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PG5 Building Advanced / DDC Suite 2.0 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



PG5 Building Advanced / DDC Suite 2.0 Overview developing DDC Suite

General basics Overview



Saia-burgess Control Systems and Components



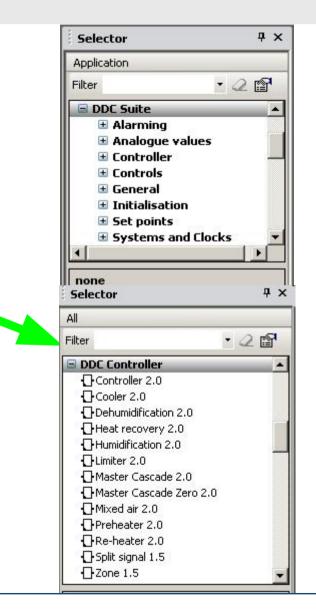
PG5 Building Advanced / DDC Suite 2.0 General

The base of DDC Suite is a FBox library containing 8 FBox families.

This families are representing the FBox functionalities and features like alarm management, controlling, sensor monitoring and so on.

As you can see in FBox family DDC Controller the FBoxes have been designed and dedicated for Heavac (Heating, Air Conditioning, Ventilation, Cooling) applications – but they can of course also be used for other systems.

But in PG5 package there is already a Heavac FBox library with some FBox families available. What's the difference between Heavac and DDC Suite library?





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PG5 Building Advanced / DDC Suite 2.0 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:

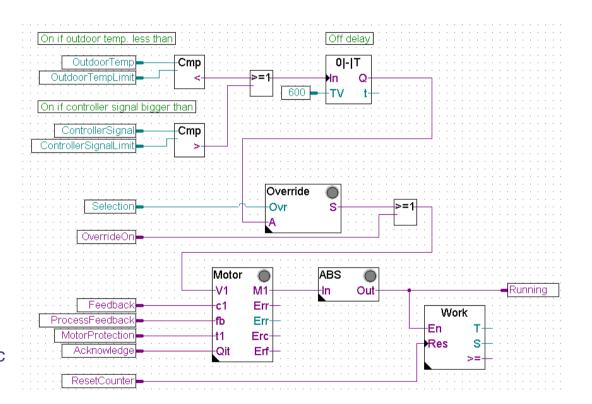
- switch on if outdoor temperature is less than x °C (e.g. forward-thinking frost protection)

- switch on if controller signal value 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

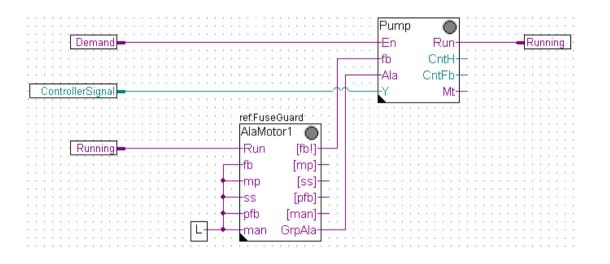
All this can be programmed with Heavac FBox library and may look like this example







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 2.0 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.





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 ..

roup/Symbol	Туре	Address/Value	Comment	
] 🔿		14	1	
- General	COB			
- Outdoor Temp	R	()		
- OutdoorTempLimit	R			
- ControllerSignal	R			
ControllerSignalLimit	R			
- Selection	R			
- OverrideOn	F			
Fieldback	F			
ProcessFeedback	F			
- MotorProtection	F			
- Acknowledge	F			
- ResetCounter	F			1
H Running	F			
Demand	F			





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).

Group/Symbol	Туре	Address/Value	Comment	-
H Running	F			
- 🖾 Demand	F			
- MotorFBox	R	[4]		
- 🛄 Override_FBox	R			
AB5_FBox	R	[4]		
Work_R_FBox	R	[6]		
Work_F_FBox	F	[3]		202

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.







PG5 Building Advanced / DDC Suite 2.0 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.

Type

GROUP

GROUP

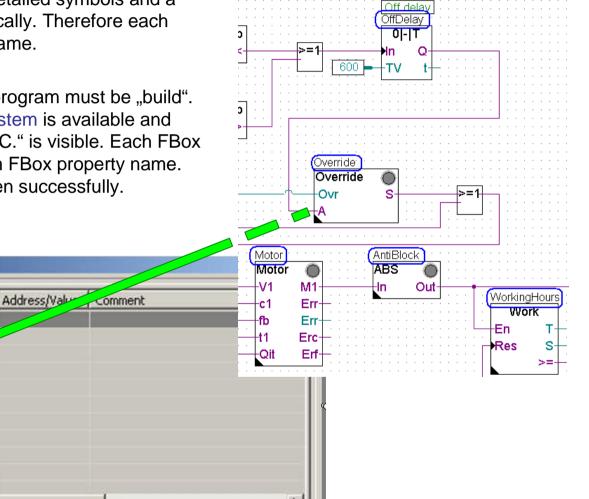
GROUP

GROUP

GROUP

GROUP

UP





Symbols

-

Group/Symbol

🕂 🔳 S

HACROS

+ Override

AntiBlock

+ WorkingHours

+ Motor

-HVC



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?

Group/Symbol	Туре	Address/Value	Comment	
🖻 🚍 A	GROUP			
Hacros	GROUP			
E HVC	GROUP			
🕂 🧰 Override	GROUP			
🗗 🚍 Motor	GROUP			
F Status	Counter	1403 [4]		
Error	Counter	1404		
Ack	F	4050		
F Timer	Timer	103		
F StartD	R	2099 [4]		
ContactD	R	2100		
FeedBackD	R	2101		
FeedBackT	R	2102		
, AntiBlack	CDALID	1		

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 2.0 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 SACAD 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.

Group/Symbol	Type	Addre	Comment
7 🚭			
- Alarming	GROUP		
D 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
Drz5m	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
H 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
│	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
	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 maintenance
- Sperre	F		(1) Motor blocked due to alarm
- Stunden	R	_	 (3) Number of operating hours (4) Number of operating hours until message mainten.





PG5 Building Advanced / DDC Suite 2.0 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 2.0 / 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.
- 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 2.0 Working with Fupla

DDC Suite - Fupla



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DDC Suite 2.0 / PG5 Building Advanced Syntax and remarks of actions during workshop

Please follow the teachers advice. Please

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

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

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

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



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DDC Suite 2.0 / PG5 Building Advanced Syntax and remarks of actions during workshop



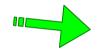
Click with left mouse button at this position



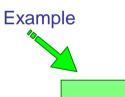
Double-click with left mouse button at this position



Click with right mouse button at this position



Follow the green arrow to next step



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



Watch this area



Changes/different workflow to former versions



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PG5 Building Advanced / DDC Suite 2.0 Working with Fupla

Creating a new project



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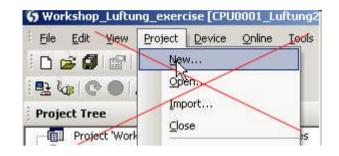
DDC Suite 2.0 / PG5 Building Advanced Working with Fupla

A new DDC Suite could be started within PG5 via "Project/New…". But then the user has to integrate manually all he'd like to use, e.g. HMI, BACnet and so on.

We recommend to start a new project via "Project/Restore…", that means we using a predefined DDC Suite template project where a lot of settings or 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

Thereby a project backup will be a little bit larger (e.g. >5 MB) but changes in future in this project may have no compatibility problem, e.g. if in meantime a Sweb object template has totally changed. Of course – our template project can be updated with your templates/addendums and backup-ed as new template project.











DDC Suite 2.0 / PG5 Building Advanced Working with Fupla

So we are starting with "Project/Restore…" – by selecting a project template. Depending on template version or location we have to navigate to the correct folder …

You'll find project templates on PG5 CD in folder DDC Suite, get the newest templates from SBC Support HomePage <u>www.sbc-support.ch</u> within Software/PG5/DDC Suite.

When starting restoring the new project name can be defined. Please use

Workshop

Press "OK" and the template project will be used as base for our Workshop project.

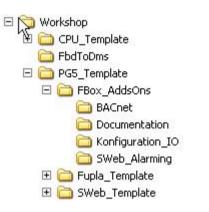
store		<u>? ×</u>
.ook in: 隘) Temp 🗾 🗲 🔁	r 🖬 🕂
	e.20_ViSiPlus_VER_22.05.08 14.19.zip DC_Suite.20_PG5_20080522_1410.zip	
ile name; iles of type;	Project DDC_Suite.20_PG5_20080522_1410.zi	Cancel
Restore		×
Restore Fro		
	NProject DDC_Suite.20_PG5_20080522_1410.zip	
File Detai	ils:	
User: Project:	06/04/08 15:03:41 For Saia Burgess Controls internal use only pcd 22:05:2008 14:10	
Project or	r CPU:	
PROJEC	Tiped	•
Restore To Project D		
Project N		
Worksho		*
CPU Nar	ne:	
		*
Help		Cancel





If we have a look into our workshop project (use Windows File Explorer) we'll see that already some folders are included:

- CPU-Template : a CPU template which should be used for each new CPE we have to add in this project
- FbdToDms : Containing some information if a ViSi.Plus SCADA system should be used
- And a PG5_Template containing :
 - 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 and adjust objects (pages) for SWeb applications designed with SWebEditor.



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PG5 Building Advanced / DDC Suite 2.0 Working with Fupla

Creating a new CPU in the project



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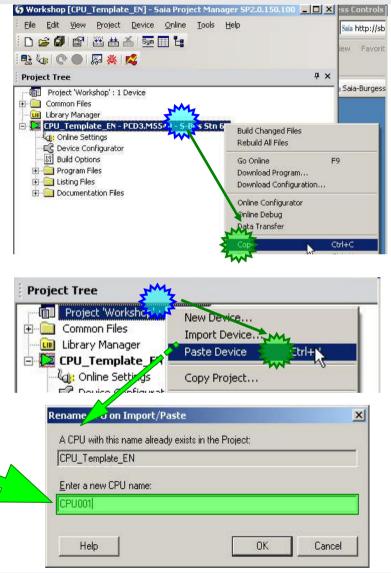
DDC Suite 2.0 / PG5 Building Advanced Working with Fupla

First we have to create a new CPU – the "CPU_Template_xx" should stay as they are because therein some settings are already predefined.

Therefore we use the copy/paste in project manager. Click with right mouse button on "CPU _Template_EN" and then Copy in context menu.

Click with right mouse button on "Project 'Workshop'" and then Paste CPU in context menu.

We have to rename the CPU, please use "CPU001" and press "OK".







DDC Suite 2.0 / PG5 Building Advanced Working with Fupla

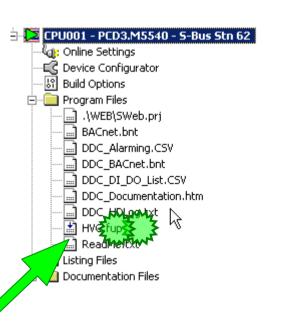
Let's have a look into the new "CPU001" – here we'll see also some predefined files:

- BACnet.bnt : User BACnet configuration file
- DDC_Alarming.CSV : automatically created text file, containing alarm texts for use within SWeb application
- DDC_BACnet.bnt : automatically created BACnet configuration file
- DDC_HDLog.txt : automatically created text file, containing detailed information how to record offline data
- HEAVAC.fup : prepared Fupla
- ReadMe.txt : Short description to the files described above

More details during the workshop!

We start engineering with a double click on file HVC.fup

NOTE: it is not possible to use DDC Suite Fboxes in more than one FUPLA file per CPU.







PG5 Building Advanced / DDC Suite 2.0 Working with Fupla

Basic settings in Fupla



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With DDC Suite we introduced some features in Fupla editor. Before starting engineering we have to check this new features – this is necessary only once time after installing PG5.

Select in Fupla Editor menu "View" and within menu list the entry "Options…". In dialog "Options" activate tab "Symbols" – here we see the new features for easier and better engineering within Fupla.

WAC_DEMO_2010 - Saia Fupla Editor - [Proce	器 Options	×
Eile Edit View Device Online Mode Blo Image: Distance Image: Distance Image: Distance Image: Distance Image: Distance Process.f Values	Use synchron refresh	Yes 1; 3 Decimal
Properties Window F4 Symbol Editor F5 Symbol Editor F5 Selector Windows Alt+F6 Page Navigator Alt+F9 IO.Slot4.[E IO.Slot4.[E	 Symbol Select symbol in Symbol List Use predefined Symbols Display List before create Show first static Delete internal Show conditional symbol Add symbols with Public scope Move Symbols to 'Global.sy5' file Add Priority in comment as Tag 	Yes Yes Yes Yes No Yes No No
IO.Slot4.	Help Set Defaults	OK Cancel







DDC Suite 2.0 / PG5 Building Advanced Working with Fupla

Use predefined Symbols:

When placing a FBox into a Fupla page a default group name space and symbols are created automatically in global symbol tab. **Recommended**



17

Display List before the symbols created:

Will pop up a dialog window when placing a FBox with predefined symbols to change/edit the default group name space immediately. If not activated the default group name space and symbols are used. **Recommended**



Navigate to the first static symbol when the Fbox selected:

Navigates in symbol editor to the first defined symbol used in the FBox you clicked on. Supports you to find the correspondent group/symbols in symbol editor. **Recommended**

Delete the internal symbols when the FBox removed:

If a FBox is deleted from Fupla page then also the correspondent group/symbol in symbol editor will be deleted. **Recommended**





I recommend to have new Fupla pages without side connectors.

Therefore please activate tab Layout and deactivate the checkbox New page with side connector.

		*
Disable warnings for Adjust	No	
Export pages by save	No	
3 Workspace		
Snap to grid	Yes	
Keep default ratio	No	
Horizontal move	Yes	ME
New page with side connectors	s No 🛃	- 3
Adjust dialog and 2D drawing	No	
🖸 Label size	12; 9	
🗄 New file page size	82; 54	
Font scaling	Yes	
User font	Arial; -12pt	
El Color Scheme	White Background	





DDC Suite 2.0 / PG5 Building Advanced Working with Fupla

Remark:

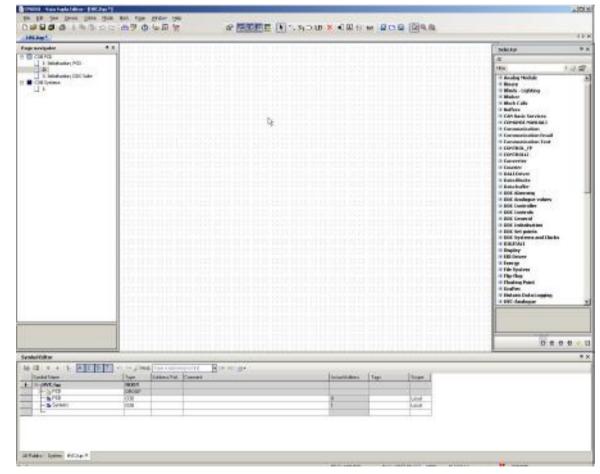
Working with DDC Suite will force long structured tree structure in symbol editor.

Therefore I recommend to "undock" the symbol editor window and resize it to a bigger comfortable window.

You can enable or disable the symbol editor window with key "F5"

If you build up the program by placing some FBoxes you don't need the symbol editor window.

But for the first impression switch on the symbol editor window







At least we have to check a setting to be sure that the symbols are created in the right way. Click with right mouse button into symbol editor, the select in context menu "Advanced" and in next context menu "Options …"

Please set ALL settings in dialog "Symbol Editor Options" to have the same behaviour!

				Symbol Editor Options
				E Editing
				Insert New Symbol New symbol
				Edit External Symbol Yes
	New Group	Ctrl+G	1	Insert After Selected Yes
	Insert	Ins		Enable Address Assign mode Yes
	Cut	Ctrl+X	-	Stretching over groups Yes
	Сору	Ctrl+C		
nbol Editor	Paste	Ctrl+V		
	Delete	Del		
Symbol Name	Select All	Ctrl+A	ddress/Val Comment Tags	
En Untitled1.fup	Find and Replace	Ctrl+H		Editing
	Expand All	Ctrl +		
	Collapse All	Ctrl -		
	Change Scope	•	Import	_
j ģ− <u>°</u> 10	Go To Definition	Ctrl+D	Export Selected Symbols	
E → Calwerte	Cross-Reference	Ctrl+R	Move Selected Symbols to 'Global.sy5'	Help Set Defaults OK Cancel
E-C BACnet	Symbol References		Use Local Declaration	
	Columns	•	Create Reference	
Aussentemn B1				Public 1
Publics System Untitled1.fup ×	Edit Data	N.	Delete Unused Symbols	
djust Window 🛛 🔏 Error List 🛛 🐺 Symposium	Add To Watch Window	Ctrl+W	Sort Symbols.	
iload in Run is disabled.	Advanced		Detions 2 3 Deck: COB COB	Page: 13/20 [



Control Systems and Components

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DDC Suite 2.0 / PG5 Building Advanced Working with Fupla

First 2 pages containing the FBoxes always needed in a typically Heavac Fupla program.

- Init FBox from Heavac library

- BACnet device FBox to switch on/off BACnet feature for DDC Suite 2.0 FBoxes

- HDLog initialization FBox – general offline trending to be used in a SWeb application

- additional HDLog FBox for DDC Suite 2.0 FBoxes

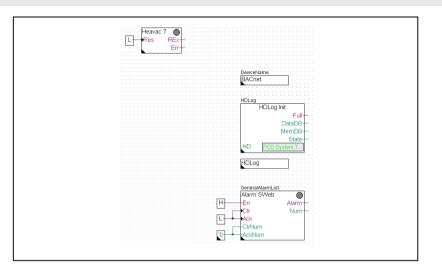
- Alarm list FBox for a general alarm monitoring to used in a SWeb application

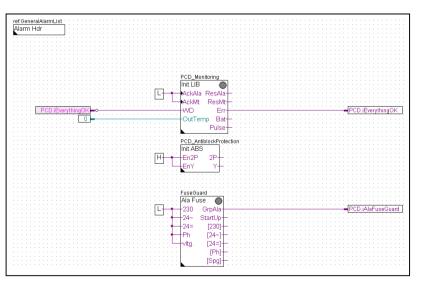
- AlarmHdr FBox - organisation alarm numbers for DDC Suite 2.0 FBoxes

- Init FBox from DDC Suite library (DDC Suite needs Heavac Init FBox placed in front of)

- Anti blocking FBox – central management of anti blocking method

- Fuse Guard FBox – (optional) monitoring fuses to hide "ghost alarms/messages" in FBoxes with alarm functionality.









In the Fupla you see in "Page Navigator" already a block with name "Systems". Double click on it to open the prepared empty page in it. You should have had this screen:

CPU001 - Saia Fupla Edito File Edit View Device	<u>Online Mode Bloo</u>	ck P <u>age Window H</u> elp STB (S) ((1) Sym	2 5 3	
Page navigator		Symbol Editor	a kia kia kia kia k	
COB Systems		E∷ E≣ ↑ ↓ † A C S	T 1 o o DFin	d: Type a substri
		Symbol Name	Туре	Address/Val
	Ĵ.		ROOT	
		📃 🗄 – 📴 PCD	GROUP	
	ANN	All Publics × System HVC.fup		





You should have this screen

rt.chap * Inaviation * X cos PcD Cos PcD Cos Pyteme Cos Pyteme I II							
1 (Systema)							
octor 8 ×							
nolog Modulo Innary Innary Innary Innary Inaker Inaker Inaker All Basis Kervises							
DMARDL MARUALI somunication Email announication Email announication Email PERIOL_FP PERIOLI SPITIOLLI Sovietes Autoriver							
ata blicks ata buffer DE Alarming DE Controller DE Controller DE Controls							
DC Initialisation Sc Not points Sc Systems and Clucks GITALI Splay In Driver In System							
ip-flop oating Point	Symbol Editor					, tin tin tin tin tin tin .	
rafter Istaric Data Logging VC-Analogue *	Bigmini Name	C S T Proceed	11	g to find 🛛 🖷 1964 Hit: Comment	۵.	Antual Address	Tagi





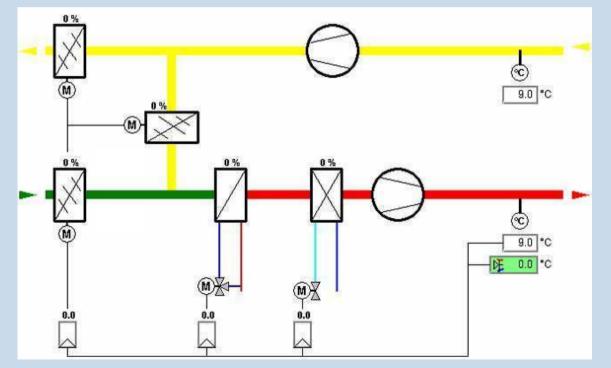


We will create a very tiny air condition. The functionality should include some virtual functionalities:

- week clock to schedule the air condition
- system switch to start/stop the air condition
- a serialized start procedure to be sure that the air condition will start always in a proper way

And also some physical components:

- supply air temperature sensor
- exhaust air temperature sensor
- supply air fan, 1 speed
- exhaust air fan, 1 speed
- damper or valves for cooling, mixed air and heating, controlled

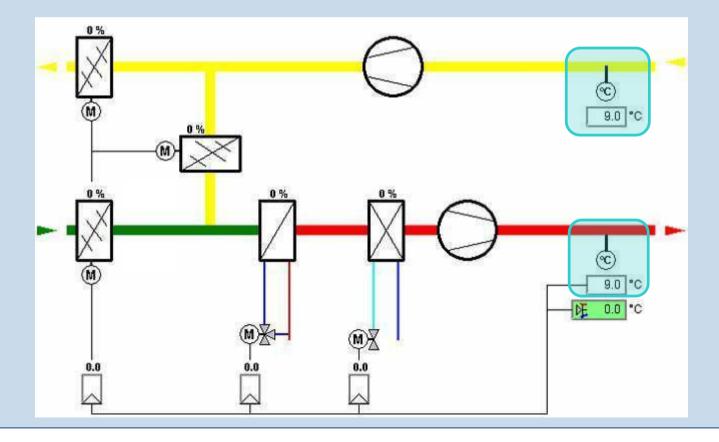






First Fupla page will contain

- the virtual functionalities week clock, system switch, serialized start procedure
- physical components supply air temperature sensor, exhaust air temperature sensor

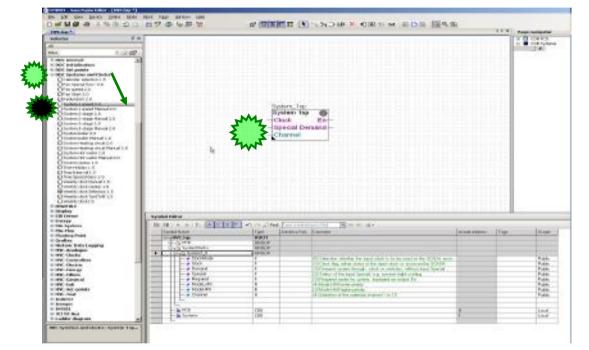




Sala-DUrgess Control Systems and Components

DDC Suite 2.0 / PG5 Building Advanced Working with Fupla

- Select from FBox selector tab Application the family DDC Systems and Clocks.
- 2. Click on FBox System 1 speed 2.0
- Place FBox approx. at same position as you can see in picture (top/centered)
- Immediately you should see that in symbol editor something has happened.



When placing a DDC Suite FBox in Fupla the FBox will generate automatically

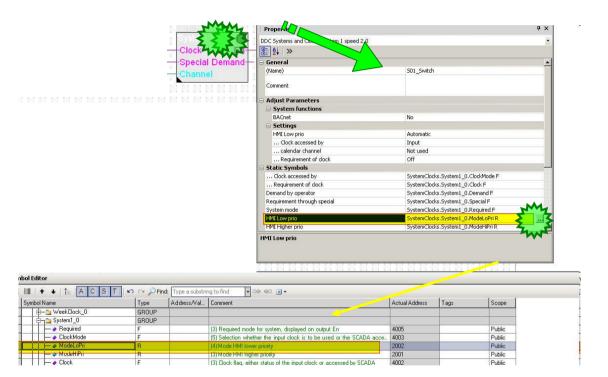
- a main group like SystemClocks to indicate from which family this FBox has been selected
- a subgroup like System1_0 where the part before "_" indicates the FBox face name and after the "_" a index, starting from 0
- At least in this group all parameters from the FBox are available with symbol, type and comment





Lets check the FBox adjust parameter. Double-click on FBox to open the Properties Window.

In the detail window you can see that the parameters are containing already predefined symbols and you can find these symbols again in the symbol editor.



Using DDC Suite FBoxes will save a lot of manual work. You never have to define symbols by your own!

DDC Suite will do this for you automatically!





The FBox System 1 speed 2.0 gives us the possibility to start/stop e.g. the air condition

- Manually by selecting parameter HMI Lower priority
- optional by clock via FBox Input or SCADA
- optional by a calendar feature

Properties	
DDC Systems and Clocks:System 1 speed 2.0	
8 2↓ >	
General	
(Name)	S01_Switch
Comment	
Adjust Parameters	
System functions	
BACnet	No
🖃 Settings	
HMI Low prio	Automatic
Clock accessed by	Input
calendar channel	Not used
Requirement o slock	Off
Static Symbols	
Clock accessed by	SystemClocks.System1_0.ClockMode F
Requirement of clock	SystemClocks.System1_0.Clock F
Demand by operator	SystemClocks.System1_0.Demand F
Requirement through special	SystemClocks.System1_0.Special F
System mode	SystemClocks.System1_0.Required F
HMI Low prio	SystemClocks.System1_0.ModeLoPri R
HMI Higher prio	SystemClocks.System1_0.ModeHiPri R
calendar channel	SystemClocks.System1_0.Channel R

DDC Suite FBoxes using always online parameters. Therefore it's possible to use e.g. during commissioning a clock FBox to start/stop the air condition as long the SCADA system is not present.

If the SCADA is online it's easy to use the SCADA clock manager to start/stop the air condition. Just switch the parameter ... Clock accessed by from Input to SCADA. Now the SCADA can write the start/stop clock command into the parameter ... Requirement of clock.

Maybe you can also switch back automatically to the clock FBox if you detect that the SCADA is offline ...





Close adjust window. We do not need the symbol editor when writing the program by using FBoxes at the first moment. As you have seen the FBoxes will create automatically all resources by themselves.

With key "F5" it's easy to hide the symbol editor – pressing "F5" will pop up the symbol editor again.

You should have this screen:

Selector	₽×	25.0	533	8 5 8	\$ S	4	594	554	53	8 F	549	594	189	8 B	549	18:49	554	1994	554	53
All						4					1				4					
Filter - 🥥	1	134													4					100
DDC General		1	- 23	123	1 1		39	1	-	5 5		133	133	5 8	1	1	1354	1354	133	13
DDC Initialisation		1000				240 A	• • • • •	#2040	#2004		1040	1004			1040 2040	+00040 +00040	10040	10040	1004	
🗄 DDC Set points		154			4.5	÷		- ÷		8	4	. 4		1	4	. 4	- 4			1
DDC Systems and Clocks		133	100						100			101	133	1						
Calendar selection 1.5		1.33	1533	133	: ::	381	1335	15.54	1331		335	1331	153		3381	13313	SE331	1335	1331	. 15
Fan Special func, 2.0		12.2		1.15	10 ES	141	1	10.04	1004	8 8	14	- 4	1	2 B	14	5143	1	1114	1994	1
Fan speed 2.0											4			11	4					
Fan Start 2.0		-53	153	5 53	5 5	10	534	535	533	5.5	33	1533	153	5 5	34	1535	1335	1535	535	15
Redundant 2.0		1.00	100	1 - 1993 	10 ES	141	1.11	1004	1934	8 8	242	1014	100	1 1	141	10.00	10040	1004	1004	1
System 1 speed 2.0									0	int	tor	n .	1sp							1
System 1 speed Manual 2.0.		-23	- 33	123	5 B	80	535	1535	_	<u> </u>		_				-	T ER.	1531	153	15
System 2-stage 2.0		100	100		10 10	1941 - 4 1041 - 4	10040	10.040	S	ys	ste	m	1s	р		C	1 1	1010	1004	1.1
System 2-stage Manual 2.0		184			4	4			-0	Clo	oc	ĸ			1	En	1			
🔂 System 3-stage 2.0		100	- 22		1			1.54	1								 (e) 	134		13
System 3-stage Manual 2.0		1.004				040 A	• • • • • • •	+ + .		p	ec	a	D	en	na	na		62040	62.04	
System boiler 2.0		154			4.5	÷			-0	Ch	ar	nne	el				÷			1
System boiler Manual 2.0		100	100		1					1		5.00	526	8 5	1000	52533				
System Heating circuit 2.0	22	1334	133	6 633	8 B	381	1334	1335	1331		338	1331	163		3381	1331	1331	1335	1333	
System Heating circuit Manual 2.0	1);	5.4		1	¥ 5	÷		1.4		8 8	÷.	- +	1	£ 5	4		- 4	- 1	1.1	1
System Hot water 2.0																				
System Hot water Manual 2.0		-538	153	153	5 5	1	- 31	15.55	533		10	1331	153		10	535	1535	1535	1531	- 5
System status 1.5		15.4	100	1	# 5	192 - I	-	F8943	1924	2.2	141	194	133	1	1141	104	1994	1994	1324	1
Time Holiday 1.5																				
Time Interval 1.5		12.54	1222			040 0	100	12.040	12.24		1040	12.04	122		1.141	122042	12040	1204	12.24	



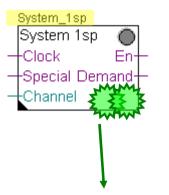


As you can see the FBox System 1sp has a default FBox name property System_1sp. DDC Suite FBoxes will use the FBox name property for some features therefore it's necessary to use a good name convention.

