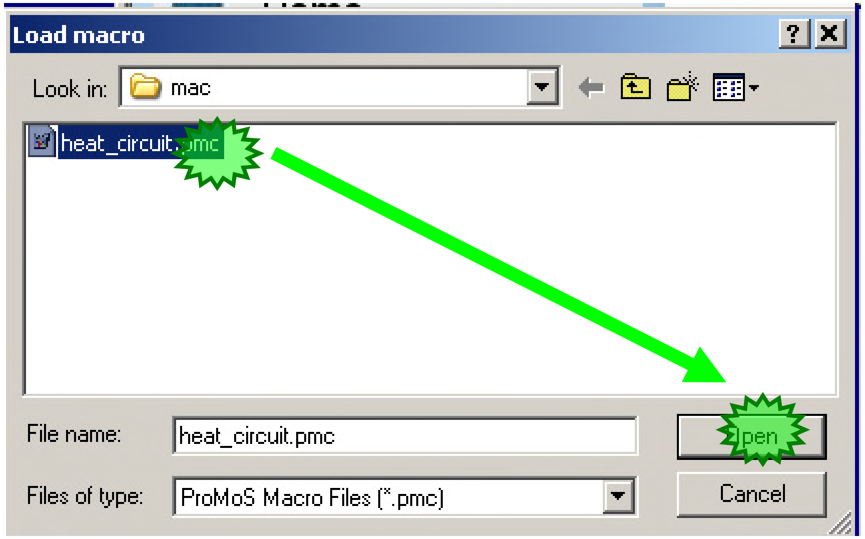
DDC Suite and Visi.Plus

Switch to runtime mode, navigate to page HC02 and switch back to Edit mode.

Click on icon “Load macro” (or menu File/Load macro)



Select the macro we saved before: heat_circuit.pmc and press “Open”



File name: heat_circuit.pmc

Files of type: ProMoS Macro Files (*.pmc)

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

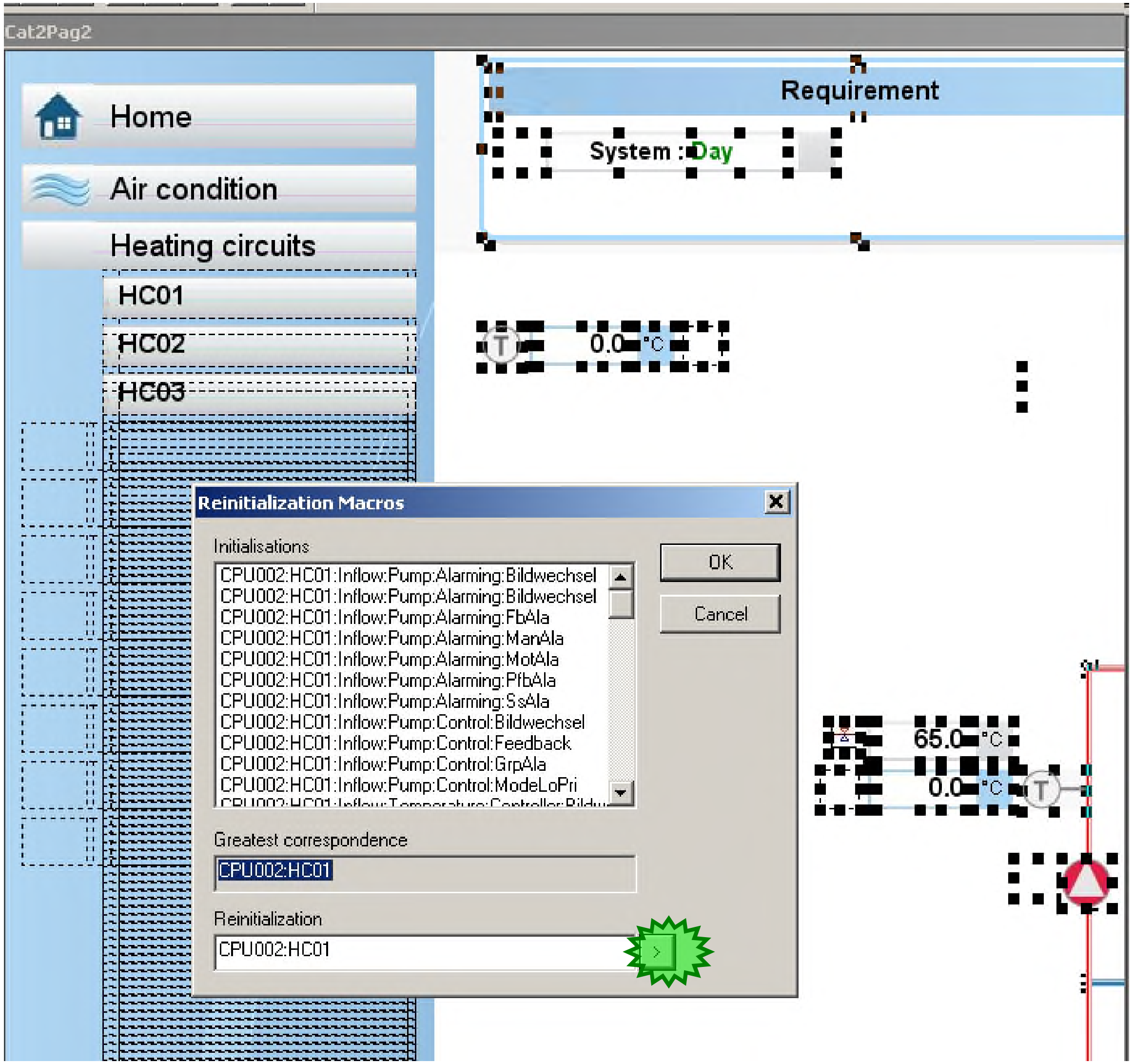
Visi.Plus will import the macro – but it detects also that all objects in this macro are assigned to a unique group structure

CPU002:HC01

So here we have the possibility to change all assigned objects in one step from HC01 into **HC02**.

Click on button “**>**”

(you can also type the correct ending HC01 into HC02 immediately in field “Re-initialisiation” – but this may give the chance of type writing errors)



Initialisations

```
CPU002:HC01:Inflow:Pump:Alarming:Bildwechsel
CPU002:HC01:Inflow:Pump:Alarming:Bildwechsel
CPU002:HC01:Inflow:Pump:Alarming:FbAla
CPU002:HC01:Inflow:Pump:Alarming:ManAla
CPU002:HC01:Inflow:Pump:Alarming:MotAla
CPU002:HC01:Inflow:Pump:Alarming:PfbAla
CPU002:HC01:Inflow:Pump:Alarming:SsAla
CPU002:HC01:Inflow:Pump:Control:Bildwechsel
CPU002:HC01:Inflow:Pump:Control:Feedback
CPU002:HC01:Inflow:Pump:Control:GrpAla
CPU002:HC01:Inflow:Pump:Control:ModeLoPri
CPU002:HC01:Inflow:Temperature:Controller:Bildw
```