Double Click on FBox opens the Window: FBox properties.

Change the default name into S01_Switch

At the end you should have this:



Prop	erties	4 ×
DDC Sy	stems and Clocks:Anlage	s 1-stufig 2.0 🔹
B A	↓ ≫	
- Gen	eral	
(Nan	ne)	System_1sp
Adv	anced Info	
Nam	e	Anlage 1-stufig 2.0
Macr	ro Name	_DDC_ENSWITCH21
Stat	us	
Extr	a Info	
Vers	ion in library	200000
9 Fami	ly	DDC Systems and Clocks
0 Libra	iry	DDC Library
E Size		12; 8

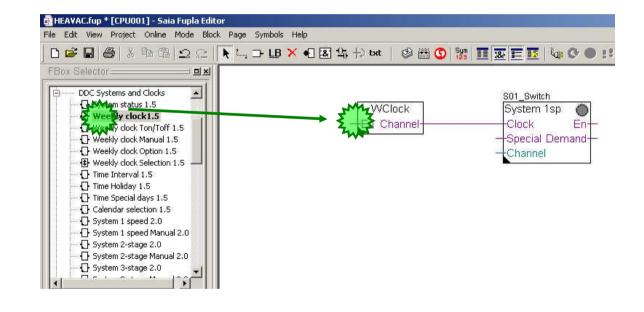






In this example we use the clock feature via FBox input Clock. Therefore we have to add a clock FBox.

- 1. Select from FBox selector tab Application the family DDC Systems and Clocks.
- 2. Click on FBox Weekly Clock 1.5
- Place FBox approx. at same position as you can see in picture (top/centered)
- 4. Connect the FBox output Channel with FBox input Clock.





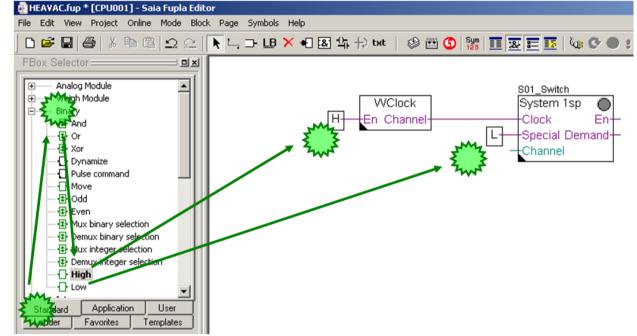
sala-burgess

Control Systems and Compone



Now we have to close some FBox inputs. E.g. the input En from FBox WClock should be always high, the input Special from FBox System 1sp is not used, therefore always low.

- 1. Select from FBox selector tab Standard the family binary.
- 2. Use FBox High and connect at En from FBox WClock
- Use FBox Low and connect at Special from FBox System 1sp



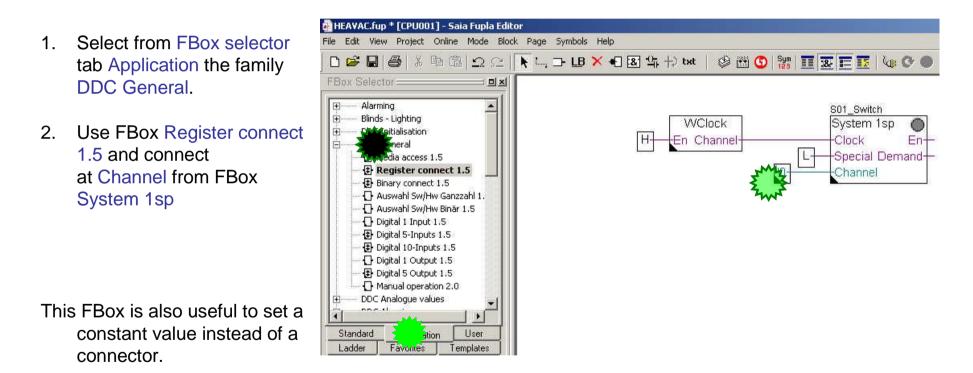
saia-burgess

Control Systems and Compone





The input Channel from FBox System 1sp is also not used (optional for use with a calendar feature). Buth this is an integer connector, therefore we need a special FBox to "close" this connector.

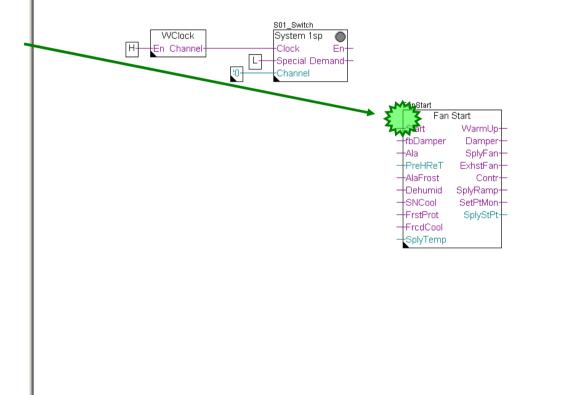






The input Channel from FBox System 1sp is also not used (optional for use with a calendar feature). Buth this is an integer connector, therefore we need a special FBox to "close" this connector.

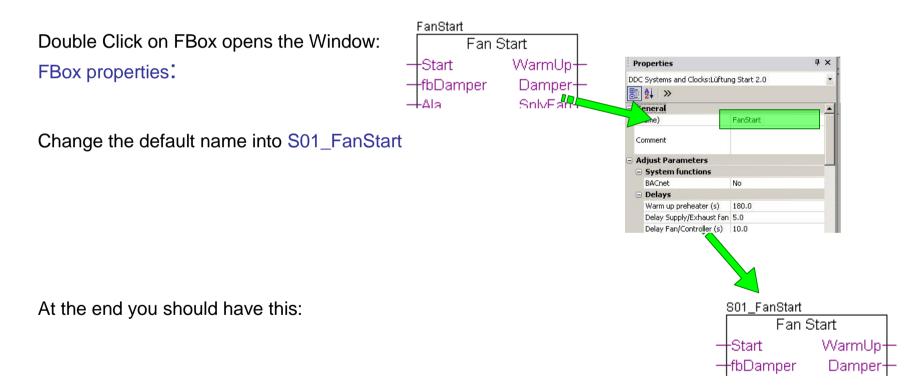
- 1. Select from FBox selector tab Application the family DDC System and Clocks.
- 2. 2. Click on FBox Fan Start 2.0
- 3. Place FBox approx. at same position as you can see in picture







Remember - the DDC Suite FBoxes will use the FBox name property for some features therefore it's necessary to use a good name convention.





sala-burgess

Control Systems and Compone



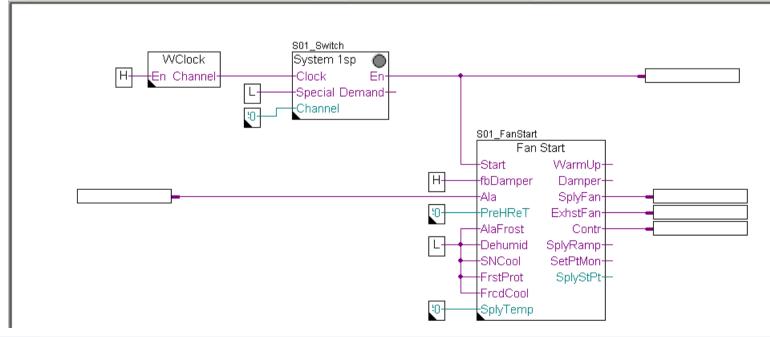
Now finish the this part by connecting some Low, High, Integer FBoxes and connectors.



FBox selector tab Standard, family Binary, FBox High and Low



FBox selector tab Application, family DDC General, FBox Register connect 1.5



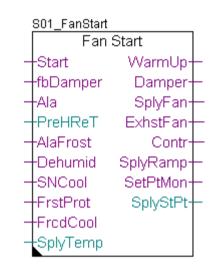




The FBox Fan Start is a often used method to start up an air condition in a strongly defined sequence, e.g.

- 1. Warm up pre-heater to prevent a frost alarm when air condition will start in winter. If this has been successful proceed with
- 2. Open damper (flap) and wait until feedback "damper (flap) open"
- 3. Start supply air fan, wait some seconds and
- 4. Start exhaust air fan, wait some seconds and
- 5. Enable controlling (PID) an after some minutes
- 6. Start set point monitoring

There is also a set point ramp for supply air temperature to have a smooth start up of controller function to prevent a overreaction if the supply air is too warm after the warm up phase







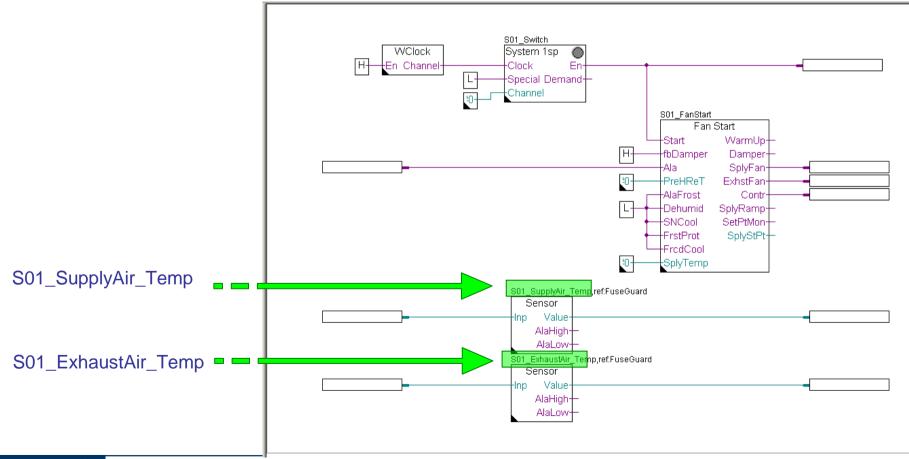
Now we add 2 temperature sensors, the first should handle the supply air temperature, the second the exhaust air temperature

S01_Switch Select from FBox selector WClock 1. System 1sp En Channel Er Clock tab Application the family Special Demand+ Channel DDC System and Clocks. S01_FanStart Fan Start Start WarmUp 2. 2. Click on FBox Fan Start H--fbDamper Damper Ala SplyFar 2.0 :0· PreHReT ExhstFar AlaFrost Contr -Dehumid SplyRamp -SNCool SetPtMor Place 2 FBoxes approx. at 3. -FrstProt SplyStPt same position as you can -FredCool SplyTemp see in picture useGuard Sensor Value AlaHigh AlaLow useGuard Sensor Value AlaHigh AlaLow





Now finish the this part by connecting the in and out connectors and editing the FBox name properties. The FBox reference properties stay unchanged.







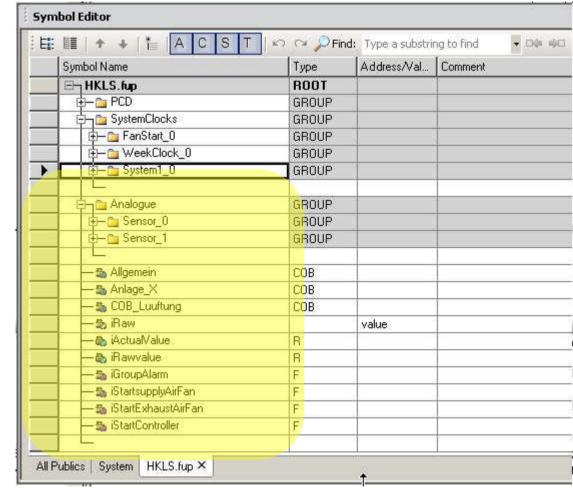
Please enter the symbol names as shown below

····· S01_	<u>Switch</u>			
WClock Syst	tem 1sp 🔘 👬 👬 👬			
H+En Channel+Clo	ck En	•	-	iStartSystem
	cial Demand			
	annel			
· · · · · · · · · · · · · · · · · · ·				
		COL_FanStart		
		Fan S	tart 🛛 🗠	
		Start	WarmUp	
	· · · · · · · · · · · · · · · · H	fbDamper	Damper	
· · · · · · · · · · · · · · · · · · ·	[· · · · · · [
iGroupAlarm		Ala	SplyFan-	iStartSupplyAirFan
	[10	PreHReT	ExhstFan	-iStartExhaustAirFan
	💟			
		AlaFrost	Contr	iStartController
		Dehumid	SplyRamp+	
	L	SNCool	SetPtMon	
	· · · · · · · · · · · · · · · L			
		FrstProt	SplyStPt-	
		··· FredCool		
			· · ·	
		SplyTemp		
	SupplyAir_Temp,ref:FuseGuar	d · · · · · · · · · · · · · · · · · ·		
· · · · · · · · · · · · · · · · · · ·	Sensor ·····			
Inp	Value			
	AlaHigh - · · · · · · · ·			
	AlaLow -			
	Exhaust®ir, Tomp rofFusaCur			
	ExhaustAir_Temp,ref:FuseGua			
	Sensor ·····			
	Value	· · · · · · · · · · · · · · · · · · ·		
line				· · · · · · · · · · · · · · · · · · ·
	AlaHigh			
	AlaLow			





Please check in symbol editor (remember show/hide symbol editor with key "F5") if you see the same structure and symbols.











The Sensor FBox with name "S01_SupplyAirFan_Temp" is connected to symbols "iRawValue" and "iActualValue" because the input is the raw value from analogue input FBox and the output is the converted, filtered and calibrated actual value.

The Sensor FBox with name "S01_ExhaustAirFan_Temp" should be connected the same symbols but than we'll have e.g. the symbol "iRawValue" used for two different functionalities.

Now this is the point where we should start to structure the symbols we got from the FBoxes and declared by us.

Structuring data is good for

- Finding data in a big list much easier
- Gives more information about the data itself
- Reduces type writing error by reusing same symbol declarations
- Is the base for writing reusable software



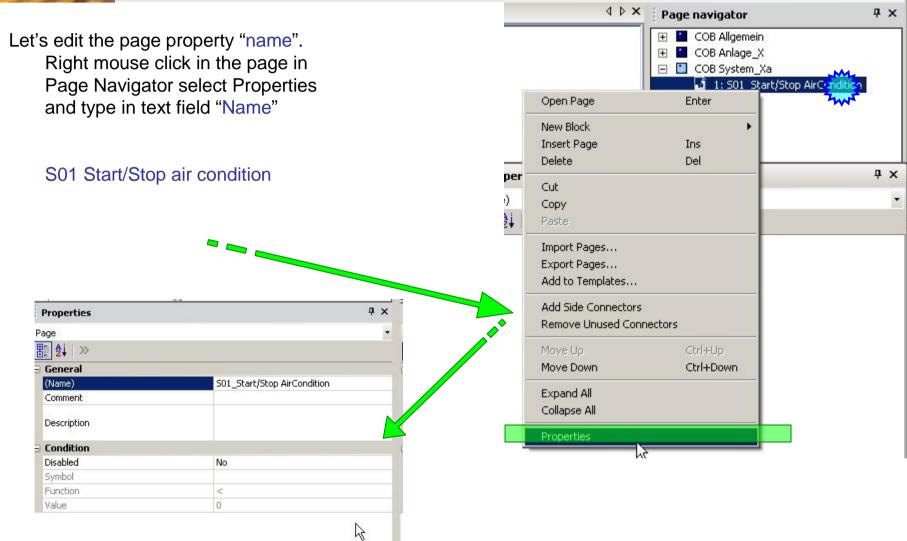




- structuring data





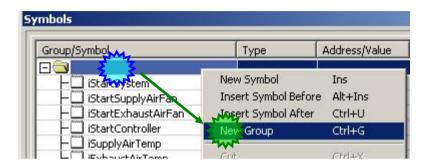


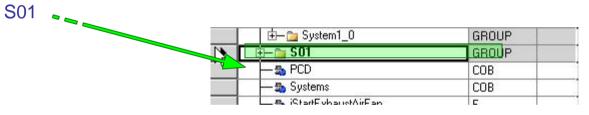






Now we will start to organise the data in symbol editor all from the FBoxes and the few symbols we defined are used in the air condition. Therefore they should be grouped in a "main" group named e.g. "S01" (=System 01).





On this Fupla page we have 3 virtual functionalities, week clock, system switch and fan start. We can not touch them (not physically existing), therefore I recommend to define a sub group "System" within group "S01"

System

💼 📴 FanStart_0	GROUP
🗐 🕀 🚞 WeekClock_0	GROUP
😟 🗄 🔁 System1_0	GROUP
📮 📴 S01	GROUP
System	GROUP



Sala-DUrgess Control Systems and Components

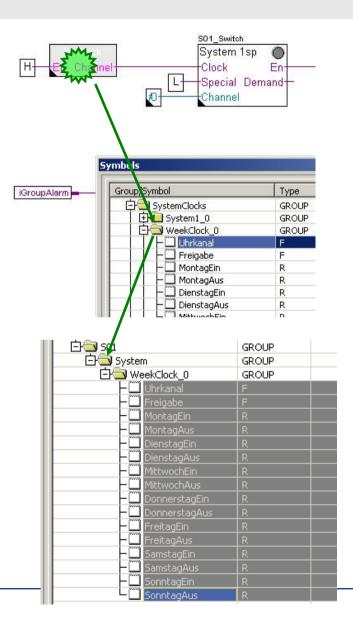


DDC Suite 2.0 / PG5 Building Advanced Working with Fupla

Let's move the data from FBox WClock into the group S01.System. To find the data just click on FBox. Symbol editor will jump automatically into the group containing the first defined data from this FBox.

You see they are located in SystemClocks.WeekClock_0

Now drag&drop the group WeekClock_0 into the group S01.System







Rename the group WeekClock_0 into

Weekclock



You can move and rename groups. This is useful to build up a clear structure and to define clear names. This will help you to find very easy data points in symbol editor – and the group names are used from Sweb and ViSi.Plus for mapping data from a FBox into a view object!

Creating a clear data structure is a must! The structure within this workshop is only a example how to do it.

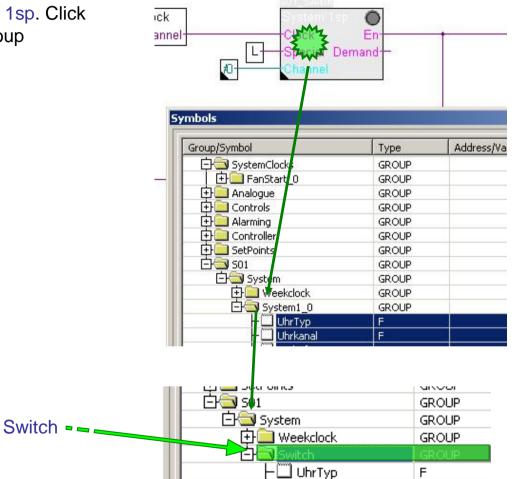
But never move or rename the symbols within a group if they are created from a FBox automatically. They are a kind of data base name space convention. If you rename them the Sweb and ViSi.Plus view object won't work any more!





DDC Suite 2.0 / PG5 Building Advanced Working with Fupla

Repeat the steps before also for FBox System 1sp. Click on FBox, drag&drop group System1_0 into group S01.System.

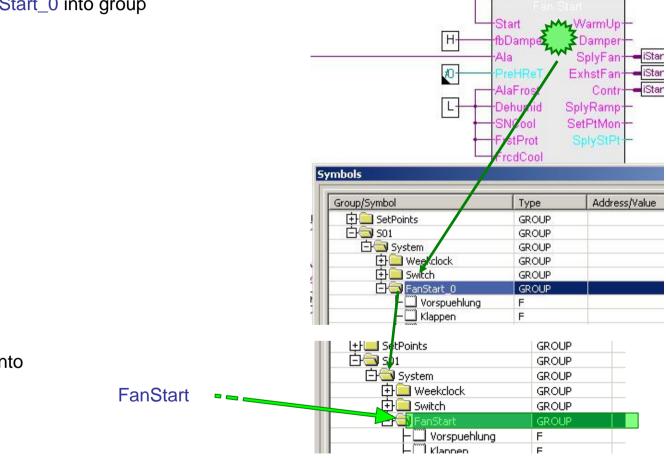


Rename group System1_0 into





Repeat the steps before also for FBox Fan Start. Click on FBox, drag&drop group FanStart_0 into group S01.System.



Rename group FanStart_0 into





Now the symbols in connectors connected to the FBox inputs or outputs at this 3 FBoxes should also be moved into the group S01.System.

Mark the symbols:

- iStartSystem
- iStartSupplyAirFan
- iStartExhaustAirFan
- iStartController
- iGroupAlarm

And drag&drop them into group S01.System

Group/Symbol	Туре	Address/V
⊡⊜		1
- 🛄 iStartSystem	F	
— 🛄 iStartSupplyAirFan	F	
— 🛄 iStartExhaustAirFan	F	
– 🛄 iStartController	F	
- iSupplyAirTemp	R	
– 🛄 iExhaustAirTemp	R	
- CisupplyAirTempInput	R	
– 🛄 iExhaustAirTempInput	R	
- 🛄 iGroupAlarm	F	
- SupplyAirFanRun	F	
LITT Exhaust AirEachurs	E	
	GROUP	
🗀 🔄 System	GROUP GROUP	
⊡⊡ System ⊢□ IStartSystem	GROUP GROUP F	
⊡ System ⊢ □ iStartSystem ⊢ □ iStartSupplyAirFan	GROUP GROUP F F	
Ġ System	GROUP GROUP F F F	
System System IStartSystem StartSupplyAirFan IStartExhaustAirFan IStartController	GROUP GROUP F F F F F	
System IStartSystem IStartSupplyAirFan IStartExhaustAirFan	GROUP GROUP F F F	





When renaming in symbol editor the symbols in the input or output connectors will be automatically updated.

So you have also a better identification in your program when reading the symbols.

FanStart		
Fan	Start	
t	WarmUp-	—
amper	Damper-	—
	SplyFan-	-S01.System.iStartSupplyAirFan
HReT	ExhstFan-	
Frost	Contr-	-S01.System.iStartController
umid	SplyRamp-	<u> </u>
Need	Co+D+Mon-	L

S01.System.iStartSystem





At this page there are 2 Sensor FBoxes left. One supports the supply air temperature sensor and the other the exhaust air temperature sensor.

Maybe there will be more available in the supply air, e.g. the supply air fan or a supply air humidity sensor – therefore I recommend to create a subgroup SupplyAir within group S01 and also a subgroup Temperature within subgroup SupplyAir.

Same for Exhaust Air ...

I recommend a depth of 4 groups: 1st group = the system, e.g. AC01 (=Air Condition 01) 2nd group = where it's located, e.g. SupplyAir 3rd group = what's there, e.g. Temperature 4th group = the functionality or component, e.g. Sensor

When reading the group structure AC01.ExhaustAir.Humidity.Sensor you will know the location at the plant and will find very fast all information depending to this sensor in the symbol editor.

301	GROUP
🕀 🦲 System	GROUP
🛱 🔄 SupplyAir	GROUP
Temperature	GROUP
🖻 🖾 ExhaustAir	GROUP
Temperature	GROUP



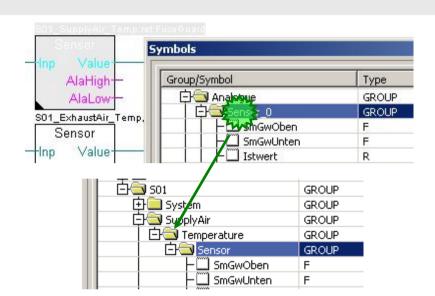


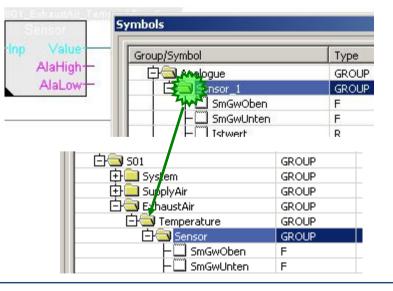
Repeat the steps before also for FBox Sensor with name S01_SupplyAir_Temp. Click on FBox, drag&drop group Sensor_0 into group S01.SupplyAir.Temperature.

Rename the group Sensor_0 into Sensor.



Rename the group Sensor_1 into Sensor.









Now the symbols in connectors connected to the FBox inputs or outputs at the first FBox should also be moved into the group S01.SupplyAir.Temperatur.

Mark the symbols:

- iRawValue
- iActualVal

And drag&drop them into group S01.SupplyAir.Temperatur

Group/Symbol	Туре	A
- 🛄 iRawValue	R	
– 🛄 iActualVal	R	
中 🖻 PCD	GROUP	
- SystemClocks	GROUP	

Group/Symbol	Туре
🛛 🕀 🧰 PCD 🚽	GROUP
H SystemClocks	GROUP
- Analogue	GROUP
🔁 🔄 501	GROUP
🕀 🧰 System	GROUP
🔁 🔁 SupplyAir	GROUP
🛛 🖾 Temperature	GROUP
- 🛄 iRawValue	R
iActualVal	R
🔄 🕀 🧰 Sensor	GROUP







The second FBox also need the same symbols in the group of S01.ExhaustAir.Temperatur.

But we did not declared to prevent having same symbols used for different functions.

Instead of creating them now manually we duplicate them in SymbolEditor.

mark both symbols in group S01.SupplyAir.Temperatur.
press "Ctrl" key and drag&drop them into group S01.ExhaustAir.Temperatur

With pressing "Ctrl" key we duplicate the symbols! Without you move them from one group into another.

Be always aware if you want to move or duplicate symbols!

白🔄 501	GROUP
🕀 🧰 System	GROUP
🖨 🔄 SupplyAir	GROUP
🛛 🖃 🔁 Temperature	GROUP
– 🛄 iRawValue	R
- 🛄 iActualVal	R
🕂 🚞 Sensor	GROUP
🖃 🔄 ExhaustAir	GROUP
🖃 🔁 Temperature	GROUP
🕂 🧰 Sensor	GROUP

白🔄 501	GROUP
🕂 🧰 System	GROUP
🗇 🔁 SupplyAir	GROUP
🖃 🔄 Temperature	GROUP
⊢	R
iActualVal	R
🕂 🧰 Sensor	GROUP
🖃 🔄 ExhaustAir	GROUP
🔄 🔄 Temperature	GROUP
- 🛄 iRawValue	R
- 🛄 iActualVal	R
🕂 🧰 Sensor	GROUP



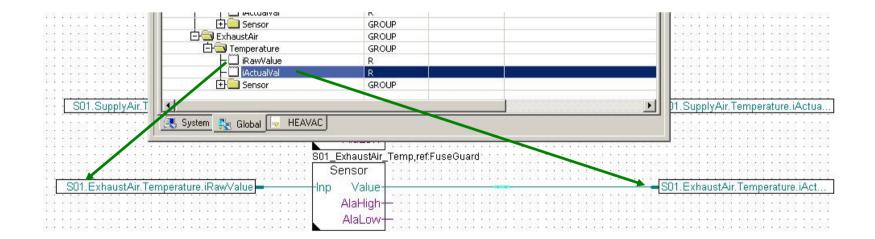






Now just drag&drop the new symbols into the connector in Fupla page.

Doing it this way you'll have always the same name convention for same functionalities.

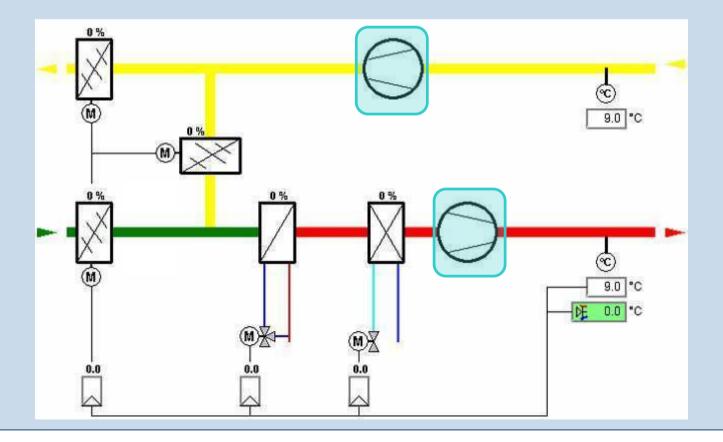






Second Fupla page will contain

- physical components supply air fan, exhaust air fan





Saia-burgess



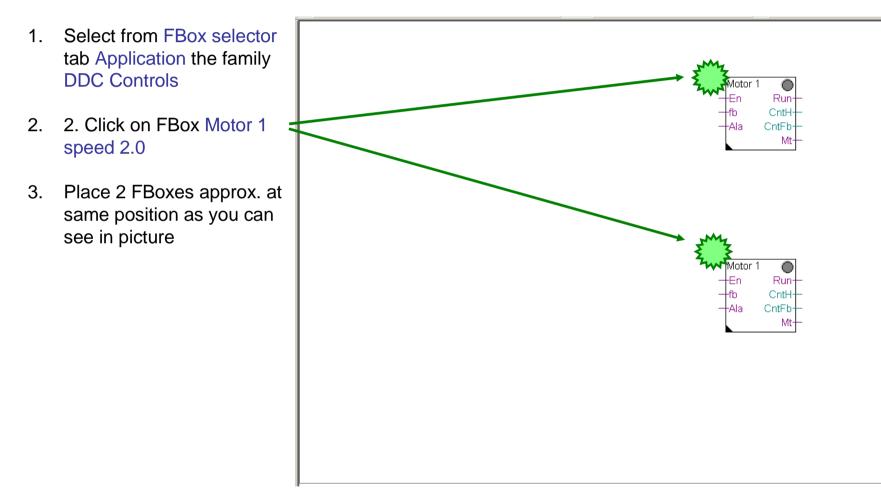
Add a new page after the current page

19 0 1 1	A CONTRACT A DESCRIPTION OF A CONTRACT OF A	4.8	X Page antipolar
1.			15 CO ND
			B (1) (vitiakastory: PO)
1.44			To be before the balance
0. T C			m B COLUMNS
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reiky 1.1			10 12





First we use some control FBoxes





saia-burgess

Control Systems and Componer



The FBox Motor 1 speed controls any drive via one digital output. The features are

- Virtual switch e.g. to start/stop for testing or maintenance
- Start delay
- Counting working hours
- Counting switch-on via feedback input
- Monitoring this counter to indicate e.g. after 2000 working hours "maintenance necessary"
- Collecting all information for a clear presentation why the motor is running or not

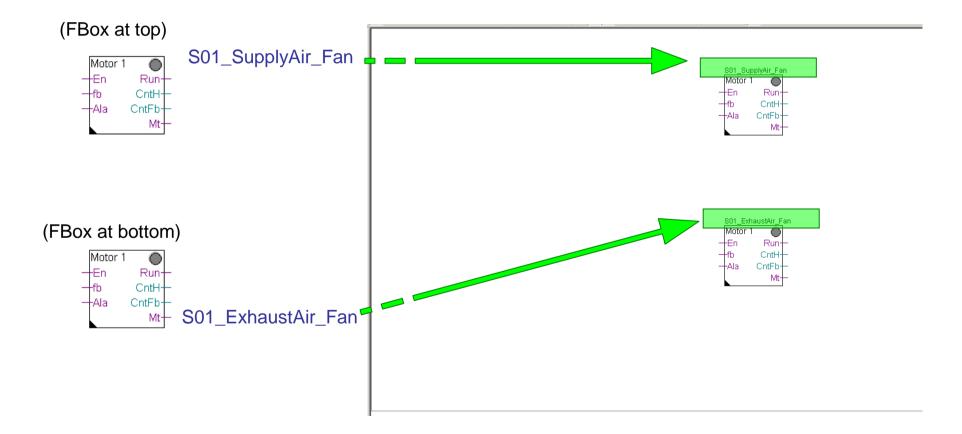
Motor 1	
-+En	Run-
fb	CntH+
Ala	CntFb+
	Mt-

Pr	operties		Ψ×
DDC	Controls:Motor 1 speed 2.0		
8	Ąį ⊨≫		
G	eneral		
	Jame)		
C	omment		
A	djust Parameters		
Ξ	System functions		
	PCD Alarm administration (Inde	0	
	BACnet	No	
Ξ	Settings		
	Digital output	-1	
	HMI Lower prio	Automatic	
	Start delay (s)	0.0	
Ξ	Counting		
	Feedback	0	
	Message after feedback	2000	
	Hours	0	
	Message after hours	5000	





Again: the FBox name property is used for some features. Give each FBox a clear name.

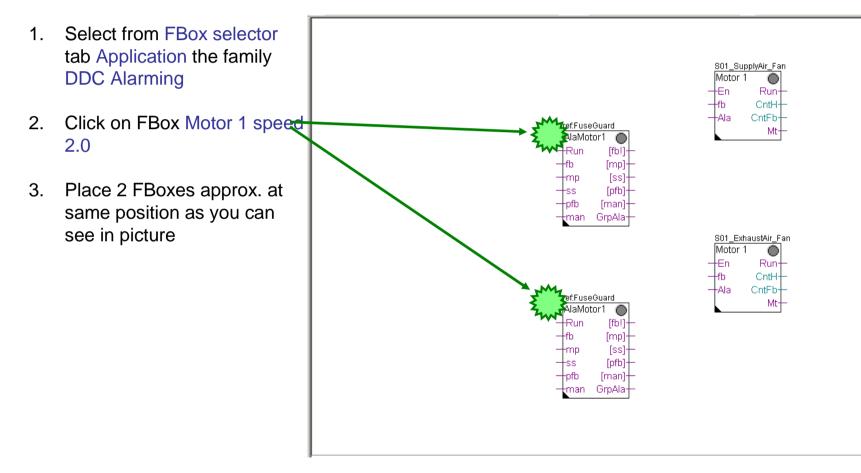








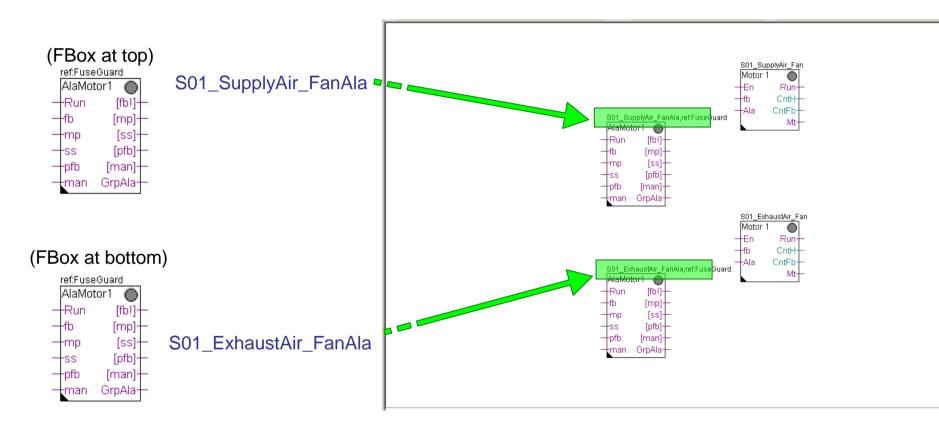
Now we the alarm monitoring







Give each FBox a clear name.





sala-burgess **Control Systems and Compone**



DDC Suite 2.0 / PG5 Building Advanced

Working with Fupla

- The FBox AlaMotor1 is monitoring at least 5 typically alarms a motor can have. The alarms could be
- Feedback (missing) -
- Process feedback (missing) -
- Motor protection -
- Service switch -
- Manual override switch

We have to modify the parameter "Normal input state" in group "[--- Process feedback ---]". By default it's "opened" - modify this into

Closed

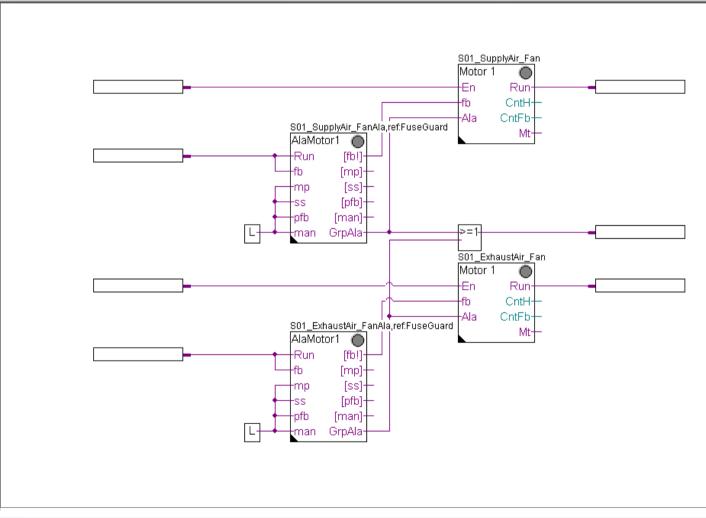
Do this also in the second AlaMotor1 FBox.

	austAir_Fai			
AlaMoto	n'i 🔘			
Run	[fb!]+			
-fb	[mp]+-			
-mp	[ss]+_			
		Properties		ąχ
-SS	[pfb]			
-pfb	[man]+	DDC Alarming:Motor 1 speed 2.0		
· · · · · · · · · · · · · · · · · · ·		₩ 2↓ >>		
man	GrpAla	🗉 General		
-		(Name)		
		Reference	FuseGuard	
		Comment		
	1	- Adjust Parameters		
		System functions		
		PCD Alarm administration (Inde	0	
		BACnet	No	
		Group alarm from fb/mp/pfb	Only these	
		🖃 Feedback		
		Digital input	-1	
		Delay	5.0	
		Process feedback		
		Digital input	-1	
		Normal input state	Closed	5
		Delay (Sec)	30.0	4
		Motor protection		
		Digital input	-1	
		Acknowledgement mandatory	No	
		Normal input state	opened	
		Alarm suppression	for appl. vltg.	
		Service switch		
		Digital input	-1	
		Acknowledgement mandatory	No	
		Normal input state	opened	
		Alarm suppression	for appl. vltg.	
		Digital input	-1	
		Normal input state	opened	
			for appl. vitg.	
		Alarm suppression	Tor appr, virg,	





Now finish the this part by connecting some Low, Or FBoxes and connectors.







Finally we add the FBox selector tab Application, family DDC Alarming FBox Acknowledge 1.5.

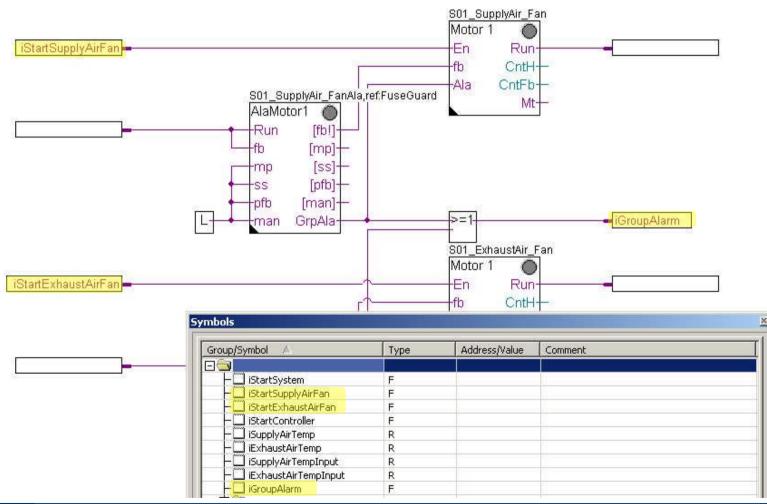
Via this FBox we can acknowledge stored alarms from this position till end of program. It's easier than switching to initialization page to access the adjust window from InitLib FBox.

🛃 Device1 - Saia Fupla Editor - [HVAC.f	fup *]
Eile Edit View Device Online M	<u>M</u> ode B <u>l</u> ock P <u>ag</u> e <u>W</u> indow <u>H</u> elp
0 🗳 🖬 🕼 🍯 🐇 🖻 🖓 🖆	2 🗅 📅 🌄 🕥 🖓 🖓 🏢
Selector 4 ×	HVAC.fup *
Application	
Filter 🔹 🧟 😭	
 Alarm ▲ Blind - Lighting ⊕ Communication Email ⊕ DALI Driver □ Data baffar 	Ack
🗄 Data buffer 🖃 DDC Suite	
 □ Alarming □ 1 Alarm 2.0 □ 1 Alarm 2.0 □ 1 Alarm 2.0 □ 1 Alarm 2.0 □ 1 Alarm/Message 2.0 □ 1 Alarm/Message 2.0 □ 1 Alarm/Message 2.0 □ 5 Alarms 2.0 □ 5 Alarms 2.0 □ Acknowledge 1.5 □ Control voltages 2.0 	





Show symbol editor (key "F5") and drag&drop some symbols from symbol editor into connectors

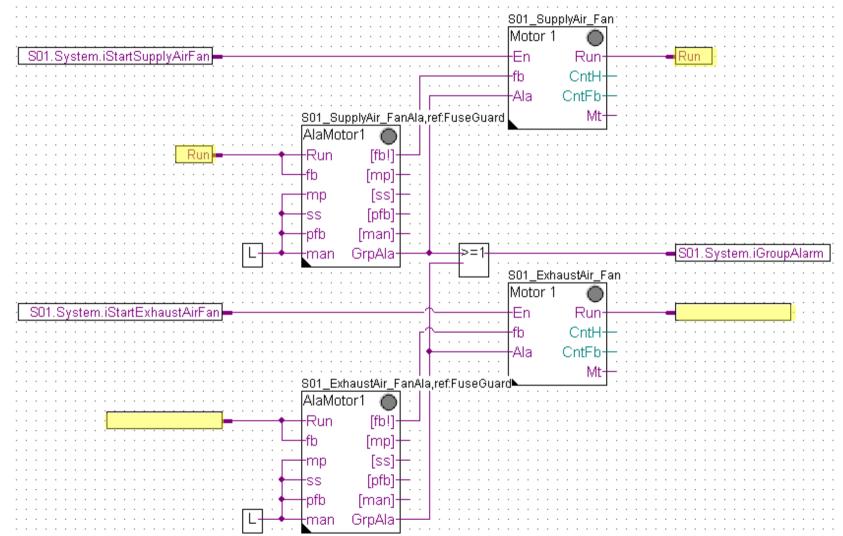




Saia-Surgess Control Systems and Components



DDC Suite 2.0 / PG5 Building Advanced Working with Fupla







Please check in symbol editor (remember show/hide symbol editor with key "F5") if you see the same structure and symbols.

Group/Symbol	Туре	Address/Value	Comment
	a contract		
- 🛄 Run	F		
由 🖻 PCD	GROUP		
- SystemClocks	GROUP		
H 🗀 Analogue	GROUP		
🕀 🧰 501	GROUP		
🔁 🔄 Controls	GROUP		
Motor1speed_0	GROUP		
Motor1speed_1	GROUP		
🗗 🔄 Alarming	GROUP		
🕀 🦲 Motor 1_0	GROUP		
🕀 🧰 Motor 1_1	GROUP		







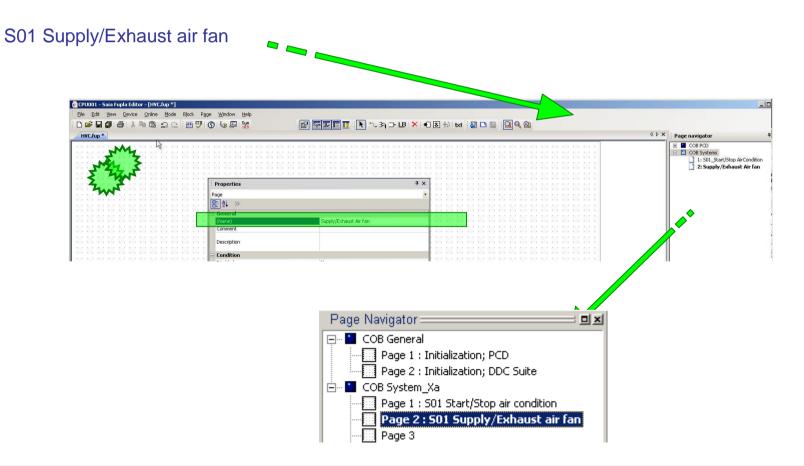
- structuring data





Double click in Fupla page and type in

text field "Name"







At this page there are 2 AlaMotor1 FBoxes and 2 Motor 1. One pair supports the supply air fan and the other the exhaust air fan.

In S01 there is already a subgroup SupplyAir and ExhaustAir – we have just to add there a subgrup Fan.

Group/Symbol	Туре	Ad
🕂 🧰 Alarming	GROUP	
🕀 🧰 Controller	GROUP	
🕀 🦲 SetPoints	GROUP	
🗗 🔁 501	GROUP	
🕀 🧰 System	GROUP	
🗗 🔄 SupplyAir	GROUP	10
🗄 🛄 Temperature	GROUP	
Fan	GROUP	
🗀 🔄 ExhaustAir	GROUP	
🕀 🧰 Temperature	GROUP	
4 🛄 Fan	GROUP	

Reminder: I recommend a depth of 4 groups: 1st group = the system, e.g. AC01 (=Air Condition 01) 2nd group = where it's located, e.g. SupplyAir 3rd group = what's there, e.g. Temperature 4th group = the functionality or component, e.g. Sensor

When reading the group structure AC01.ExhaustAir.Humidity.Sensor you will know the location at the plant and will find very fast all information depending to this sensor in the symbol editor.





DDC Suite 2.0 / PG5 Building Advanced

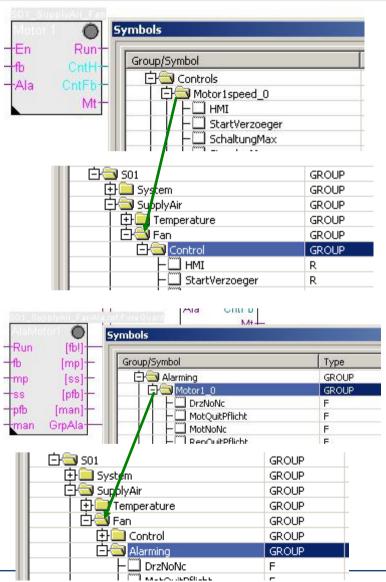
Working with Fupla

Repeat the steps before also for FBox Motor 1 with name S01_SupplyAir_Fan. Click on FBox, drag&drop group Motor1speed_0 into group S01.SupplyAir.Fan.

Rename the group Motor1speed_0 into Control. (because the fan will have a second FBox and this FBox will control the fan)

Repeat the steps before also for FBox AlaMotor1 with name S01_SupplyAir_FanAla. Click on FBox, drag&drop group Motor1_0 into group S01.SupplyAir.Fan.

Rename the group Motor1_0 into Alarming. (because the fan has already another FBox and this FBox will handle the alarming of the fan)







Repeat the steps before also for the exhaust air fan.

The symbol in connectors for Supply Air Fan should also be moved into the group S01.SupplyAir.Fan.

Mark the symbol iSupplyAirFanRun and drag&drop them into group S01.SupplyAir.Fan

Group/Symbol	Туре	
🗗 🔁 S01	GROUP	
🕀 🧰 System	GROUP	
🕀 🔄 SupplyAir	GROUP	
ExhaustAir °	GROUP	¢
🕀 🧰 Temperature	GROUP	
o 🗗 🗃 Fan	GROUP	c
🕀 🧰 Control	GROUP	
o _t_ Alarming o	GROUP	0

Group/Symbol	Туре
- 🛄 Run	F
🕀 🚞 PCD	GROUP
🗗 🔁 501	GROUP
🛛 🕀 🧰 System	GROUP
🔁 🖾 SupplyAir	GROUP

Group/Symbol	Туре
中 🖻 PCD	GROUP
🔁 🔄 501	GROUP
🛛 🕁 🧰 System	GROUP
🛛 🖾 🖾 SupplyAir	GROUP
🔰 📄 🔁 Temperature	GROUP
🔰 📋 📥 Fan	GROUP
Run	F
🛛 📔 庄 🧰 Control	GROUP
Alarming	GROUP







The second FBox also need the same symbol in the group of S01.ExhaustAir.Fan.

But we did not declared to prevent having same symbols used for different functions.

Instead of creating them now manually we duplicate them in SymbolEditor.

mark symbol in group S01.SupplyAir.Fan.
press "Ctrl" key and drag&drop them into group S01.ExhaustAir.Fan

With pressing "Ctrl" key we duplicate the symbols! Without you move them from one group into another.

Be always aware if you want to move or duplicate symbols!

Group/Symbol	Туре
🕀 🧰 PCD	GROUP
🔁 🔄 501	GROUP
🔄 🔁 🛄 System	GROUP
🔄 📮 🔄 SupplyAir	GROUP
📃 🔄 🔁 Temperature	GROUP
E E San	GROUP
Run	F
Control	GROUP
🛛 📋 🔄 庄 🚞 Alarming	GROUP
Group/Symbol	Туре
Group/Symbol	Туре
	GROUP
日 中 PCD	GROUP
E Sol D Sol D Sol D System D System D System	GROUP GROUP
	GROUP GROUP GROUP
E Sol D Sol D Sol D System D System D System	GROUP GROUP GROUP GROUP GROUP
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Image: Solid system Image: Solid system Image: System <t< td=""><td>GROUP GROUP GROUP GROUP GROUP GROUP F GROUP GROUP GROUP</td></t<>	GROUP GROUP GROUP GROUP GROUP GROUP F GROUP GROUP GROUP

📄 Control

🕂 🧰 Alarmina



GROUP

GROUP

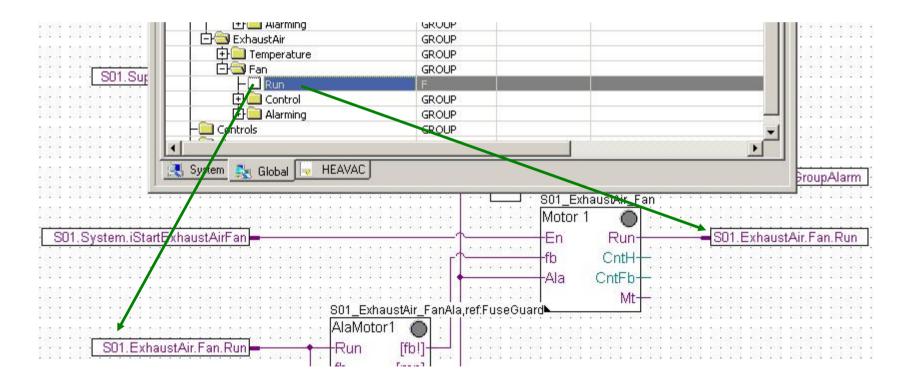






Now just drag&drop the new symbol into the connector in Fupla page.

Doing it this way you'll have always the same name convention for same functionalities.



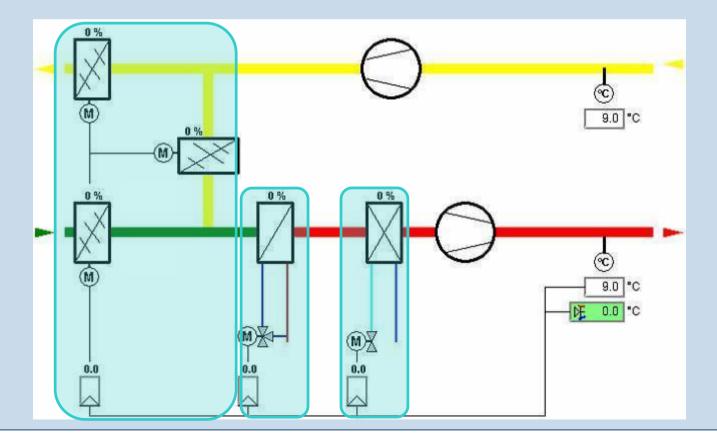






Third Fupla page will contain

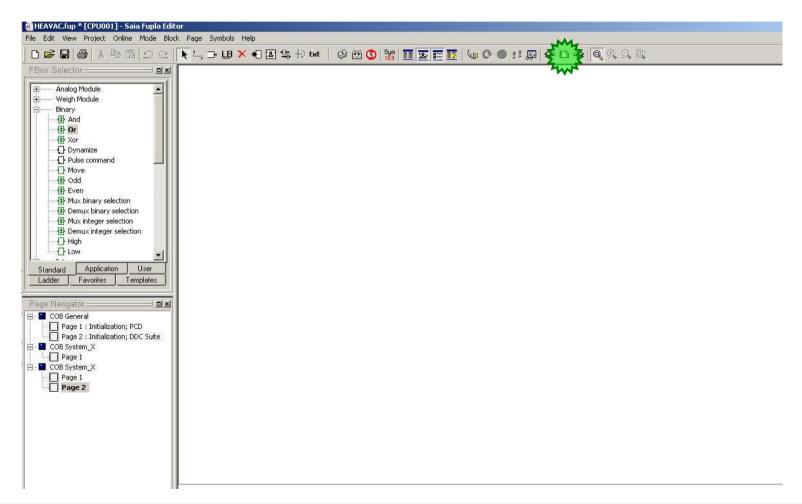
- physical components controller cooler, controller mixed air, controller pre-heater







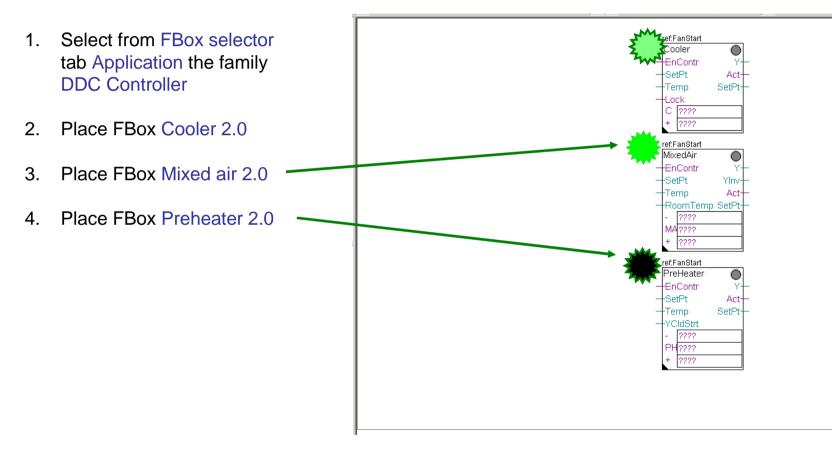
Add a new page after the current page







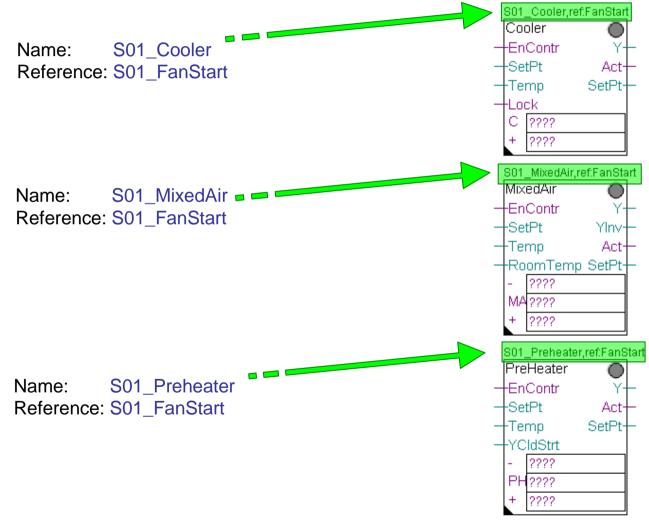
First we use some control FBoxes







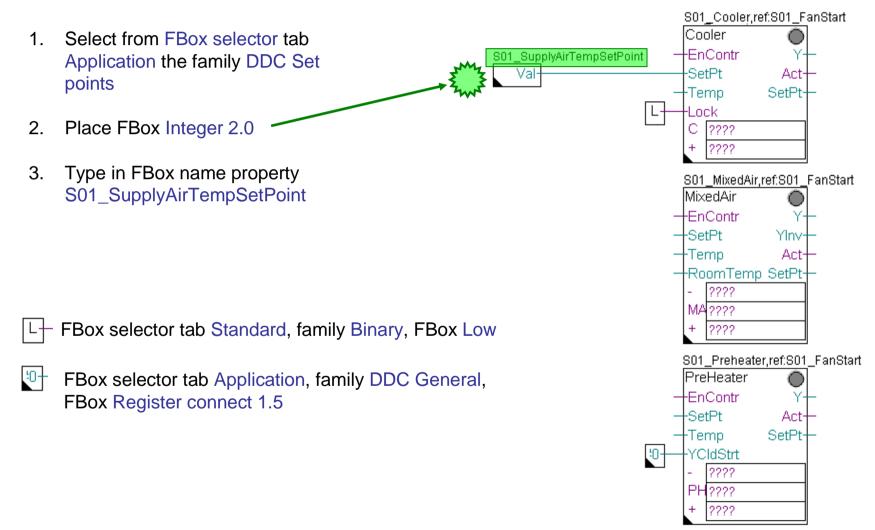
Give each FBox a clear name. FBox reference properties get a prefix S01_.