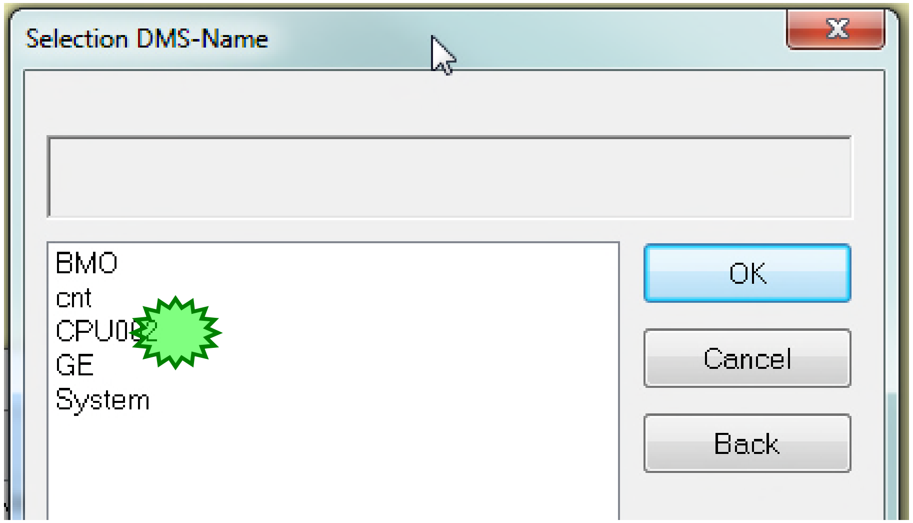
Greatest correspondence: CPU002:HC01

Reinitialization: CPU002:HC01

DDC Suite 2.5 / PG5 Building Advanced

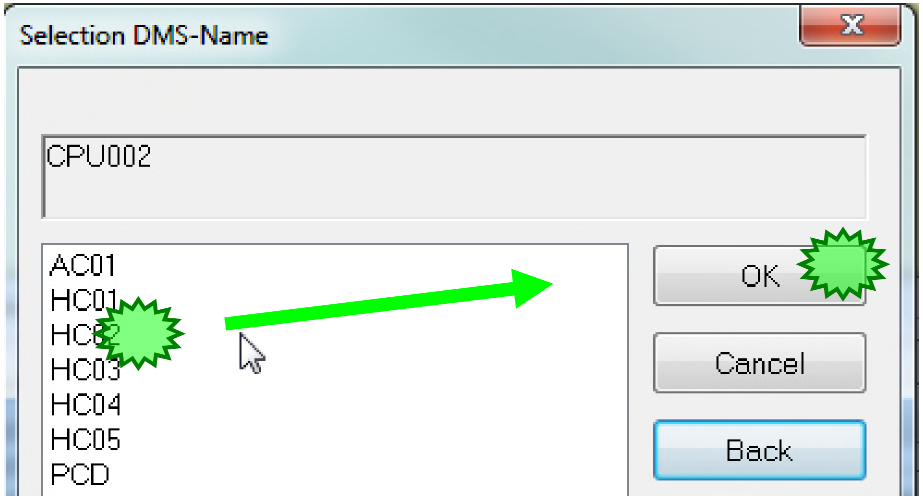
DDC Suite and Visi.Plus

The data base structure navigator opens and now we can navigate to the “HC02” to assign all the objects.


Selection DMS-Name

BMO
cnt
CPU002
GE
System

A single click to entry “CPU002” – the next layer (group) will be listed.


Selection DMS-Name

CPU002

AC01
HC01
HC02
HC03
HC04
HC05
PCD

A single click on entry “HC02” and then button OK.

DDC Suite 2.5 / PG5 Building Advanced

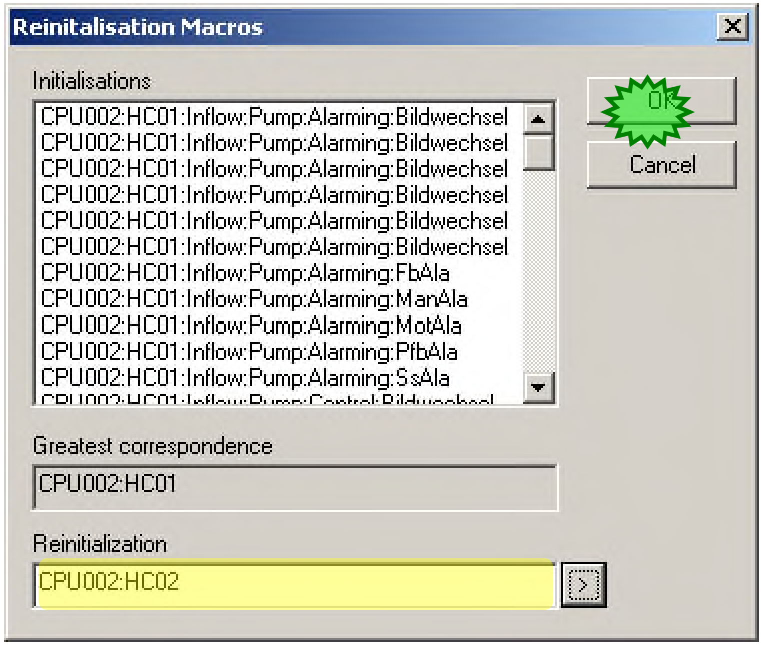
DDC Suite and Visi.Plus

Check if field “Reinitialization” is changed into

CPU002:HC02

And press OK.

That’s all. Check if the objects are assigned to HC02 – do this in runtime mode.



Reinitalisation Macros

Initialisations

CPU002:HC01:Inflow:Pump:Alarming:Bildwechsel
CPU002:HC01:Inflow:Pump:Alarming:Bildwechsel
CPU002:HC01:Inflow:Pump:Alarming:Bildwechsel
CPU002:HC01:Inflow:Pump:Alarming:Bildwechsel
CPU002:HC01:Inflow:Pump:Alarming:Bildwechsel
CPU002:HC01:Inflow:Pump:Alarming:Bildwechsel
CPU002:HC01:Inflow:Pump:Alarming:FbAla
CPU002:HC01:Inflow:Pump:Alarming:ManAla
CPU002:HC01:Inflow:Pump:Alarming:MotAla
CPU002:HC01:Inflow:Pump:Alarming:PfbAla
CPU002:HC01:Inflow:Pump:Alarming:SsAla
CPU002:HC01:Inflow:Pump:Control:Bildwechsel

Greatest correspondence: CPU002:HC01

Reinitialization: CPU002:HC02

Now you can imagine how many time you save when you have to draw big air condition with up to 50, 60 or 100 objects.

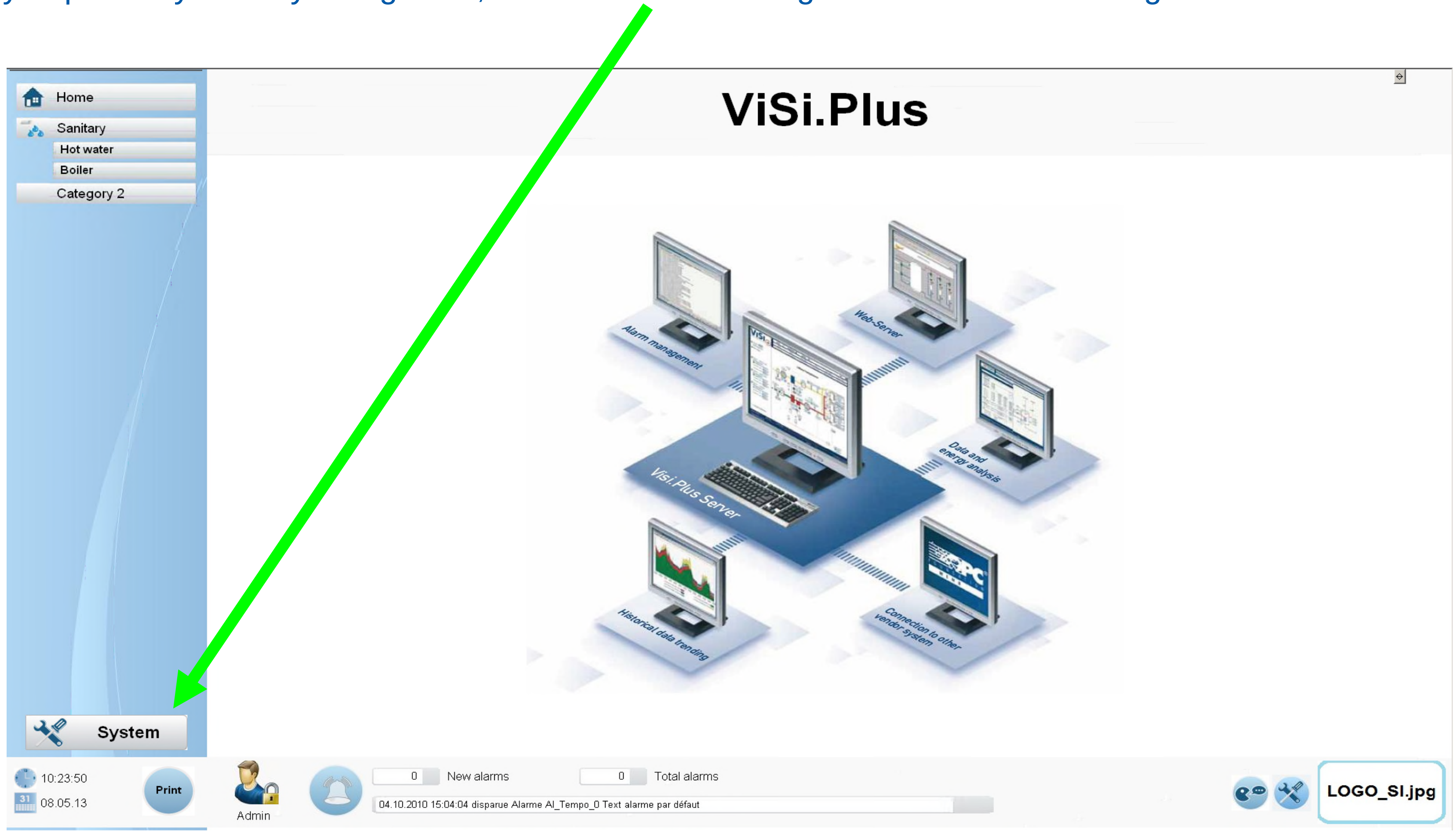
System - navigation page

SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

As you probably already recognised, there is an extra navigation button in the navigation bar…