Now finish the this part by connecting some Low, Register connectors and Value FBoxes.







We have to set a value in FBox Register connected to Input YCldStrt:

- 1. Open adjust window with double click on FBox
- 2. Type in value 456

This represents 45.6 and will be used as valve signal during start up phase. More info later on during test

	PH??? + ???	?
Properties	q	×Υ
DDC General:Register conn	ect 1.5	-
8 2↓ >>		
3 General		
(Name)		anto:
Comment		
Adjust Parameters		
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	
Advanced Info		
	Register connect 1.5	
Name	The Break and a set and	

S01_Preheater,ref:S01_FanStart ref:FanStart PreHeater

EnContr

2222

SetPt

Temp YCldStrt (m)

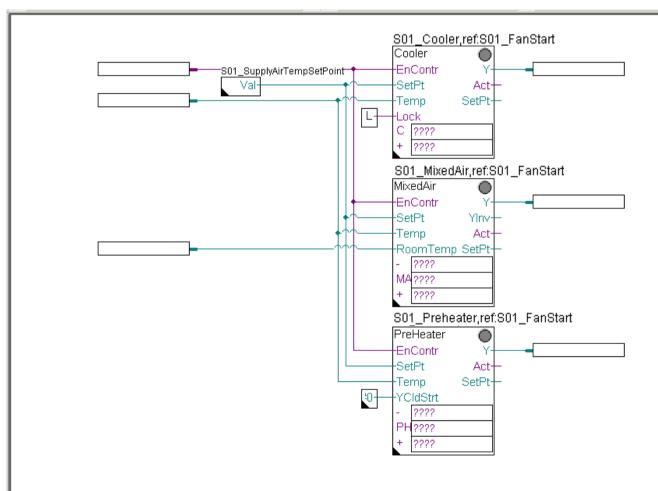
Act

SetPt





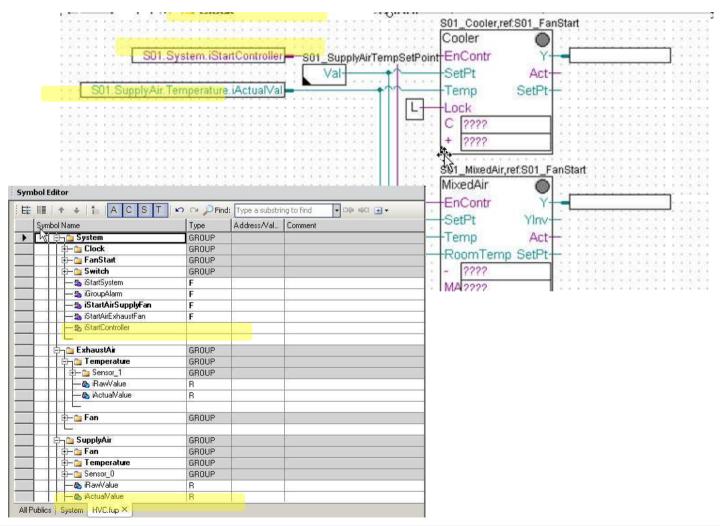
Now finish the this part by connecting input and output connectors.







Show symbol editor (key "F5") and drag&drop some symbols from symbol editor into connectors

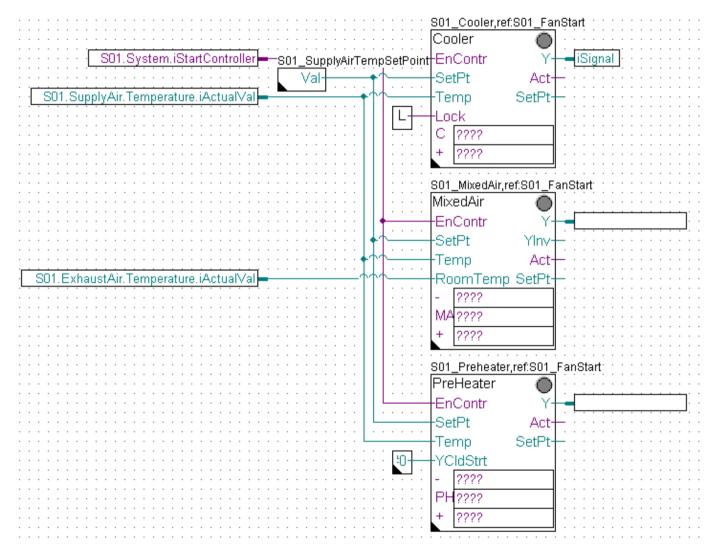




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DDC Suite 2.0 / PG5 Building Advanced Working with Fupla







Please check in symbol editor (remember show/hide symbol editor with key "F5") if you see the same structure and symbols.

E		T 🛛 🗠 🔎 Fir
	Symbol Name	Туре
-	En HVC.fup	ROOT
	🕸 – 🔁 PCD	GROUP
	🔁 🞝 Analogue	GROUP
	🕀 🔁 SystemClocks	GROUP
	🕀 🔁 Controls	GROUP
	🔄 🔁 Alarming	GROUP
	📮 📴 Controller	GROUP
	🗊 — 🚞 MixedAir_0	GROUP
	🛱 — 🚞 Cooler_0	GROUP
•		GROUP
	1	

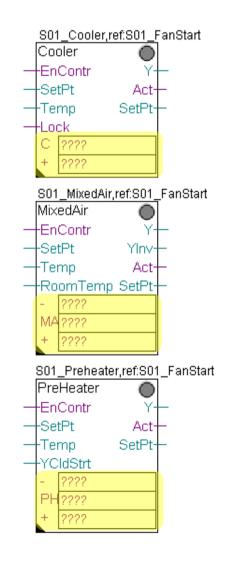




There are still some connectors undefined, displaying "????". Within DDC Suite the controller sequence is not defined within 1 FBox (e.g. like the HMC FBox from Heavac library).

The sequence is defined by creating a "chain" (handshaking) between the controller FBoxes. Therefore each FBox provides 2 or 3 connectors to define some flags for "chaining".

- The connector with a shortcut for FBox name, e.g. C = Cooler, MA = MixedAir or PH = PreHeater identifies a Flag which is monitoren by the FBox itself. If this Flag is high (and also the input EnContr) the controller will work.
- The connector with a "-" (minus) identifies the flag if a controller which should be activated when this controller FBox calculates less than 2 % signal (let's say "need less energy in air")
- The connector with a "+" (minus) identifies the flag if a controller which should be activated when this controller FBox calculates more than 98 % signal (let's say "need more energy in air")









Lets start with the FBox Cooler:

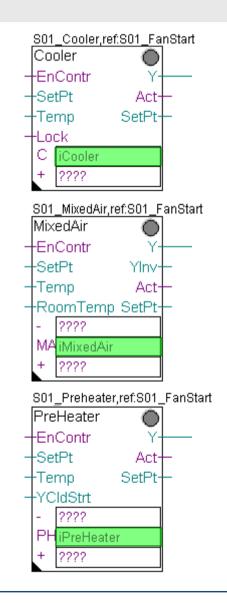
- C connector = iCooler. This flag is monitored by FBox

FBox MixedAir:

- MA connector = iMixedAir. This flag is monitored by FBox.

FBox PreHeater:

- PH connector = iPreHeater. This flag is monitored by FBox.







Lets start with the FBox Cooler:

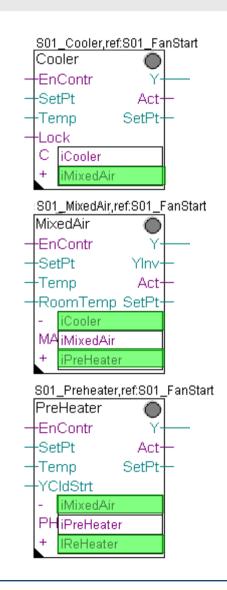
- C connector is already defined (own Flag)
- "+" connector = iMixedAir because if signal from Cooler is less than 2 % the MixedAir should be activated

FBox MixedAir:

- MA connector is already defined (own Flag)
- "-" connector = iCooler because if signal from MixedAir is less than 2 % the Cooler should be activated again
- "+" connector = iPreHeater because if signal from MixedAir is bigger than 98 % the PreHeater should be activated.

FBox PreHeater:

- PH connector is already defined (own Flag)
- "-" connector = iMixed because if signal from PreHeater is less than 2 % the MixedAir should be activated again
- "+" connector = iReHeater because if signal from PreHeater is bigger than 98 % the ReHeater should be activated. (OK – in this example we don't have – but that's no problem!)







S01_Cooler,ref:S01_FanStart	
	:
· · · · · · · · · · · · · · · · · · ·	
·····································	•
S01.SupplyAir.Temperature.iActualVal	
· · · · · · · · · · · · · · · · · · ·	•
+ iMixedAir	
	•
S01_MixedAir,ref:S01_FanStart	
MixedAir	•
VV VV VV VVVVVVVVVVVVVVVV_V	r.
EnContr Y	ŀ
♦↑	
Temp Act →	:
S01.ExhaustAir.Temperature.iActualVal	:
- · · · · · · · · · · · · · · · · · · ·	
MA <mark>iMixedAir in the second secon</mark>	:
iPreheater	:
· · · · · · · · · · · · · · · · · · ·	
<u>S01_Preheater,ref:S01_</u> FanStart	:
PreHeater 🕥 · · · · · · · · · · · · · · · · · ·	
EnContr Y	ĺ.
· · · · · · · · · · · · · · · · · · ·	·
SetPt Act	:
Temp SetPt+ · · · · · · · · · · · · · · · · · · ·	
LO YCldStrt	
	•
· · · · · · · · · · · · · · · · · · ·	
PH iPreheater	•
+ iReHeater	
	•
	-





Please check in symbol editor (remember show/hide symbol editor with key "F5") if you see the same structure and symbols.

Symbol Name	Туре	Address/Val	Comment	
En HVC.fup	ROOT			
E-CD	GROUP	8		
😟 – 📴 Controls	GROUP			
😟 — 🚘 Alarming	GROUP			
🔃 — 🔁 S01	GROUP			
😟 – 📴 Controller	GROUP			
- S PCD	COB			
— 🐁 Systems	COB			
— 🚓 iSignal	R			
	F	12	2	
— 🎭 iMixedAir	F			
— 🎭 iPreheater	F			
🎭 iReHeater	F			





At the end we have a small air condition but a look into the symbol editor will display a lot of symbols - 98% of them are created automatically by placing a FBox into Fupla page.

The missing 2% are user defined and only necessary to connect information between Fupla pages ore FBoxes.

Let's organise this big amount of data into a clear structure. The target is to get a data structure where it's easy to find any information and also to get a reusable air condition template.

Group/Symbol	Туре	Address/Value	Comment	
Istwert	R		(1) Physical value of the sensor = Output	3
Korrektur	R		(5) Correction value in physical quantity	
FilterZeit	R		(5) Scanning time of the sensor value for	
FilterFaktor	R		(5) Factor for influencing a change in read	3
IstwertY1	R		(5) Minimum physical value	
- IstwertY2	R		(5) Maximum physical value	
RohwertX1	R		(5) Minimum raw value of the input card	
RohwertX2	R		(5) Maximum raw value of the input card	
	B		(4) High limit, for passive sensors e.g. cab	
	B		(4) Low limit, for passive sensors e.g. sho	
- SpgGrp	R		(5) Associated voltage group for suppress.	
MessTyp	R		(5) Selection of the conversion of the valu	
Controls	GROUP			
Motor1speed 0	GROUP			
	R		(4) Mode HMI lower priority	
StartVerzoeger	R		 (5) Delay from start command to activatio 	
SchaltungMax	R		 (4) Number of feedback on until message 	
StundenMax	R		 (4) Number of operating hours until message 	
	E		(4) Number of operating hours until messa (2) Display requested motor state	- interest
	F		 (2) Display requested motor state (2) Corresponds to the input fb = feedback 	
Wartung	E		(3) Message maintenance neccessary	
Sperre	Ē		(3) Motor blocked due to alarm	
	R			
Schaltung	1.35		(3) Number of feedback	
Stunden	R		(3) Number of operating hours	
AnsteuerDO	R		(5) Digital output motor	
HMISuper	R		(4) Mode HMI higher priority	
Ausgang	F		(2) Display if motor should run	
Motor1speed_1	GROUP			
	R		(4) Mode HMI lower priority	
- StartVerzoeger	R		(5) Delay from start command to activatio	
SchaltungMax	R		(4) Number of feedback on until message	
StundenMax	R		(4) Number of operating hours until messa.	
Ansteuerung	F		(2) Display requested motor state	
Betrieb	F		(2) Corresponds to the input fb = feedback	
Wartung	F		(3) Message maintenance neccessary	
Sperre	F		(3) Motor blocked due to alarm	
Schaltung	R		(3) Number of feedback	1
Stunden	R		(3) Number of operating hours	
AnsteuerDO	R		(5) Digital output motor	
	R		(4) Mode HMI higher priority	
Ausgang	E		(2) Display if motor should run	
🖓 🔁 Alarming	GROUP			
Motor1_0	GROUP			
DrzNoNc	F		(5) Selection of the normal status of the p	
MotQuitPflicht	F		(5) Selection whether the alarm follows th	
MotNoNc	F		(5) Selection of the normal status of the	
RepQuitPflicht	F		(5) Selection whether the alarm follows th	
RepNoNc	F		(5) Selection of the normal status of the s	
- 🛄 HandNoNc	F		(5) Selection of the normal status of the	
- 🛄 BrmVerzoeger	R		(5) Maximum delay until feedback operati	
DrzVerzoeger	R		(5) Maximum delay until process feedback	
MotSpgGrp	R		(5) Associated voltage group for suppress.	
RepSpgGrp	R		(5) Associated voltage group for suppress	
			1.1	ſ







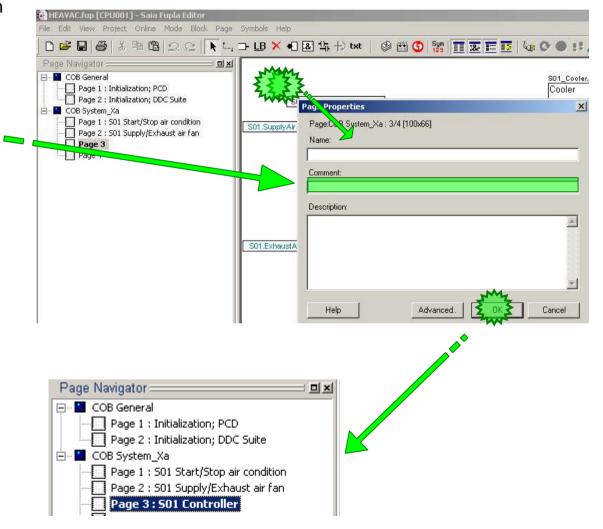
- structuring data





Double click in Fupla page and type in text field "Name"

S01 Controller







At this page there are 3 controller FBoxes representing an unit and 1 FBox for a set point. Maybe the unit will have more than one FBox it's always a good thing to create a separate group

So let's create a group

Cooler to store all data for the cooler/valve unit

MixedAir to store all data for the mixed air/damper unit

Preheater to store all data for the preheater/valve unit

oup/Symbol	Туре
- - - - - - - - - -	GROUP
🕀 🧰 System	GROUP
🕀 🦲 SupplyAir	GROUP
🕀 🧰 ExhaustAir	GROUP
- Cooler	GROUP
- 🧰 MixedAir	GROUP
🖵 🧰 Preheater	GROUP

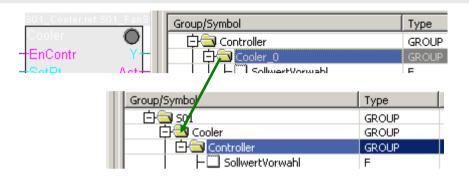


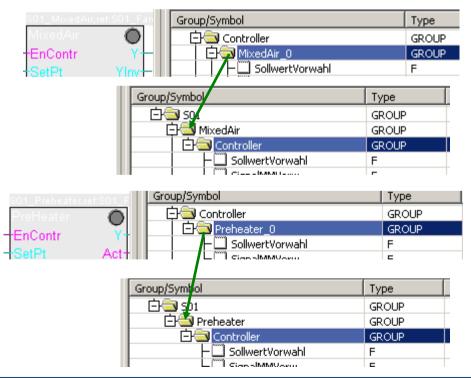


Repeat the steps before also for FBox Cooler with name S01_Cooler. Click on FBox, drag&drop group Cooler_0 into group S01.Cooler. Rename the group Cooler_0 into Controller.

Repeat the steps before also for FBox MixedAir with name S01_MixedAir. Click on FBox, drag&drop group MixedAir_0 into group S01.MixedAir. Rename the group MixedAir_0 into Controller.

Repeat the steps before also for FBox PreHeater with name S01_Preheater. Click on FBox, drag&drop group Preheater_0 into group S01.Preheater. Rename the group Preheater_0 into Controller.









- 1. Mark the symbol iCooler drag&drop it into group S01.Cooler
- 2. Mark the symbol iMixedAir drag&drop it into group S01.MixedAir
- 3. Mark the symbol iPreHeater and iReHeater drag&drop them into group S01.Preheater

Group/Symbol	Туре
⊢Ш iSignal	R
– 🛄 iPreheater	F
— 🛄 iReHeater	F
— 🛄 iMixedAir	F
– 💶 iCooler	F
🕀 🚺 PCD	GROUP
🔁 🔂 SO1	GROUP
' ↑ → - ·	

Group/Symbol	Туре
НШ Бignal	R
🕀 🧰 PCD	GROUP
[〕 [〕 〕 [〕 [〕 [〕 [〕 []] []] [] [] []	GROUP
🕂 🔁 System	GROUP
🔄 🕂 🛄 SupplyAir	GROUP
🔄 🕂 🛄 ExhaustAir	GROUP
🔄 🔁 Cooler	GROUP
iCooler	F
Controller	GROUP
🔄 🔁 MixedAir	GROUP
iMixedAir	F
Controller	GROUP
🔄 🗇 PreHeater	GROUP
iPreheater	F
iReHeater	F
🛛 📄 📥 Controller	GROUP





The symbol in connectors for Cooler should also be moved into the group S01.Cooler.

Mark the symbol iSignal and drag&drop it into group S01.Cooler

Group/Symbol	Туре
- 🛄 iSignal	R
中 🖻 PCD	GROUP
🔁 🔁 501	GROUP
中间 Svstem	GROUP
Group/Symbol	Туре
Group/Symbol	Туре
Group/Symbol	GROUP
日 つ 中 回 PCD	GROUP
日 中 中 中 10 10 10 10 10 10 10 10 10 10	GROUP GROUP
日 中 PCD 日 つ S01 「中 の System	GROUP GROUP GROUP
다	GROUP GROUP GROUP GROUP GROUP
다 PCD 다 Sol 다 System 다 SupplyAir 다 도haustAir	GROUP GROUP GROUP GROUP GROUP GROUP
	GROUP GROUP GROUP GROUP GROUP GROUP GROUP





The other controller FBoxes also need the same symbol in the group of S01.MixedAir and S01.PreHeater.

But we did not declared to prevent having same symbols used for different functions.

Instead of creating them now manually we duplicate them in SymbolEditor.

- mark symbol in group S01.Cooler.
- press "Ctrl" key and drag&drop them into group S01.MixedAir

Repeat this also for PreHeater.

With pressing "Ctrl" key we duplicate the symbols! Without you move them from one group into another.

Be always aware if you want to move or duplicate symbols!

Group/Symbol	Туре
🕀 🧰 PCD	GROUP
🗗 🔄 501	GROUP
🔁 🛄 System	GROUP
🛛 🔁 🚞 SupplyAir	GROUP
📔 庄 🧰 ExhaustAir	GROUP
🗗 🔄 Cooler	GROUP
- 🛄 iCooler	F
iSignal 💋	R
🕂 🧰 Controller	GROUP
	1 1
Group/Symbol	Туре
🗇 🖻 PCD	GROUP
Ē 🗟 501	GROUP

Group/Symbol	Туре
中 🖻 PCD	GROUP
🗗 🔄 501	GROUP
🛛 🕀 🧰 System 🖊	GROUP
🛛 🕀 🧰 Supply Air	GROUP
🔁 🧰 Exhay st Air	GROUP
Cooler	GROUP
	F
- 🛄 iS <mark>i</mark> gnal	R
🛛 🗗 💋 🖍 ontroller	GROUP
🔁 🔄 MijkedAir	GROUP
- 🕎 iMixedAir	F
– 📕 iSignal	R
🛛 🔄 🛄 Controller	GROUP
🛛 🖻 🚭 PreHeater	GROUP
iPreheater	F
iReHeater	F
– 🦳 iSignal	R
🔄 🛨 🧰 Controller	GROUP







Now we just have to drag&drop them from SymbolEditor into Fupla connector

zation; DDC Suite	SO1.Svs	tem.iStartControlle	r - S01 SunnivAirTemnSetPoint	-EnContr Y-	S01.Cooler.iSignal
Group/Symbol	Туре	Address/Value	Comment	Set t-	
3 0007,59 mbor 3 🖄	1 type	Hudi 635/ Value	1 Commerce		
コープ 中国 PCD	GROUP			1.Cooler.iCo	
	GROUP				nan saan saan sa
🕀 🦲 System	GROUP			1.MixedAir.i	
E SupplyAir	GROUP				Baga salat salat sa
ExhaustAir	GROUP				anStart
Cooler	GROUP			Air 🔘	
iCooler	E			ntr Y	
- 🛄 iSignal	R			Yinv-	
🗄 🛄 Controller	GROUP				
🕂 🤤 MixedAir	GROUP			Act	
iMixedAir	F			Temp SetPt-	<u>- 4 4 5 4 4 5 4 4 5 4 5 6 5 6 5 6 5 6 5 6</u>
- Signal	R			11.Cooler.iCo	nan saan saar sa
	GROUP			1.MixedAir.i	
	GROUP				alah salah salah sal
- iPreheater	E.			1.PreHeater	
⊢ 🛄 iReHeater ⊢ 🛄 iSignal	R				Tana ang sana ang sa
	GROUP			eheater,ref:S01_	Fanstan
	GROOF			ater 🔘	
				ntr Y-	S01.PreHeater.iSigr
				Act-	· · · · · · · · · · · · · · · · · · ·
				SetPt-	



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DDC Suite 2.0 / PG5 Building Advanced

Working with Fupla

At least we have to move FBox Value with name S01_SupplyAirTempSetPoint. Click on FBox, drag&drop group Integer_0 into group S01.SupplyAir.Temperature. Rename the group Integer_0 into SetPoint

🔁 🦲 PCD	GR	OUP
E SetPoints	GR	OUP
🖃 🔯 Integer_0	GR	OUP
Registe		
占 🔄 501	GR	OUP
	S 01	GROUP
	🕂 🔁 System	GROUP
	🕂 🔁 SupplyAir	GROUP
	🔁 🔽 Temperature	GROUP
	iSupplyAirTemp	R
	iSupplyAirTemp	
	🕂 🕀 🧰 Sensor	GROUP
	🖃 🔁 SetPoint	GROUP
	Register	R
	🕂 🛄 Fan	GROUP





At least all data should be moved into group S01(or subgroups) and no symbol any more in root

The groups Analogue, Controls, Alarming and Controller should also be empty (no "+" sign in front of the folder)

Now we have moved all data in a clear and unique structure.

aroup/Symbol	Туре	Address/Value	Comment	
3		l		
ΗÜ	Output	48		
FO	Input	32		
🕀 🧰 PCD	GROUP			
- SystemClocks	GROUP			
- Analogue	GROUP			
- Controls	GROUP			
Harming	GROUP			
- Controller	GROUP			
🕀 🧰 SetPoints	GROUP			
白圖 501	GROUP			
🕀 🦲 System	GROUP			
🕂 🦲 SupplyAir	GROUP			
🕀 🦲 ExhaustAir	GROUP			
🕂 🦲 Cooler	GROUP			
🕂 🦲 MixedAir	GROUP			
🕀 🧰 Preheater	GROUP			

Now press key "F2" to build the program.

Any error messages?

Yes: rewind to first slide and repeat all lessons ...





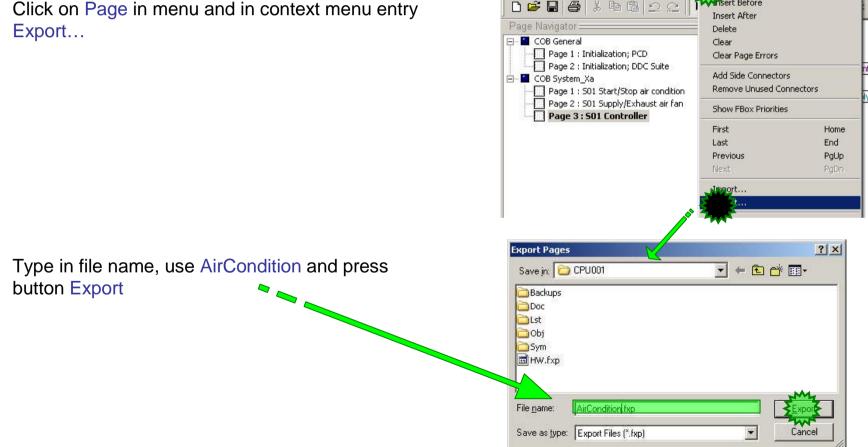
At this point we have created a small and nice air condition application. In real life it would be bigger with much more FBoxes or symbols - but we can reuse this in future if we store it as template.

HEAVAC.fup * [CPU001] - Saia Fupla Editor

File Edit View Project Online Mode Block

Symbols Help Ansert Before

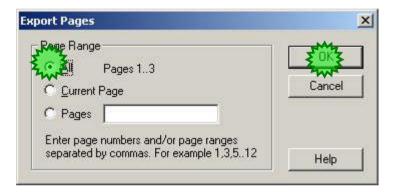
Therefore we export this application as tempalte. Click on Page in menu and in context menu entry







Within Dialog Export Pages select option All and finish with button OK.



End of engineering a Fupla application. With DDC Suite FBoxes we reduce the manual work to define symbols for FBoxes – only the symbols in the side connectors must be defined manually.