10:23:50
08.05.13

0 New alarms

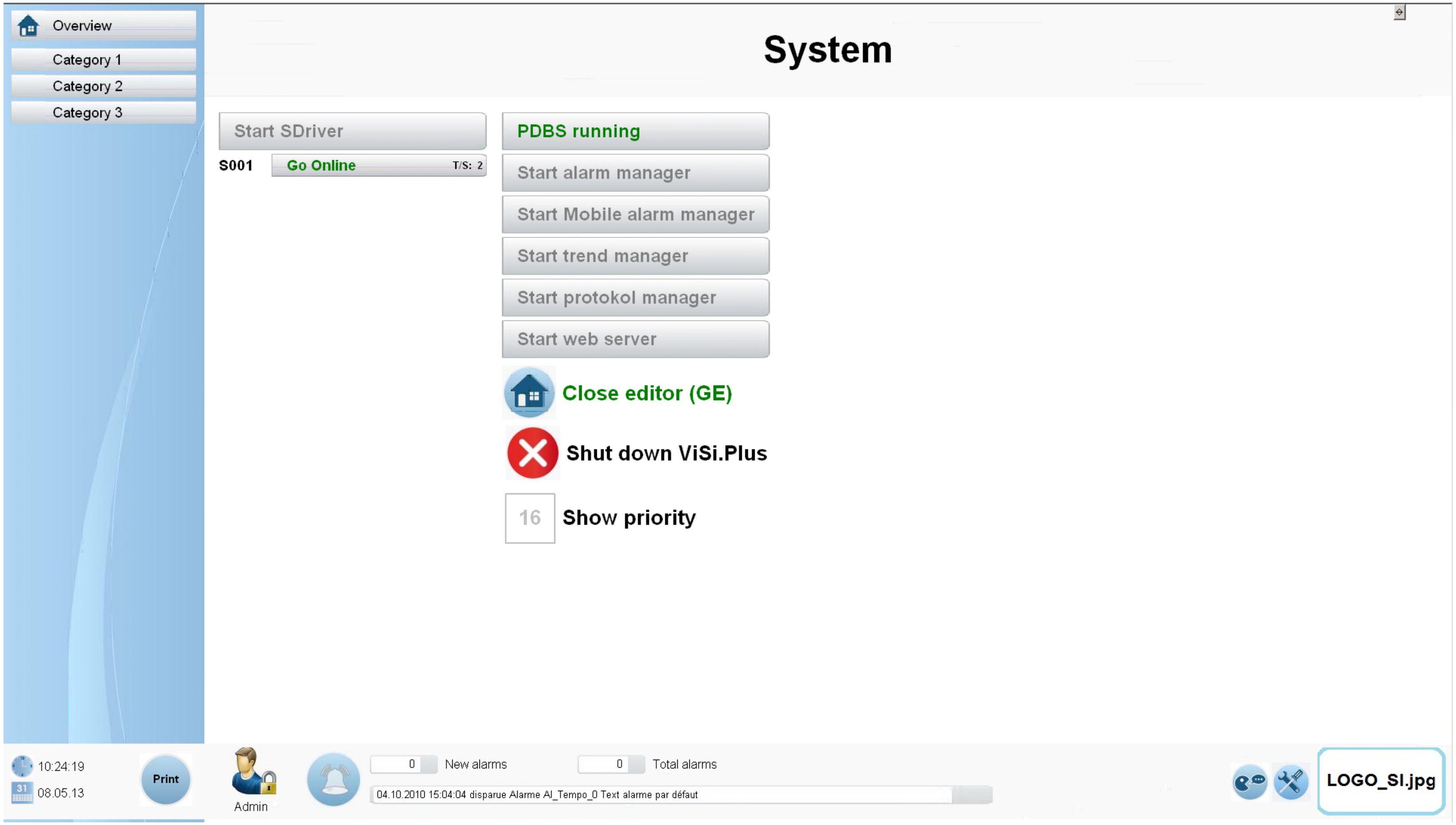
0 Total alarms

04.10.2010 15:04:04 disparue Alarme AI_Tempo_0 Text alarme par défaut

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

This is to open a new page, containing most of the Visi-modul informations, direct link you normally use during the development phase…



04.10.2010 15:04:04 disparue Alarme AI_Tempo_0 Text alarme par défaut

DDC Suite 2.5 / PG5 Building Advanced

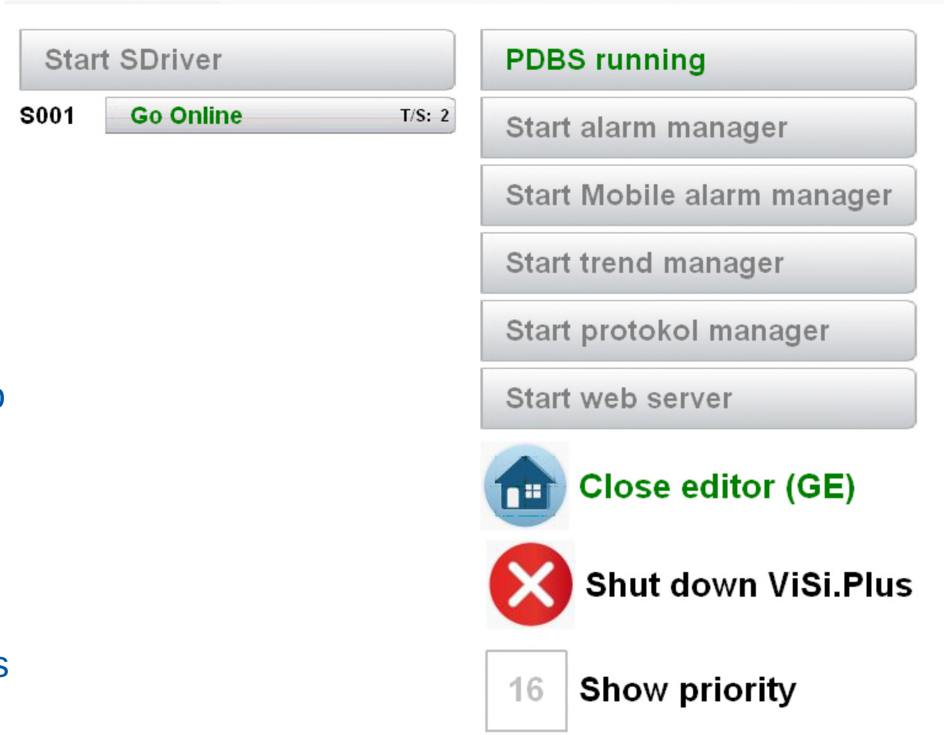
DDC Suite and Visi.Plus

As you can see you have direct access to the most imoportant Visi-moduls like

- Sdriver,
- Alarm Manager,
- Mobile Alarm Manager(MALM,
- Trend Manager(HDAM)
- Protocol manager
- and WebServer

Beside these modul Start/Stop and feedback info you can

- see and manage your Sdriver-channels
- close GE or complete VisiPlus application
- turn On/Off the yellow user level (priority) labels



DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Any problems?

Yes: rewind to first slide and repeat all lessons …

Everything OK: Congratulation

Good to know – it is helpful

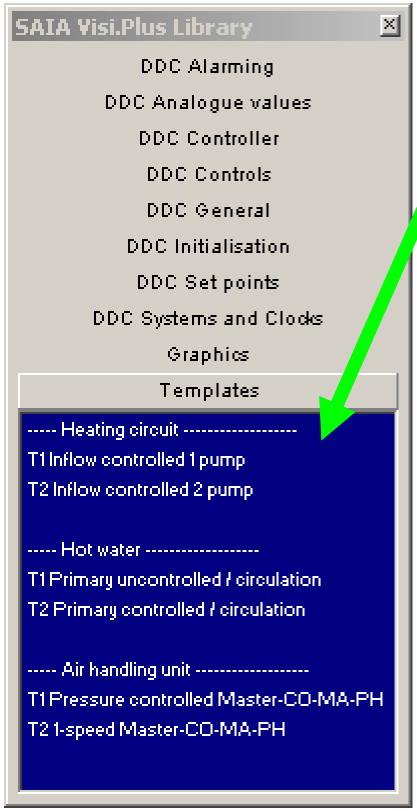
SAIA BURGESS CONTROLS

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

We introduced two new library folders to the Catalog

- one for the system-templates
- and an other one for the icon-gallery graphical elements