4th Fupla page (and last page ...) will contain

- physical layer for testing procedure

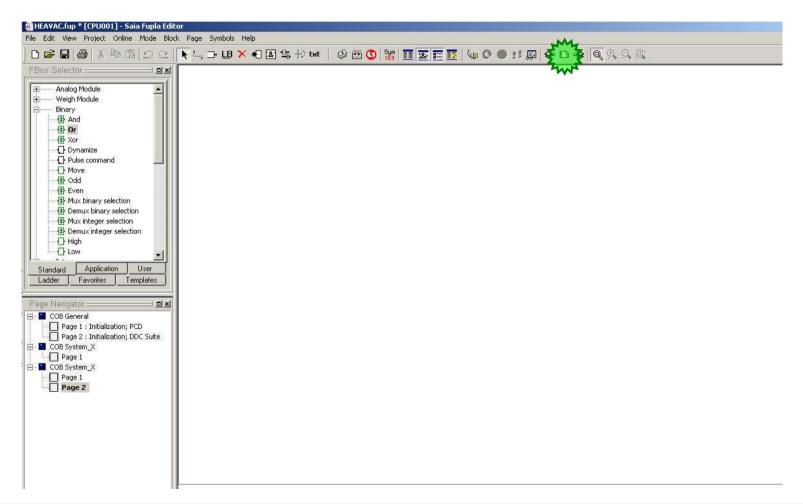




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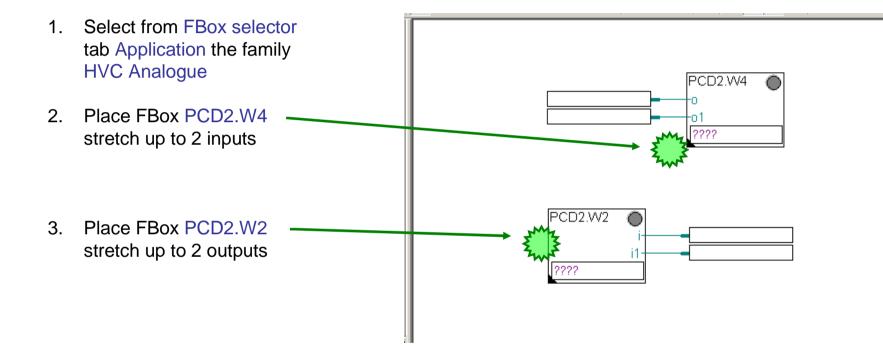


Add a new page after the current page









Connect also to FBox inputs and outputs all connectors



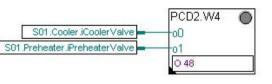
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DDC Suite 2.0 / PG5 Building Advanced **Working with Fupla**

Type O 48 into PCD2.W4 FBox connector 1.



- 2. Type I 32 into PCD2.W2 FBox connector
- drag&drop some symbols from symbol 3. editor into connectors

CD2.W2			
10+	S01.SupplyAir.Temperature.iSupplyAirTempInp	out	
i1+	SUI ExhaustAir remperature ExhaustAir remp	n put	
32	Symbols		
	Group/Symbol	Туре	Address/Valu
	中 PCD	GROUP	
	File SetPoints	GROUP	
	501	GROUP	
	G System	GROUP	
	G SupplyAir	GROUP	
	Temperature	GROUP	
	iSupplyAirTemp	R	
	iSupplyAirTempInput	B	
	File Sensor	GROUP	
	Frie Fan	GROUP	
	ExhaustAir	GROUP	
	E Temperature	GROUP	
	iExhaustAirTemp	R	
	iExhaustAirTempInput	R	
	Sensor	GROUP	
	Fin Fan	GROUP	
	Cooler	GROUP	
	- CoolerValve	R	
		F	
		GROUP	
	H MixedAir	GROUP	
	Preheater	GROUP	
		R	
	iPreHeater	F	
		F	
		GROUP	

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Now press key "F2" to build the program.

Any error messages?

Yes: rewind to first slide and repeat all lessons ...

Everything OK: download program







PG5 Building Advanced / DDC Suite 2.0 Online features

DDC Suite - Online features



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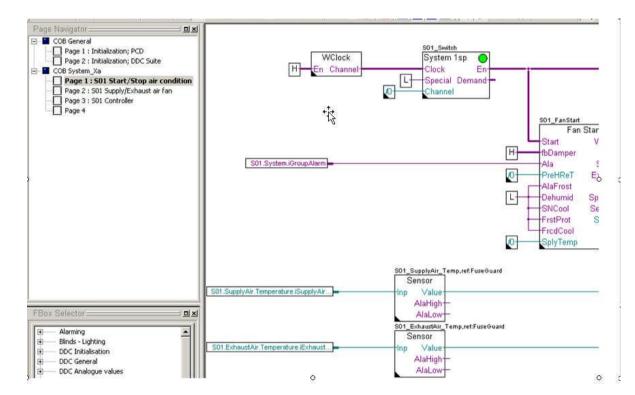
DDC Suite 2.0 / PG5 Building Advanced Online features

After download and run we will demonstrate the online features of DDC Suite.

All parameter in DDC Suite FBoxes are online parameter, that means that also some basic settings can be made online without forcing

- Go offline
- change parameter
- compile
- download

This will reduce commissioning time



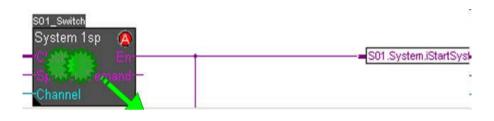
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DDC Suite 2.0 / PG5 Building Advanced Online features

If PCD clock is on time the FBox System 1sp will enable the air condition by clock demand.

Until all settings have been made we'll block the air condition, just open adjust window and set parameter "HMI Lower priority" to Off and write this into PCD.



You will see that the LED of the FBox turns to RED – indication that this "system" is under manual operation.

Close adjust window.

	nst Window	+		_	
	Description	Online Value			Modify Value
	⊡¬ ⊕ DDC Systems and Clocks: System1 spe				
	E 🚽 🖏 Settings				1
		Automatic		-	
0		Off	1 3	-+	Off 🗸 🗸
		Input		-	
		Not used	+	\rightarrow	
		Off	+	\rightarrow	
		Off			
		Off		ĺ	
	└─- ₀□ System mode	Off		1	





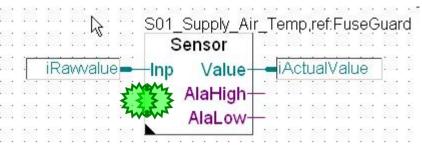
Online features

Lets have a look into FBox Sensor – open adjust window from FBox with name S01_SupplyAir_Temp.

By default this FBox expects already a physical value at input In. But the PCD workshop model supports only a active linear signal – so we have to convert the value. Therefore

- Select Conversion at parameter CardType
- set Physical. Value min to 15.0
- set Physical. Value min to 26.0
- set raw input value min to 0
- set raw input value max to 1000

And write this settings into PCD.



Value			Modify Value
sion	+	3→	Conversion
	w		
	-	\rightarrow	
	+	-	
	+-	-	
	M		
	r y	\rightarrow	15
	-	-+	26
	+-	\rightarrow	0
	1 +1	-	1000
l. vitg.		\rightarrow	
	+	\rightarrow	
	+	\rightarrow	





Online features

Also the exhaust air temperature sensor must be parameterized. Open adjust window from FBox with name S01_ExhaustAir_Temp.

This sensor may have another linearization. Therefore

- Select Conversion at parameter CardType
- set Physical. Value min to 10.0
- set Physical. Value min to 40.0
- set raw input value min to 0
- set raw input value max to 1000

And write this settings into PCD.

S01_Exhaust_Air_Temp,ref	:FuseGuard			
Sensor Inp Value				
AlaLow -				
Adjust Window				
💷 🗞 😭 斗 🛛 Edit Data Never	- +			N.
Description	Online Value			Modify Value
En DDC Analogue values: Sensor 2.0				
En 🖏 Sensor				
	Conversion	2 3	\rightarrow	Conversion
	10.0	Zwe		
Correction	0.0		-	
Ep				
	1.0	+	\rightarrow	
Smoothing factor	10	+	-	
ˬ-« Conversion		NA		
Physical. Value min.	10.0	NKA		10
	40.0	5 -7	-	40
	0	+	->	0
	1000	har	-	1000
General Advisory State Strategy St	for appl. vltg.	4	-	
Én 🖏 Alarm limit values				
	100.0	+	-	
	Ok			
	0.0	+	-	
🖵 👊 status	Ok		0,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	

You see you can adapt very easy the linearization for a sensor e.g. if a sensor must be replaced and the physical or/and raw values are different.

Additional a correction can be made, also a filter and last but not least a limit low/high is monitored. E.g. if you have a supply air temperature sensor you can define 5.0 as low and 70.0 as high limit to indicate a "short wire" or "broken wire".



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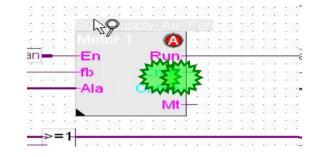
DDC Suite 2.0 / PG5 Building Advanced

Online features

On page S01 Supply/Exhaust air fan we can parameterize the fan. Open adjust window from FBox with name S01_ExhaustAir_Fan

You see parameter Digital output contains -1 – this means no hardware output controlled from this FBox. We can access any digital output simply by typing in the output address – type in 16 and write into PCD.

Now we can manually start/stop the fan by setting parameter HMI Lower priority to On or Off. The FBox will set FBox output Run to required state – but also the defined hardware output.



📕 On 🔮 🙏 🛛 Edit Data 16			+	+			
	Description		Online Value			Modify Value	
	Ent	DDC Controls: Motor 1 speed 20					
	¢-	🖏 Settings		M			
		— 🛥 Digital output	16	<u> </u>	\rightarrow	16	
		— 🛥 HMI Higher prio	Automatic				
			On	+	-		
	T I	🗕 🛥 Start delay (s)	0.0	+	-		
			Off				
			Off				
	l i	— 🛥 Feedback	Off				
	l i		Off			Off	
		🖵 📲 Motor status	BLOCKED				
	Ġ-	Counting 🗸 🖓					
		— 🛥 Feedback	1	+	\rightarrow		
		🗕 📲 Message after feedback	2000	+	-+		
		— 🛥 Hours	0	+	-		
		└─_∍_ Message after hours	5000	-	\rightarrow		

All FBoxes normally controlling a digital output are able to access the hardware output by themselves. If no output should be accessed use -1 – then no hardware address is defined and this option is disabled.

Please set parameter HMI Lower priority back to Automatic and write into PCD.





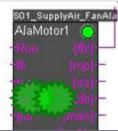
Online features

Open adjust window from FBox with name S01_ExhaustAir_FanAla

Here we can define the input handling for typically motor alarms. If the parameter Digital input contains -1 the FBox input is used, as soon the value is set to a real address this input is used.

Additional a mandatory acknowledge can be set, that means if the input turns to alarm state an back to normal state the alarm is still active and must be acknowledged (use e.g. the FBox Ack in upper left corner)

Also the normal state of the input can be defined – opened or closed.



Adjust Window					ą	×
🔠 On 🕃 Џ Edit Data 🛛	+					
Description	Online Value			Modify Value		
🕞 🕁 🗄 DDC Alarnsing: Motor 1 speed 2.0						
ې 🖏 System functions			1			
Group alarm from fb/mp/pfb	Only these	-	ĺ→			
En 🖏 Feedback						
🛛 🔶 🛶 Digital input	-1	+	\rightarrow			
Delay	5.0	+	\rightarrow			
Alarm status	ok					
Process feedback						
	0	1	-+	0		
Normal input state	opened	-	\rightarrow			
Delay (Sec)	30.0	+	\rightarrow			
► Alarm status	ALARM			1		
🛱 🖓 Motor protection			-			
🕂 🗝 Digital input	1	Jun 1	\rightarrow	1		
	No	+ +	\rightarrow	No		
🕂 📲 Normal input state	opened	had	-	opened		
	for appl. vitg.	4	-			
Alarm status	ok		-			
🔄 🛱 🖏 Service switch			-			
- Di-A-Lin-14		1.	Û .	[10



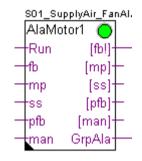


All FBoxes normally monitoring a digital output are able to access the hardware input by themselves. If no input should be accessed use -1 -then no hardware address is defined and this option is disabled – so it's always a choice between FBox input and physically input.

If a physically input is defined within the FBox the commissioning would be complicated during testing the inputs (e.g. turn on/off maintenance switch)

Therefore those FBoxes are displaying at FBox output the input state. This information is enclosed into brackets [...]. Here you can see always the raw input state. An output containing an additional exclamation mark -! – like [fb!] indicates that this input state can be used also to connect to other FBox inputs. E.g. a feed back input is normally always High if motor is running and Low if motor is off.

So it's very easy to define which alarm must be monitored for each motor, you don't have to think during engineering time if there is a feedback, motor protection or maintenance switch input available or not. Just parameterize the input if it's present.





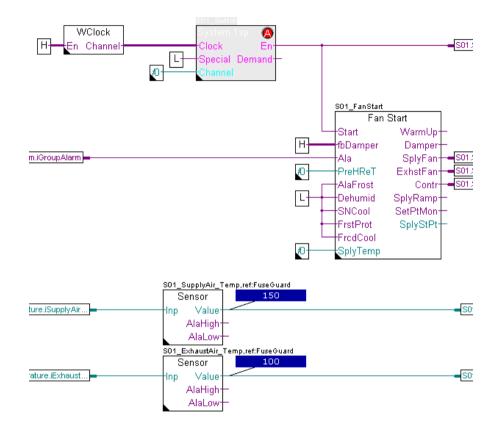


Syntax and remarks of actions during workshop

Back to page S01 Start/Stop air condition.

Turn potentiometer to left position until you have the minimum value of 15.0 and 10.0.

This will be the start point to have a defined controller behaviour during the controller functionality explanation.



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PG5 Building Advanced / DDC Suite 2.0 HDLog – offline trending

HDLog Offline trending



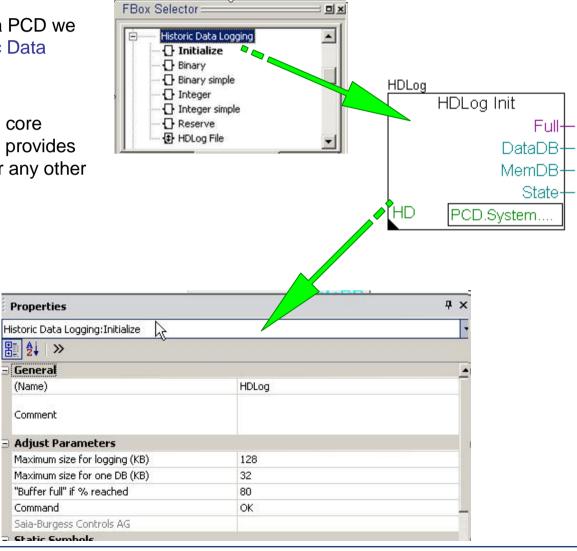
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DDC Suite 2.0 / PG5 Building Advanced HDLog – offline trending

To use offline trend functionality in a PCD we have to use the FBox family Historic Data Logging – available since 2 years.

An HDLog Init FBox implements the core functionality, allocating memory and provides an interface to Sweb or ViSi.Plus (or any other SCADA) system.





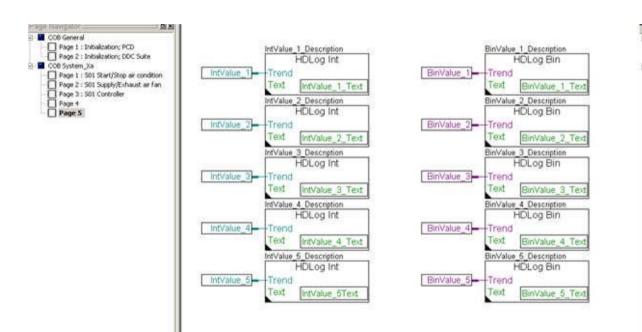


And then you have to place an FBox for each data you'd like to trend offline in the PCD. This leads often into "trend collecting pages".

Additional you have to

- connect the symbol
- type in a text description
- type in a FBox name property
- set the parameter in adjust window

This means some additional work and you can make also some mistakes, even if you'd like to configure the recording method for all e.g. Set Points to the same style.







PG5 Building Advanced / DDC Suite 2.0 HDLog – offline trending

HDLog with DDC Suite Basics



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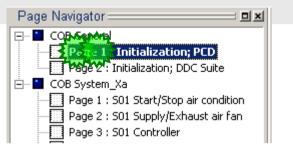


DDC Suite 2.0 / PG5 Building Advanced HDLog – offline trending

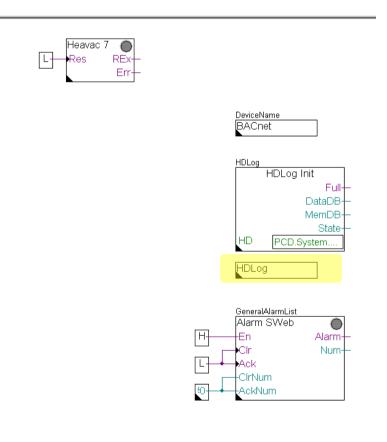
If we would like to use the feature Offline trending in PCD within DDC Suite we also have to use the the Historic Data Logging FBox family – that means that the DDC Suite feature is based on the original HDLog FBox functionality!

At least we have to place the FBox HDLog Init – but this is already prepared on first page Initialization; PCD in block COB General.

But you can also see that there is an additional FBox HDLog below the FBox HDLog Init.



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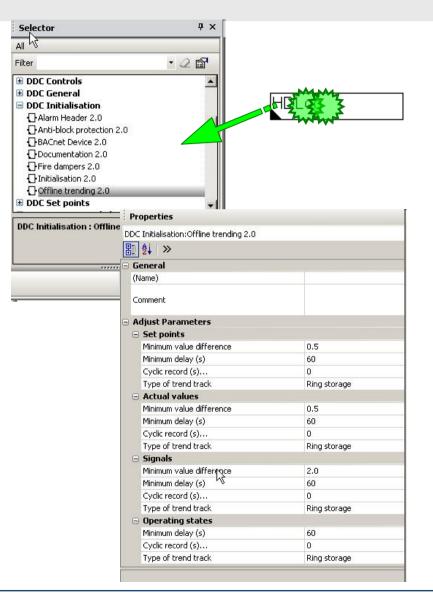
DDC Suite 2.0 / PG5 Building Advanced HDLog – offline trending

This new FBox is located in the FBox family DDC Initialization and will only operate with DDC Suite FBoxes.

This FBox has no inputs or outputs, there are only some settings ion adjust window available.

DDC Suite FBoxes are dedicated for Heavac applications and so we normally have some typically data points which are from interest for offline trending. These are Set points, Actual values, Signals and Operating states.

This FBox predefines for each kind of this data type a typically record method, e.g. all Set points should be stored if it's changed with a difference +/- 0.5 – but use also a minimum delay to prevent filling up the offline data base if the set point is changing very fast (e.g. bad calculation). A cyclically recording is not defined (saves memory) and the historic data should be handled in a ring buffer.



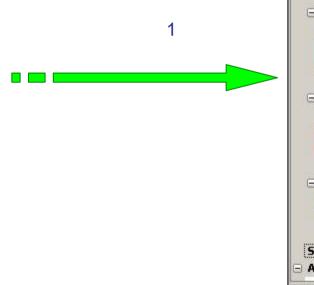




DDC Suite 2.0 / PG5 Building Advanced HDLog – offline trending

For this workshop we'll reduce the delay to one second and enable the cyclically recording also with 1 second.

This setting will fill up quite fast the historic data base but for testing I recommend to use this parameters.



Properties	4	×		
DDC Initialisation:Offline trending 2.0				
8 2↓ ≫				
General				
(Name)				
Comment				
Adjust Parameters				
🖃 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)	0			
Type of trend track	Ring storage			
Static Symbols				
Advanced Info				



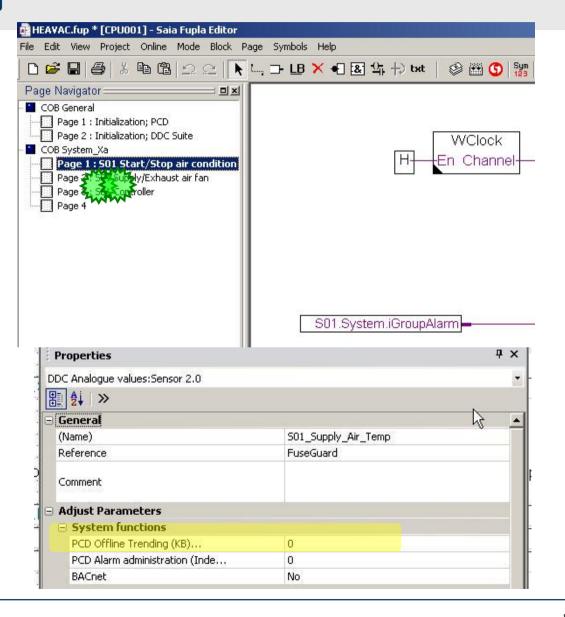




DDC Suite 2.0 / PG5 Building Advanced HDLog – offline trending

Lets jump in Fupla to block COB System_X and therein to page S01 Start/Stop air condition.

To activate offline trending for DDC Suite FBoxes we don't have to set an additional FBox – all DDC Suite FBoxes supporting offline trending will have an entry in adjust window





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DDC Suite 2.0 / PG5 Building Advanced HDLog – offline trending

The DDC Suite FBoxes have always on top in adjust window a group named [--- System functions ---].

Herein the FBox provides different features depending at the functionality of the FBox.

To activate offline trending the parameter PCD Offline Trending (KB)... must be parameterized.

Value 0 disables offline trending in this FBox, any other value reserve the amount of KB you type in. This is the same like in the original HDLog FBoxes.

Properties	Ф	×
DC Analogue values:Sensor 2.0		
∰ <u></u> ≜↓ ≫		
General		10
(Name)	S01_Supply_Air_Temp	
Reference	FuseGuard	
Comment		
Adjust Parameters		
System functions		
PCD Offline Trending	0	
PCD Alarm administration (Inde	0	
BACnet	No	
Properties	.	×
DDC Analogue values:Sensor 2.0		•
₿	N	
3 General	2	-
(Name)	S01_Supply_Air_Temp	
Reference	FuseGuard	
Comment		
🗉 Adjust Parameters		
30203		
System functions		
System functions PCD Offline Trending (KB)	0	
	0 0	





DDC Suite 2.0 / PG5 Building Advanced HDLog – offline trending

The FBoxes have of course a lot of adjust parameter and one of them will be used for offline trending.

If you don't know which parameter is used just click at the line "PCD Offline Trending (KB)..." and you'll see the parameter to be recorded at the buttom info field.

Properties	4 >
DDC Analogue values:Sensor 2.0	
8 2↓ ≫	
General	
(Name)	
Reference	FuseGuard
Comment	
Adjust Parameters	
System functions	
PCD Offline Trending (KB)	0
PCD Alarm administration (Inde	0
BACnet	No
😑 Sensor	
Card type	1:1 physical
Correction	0.0





PG5 Building Advanced / DDC Suite 2.0 HDLog – offline trending

HDLog with DDC Suite In use



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Control Systems and Components

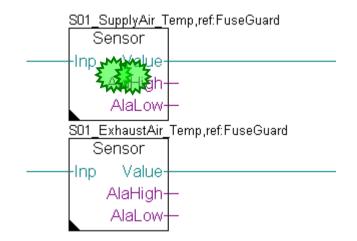


DDC Suite 2.0 / PG5 Building Advanced HDLog – offline trending

Lets start to activate offline trending for our small air condition application.

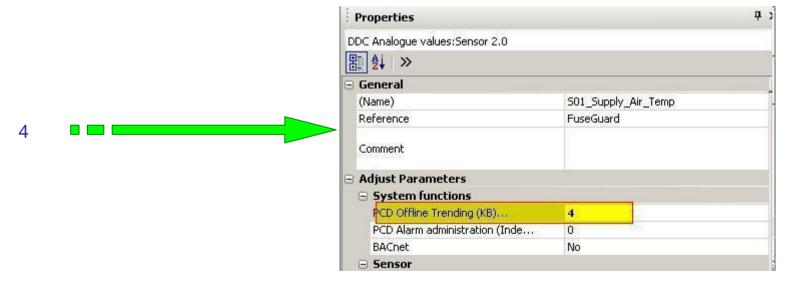
On first page we have 2 Sensor FBoxes. Open the adjust windows for the first FBox with name property S01_SupplyAir_Temp.

Lets define 4 KB for this parameter.



Control Systems and Compone

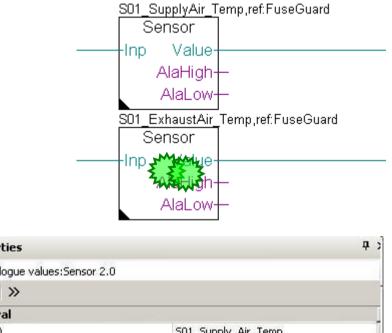
saia-burgess

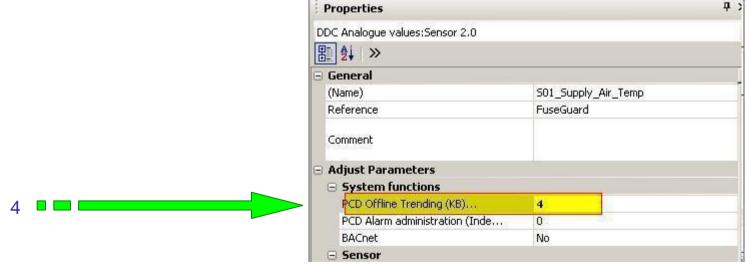






Repeat this is with second Sensor FBox. Open adjust windows for first FBox with name property S01_ExhaustAir_Temp.





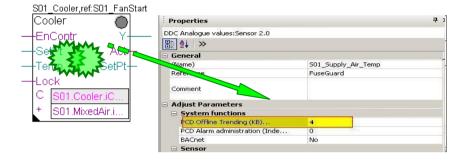




Jump to 3rd page S01 Controller.

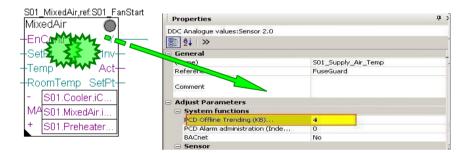
Here we have 3 FBoxes.

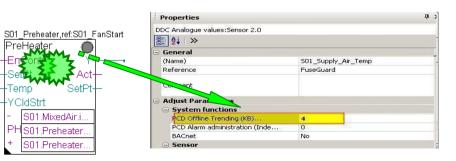
Open adjust windows of all FBoxes and set parameter PCD Offline Trending (KB)... to 4.



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Within this small application we configured 5 offline trend records. Now build your program by pressing key "F2" – you should have no errors.

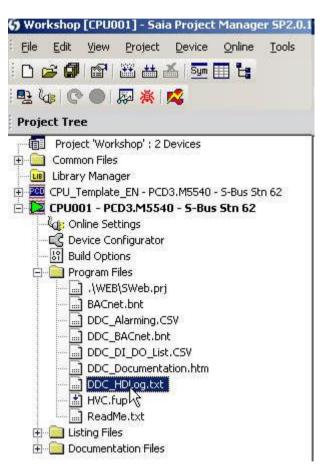
That's all what we have to do in Fupla. If we would download the program the historic data base would work – but we need of course an application to access the offline trending data.

On the other side if you imagine a big Fupla application with 50 or more pages and up to 300 FBoxes. In Fupla page you don't have any information which FBox is parameterized to use offline trending, how many KB or how you can access the offline data from this FBox.

Therefore the DDC Suite FBoxes creating a text file where all this information are centralized to support you during engineering and also for documentation.

The file name is always DDC_HDLog.txt and is created in the CPU folder.

This file is already available in our CPU001



Control Systems and Co





DDC Suite 2.0 / PG5 Building Advanced

| **∰**...⊟ |...⊕

HDLog – offline trending

This file is not linked to the program – this file contains only information about historic trending parameterized with DDC Suite FBoxes.

A double click at this file will open the notepad. You'll see all definitions we made in FBox HDLog and also from each FBox where the parameter PCD Offline Trending (KB)... is set to a value greater than 0 (= activated).

At least each FBox will inform you about

- record type, Set point, actual value ...
- The FBox name property
- Symbol to be used in an Sweb trend macro
- effective data point in FBox for trending
- reserved memory size

Don't change the file manually. If you build the program again the file will be overwritten.

tings gram Files	
BACnet.bnt	
DDC Alarming.CSV	
DDC_Alaming.CDV	
DD HD ag.txt	
HALLAN Fun	
DDC_HDLog.txt - Note	epad
File Edit Format View	and a second
PCD offline Trend	ing Settings:
- minimum delay	(unit, raw format) : 5 (seconds) : 1
– cyclic delay – type	(seconds) : 1 (O=Fill&Stop, 1=Ringbuffer) : 1
Actual value : - min. difference - minimum delay - cyclic delay - type	(unit, raw format) : 5 (seconds) : 1 (seconds) : 1 (0=Fill&stop, 1=Ringbuffer) : 1
signal : - min. difference - minimum delay - cyclic delay - type	(unit, raw format) : 20 (seconds) : 1 (seconds) : 1 (0=Fill&Stop, 1=Ringbuffer) : 1
Steuern : - min. difference - minimum delay - cyclic delay - type	(unit, raw format) : 0 (seconds) : 1 (seconds) : 0 (0=Fill&Stop, 1=Ringbuffer) : 1
Record FBox [Meas	urement - Sensor]
Type FBox Properties N Use symbol for Sw	: actual value ame : SO1_SupplyAir_Temp eb : A.HDLog.SO1_SupplyAir_Temp in record stored : SO1.SupplyAir.Temperature.Sensor.Istwer : 4 KB
Record FBox [Meas	urement - Sensor]
Type FBox Properties N Use symbol for SW Effective symbol Used memory	: actual value ame : SO1_ExhaustAir_Temp eb : A.HDLog.SO1_ExhaustAir_Temp in record stored : SO1.ExhaustAir.Temperature.Sensor.Istwe : 4 KB

Control Systems and Con



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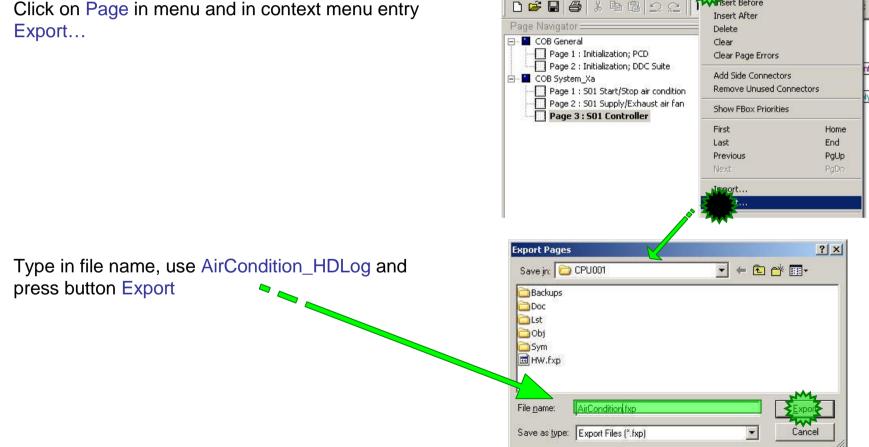
At this point we have created a small and nice air condition application. In real life it would be bigger with much more FBoxes or symbols - but we can reuse this in future if we store it as template.

HEAVAC.fup * [CPU001] - Saia Fupla Editor

File Edit View Project Online Mode Block

Symbols Help Ansert Before

Therefore we export this application as tempalte. Click on Page in menu and in context menu entry

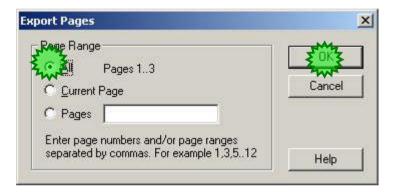








Within Dialog Export Pages select option All and finish with button OK.



End of engineering a Fupla application. With DDC Suite FBoxes we reduce the manual work to define symbols for FBoxes – only the symbols in the side connectors must be defined manually.





PG5 Building Advanced / DDC Suite 2.0 HDLog – offline trending

HDLog with DDC Suite Accessing data within SWeb



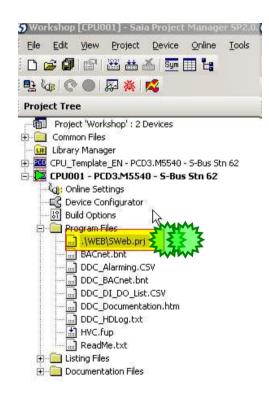
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Control Systems and Componen



We will create a fast Sweb application.

First open your Web Editor Project (Sweb.prj)





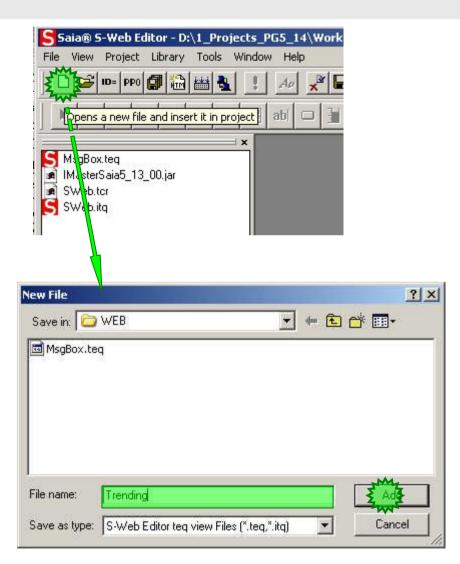


Within S-Web Editor open a new page

In dialog New File type in Trending as file name and finish with a click on button Add.

The following steps are standard when using HDLog offline data in a Sweb application.

There is no specific behaviour for DDC Suite!





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Control Systems and Compone

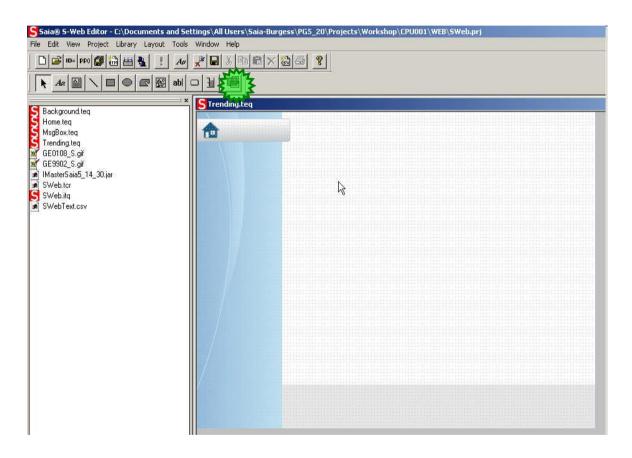
Saia-burgess



DDC Suite 2.0 / PG5 Building Advanced HDLog – offline trending

The new page Trending.teq appears and we have to add a trend macro.

Insert a Macro ...







Control Systems and Components



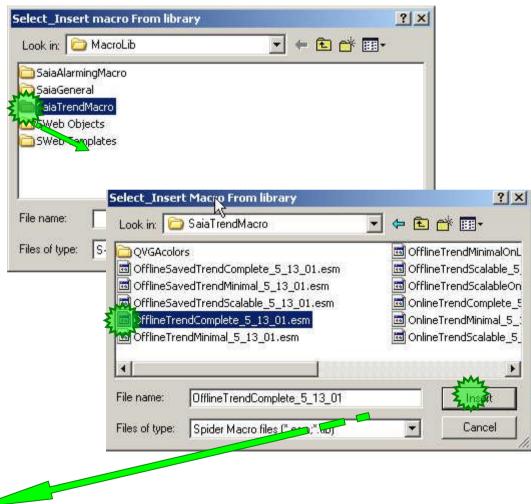
DDC Suite 2.0 / PG5 Building Advanced HDLog – offline trending

Within Select_Insert macro From library dialog

- Select folder SaiaTrendMacro
- then OfflineTrendComplete_5_13_01.esm

And in dialog Configure Macro Infos on macro instance just click on button OK.

Macro Find/Replace	Find/Replace	
	Select U	pdate
		puace
Info Org Name	Info Modified Name	+
CONTAINER "_TREND_BUSY"	_TREND_BUSY	
CONTAINER "@MACROOFTActiveTrends.081004122013"	@MACROOFTActiveTrends.081004122013	
CONTAINER "@MACROOFTActiveTrendsHeaderSP.0810	@MACROOFTActiveTrendsHeaderSP.081004122013	_
CONTAINER "@MACROOFTAvailableTrendsHeadered.08	@MACROOFTAvailableTrendsHeadered.081004122013	
CONTAINER "@MACROOFTAvailableTrends.0810041220	.@MACROOFTAvailableTrends.081004122013	
CONTAINER "@MACROOFTActiveTrendsName.08100412.	@MACROOFTActiveTrendsName.081004122013	
CONTAINER "@MACROOFTYMin.081004122013"	@MACR00FTYMin.081004122013	
CONTAINER "@MACROOFTYMax.081004122013"	@MACROOFTYMax.081004122013	
CONTAINER "@MACROOFTActiveTrendsColor.08100412	@MACROOFTActiveTrendsColor.081004122013	
CONTAINER "@MACROOFTLoadDatasStartIndex.081004	@MACROOFTLoadDatasStartIndex.081004122013	
CONTAINER "@MACROOFTLoadDatasEndIndex.0810041.	@MACROOFTLoadDatasEndIndex.081004122013	
CONTAINER "@MACROOFTActiveTrendsIndex.08100412.	@MACROOFTActiveTrendsIndex.081004122013	
CONTAINER "@MACROOFTNewTrendsName.081004122.	@MACROOFTNewTrendsName.081004122013	
CONTAINER "@MACROOFTNewYMin.081004122013"	@MACROOFTNewYMin.081004122013	
CONTAINER "@MACROOFTNewYMax.081004122013"	@MACROOFTNewYMax.081004122013	
CONTAINER "@MACROOFTNewTrendsColor.0810041220.	@MACROOFTNewTrendsColor.081004122013	-
Show all Containers	🔽 Show all Srings	
Show all PPOs	Show all HTML Tags	
Show all Files	Show all FKEYs	
	M	







GR

After macro import double click in macro.

The Group dialog appears. Activate tab Advanced settings

In list Select the Painter to Configure double click at second entry 1_MacroOffline Trend

S Trending.teq			THE PERSON NEWS
Affluent republics	on/ata 5 4.4 00		
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FTXMinDate.08	FTXD atel 21.08	FTXDate/61.08	FTXDate/81.08* TXMaxDate.0
Clear Logs	<< scroll < scroll	scroll>	scroll >> Stop Load Data
'Save Logs to file	Zoom Out	Zoomini i i	Load Infos
@MACR00FTAct	007 Min.0810 0FTYMax.0810	Update	@MACROOFTActiveTrendsM
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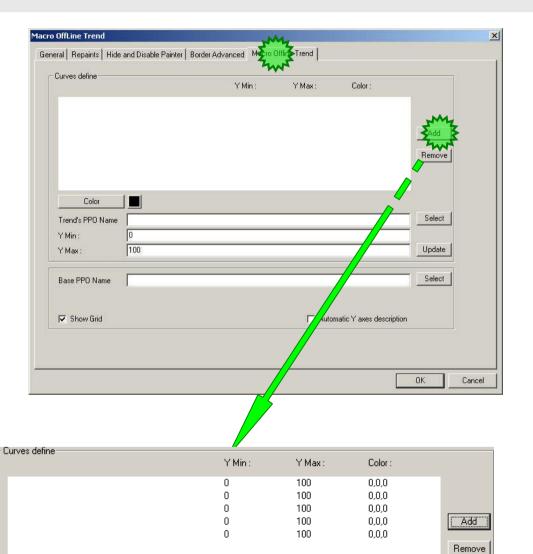






In dialog Macro Offline Trend activate tab Macro Offline Trend.

We defined in our Fupla 5 historic trend data, so click 5 times on button Add.



You should see 5 empty entries.



Color :

0.0.0

Y Max :

100



### DDC Suite 2.0 / PG5 Building Advanced HDLog – offline trending

Curves define

Click on first entry

Then select colour red

Click on parameter Trend's PPO Name button Select to assign a historic data.

In dialog Browse for Symbol [CPU001] to node

- A

- A.HDLog

And select S01_SupplyAir_Temp. You can see in column Comment a reminder where this symbol should be used.

				100	0,0,0
			Π	100	000
Ecolog					
d's PPO Name					
n: 0	1				
x: 1	00				Ur
Browse For Sym	bol [CPU001]				
	bol [CPU001]	Туре	Address/Value	Comment	
Group/Symbol 🔺		GROUP	1	Comment	
Group/Symbol ∧ 戸-Â A 戸-Â A.Ala	arm.	GROUF		Comment	
Group/Symbol A	arm Log	GROUF GROUF GROUF			
Group/Symbol A	irm Log nit	GROUF GROUF GROUF R	2235	"Base PPO Name" in SWeb T	frend Macro
Group/Symbol A	irm Log nit i01_Cooler	GROUF GROUF GROUF R R	2235 2586	"Base PPO Name" in SWeb T "Trend's PPO Name" in SWel	Frend Macro b Trend Macro
Group/Symbol A	irm Log nit i01_Cooler i01_ExhaustAir_Temp	GROUF GROUF GROUF R R R R	2235 2586 2584	"Base PPO Name" in SWeb T "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel	Frend Macro b Trend Macro b Trend Macro
Group/Symbol A  Group/Symbol A  Group A.Ala  Group A.HD  Group A.HD  Group S  Group	irm Log nit 01_Cooler i01_ExhaustAir_Temp i01_MixedAir	GROUF GROUF GROUF R R R R R	2235 2586 2584 2587	"Base PPO Name" in SWeb T "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel	Frend Macro b Trend Macro b Trend Macro b Trend Macro b Trend Macro
Group/Symbol A  Group/Symbol A  Group A.Ala  Group A.HD  Group A.HD  Group S  Group	irm Log nit i01_Cooler i01_ExhaustAir_Temp	GROUF GROUF GROUF R R R R	2235 2586 2584	"Base PPO Name" in SWeb T "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel	Frend Macro b Trend Macro b Trend Macro b Trend Macro b Trend Macro
Group/Symbol A  Group/Symbol A  Group A.Ala  Group A.HD  Group S	irm Log nit 01_Cooler i01_ExhaustAir_Temp i01_MixedAir	GROUF GROUF GROUF R R R R R	2235 2586 2584 2587	"Base PPO Name" in SWeb T "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel	Frend Macro b Trend Macro b Trend Macro b Trend Macro b Trend Macro b Trend Macro
Group/Symbol A  Group/Symbol A  Group/Symbol A  Group A.Ala  Group A.HD  Group S  Gr	irm Log nit 01_Cooler 01_ExhaustAir_Temp 01_MixedAir Q1_Preheater	GROUF GROUF GROUF R R R R R R R	2235 2586 2584 2587 2588 2588 2585	"Base PPO Name" in SWeb T "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel	Frend Macro b Trend Macro b Trend Macro b Trend Macro b Trend Macro b Trend Macro
Group/Symbol A  Group/Symbol A  Group/Symbol A  Group A.Ala  Group A.HD  Group S  Gr	irm Log nit 01_Cooler 01_ExhaustAir_Temp 01_MixedAir 01_Preheater	GROUF GROUF GROUF R R R R R R R	2235 2586 2584 2587 2588 2588 2585	"Base PPO Name" in SWeb T "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel	Frend Macro b Trend Macro b Trend Macro b Trend Macro b Trend Macro b Trend Macro
	irm Log nit 01_Cooler 01_ExhaustAir_Temp 01_MixedAir 01_Preheater	GROUF GROUF R R R R R R R R GROUF	2235 2586 2584 2587 2588 2588 2585	"Base PPO Name" in SWeb T "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel "Trend's PPO Name" in SWel	Frend Macro b Trend Macro b Trend Macro b Trend Macro b Trend Macro b Trend Macro

Y Min :

0





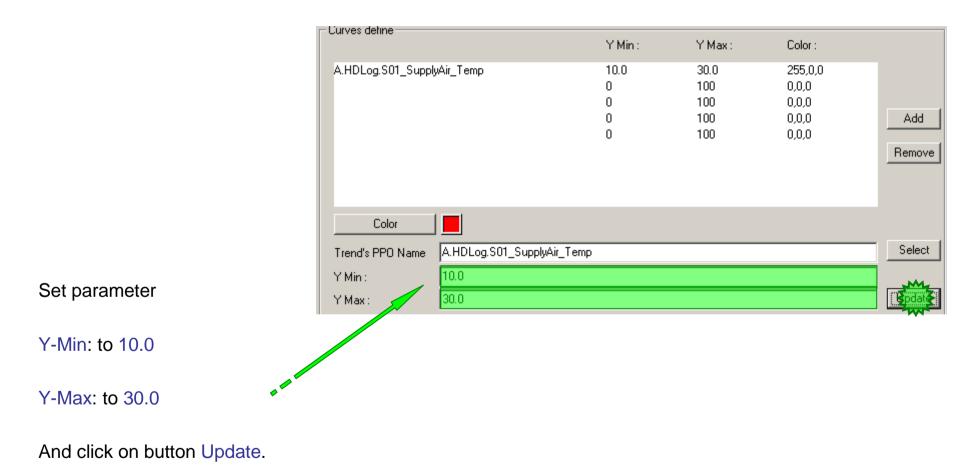
You see the DDC Suite FBox uses the FBox name property to generate automatically a symbol in symbol editor within system tab, group A.HDLog.

Therefore it's necessary to define always the FBox name property - it's also in use for other features ...

Group/Symbol 🔺	Type	Address/Value	Comment	
🖻 🧰 A	GROUF			
🕀 🛅 A.Alarm	GROUF			
🖻 🛄 A.HDLog	GROUF			
Init	R	2235	"Base PPO Name" in SWeb Trend Macro	
S01_Cooler	R	2586	"Trend's PPO Name" in SWeb Trend Macro	
S01_ExhaustAir_Temp	R	2584	"Trend's PPO Name" in SWeb Trend Macro	
S01_MixedAir	R	2587	"Trend's PPO Name" in SWeb Trend Macro	
S01_Preheater	R	2588	"Trend's PPO Name" in SWeb Trend Macro	
	R	2585	"Trend's PPO Name" in SWeb Trend Macro	
🕀 🛅 A.HDLog.Data	GROUF			
🗄 🧰 S	GROUF			
d				











Repeat this for all 4 left historic data. Orientate at list below

- Curves define	Y Min :	Y Max:	Color :
A.HDLog.S01_SupplyAir_Temp	10.0	30.0	<ul> <li>255,0,0</li> <li>255,255,0</li> <li>0,0,255</li> <li>255,128,0</li> <li>255,128,128</li> </ul>
A.HDLog.S01_ExhaustAir_Temp	10.0	40.0	
A.HDLog.S01_Cooler	0.0	100.0	
A.HDLog.S01_MixedAir	0.0	100.0	
A.HDLog.S01_Preheater	0.0	100.0	

Control Systems and Components

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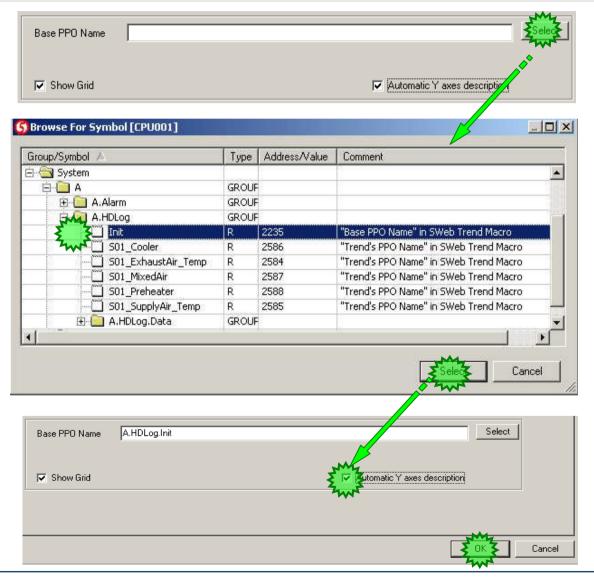
### DDC Suite 2.0 / PG5 Building Advanced HDLog – offline trending

Finally we have to define where the Sweb application will find the data base itself at the PCD.

Therefore click on button Select at parameter Base PPO Name

Select in dialog symbol A.HDLog.Init

Finally activate checkbox Automatic Y axes description and click on button OK. (2 times, because former dialog is still active)





Sala-DUrgess Control Systems and Components

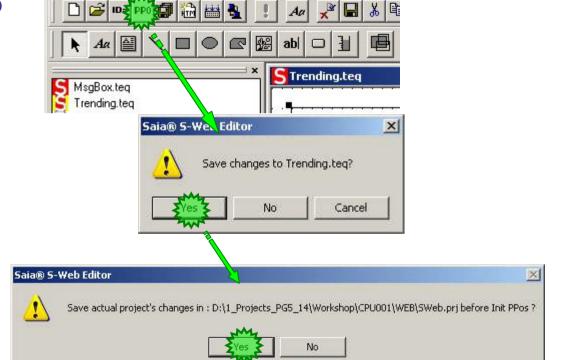


### DDC Suite 2.0 / PG5 Building Advanced HDLog – offline trending

Now we have to check some PPO settings, therefore click on button PPO in symbol bar.

You will get a dialog asking for saving changes. Click in button Yes.

You will get a dialog asking for saving project changes. Click in button Yes.



Saia® S-Web Editor - D:\1_Projects_PG5_14\Workshop\CP

File Edit View Project Library Layout Tools Window Help





You will see the PPOs Initialisation list.

We have to define the format for all symbols containing to S01 air condition.

Set Format to DEC.1

The format for A.HDLog.Init stays unchanged (DEC).

End by clicking on button OK.

PPO Name	Min	Max	Format	Ur
A.HDLog.Init			DEC	
A.HDLog.S01_Cooler				1.
A.HDLog.S01_ExhaustAir_Temp				
A.HDLog.S01_MixedAir				
A.HDLog.S01_Preheater				
A.HDLog.S01_SupplyAir_Temp				
De Toltialication				
Os Initialisation PPO Name	Min	Max	Format	U
	Min	Max	Format	U
PPO Name	Min	Max	and the second sec	U
A.HDLog.Init	Min	Max	DEC	U
PPO Name A.HDLog.Init A.HDLog.S01_Cooler A.HDLog.S01_ExhaustAir_Temp A.HDLog.S01_MixedAir	Min	Max	DEC DEC.1	U
PPO Name A.HDLog.Init A.HDLog.S01_Cooler A.HDLog.S01_ExhaustAir_Temp	Min	Max	DEC DEC.1 DEC.1	

Do not rely on min/max range verification for safety critical operations		Cancel	
	900		





Now we have to define a start page for web application.

Click in symbol bar at button HTML and type start.htm into File name text field.

Finish with a click on button Save.

Library Layout Tools Window Help File Edit View × 🖬 🕹 🖻 🖀 × 🚵 🎒 🤶 🗋 🧭 ID= PP0 Aa 😨 🔛 abl 🗆 🚹 画 Aa k 0 S Trending.teq ×. MsgBox.teq ? × New Trending.teg 🖌 IMasterSaia5 13 00.jar 💽 🗧 🖻 💣 📰+ Save jn: 🗀 WEB SWeb.tcr SWeb.itq File name: start.htm Save as type: *.html;*.htm Cance

Saia® S-Web Editor - 0:\1 Projects PG5 14\Workshop\CPU001\WEB\SWeb.ori

Finally we can build the Sweb application by clicking on button Build All.

Close S-Web Editor.





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**Control Systems and Compone** 



Now add the web server to our CPU.

First add a new program file to your project.

Select from File Type list entry Web Server Project (*.wsp) and type into text field File Name

V

#### 🖃 🔝 CPU001 - PCD3.M5540 - IPNode 99, Station 0

Rogram Fi	New	Ctrl+N
.\WEB		CUITIN
BACne	Add Files	
🛄 DDC_A	Paste	Ctrl+∀
🛄 DDC_B	Delete All Files	
D DDC H	Delece Hill Bestin	

d File Name	S New File [CPU001]
	File Name:
/ebServer	WebServer
	Directory:
	D:\1_Projects_PG5_14\Workshop\CPU001
	File Type:
	Watch Window Files (*.5ww) Data Transfer Files (*.dt5) BuES SQL Database Files (*.bue) RACnet Files (*.bnt)
	HMx Files (*.hmi) Wsb Server Project (*.wsp)
	Web Editor Project (*.prj)
	Description:
	I Linked/Built I Open file now
	Help Cancel



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Control Systems and Componer



Select within SAIA – Web-Builder-C all files and add then to list WEB Server Content.

Press button Generate, close Web Builder and build in PG5 the CPU, download .

督 SAIA - Web-Builder-C ¥1.204.6 (₩e	ebServer.wsp)		-OX
File Help			
Project: WebServer.wsp	M.	WEB Server Content	
IMasterSaia5_13_00.jar MsgBox.teq start.htm SWeb.itq SWeb.tcr Trending.teg	<- <u>R</u> emove	FileName IMasterSaia5_13_00.jar MsgBox.teq start.htm SWeb.itq SWeb.tcr Trending.teq	
	<u>G</u> enerate	3	<u> </u>
XX	▼ <u>S</u> ettings		







PG5 Building Advanced / DDC Suite 2.0 SWeb alarming

## SWeb alarming



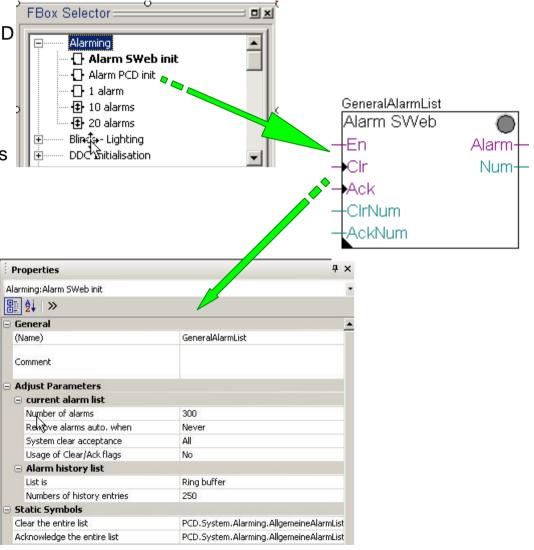


## DDC Suite 2.0 / PG5 Building Advanced

SWeb alarming

To use SWeb alarming functionality in a PCD we have to use the FBox family Alarming – available since 2 years.

An Alarm SWeb FBox implements the core functionality, allocating memory and provides an interface to Sweb or via CGI calls.





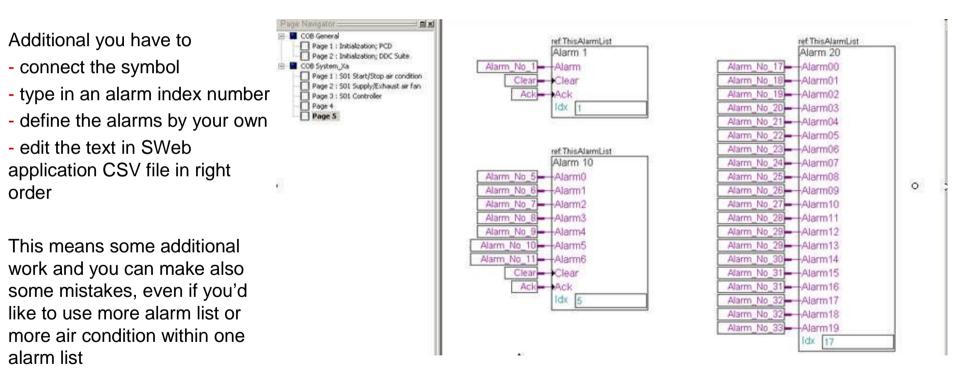




### DDC Suite 2.0 / PG5 Building Advanced

SWeb alarming

And then you have to place some FBoxes to collect all the alarm information in you application. This leads often into "alarm collecting pages".