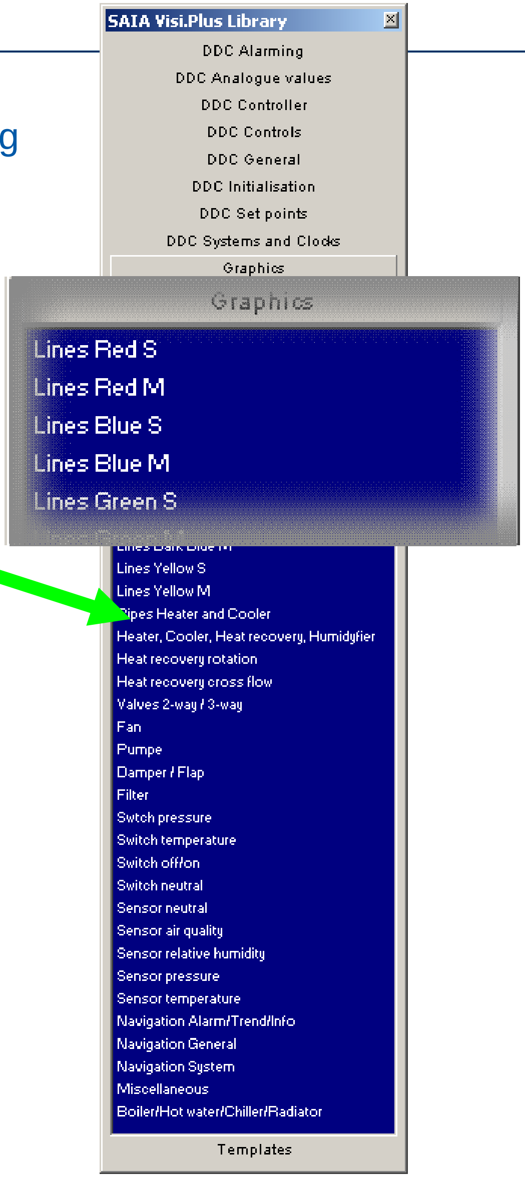
SAIA Visi.Plus Library

DDC Alarming
DDC Analogue values
DDC Controller
DDC Controls
DDC General
DDC Initialisation
DDC Set points
DDC Systems and Clocks
Graphics
Templates

----- Heating circuit ------------------
T1 Inflow controlled 1 pump
T2 Inflow controlled 2 pump

----- Hot water ------------------
T1 Primary uncontrolled / circulation
T2 Primary controlled / circulation

----- Air handling unit ------------------
T1 Pressure controlled Master-CO-MA-PH
T2 1-speed Master-CO-MA-PH



SAIA Visi.Plus Library

DDC Alarming
DDC Analogue values
DDC Controller
DDC Controls
DDC General
DDC Initialisation
DDC Set points
DDC Systems and Clocks
Graphics

Graphics

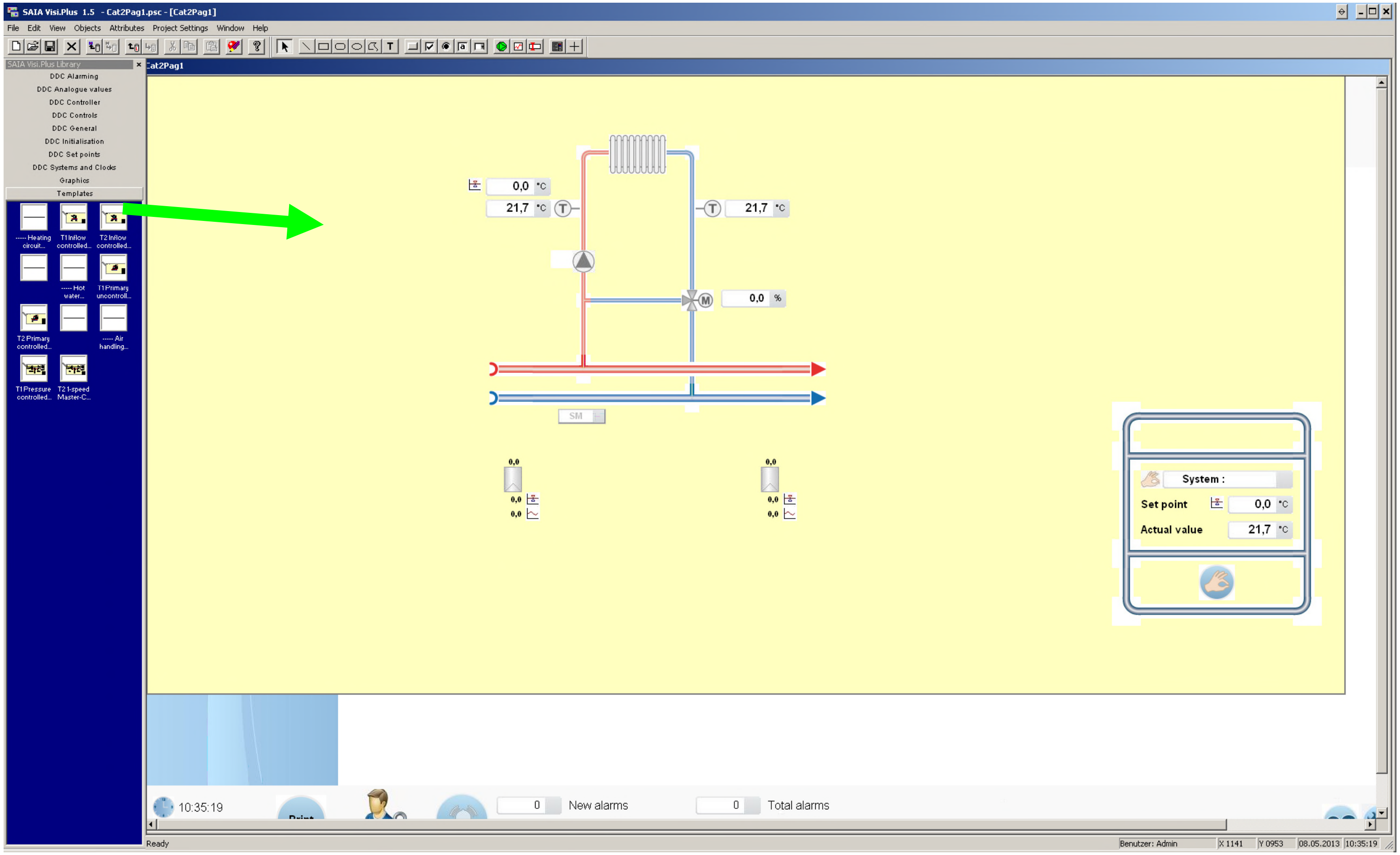
Lines Red S
Lines Red M
Lines Blue S
Lines Blue M
Lines Green S
Lines Dark Blue M
Lines Yellow S
Lines Yellow M
Pipes Heater and Cooler
Heater, Cooler, Heat recovery, Humidyfier
Heat recovery rotation
Heat recovery cross flow
Valves 2-way / 3-way
Fan
Pumpe
Damper / Flap
Filter
Swtch pressure
Switch temperature
Switch off/on
Switch neutral
Sensor neutral
Sensor air quality
Sensor relative humidity
Sensor pressure
Sensor temperature
Navigation Alarm/Trend/Info
Navigation General
Navigation System
Miscellaneous
Boiler/Hot water/Chiller/Radiator
Templates

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

This means that with a simple drag-and-drop action you can insert

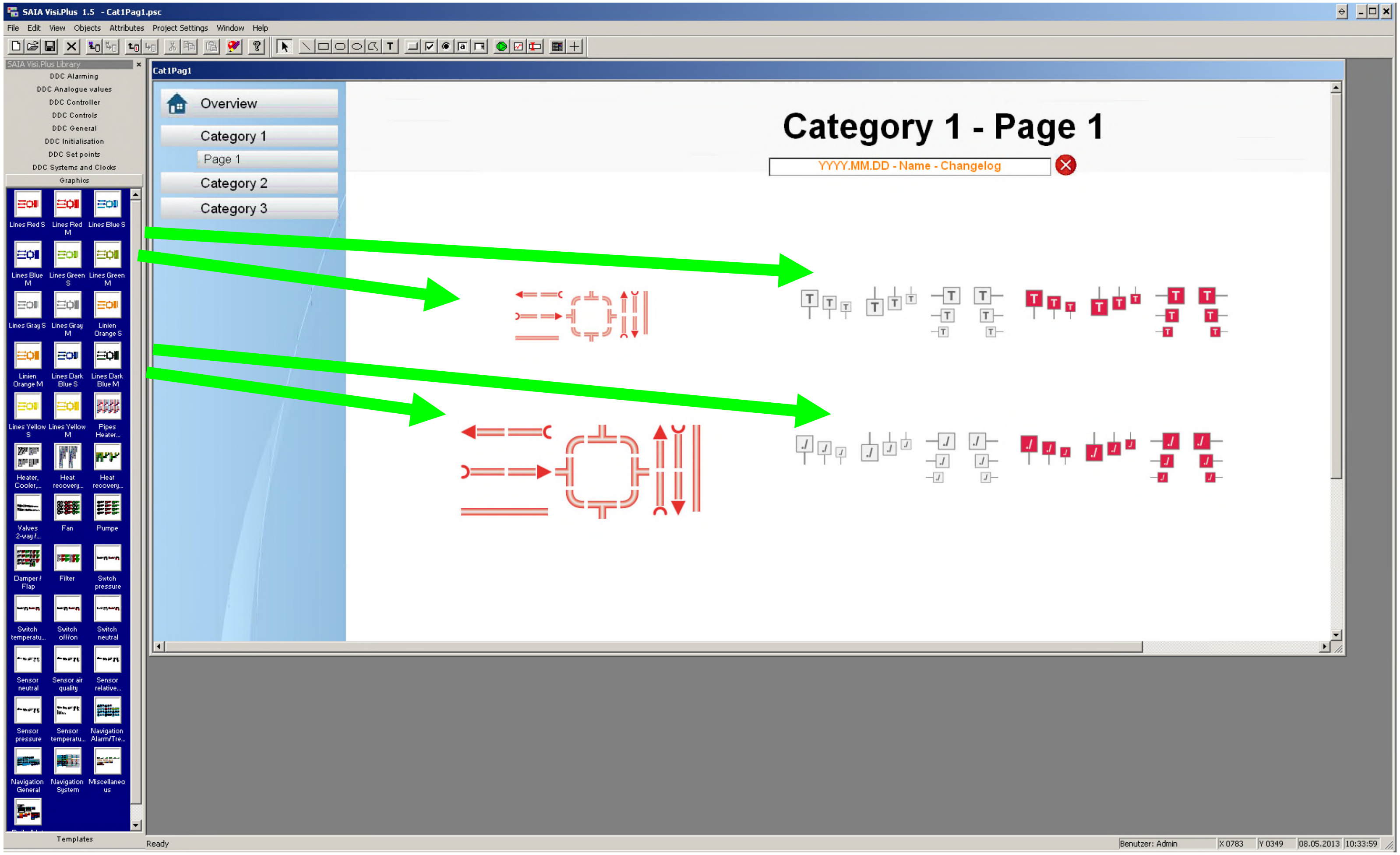
- any predefined system template … (or your own template if you have added it to the catalog)



DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

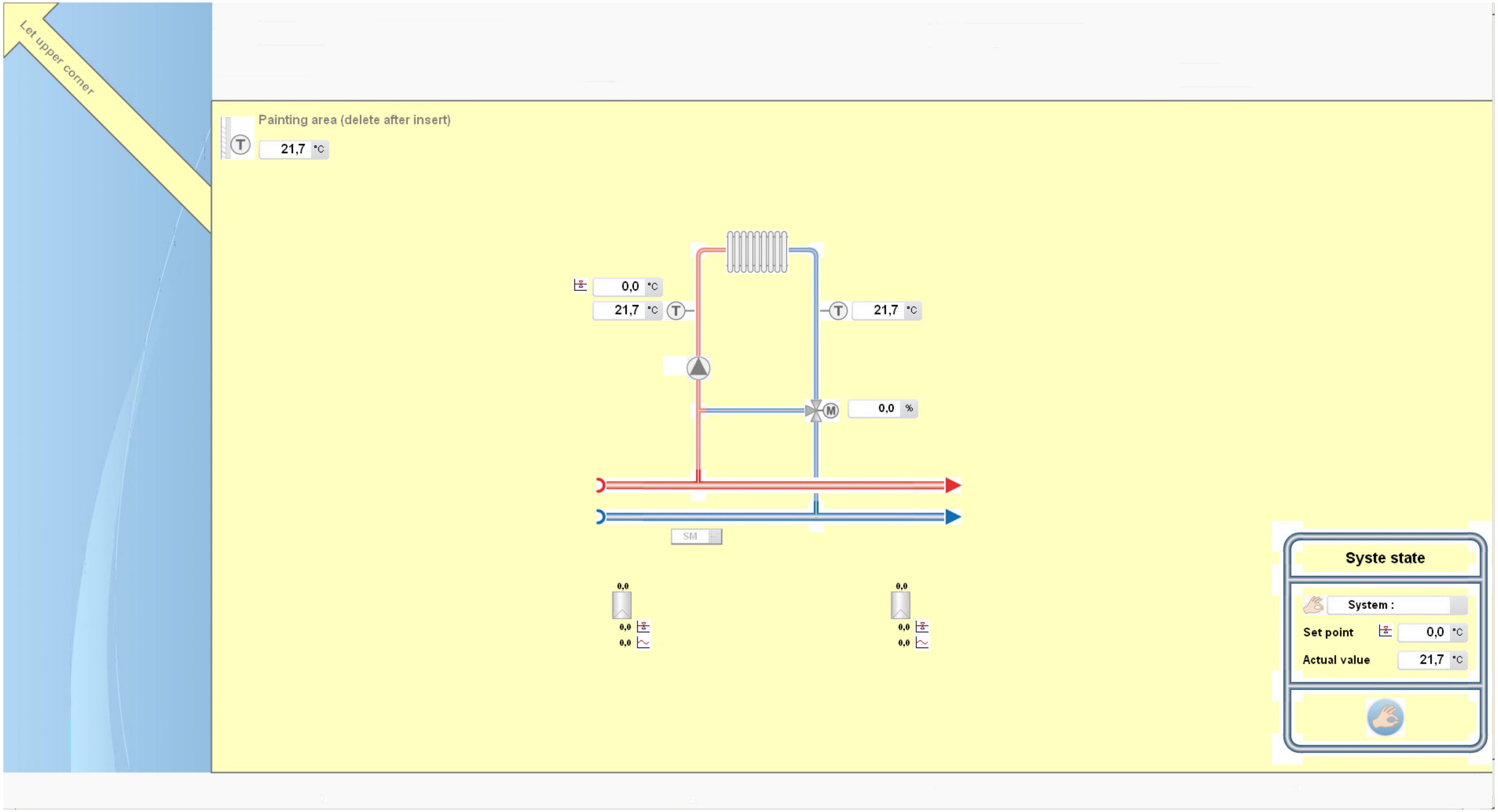
- or any icon-group to your current page



DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Heating circuit T1



Painting area (delete after insert)

21,7 °C

Syste state

System :

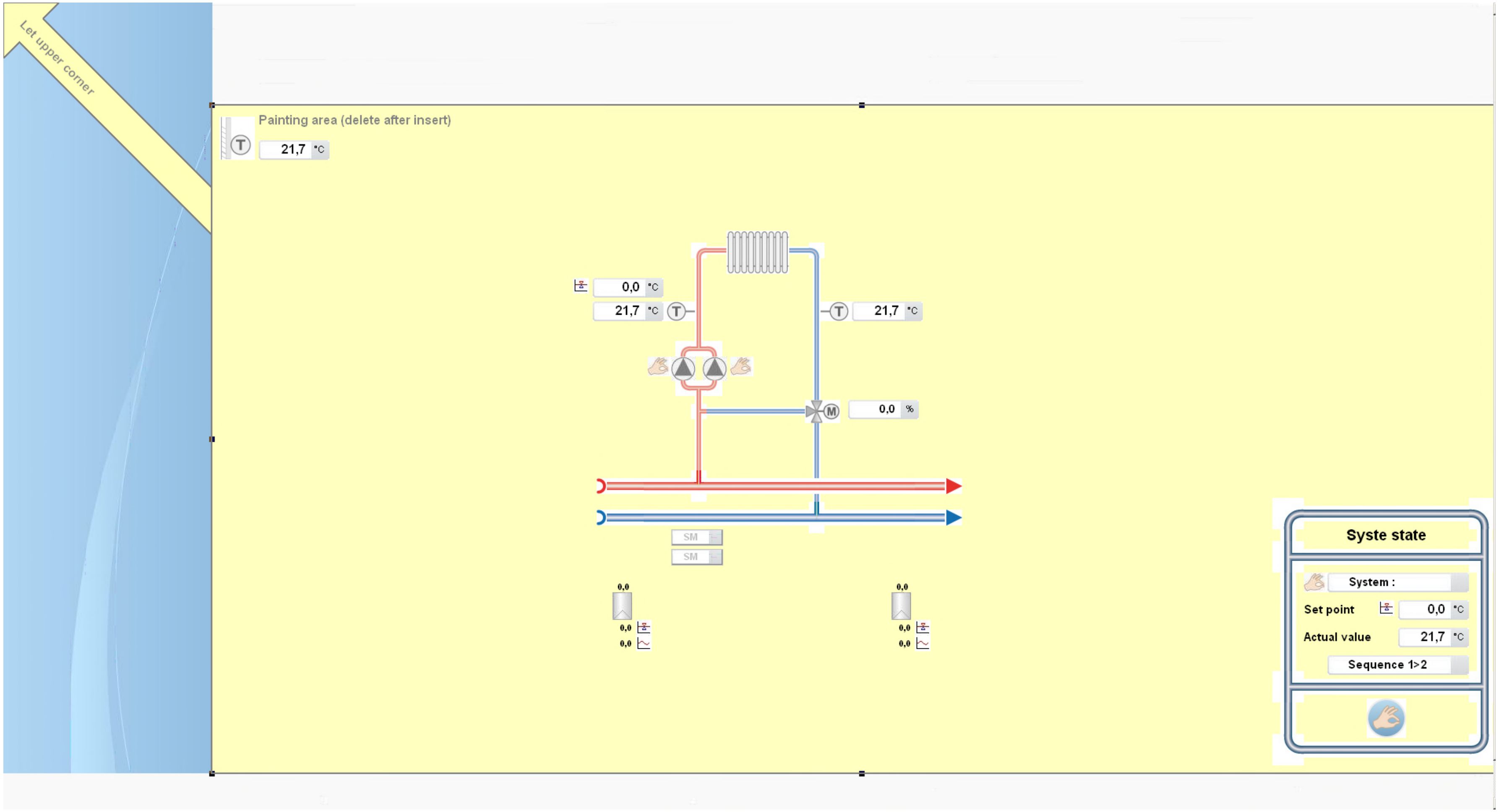
Set point 0,0 °C

Actual value 21,7 °C

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Heating circuit T2



Syste state

System :