PG5 Building Advanced / DDC Suite 2.0 SWeb alarming

# Alarming with DDC Suite Basics



### DDC Suite 2.0 / PG5 Building Advanced

SWeb alarming

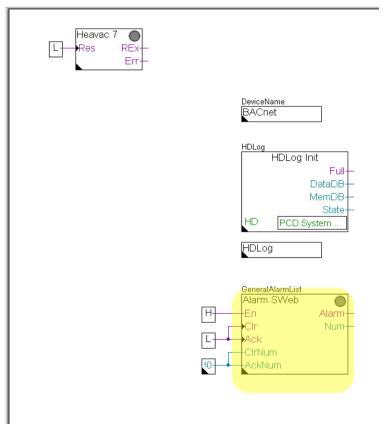
If we would like to use the feature PCD managed alarming within DDC Suite we also have to use the the Alarming FBox family – that means that the DDC Suite feature is based on the original Alarming functionality!

At least we have to place the FBox Alarm SWeb – but this is already prepared on first page Initialization; PCD in block COB General.

The sub-FBoxes for alarming are connected to this alarm list via FBox Name/Ref property – it's possible (depending on PCD type) to have more alarm list in one PCD.



**Control Systems and Compone** 





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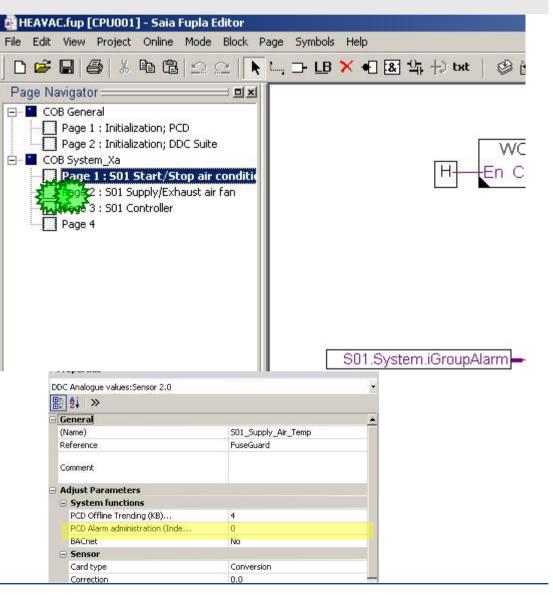
DDC Suite 2.0 / PG5 Building Advanced

SWeb alarming

Lets start to define the alarms for SWeb for the air condition.

Activate page S01 Start/Stop air condition in block COB System_X.

To activate alarm management in DDC Suite FBoxes we don't have to set additional FBoxes – all DDC Suite FBoxes supporting alarm management will have an entry in adjust window





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**Control Systems and Compone** 



### DDC Suite 2.0 / PG5 Building Advanced

SWeb alarming

The DDC Suite FBoxes have always on top in adjust window a group named [--- System functions ---].

Herein the FBox provides different features depending at the functionality of the FBox.

To activate alarm management the parameter PCD Alarm administration (Index)... must be parameterized.

Value 0 disables alarm managemt in this FBox, any other value defines the base alarm index for the first alarm in this FBox. This is the same like in the original Alarm FBoxes.

Properties	Ф ×
DDC Analogue values:Sensor 2.0	
₩ 2↓ >>	
∋ General	
(Name)	S01_Supply_Air_Temp
Reference	FuseGuard
Comment	
🖃 Adjust Parameters	
System functions	
PCD Offline Trending (KB)	4
PCD Alarm administration (Inde	0
BACnet	No
🖃 Sensor	
Card type	Conversion
Correction	0.0

1			-
	PCD Alarm administration (Inde	0	



n v



### DDC Suite 2.0 / PG5 Building Advanced SWeb alarming

5 m

The FBoxes have of course a different number of alarm information.

If you don't know how many alarms are handled within this FBox just click at the text PCD Alarm administration (Index)... and you'll see the parameter to be recorded.

General (Name)	S01_Supply_Air_Temp	
Reference	FuseGuard	
Comment		
Adjust Parameters	M	
System functions	1	
PCD Offline Trending (KB)	4	
PCD Alarm administration (Inde	0	
BACnet k	No	
Sensor		
Card type	Conversion	







PG5 Building Advanced / DDC Suite 2.0 SWeb alarming

# Alarming with DDC Suite In use



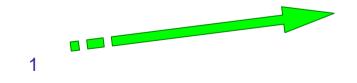


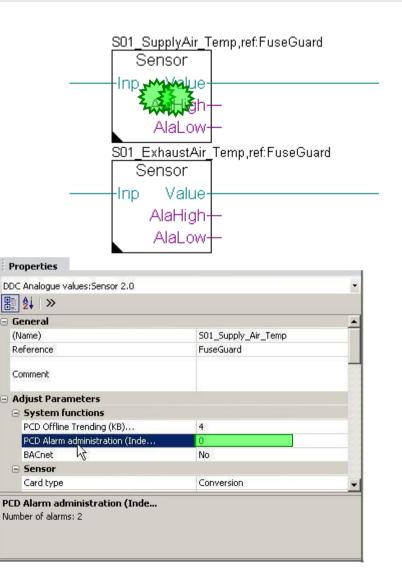
### DDC Suite 2.0 / PG5 Building Advanced SWeb alarming

Lets start to activate alarm management for our small air condition application.

On first page we have 2 Sensor FBoxes. Open adjust windows for first FBox with name property S01_SupplyAir_Temp.

Lets define the base index for the first alarm in this FBox. We'll start with number 1. If this FBox has more than 1 alarm than it takes automatically also number 2, 3, 4 and so on until all alarms in this FBox are numbered.









## DDC Suite 2.0 / PG5 Building Advanced

-

SWeb alarming

We also have to type in in next FBox another base index. It's not allowed that they overlap – otherwise you'll allocate 2 alarms from different FBoxes to 1 alarm in alarm management. This leads into strange behaviour.

Therefore it's necessary to know how many alarms this Sensor FBox handles. Just click on parameter PCD Alarm administration (Index)... und you'll see in a pop up window that this FBox handles 2 alarms.

That means:

- We defined within this FBox the index with 1
- 2 alarms are handled

Base index to use in next FBox is at least 3 (This base index + number of alarms)

P	roperties		φ×
DDO	Analogue values:Sensor 2.0		+
₽. •	<b>≜</b> ↓   ≫		
3 G	ieneral		
()	Name)	S01_Supply_Air_Temp	
R	eference	FuseGuard	1
c	omment		-
= A	djust Parameters		
G	System functions		
M	PCD Offline Trending (KB)	4	
	PCD Alarm administration (Inde	1	
m ²	BACnet	Nohs	
E	Sensor		
	Card type	Conversion	
	D Alarm administration (Inde hber of alarms: 2		





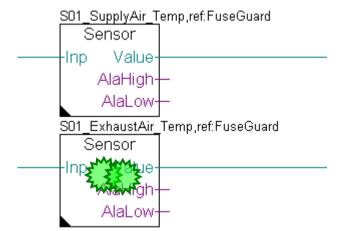
### DDC Suite 2.0 / PG5 Building Advanced SWeb alarming

Open adjust windows for first FBox with name property S01_ExhaustAir_Temp.

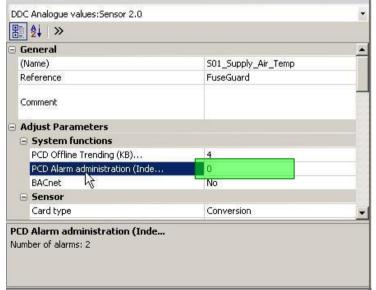
The base index we calculated for next FBox is 3, type in in parameter PCD Alarm administration (Index)...

Now we can check again how many alarms this FBox handles. Again 2 - so base index for next FBox is calculated 3+2 = 5





#### Properties





Control Systems and Components

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### DDC Suite 2.0 / PG5 Building Advanced SWeb alarming

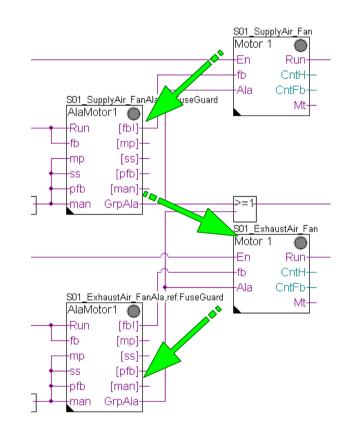
On next page all FBoxes providing alarm(s). Type in the index in parameter PCD Alarm administration (Index)... and calculate the index for next FBox.

Start in upper right corner and follow the arrows to the next FBox.

At least the index should be:

- FBox Motor 1 (S01_SupplyAir_Fan): 5
- FBox AlaMotor1 (S01_SupplyAir_FanAla): 6
- FBox Motor 1 (S01_EchaustAir_Fan): 11
- FBox AlaMotor1 (S01_ExhaustAir_FanAla): 12

At the end we should have total 16 alarms.







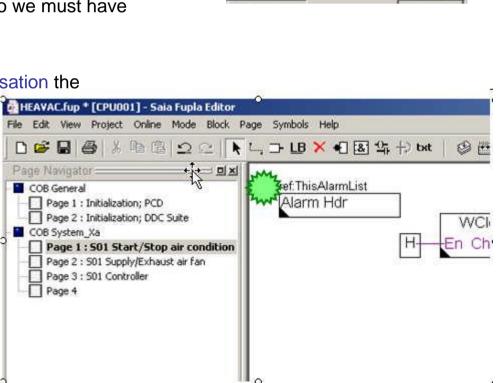
### DDC Suite 2.0 / PG5 Building Advanced SWeb alarming

So far – so good. But if we have more than 1 alarm list – how do the DDC Suite FBoxes know to which alarm list the alarm have to be assigned?

The FBoxes from FBox family Alarming are using the Name/Ref mechanism to assign an FBox to an alarm list – but the DDC Suite FBoxes are using already the FBox property Ref. So we must have another possibility.

Therefore we in DDC Suite FBox family DDC Initialisation the FBox Alarm Header 2.0.

Place this FBox on first page in the Upper left corner.







**Control Systems and Compone** 

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Sala-DUGESS Control Systems and Components



### DDC Suite 2.0 / PG5 Building Advanced SWeb alarming

You see that this FBox provides the FBox property name and it's already predefined to a default alarm list.

Rename the ref ThisAlarmList into GeneralAlarmList

So this FBox is assigned to the alarm list with FBox property name GeneralAlarmList. But not only this FBox – automatically all FBoxes from DDC Suite placed after this FBox also know that their alarms have to be assigned to this alarm list!

You can place this FBox as often as it's necessary, e.g. on every page or only once if you use 1 alarm list in you CPU.

33 5 White	FBox Properties	x
	Name	
	Reference:	
	GeneralAlarmList	
	Comment:	
S01.Sy		Cancel
	neralAlarmList	
Alarn	n Hdr	





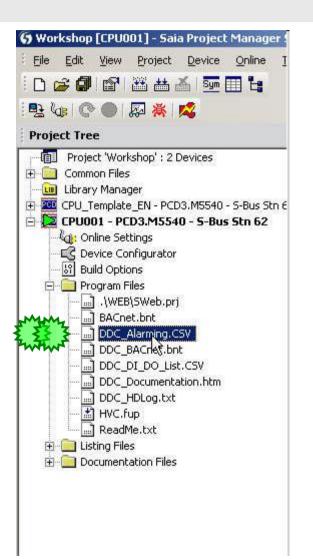
So we defined all alarm numbers and also the alarm list. Build the program. Now we could start to implement the Alarm macro in Sweb application – but I don't know which alarm in a FBox is assigned as second or third alarm and also I cannot see any Information in Fupla itself or in symbol editor.

So this means the alarms are "hidden" - not really useful.

But the DDC Suite FBoxes are creating during build process automatically a file with name DDC_Alarming.csv.

This file is already listed in CPU Program Files folder.

Double click on it, Excel should open this file.







### DDC Suite 2.0 / PG5 Building Advanced

SWeb alarming

The CSV file contains 4 columns

A: to which alarm list the alarm is assigned

B: alarm number in alarm administration

C: same as B but with prefix "Alarm_"

D: alarm text

M	1icrosoft Excel - D	DC_Alarming.CSV		
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2	A	В	С	D
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3	List_1	2	Alarm_2	FuseGuard 24 VAC missing
4	List_1	3	Alarm_3	FuseGuard 24 VDC missing
5	List_1	4	Alarm_4	FuseGuard phase missing
6	List_1	5	Alarm_5	FuseGuard control voltage
7	List_1	1	Alarm_1	S01_SupplyAir_Temp limit high
8	List_1	2	Alarm_2	S01_SupplyAir_Temp limit low
9	List_1	3	Alarm_3	S01_ExhaustAir_Temp limit high
10	List_1	4	Alarm_4	S01_ExhaustAir_Temp limit low
11	List_1	6	Alarm_6	S01_SupplyAir_FanAla no feedback
12	List_1	7	Alarm_7	S01_SupplyAir_FanAla motor protection
13	List_1	8	Alarm_8	S01_SupplyAir_FanAla maintenance switch
14	List_1	9	Alarm_9	S01_SupplyAir_FanAla no process feedback
15	List_1	10	Alarm_10	S01_SupplyAir_FanAla manual override
16	List_1	5	Alarm_5	S01_SupplyAir_Fan Service
17	List_1	12	Alarm_12	S01_ExhaustAir_FanAla no feedback
18	List_1	13	Alarm_13	S01_ExhaustAir_FanAla motor protection
19	List_1	14	Alarm_14	S01_ExhaustAir_FanAla maintenance switch
20	List_1	15	Alarm_15	S01_ExhaustAir_FanAla no process feedback
21	List_1	16	Alarm_16	S01_ExhaustAir_FanAla manual override
22	List_1	11	Alarm_11	S01_ExhaustAir_Fan Service
23				





## DDC Suite 2.0 / PG5 Building Advanced

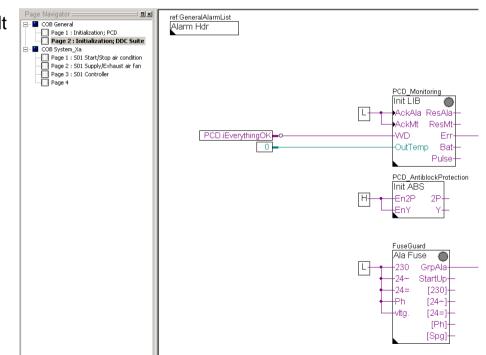
SWeb alarming

When we check the alarm number we'll see that the numbers 1 to 5 are used twice, once for some kind of FuseGuard monitoring and once from our definition.

· -·· · ·	1	
1	Alarm_1	FuseGuard 230 VAC missing
2	Alarm_2	FuseGuard 24 VAC missing
3	Alarm_3	FuseGuard 24 VDC missing
4	Alarm_4	FuseGuard phase missing
5	Alarm_5	FuseGuard control voltage
1	Alarm_1	S01_SupplyAir_Temp limit high
2	Alarm_2	S01_SupplyAir_Temp limit low
3	Alarm_3	S01_ExhaustAir_Temp limit high
4	Alarm_4	S01_ExhaustAir_Temp limit low

Reason: A DDC Suite template already has 2 default pages with some init FBoxes and already the FBox FuseGuard and Alarm Hdr.

By default they are assigned to alarm list with name GeneralAlarmList and first alarm number 1.





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### DDC Suite 2.0 / PG5 Building Advanced SWeb alarming

So we have to re-address the alarms – but this is done very fast and quite smart. In CSV file we see that 1 to 5 is used twice – but maybe it would be better to reserve 6 to 10 and start with alarm number 11 in our air condition application.

- 1. Close Excel
- 2. Jump to first page S01 Start/Stop air condition
- 3. open adjust window from FBox Alarm Hdr
- 4. modify parameter Base alarm index from 1 to 11
- 5. Close adjust parameter
- 6. Build program (use key "F2")
- 7. open file DDC_Alarming.csv in PG5 project manager

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COB General Page 1 : Initialization; PCD Page 2 : Initialization; DDC Suite COB System_Xa Page 1 : S01 Start/Stop air conditie Page 2 : S01 Supply/Exhaust air fan Page 3 : S01 Controller Page 4	H
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B 2↓ >>	
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(Name)	JML
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🖃 Adjust Parameters	
Base alarm index	11





This looks much better – and it's very easy to "move" alarms numbers for a complete application (e.g. the air condition) instead of renumbering within each FBox.

Lets have a look at column C. The alarm text is created automatically. The FBox using this method:

Use FBox property name and add a detailed information – because one FBox may have more than one alarm.

So the first part can be defined by yourself.

(To modify detailed information see chapter Sweb alarming - advanced)

	С	D
mList		
1	Alarm_1	FuseGuard 230 VAC missing
2	Alarm_2	FuseGuard 24 VAC missing
3	Alarm_3	FuseGuard 24 VDC missing
		FuseGuard phase missing
		FuseGuard control voltage
		S01_SupplyAir_Temp limit high
		S01_SupplyAir_Temp limit low
		S01_ExhaustAir_Temp limit high
		S01_ExhaustAir_Temp limit low
		S01_SupplyAir_FanAla no feedback
		S01_SupplyAir_FanAla motor protection
		S01_SupplyAir_FanAla maintenance switch
		S01_SupplyAir_FanAla no process feedback
20	Alarm_20	S01_SupplyAir_FanAla manual override
		S01_SupplyAir_Fan Service
		S01_ExhaustAir_FanAla no feedback
		S01_ExhaustAir_FanAla motor protection
		S01_ExhaustAir_FanAla maintenance switch
		S01_ExhaustAir_FanAla no process feedback
		S01_ExhaustAir_FanAla manual override
21	Alarm_21	S01_ExhaustAir_Fan Service





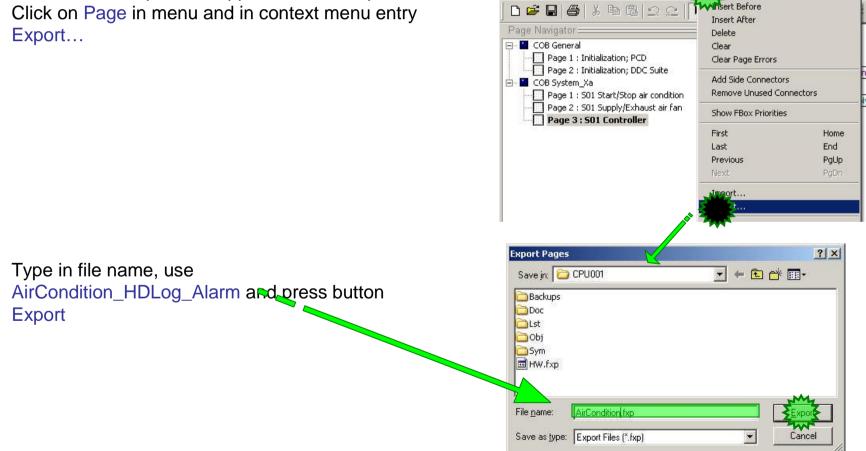
At this point we have created a small and nice air condition application. In real life it would be bigger with much more FBoxes or symbols - but we can reuse this in future if we store it as template.

HEAVAC.fup * [CPU001] - Saia Fupla Editor

File Edit View Project Online Mode Block

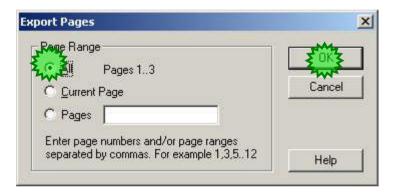
Symbols Help

Therefore we export this application as tempalte. Click on Page in menu and in context menu entry





Within Dialog Export Pages select option All and finish with button OK.



End of engineering a Fupla application. With DDC Suite FBoxes we reduce the manual work to define symbols for FBoxes – only the symbols in the side connectors must be defined manually.







PG5 Building Advanced / DDC Suite 2.0 SWeb alarming

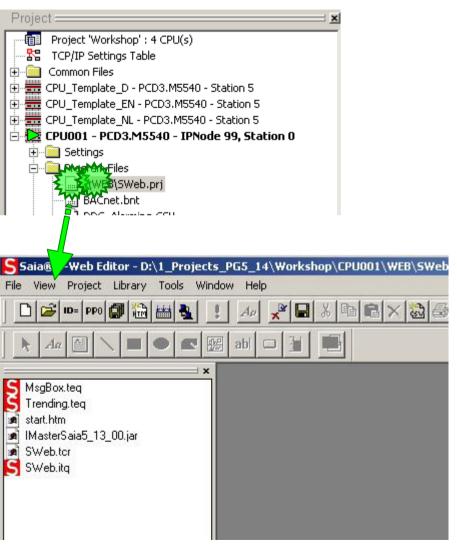
## Using alarm text in Sweb application





OK – back to SWeb engineering. Now we have a CSV file with all necessary information.

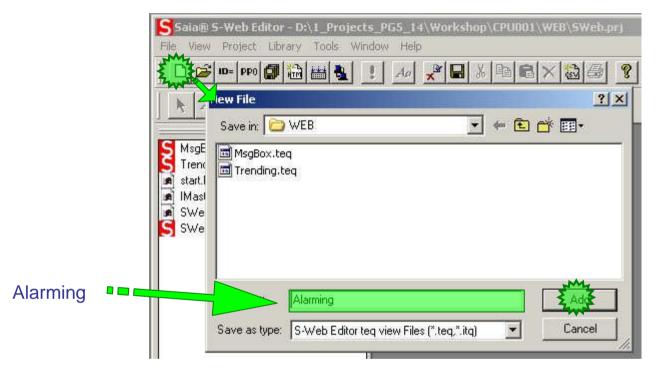
Open S-Web Editor







Create a new file.





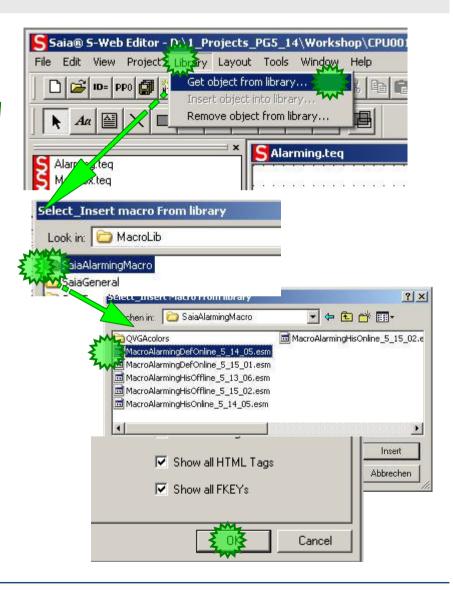


We have to load an alarming macro. Click on Library in menu bar. In context menu select Get object from library ...

Select folder SaiaAlarmingMacro

Select macro MacroAlarmingDefOnline_5_14_05.esm

And click at button OK on input dialog.







After macro import double click in macro.

The Group dialog appears. Activate tab Advanced settings

In list Select the Painter to Configure double click at first entry 0_Macro DefOnlineAlarm ....

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In dialog Macro DefOnlineAlarm activate tab Macro Alarming.

First we have to define which alarm list we'd like to show in this view. Therefore click on button Select at parameter Alarm List PPO Name.

General	Repaints	Hide an	d Disable Painter	By Denayvanced
File Viewer Advance	ced Repaints	File Viewer Ad	vanced Actions	Macro Aprming
larm List Name				Twit
arm List PPO Name				Select
larms Texts				
	V File			
	V File			
Jarms Texts	V File			
	V File			

#### Select from group

- System
- System.A
- System.A.Alarm
- System.A.Alarm.GeneralAlarmList

Entry MyHandle end click on button Select.

Group/Symbol 🛆	Type	Address/Value	Comment
🖯 🔄 Global		e 	
🕀 🦲 PCD	GROUF		
😟 🧰 S01	GROUF		
🗄 🧰 SetPoints	GROUF		
🗄 🔄 System			
🖻 🧰 A	GROUF		
📄 🧰 A.Alarm	GROUF		
📃 📄 🦲 A.Alarm.GeneralAlarmList	GROUF		
Flags	F	4166 [300]	Alarmflags
Handle	R	2209	Handle-ID
yName	TEXT	3000	Name of list
1 - 7m2			





At least we have to define that the alarm text should be used from a CSV file. Activate checkbox Alarms Text From CSV File.

Finally define how many Alarms in this list should be supported. Type in 50

General	Repaints	Hide and
File Viewer Adva	nced Repaints	File Viewer Ad
Alarm List Name		
_	A.Alarm.GeneralAlarmList.My	Name
Alarm List PPO Name 🛛	A.Alarm.GeneralAlarmList.My	Name
_		Name

Close all dialog.

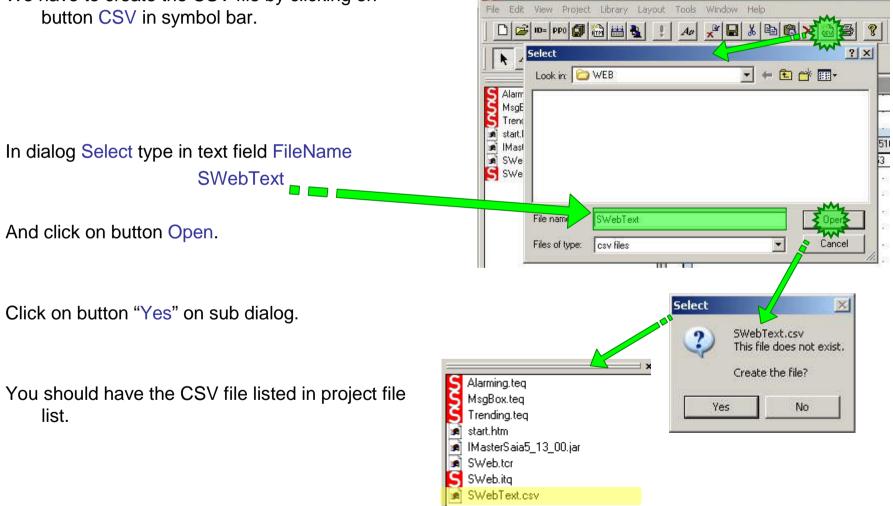
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Saia® S-Web Editor - D:\1 Projects PG5 14\Workshop\CPU001\WEB\SWeb.prj

We have to create the CSV file by clicking on button CSV in symbol bar.





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### DDC Suite 2.0 / PG5 Building Advanced

SWeb alarming

Select form menu Project and in context menu entry Project configurations ...

Click on tab Project - Applet Advanced

Activate checkbox HTML Parameters in CSV file

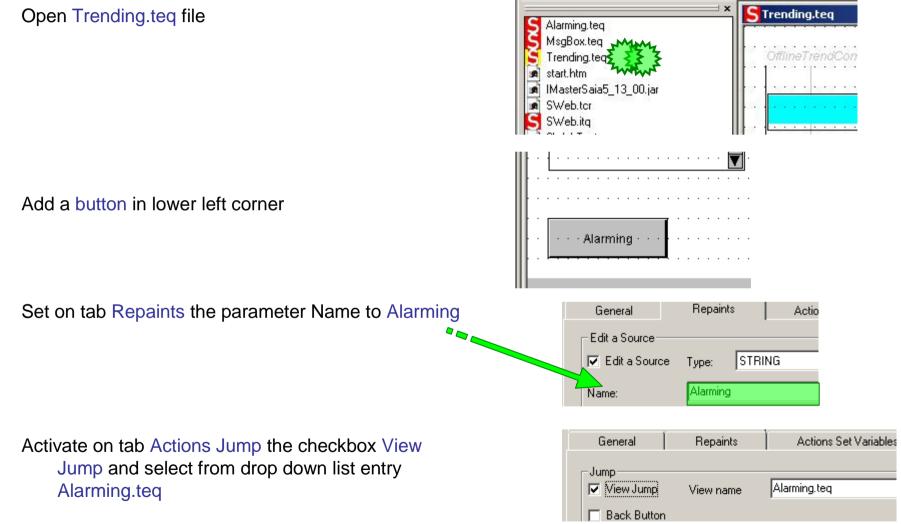
Select in dropdown list csv file: entry SWebText.csv

Close dialog by clicking on button OK.