Set point 0,0 °C

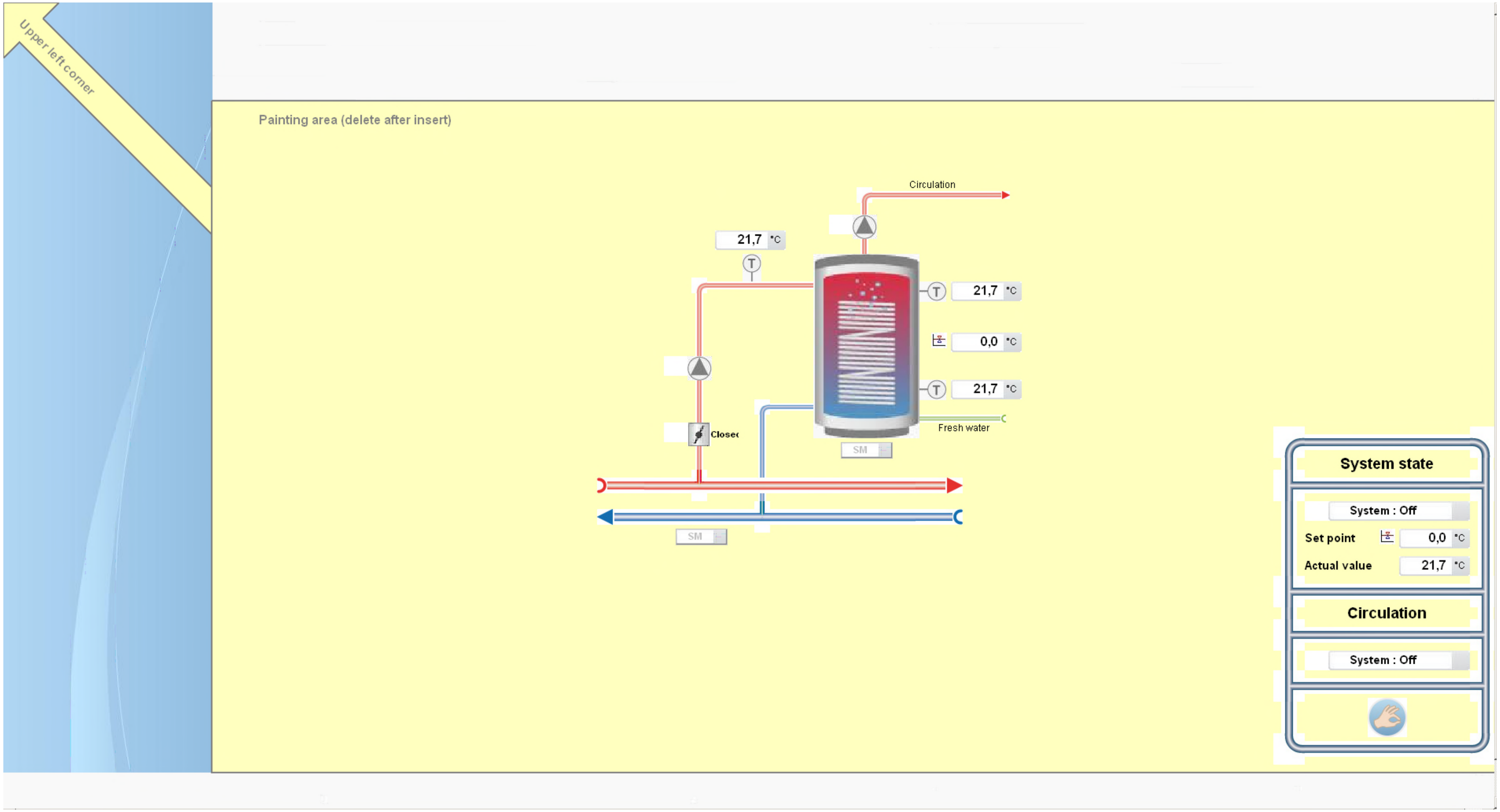
Actual value 21,7 °C

Sequence 1>2

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Hot water T1



System state

System : Off

Set point 0,0 °C

Actual value 21,7 °C

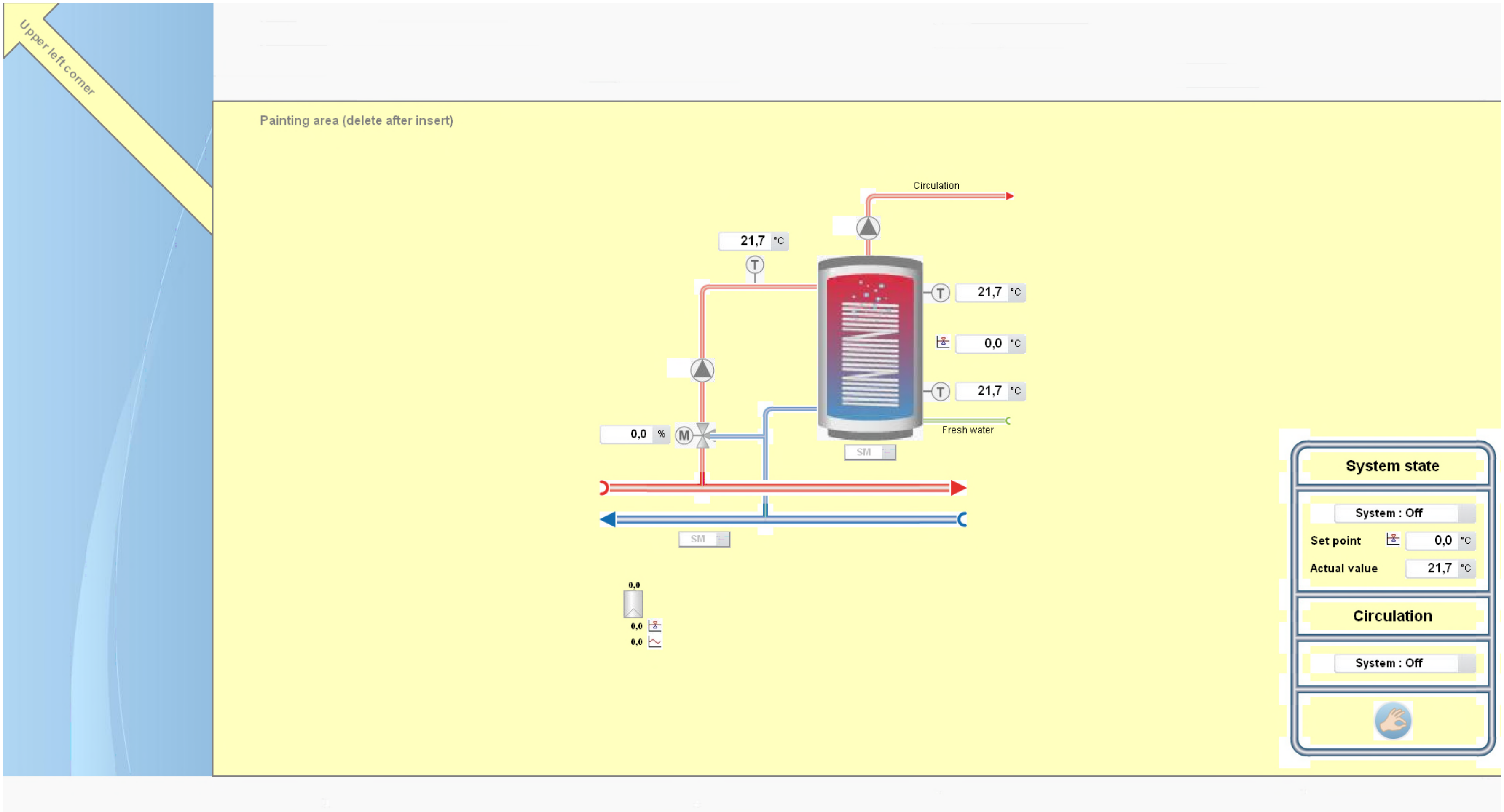
Circulation

System : Off

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Hot water T2



System state

System : Off

Set point 0,0 °C

Actual value 21,7 °C

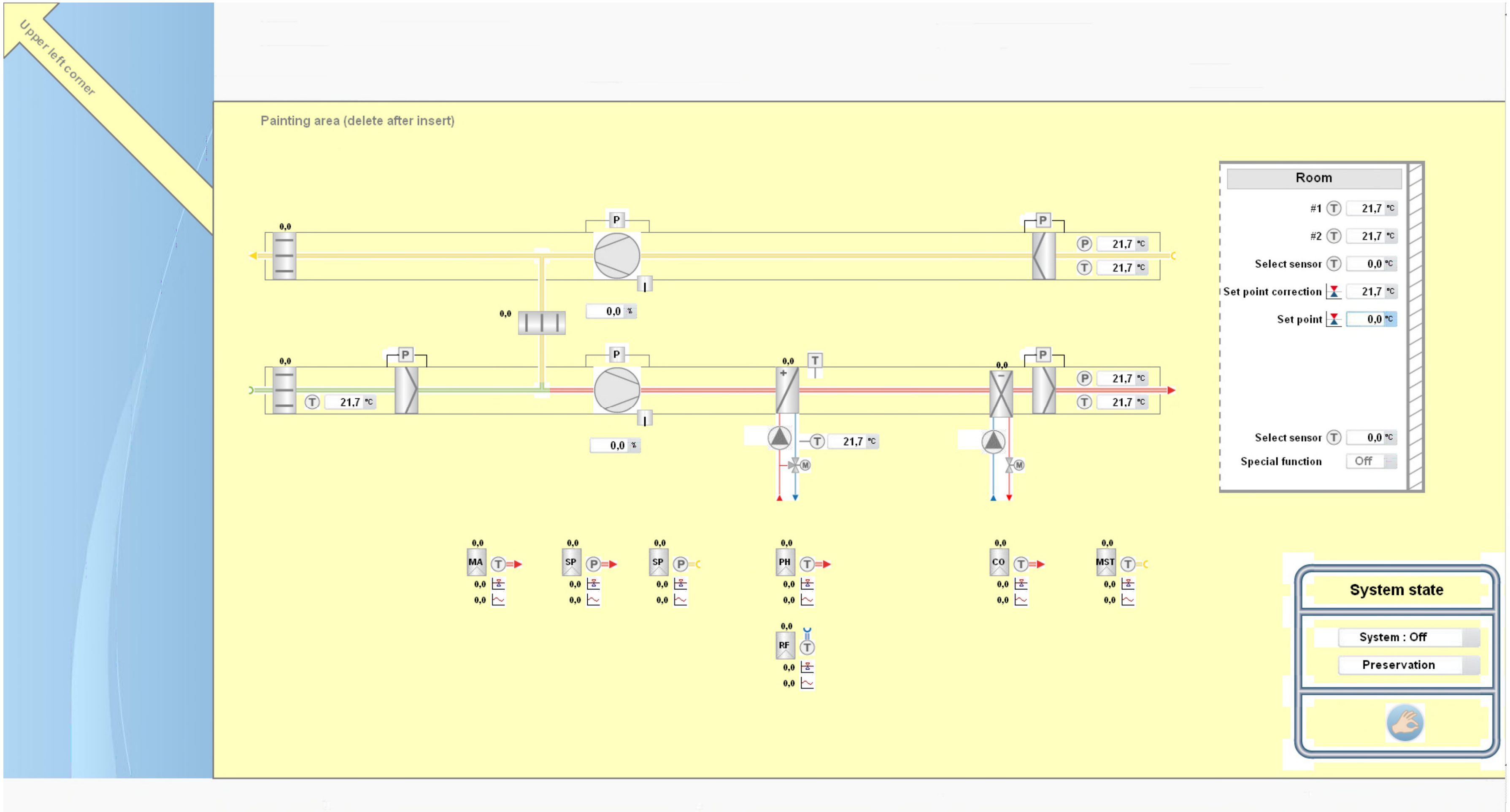
Circulation

System : Off

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Air condition T1



Upper left corner

Painting area (delete after insert)

Room

#1 21,7 °C

#2 21,7 °C

Select sensor 0,0 °C

Set point correction 21,7 °C

Set point 0,0 °C

Select sensor 0,0 °C

Special function Off

System state

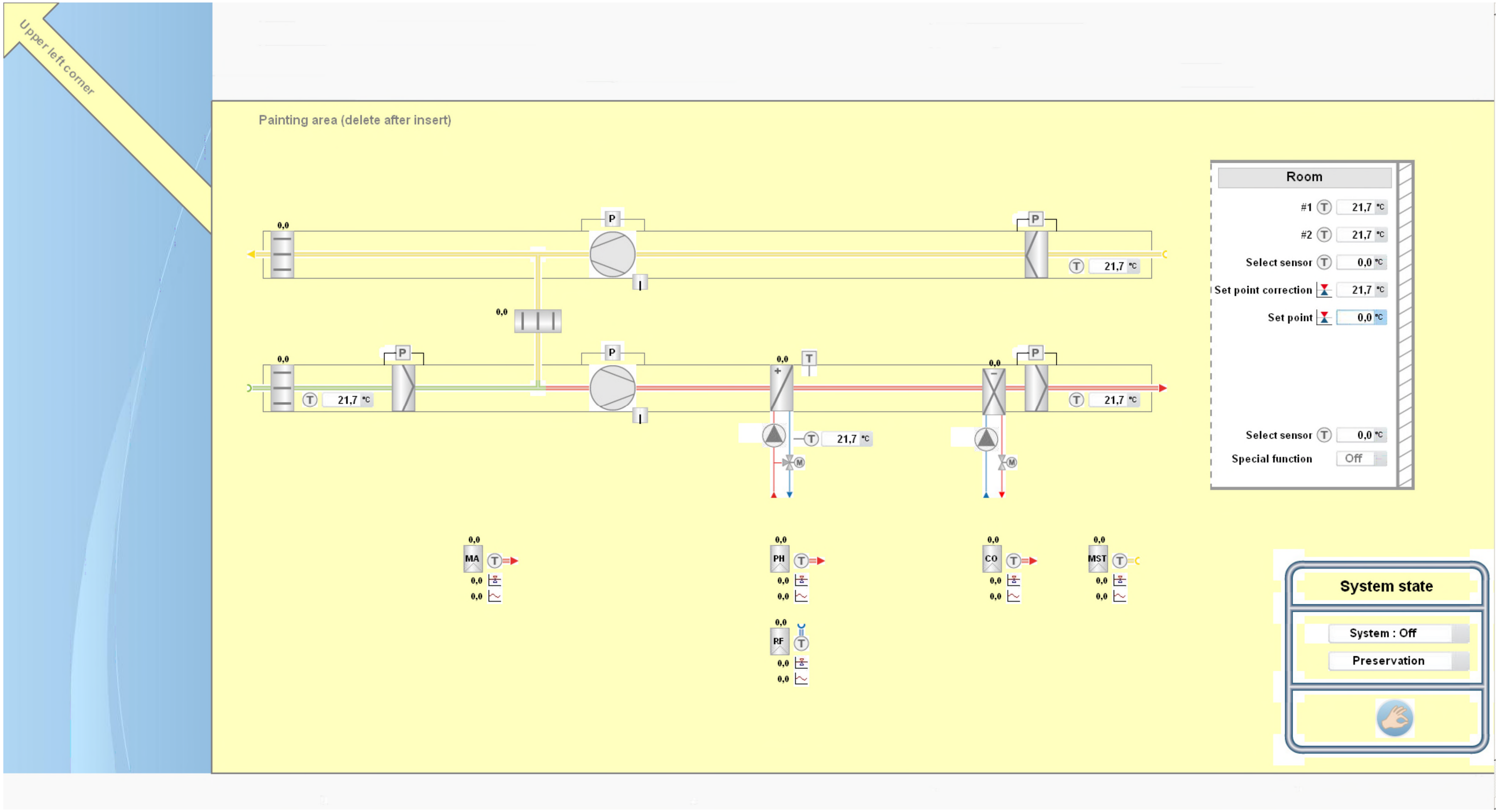
System : Off

Preservation

DDC Suite 2.5 / PG5 Building Advanced

DDC Suite and Visi.Plus

Air condition T2



DDC Suite – hints & tricks

- Stephan Hintze / 05.12.2008

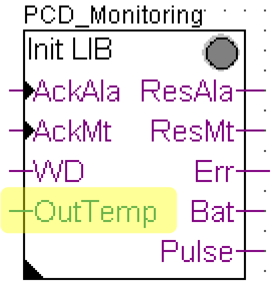
sbc
SAIA BURGESS CONTROLS

Initialisation

SAIA BURGESS CONTROLS

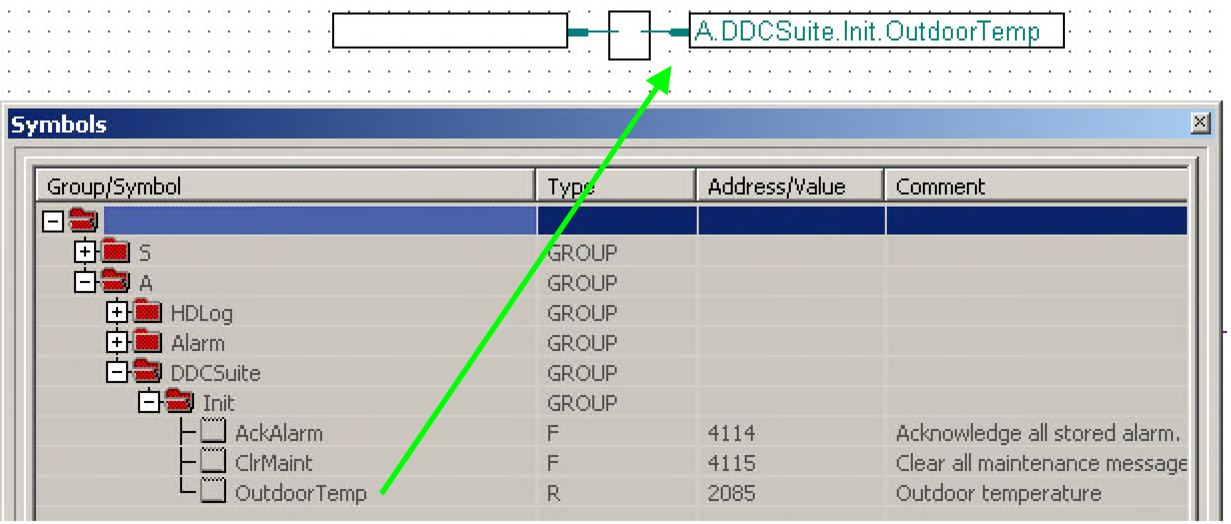
DDC Suite Advanced – Overview

The FBox “InitLIB” supports the outdoor temperature at input “OutTemp” to FBoxes for calculation or comparison.



This means that all such FBoxes in program will use a single unique outdoor temperature. But what if each system has it’s own outdoor temperature sensor?

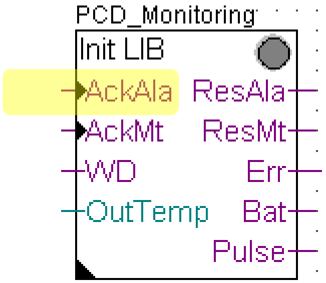
After a first build the FBox “InitLIB” creates a symbol in system tab which can be used to assign in program another outdoor temperature. So it’s easy to map for each system it’s own temperature.

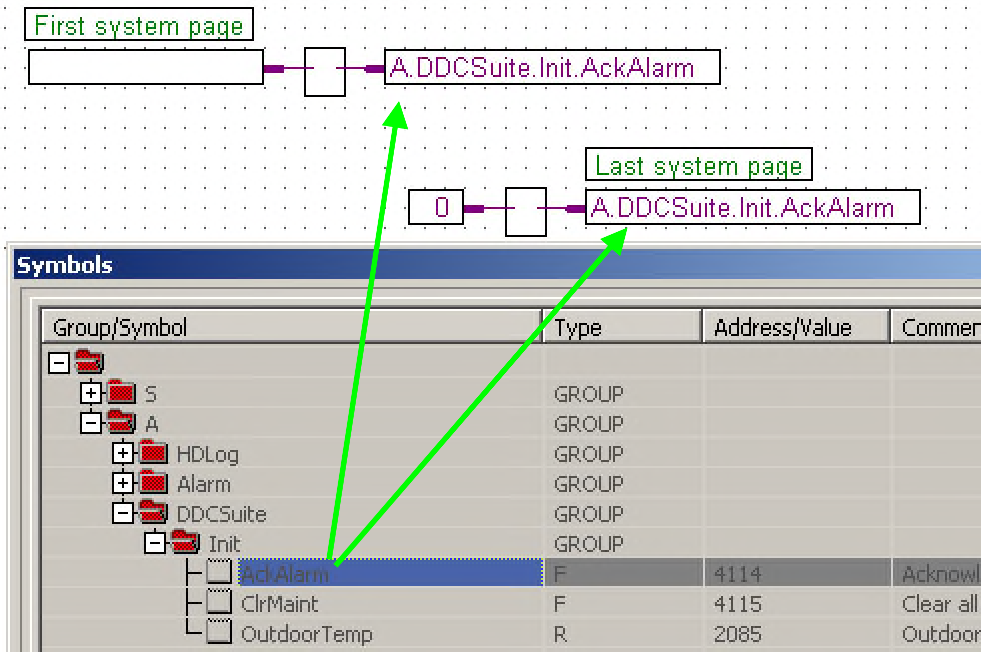


Group/Symbol	Type	Address/Value	Comment
S	GROUP		
A	GROUP		
HDLog	GROUP		
Alarm	GROUP		
DDCSuite	GROUP		
Init	GROUP		
AckAlarm	F	4114	Acknowledge all stored alarm.
ClrMaint	F	4115	Clear all maintenance message
OutdoorTemp	R	2085	Outdoor temperature

DDC Suite Advanced – Overview

Acknowledging alarms also is done from the FBox “InitLIB” for whole program. You can also split this into system parts. Just transfer the “acknowledge” command from system on first page of system into the provided symbol and reset it on last system page.

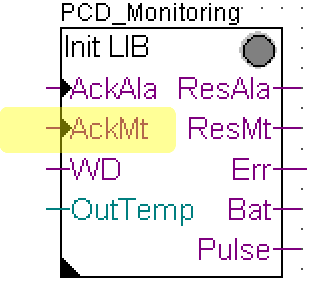


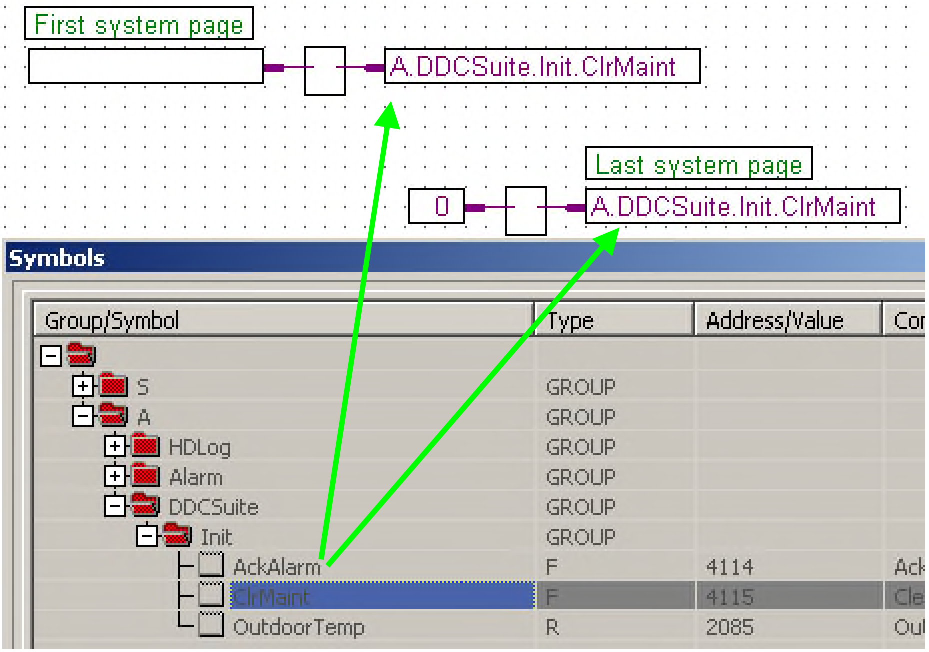


Group/Symbol	Type	Address/Value	Commer
S	GROUP		
A	GROUP		
HDLog	GROUP		
Alarm	GROUP		
DDCSuite	GROUP		
Init	GROUP		
AckAlarm	F	4114	Acknowl
ClrMaint	F	4115	Clear all
OutdoorTemp	R	2085	Outdoor

DDC Suite Advanced – Overview

Resetting maintenance messages and reinitializing internal counter is also done from the FBox “InitLIB” for whole program. You can also split this into system parts. Just transfer the “clear maintenance” command from system on first page of system into the provided symbol and reset it on last system page.





Group/Symbol	Type	Address/Value	Co
S	GROUP		
A	GROUP		
HDLog	GROUP		
Alarm	GROUP		
DDCSuite	GROUP		
Init	GROUP		
AckAlarm	F	4114	Ack
ClrMaint	F	4115	Cle
OutdoorTemp	R	2085	Out