Saia® S-We	b Editor - D:\1_Projects_PG5_14\Workshop\	
File Edit View	Project Library Layout Tools Window Hel	
	Add to project	
	Remove from project	
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	Import Containers file (itq)	
Alarming.teq	Project configurations	
S MsgBox.teg	Grid configurations	
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Browsing mode :	DEFAULT	
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Loading mode :	Standard Load	
Default Loading mo	ode that loads all views from server at applet's init phase	
	<b>E</b> OK <b>E</b>	Cancel







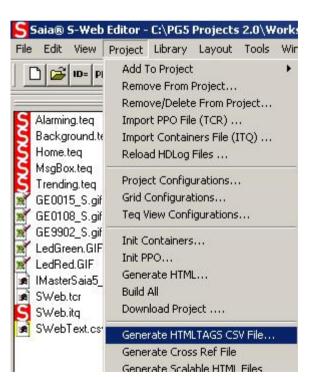


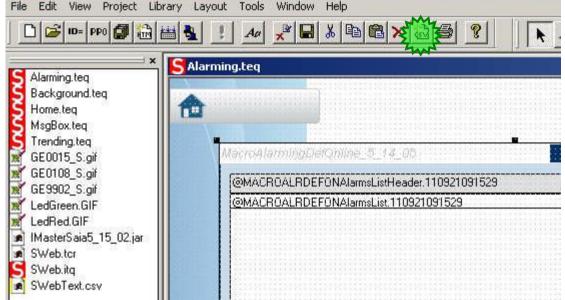
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#### DDC Suite 2.0 / PG5 Building Advanced SWeb Alarming

To create the default Alarm text's we have to press the 🔯 button or choose the command "Generate HTMLTAGS CSV File" from the project menu.





Saia® S-Web Editor - C:\PG5 Projects 2.0\Workshop_1\CPU0001\WEB\SWeb.prj 🖁







PG5 Building Advanced / DDC Suite 2.0 SWeb alarming

# Alarming with DDC Suite AddOn tool





The new DDC Suite Addon Tool is automatically installed with PG5 2.0.200

The DDC Suite Addon Tool merges the Alarm text's from the DDC_Alarming.csv into the SWebText.csv file, that is used by the Web Alarming Macro.





In the project, right click on "Program Files" Select the "File Type" DDC Suite (*.ddc):



Choose a nice name i.e. DDC_Addon.ddc

Take care that the Option "Linked/Built" has to be deactivated.

File Name:		
DDC_Suite_Example		
Directory:		
C:\Users\Public\Saia-Burgess\Pl	G5_20\Projects\DD(	C Suite Template\CPU_
File Type:		
Excel Symbol File (*.xls) Visi+ Symbol File (*.rxp) BACnet Files (*.bnt)		^
DDC Suite (*.ddc)		
HMI Files (*.hmi) Web Server Project (*.wsp)		E
Web Editor Project (*.prj)		*
Description:		
		*
		÷
My III III C		
🔤 Şənked/Built 🛛 📝 Open file	now	



Sala-DUrgess Control Systems and Components

## DDC Suite 2.0 / PG5 Building Advanced

SWeb alarming

The Addon tool recognizes the path to the CPU folder and writes per default into the SWebText.csv file.

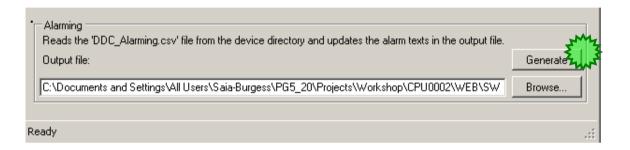
You can also choose a different output file by clicking the "Browse" button (if you did not use a DDC Suite template).

ACnet reates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.	
Force Update (Clear the content of 'BACnet.bnt' before the update)	
pen Log file	
evice path:	Generate
C:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Projects\Workshop\CPU0002	
ITM Doc	
eads the HTML documents from dorument directory and creates the .SRC files in the device directory. ocument directory:	Generate
:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Projects\Workshop\PG5_Templates\FBo	Browse
larming	
eads the 'DDC_Alarming.csv' file from the device directory and updates the alarm texts in the output file.	
utput file:	Generate
nts and Settings\All Users\Saia-Burgess\PG5_20\Projects\Workshop\CPU0002\WEB\SWebText.csv	Browse





Click on button Generate.



#### If the update has been successful a Success text appears in the status bar

Alarming Reads the 'DDC_Alarming.csv' Ne from the device directory and updates the alarm texts in the output Output file: ents and Settings\All Users\Saia-Burgess\PG5_20\Projects\Workshop\CPU0002\WEB\SWebText.	Generate
Updated the 'SWebText.csv' file with the alarming text from 'DDC_Alarming.csv'	.::



When you check the **SWebText.scv** file you'll see that the alarm text has been updated completely.

Undefined alarms in DDC_Alarming.csv are removed and replaced with a "-".

The AddOn tool will walk through all alarms defined in the SWebText.csv file and replace unused alarm with a "-"! If you type in manually a text in an unused alarm you'll loos this information!

SWebText.csv	
A.Alarm.GeneralAlarmList.MyName_31;-	
A.Alarm.GeneralAlarmList.MyName_30;-	
A.Alarm.GeneralAlarmList.MyName_29;-	
A.Alarm.GeneralAlarmList.MyName_28;-	
A.Alarm.GeneralAlarmList.MyName_27;-	
A.Alarm.GeneralAlarmList.MyName_26;-	
A.Alarm.GeneralAlarmList.MyName_25;S01_ExhaustAir_FanAla manual override	
A.Alarm.GeneralAlarmList.MyName_24;S01_ExhaustAir_FanAla no process feedback	
A.Alarm.GeneralAlarmList.MyName_23;S01_ExhaustAir_FanAla maintenance switch	
A.Alarm.GeneralAlarmList.MyName_22;S01 ExhaustAir_FanAla motor protection	
A.Alarm.GeneralAlarmList.MyName_21;S01_ExhaustAir_FanAla no feedback	
A.Alarm.GeneralAlarmList.MyName_20;S01_ExhaustAir_Fan Service	
A.Alarm.GeneralAlarmList.MyName_19;S01_SupplyAir_FanAla manual override	
A.Alarm.GeneralAlarmList.MyName_18;S01_SupplyAir_FanAla no process feedback	
A.Alarm.GeneralAlarmList.MyName_17;S01_SupplyAir_FanAla maintenance switch	
A.Alarm.GeneralAlarmList.MyName_16;S01_SupplyAir_FanAla motor protection	
A.Alarm.GeneralAlarmList.MyName_15;S01_SupplyAir_FanAla no feedback	
A.Alarm.GeneralAlarmList.MyName_14;S01_SupplyAir_Fan Service	
A.Alarm.GeneralAlarmList.MyName_13;S01_ExhaustAir_Temp limit low	
A.Alarm.GeneralAlarmList.MyName_12;S01_ExhaustAir_Temp limit high	
A.Alarm.GeneralAlarmList.MyName_11;S01_SupplyAir_Temp limit low	
A.Alarm.GeneralAlarmList.MyName_10;S01_SupplyAir_Temp limit high	
A.Alarm.GeneralAlarmList.MyName_9;-	
A.Alarm.GeneralAlarmList.MyName_8;-	
A.Alarm.GeneralAlarmList.MyName_7;-	
A.Alarm.GeneralAlarmList.MyName_6;-	
A.Alarm.GeneralAlarmList.MyName_5;FuseGuard control voltage	
A.Alarm.GeneralAlarmList.MyName_4;FuseGuard phase missing	
A.Alarm.GeneralAlarmList.MyName_3;FuseGuard 24 VDC missing	
A.Alarm.GeneralAlarmList.MyName_2;FuseGuard 24 VAC missing	
A.Alarm.GeneralAlarmList.MyName_1;FuseGuard 230 VAC missing	
Select Mode :: Select Mode :	
Sort Mode :: Sort Mode :	
•	• //

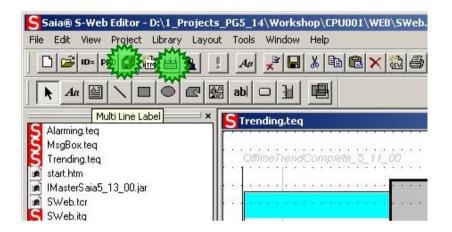




Back in S-Web Editor.

- save the project by clicking on disk symbol button
- Build the S-Web project by clicking on build button

Close S-Web Editor.



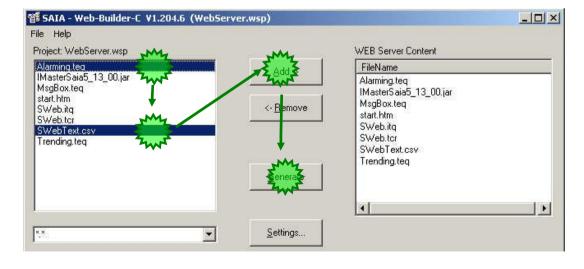
Open WebServer project from PG5 project manager

Select from left list

- Alarming.teq
- SWebText.csv

Click on button Add, press Generate End WebServer.

Build program in PG5 project manager Download program into PCD









PG5 Building Advanced / DDC Suite 2.0 SWeb alarming

# SWeb alarming - advanced





# DDC Suite 2.0 / PG5 Building Advanced

SWeb alarming

Remember - the alarm text is created by

- FBox property Name
- detailed information because one FBox may have more than one alarm

So the first part can be defined by yourself – but the second part is "hard coded in FBox", e.g. the FBox "Sensor" from family "Analogue values" supports 2 alarm, "limit low" and "limit high".

How can this default texts customized?

	С	D
mList	_	
1	Alarm_1	FuseGuard 230 VAC missing
2	Alarm_2	FuseGuard 24 VAC missing
3	Alarm_3	FuseGuard 24 VDC missing
4	Alarm_4	FuseGuard phase missing
5	Alarm_5	FuseGuard control voltage
		S01_SupplyAir_Temp limit high
		S01_SupplyAir_Temp limit low
13	Alarm_13	S01_ExhaustAir_Temp limit high
14	Alarm_14	S01_ExhaustAir_Temp limit low
16	Alarm_16	S01_SupplyAir_FanAla no feedback
		S01_SupplyAir_FanAla motor protection
		S01_SupplyAir_FanAla maintenance switch
		S01_SupplyAir_FanAla no process feedback
		S01_SupplyAir_FanAla manual override
		S01_SupplyAir_Fan Service
		S01_ExhaustAir_FanAla no feedback
		S01_ExhaustAir_FanAla motor protection
		S01_ExhaustAir_FanAla maintenance switch
		S01_ExhaustAir_FanAla no process feedback
		S01_ExhaustAir_FanAla manual override
21	Alarm_21	S01_ExhaustAir_Fan Service







Each FBox generating alarm text supports an external file.

• If the file is not present than the "hard coded" detailed information is used.

• if the file is found then the definition how to create the alarm must be declared in this file and the "hard coded" part is ignored.

So the external file disables the "hard coded" definition!

The files are structured with a strong name convention

- ALM_ declares that this file contains alarm declaration
- DDC_ identifies that this file is used with DDC suite FBoxes
- "Family_" e.g. Alarming_ declares the DDC Suite family
- "FBox" e.g. 1Alarm defines the FBox itself
- .src file extension

Example: ALM_DDC_Alarming_1Alarm.src

But you don't have to know all these file names or create them by yourself.





Within each DDC Suite template this files are already existing in the template CPU folder.

So in fact the "hard coded" definition is not used by default – but the files containing the "hard coded" part itself.

We just prepared the files that you don't have to create them by your own or copy them from other folder into CPU folder.

CPU001				- 🗆 ×
File Edit View Favorites Tools Help				-
🕒 Back 🔹 💮 🖌 🎓 🥠 Search 🛛 📂 Folders 🛛 🔢	<b>I</b> •			
address 🛅 C:\Documents and Settings\All Users\Saia-Burgess\PC	G5_20\Projects\Workshop\CPU001			🔻 🔁 Go
Folders	× Name -	Size	Туре	Date MA
🗄 🛅 HighRackStorage last		5 KB	INC File	13.12
E C HighRackStorage_ast		4 KB	SRC File	14.12
⊡ HighRackStorageLucian	Global.sy5	27 KB	SY5 File	14.12
E ☐ High KackotorageLucian E ☐ HLK tests	SfupObjects.applist	0 КВ	APPLIST File	14.12
E C hmi editor	AddOn_DDC_Alarming1Alarm	1 KB	SRC File	15.05
E Cold	AddOn_DDC_Alarming5Alarms	1 KB	SRC File	15.05
E C Project1	AddOn_DDC_AlarmingAlarmMessage	1 KB	SRC File	15.05
E C Project2	AddOn_DDC_AlarmingDelayedAlarm	1 KB	SRC File	15.05
	AddOn_DDC_AlarmingFireDamper	1 KB	SRC File	15.05
표 🛅 Project3 🖅 🛅 Project4	AddOn_DDC_AlarmingFrostProtection	1 KB	SRC File	15.05
E C Project4	AddOn_DDC_AlarmingMotorDrive1Speed	1 KB	SRC File	15.05
	AddOn DDC AlarmingMotorDrive2Speed	1 KB	SRC File	15.05
	AddOn_DDC_AlarmingMotorDrive3Speed	2 KB	SRC File	15.05
🗄 🧰 Samples 🕀 🧰 test	AddOn_DDC_AlarmingPowerSupply	1 KB	SRC File	15.05
	AddOn_DDC_ControlMotorDrive1Speed	1 KB	SRC File	15.05
E      testPCA2D12_20101122     T	AddOn DDC ControlMotorDrive2Speed	1 KB	SRC File	15.05
⊞ 🚞 Transfer_t×_reg	AddOn_DDC_ControlMotorDrive3Speed	1 KB	SRC File	15.05
🕀 🧰 V-CH Demo Projekt 2009	AddOn_DDC_ControlPump	1 KB	SRC File	15.05
🕀 🛅 Web_Editor_parking	AddOn_DDC_ControlValveDamperAnalog	1 KB	SRC File	15.05
🗉 🛅 WebAdvancedNew	Addon DDC CentralValueDemoerOnenCl	1 KB	SRC File	15.05
🗄 🚞 WebEditorTemplate_workshop	AddOn DDC Toitiplication library	1 KB	SRC File	15.05
🗄 🧰 WebEditorTemplate_workshop2	ALM_DDC_Alarming_1Alarm	1 KB	SRC File	16.01
🖂 🧰 Workshop	ALM DDC Alarming SAlarms	1 KB	SRC File	16.01
E CPU001	ALM DDC Alarming AlarmMessage	1 KB	SRC File	16.01
Backups	ALM DDC Alarming DelayedAlarm	1 KB	SRC File	16.01
Doc	ALM DDC Alarming FireDamper		SRC File	22.05
🛅 Html	ALM DDC Alarming FrostProtection		SRC File	16.01
Lst	ALM DDC Alarming Hysteresis	1 KB	SRC FI's	16.01
Obj	ALM DDC Alarming MotorDrive1Speed	1 KB	SRC File	16.01
🔁 Sym	ALM_DDC_Alarming_MotorDrive2Speed	1 KB	SRC File	16.01
E WEB	ALM_DDC_Alarming_MotorDrive3Speed		SRC File	16.01
E 🚞 CPU_Template	ALM DDC Alarming PowerSupply		SRC File	16.01
F in CPU Template FN		1 KD		10.01



Sala-DUrgess Control Systems and Components



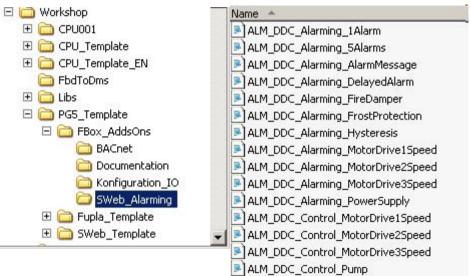
### DDC Suite 2.0 / PG5 Building Advanced

SWeb alarming

If you made some mistakes with this files – you can restore them.

Within a DDC Suite project you'll find in folder FBox_AddOns, subfolder SWeb Alarming all files.

Just copy them and past it into your CPU folder.



ALM_DDC_Control_ValveDamperAnalog
ALM_DDC_Control_ValveDamperOpenClose

ALM_DDC_Control_valveDamperOpenCit
ALM_DDC_Measurement_Sensor





Now lets customize the detailed alarm information for FBox Sensor.

The FBox Sensor is from FBox family Analogue Values. Lets check if there is a file named

ALM_DDC_AnalogueValue_Sensor.src

Unfortunately not - but when we check the files you'll find a file named

ALM_DDC_Measurement_Sensor.src

During translating DDC Suite into English we hade some different texts within FBoxes, files and description – there may be some small differences – but at the end you can identify them normally.

At least – there is a chapter DDC Suite - advanced – detailed information wherein you'll find for each FBox if it supports an external files for alarming and the file name. Please refer this chapter if you are not able to find the file you're looking for.





Please open file ALM_DDC_Measurement_Sensor.src with Notepad.

You'll see for each alarm an entry like \$WRFILE "DDC_Alarming.CSV" .... Always terminated with a construct of @&Name@. This indicates "use here the FBox property Name".

The text after this construct is the detailed information and can be changed without problems.



Please modify "limit high" into "broken wire" and "limit low" into "short circuit". Save file and close Notepad.

<u> _</u>	
	*
;@&Name@ <mark>broken wire</mark> x+1@:@&Name@ <mark>short circuit</mark>	





### DDC Suite 2.0 / PG5 Building Advanced

SWeb alarming

Close Excel and build program.

A "Rebuild All Files" is required – we didn't change any file listed in program files folder within PG5 project manager – so we have to force to rebuild the while program to be sure that the changes in such external files are executed.

Open file DDC_Alarming.csv in PG5 project manager.

You see it's very easy to customize the default alarm texts e.g. if it's a demand from end user.

The FBoxes will search for external files 1st in CPU folder, if there not present 2nd in PG5 libs folder, if there not found 3rd "hard coded" definition is used

	A	В	С	D	E	F	G	
3	List_1	2	Alarm_2	FuseGuard 24 \	/AC missing	3		
4	List_1	3	Alarm_3	FuseGuard 24 \	/DC missing	1		
5	List_1	4	Alarm_4	FuseGuard pha	se missing			
6	List_1	5	Alarm_5	FuseGuard cont	trol voltage			
7	List_1	11	Alarm_11	AC01_Shop_Su	ipplyAir_Ter	np broken w	vire	
8	List_1	12	Alarm_12	AC01_Shop_Su	ipplyAir_Ter	np short circ	cuit	
9	List_1	13	Alarm_13	AC01_Shop_Ex	haustAir_Te	emp broken	wire	
10	List_1	14	Alarm_14	AC01_Shop_Ex	haustAir_Te	emp short ci	rcuit	
11	List_1	16	Alarm_16	ACO1_Shop_Su	ipplyAir_Far	Ala no feed	back	
12	List_1	17	Alarm_17	ACO1_Shop_Su	ipplyAir_Far	Ala motor p	rotection	
13	List_1	18	Alarm_18	ACO1_Shop_Su	ipplyAir_Far	Ala mainter	hance switch	1
14	List_1	19	Alarm_19	AC01_Shop_Su	ipplyAir_Far	Ala no proc	ess feedback	k
15	List_1	20	Alarm_20	AC01_Shop_Su	ipplyAir_Far	Ala manual	override	
16	List_1	15	Alarm_15	ACO1_Shop_Su	ipplyAir_Far	n Service		
17	List_1	22	Alarm_22	AC01_Shop_Ex	haustAir_Fa	anAla no fee	dback	
18	List_1	23	Alarm_23	AC01_Shop_Ex	haustAir_Fa	anAla motor	protection	
19	List_1	- 24	Alarm_24	AC01_Shop_Ex	haustAir_Fa	anAla mainte	enance switc	:h
20	List_1	- 25	Alarm_25	AC01_Shop_Ex	haustAir_Fa	anAla no pro	cess feedba	ck
21	List_1	26	Alarm_26	AC01_Shop_Ex	haustAir_Fa	anAla manu:	al override	
22	List_1	21	Alarm_21	AC01_Shop_Ex	haustAir_Fa	an Service		
23	List_1	31	Alarm_31	HC01_Outdoor_	Ttemp brok	en wire		
24	List_1	32	Alarm_32	HC01_Outdoor_	Ttemp shor	t circuit		
25	List_1	- 35	Alarm_35	HC01_Inflow_Te	emp broken [.]	wire		
26	List_1	- 36	Alarm_36	HC01_Inflow_Te	emp short ci	rcuit		
27	List_1	- 33	Alarm_33	HC01_Inflow_Te	mp_Toleran	ce limit higł	1	
28	List_1	- 34	Alarm_34	HC01_Inflow_Te	mp_Toleran	ce limit low		
29	List_1	37	Alarm_37	HC01_Returnflo	w_Temp bro	iken wire		
30	List 1	.38	Alarm 38	HC01 Returnflo	w Temn shi	nrt dirquit		







### PG5 Building Advanced / DDC Suite 2.0 BACnet

# **BACnet**





#### DDC Suite 2.0 / PG5 Building Advanced BACnet

BACnet engineering is done with the PG5 BACnet Configurator.

This tool supports you to generate BACnet objects and mapping PCD resources to BACnet objects.

At least the engineer must know which resource should be mapped within which BACnet objects, and if done this way what must I do in Fupla?

BACnet is not transport protocol like S-Bus or ModBus. It's a functionality and must be known very well from the engineer. But this takes a long time to learn and getting specialized to BACnet.

DDC Suite will do this part – you don't have to "fight" with BACnet basics.

🗏   🔫 🖳 🕇 👘 🗕   🏹	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
🕂 💽 DeviceName (DE 1)	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	0	
	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	222	







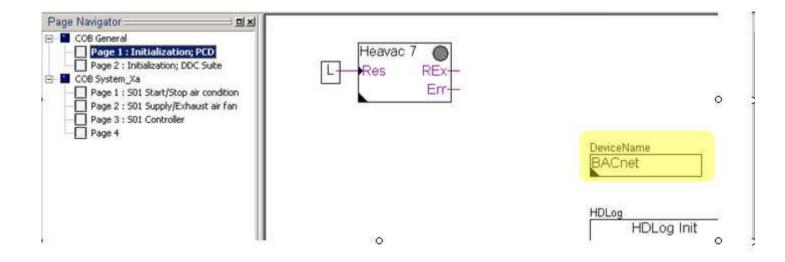
PG5 Building Advanced / DDC Suite 2.0 BACnet

# BACnet with DDC Suite In use





In first page (Initialization; PCD) the FBox BACnet is already present. This FBox is located in FBox family DDC Initialization and must be placed only once in a program.

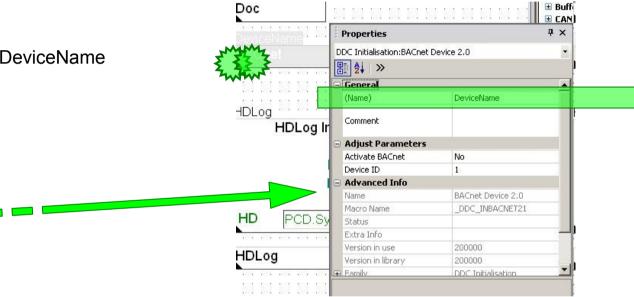






The FBox property name is used to define the BACnet device name.

Modify the name property from DeviceName into Workshop_BACnet.







Open adjust window. This FBox provides only two parameters.

#### Parameter Activate BACnet

If No is selected than no program does not need a BACnet stack running on PCD – even if maybe in some FBoxes BACnet functionality is selected
If Yes is selected than BACnet stack must run on PCD – otherwise some

FBoxes parameterized with BACnet functionality won't work!

#### Parameter Activate BACnet

Is a unique ID in BACnet network. Set Device ID to

General (Name)	DeviceName
Comment	
Activate BACnet	Yes
Device ID	3280
Advanced Info	
Name	BACnet Device 2.0
Macro	DDC_INBACNET21
S KUS	
Extra Info	



3280

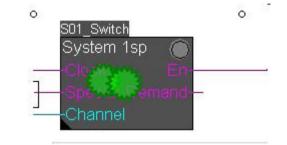


Jump to page S01 Start/Stop air condition.

Now we have to walk through all FBoxes and parameterize if this FBox should support BACnet and which parameter.

Open adjust window of FBox System 1sp. In BACnet parameters drop down list just select if only the HMI (switch) should be activated for BACnet or also the clock should be handled by BACnet.

Select HMI/Clock and close adjust window.



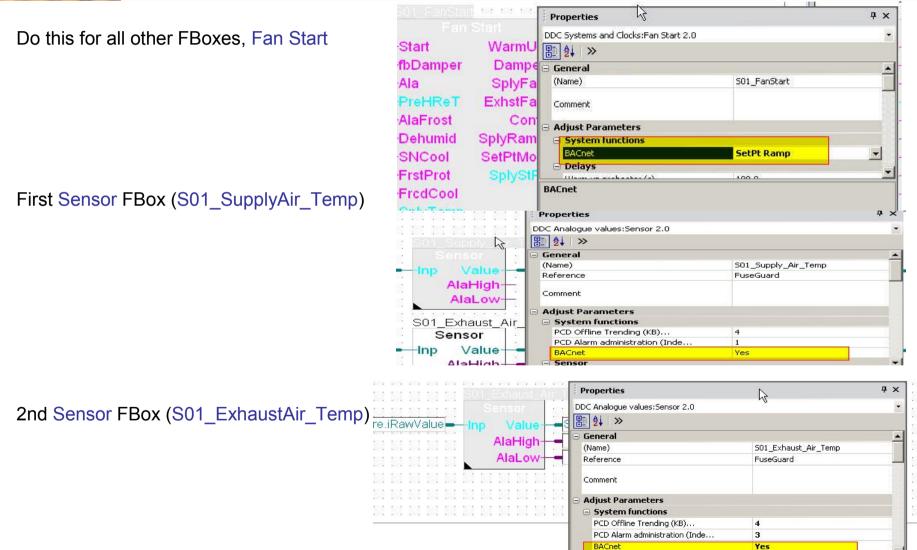
Properties	5	Ψ×
DDC Systems and Clocks:System 1 speed	12.0	-
₿ ₽↓   ≫		
General		
(Name)	S01_Switch	
Comment		
Adjust Parameters		
System functions	rmz.	
BACnet	HMI/clock	
🖃 Settings	·W.	
HMI Low prio	Off	
Clock accessed by	Input	
calendar channel	Not used	



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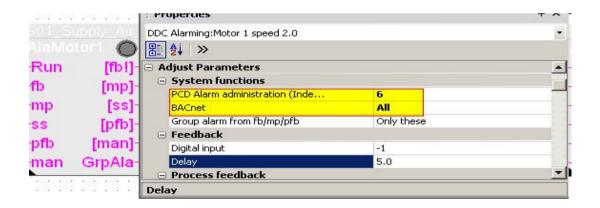
**Control Systems and Compone** 

#### DDC Suite 2.0 / PG5 Building Advanced BACnet

Next page, first Motor 1 FBox (S01_SupplyAir_Fan)

2: Su **₽**× Properties DDC Controls:Motor 1 speed 2.0. + Run -En 書 ⊉↓ ≫ -fb CntH 🗄 General (Name) S01_Supply_Air_Fan -Ala Mt Comment **Adjust Parameters** - System functions PCD Alarm administration (Inde... 5 BACnet HMI/fb/Mt/CntH/CntFb 01 Exhaust Air

first AlaMotor1 FBox (S01_SupplyAir_FanAla)





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11:001

Control Systems and Component

Saia-JUIGESS Control Systems and Components



#### 2nd Motor 1 FBox (S01_ExhaustAir_F an)

#### 2nd AlaMotor1 FBox (S01_ExhaustAir_F anAla)

2002 2002 2002 20	유 : William	
S01_Exhaust_	Properties	Ф ×
Motor 1	DDC Controls:Motor 1 speed 2.0	
-En Ru	n- 團 ♠↓ >>	
fb Cnt	📕 🖻 General	<b>A</b>
	(Name)	S01_Exhaust_Air_Fan
	nt- Comment	
And and and and a	😑 System functions	
	PCD Alarm administration (Inde	11
	BACnet	HMI/fb/Mt/CntH/CntFb

			/ 114	
	haust_Ar	Properties		Ψ×
		DDC Alarming:Motor 1 speed 2.0		
Run	[fb!]-	₩ 2↓ >>		
fb	[mp]-	Reference	FuseGuard	-
-mp	[ss]-	Comment		_
SS	[pfb]-	Adjust Parameters		
pfb	[man]-	System functions		
man	GrpAla-	PCD Alarm administration (Inde	12	
man	Ciprid	BACnet	All	
23.23 77.77		Group alarm from fb/mp/pfb	Only these	
		Normal input state		





10.1

BACnet

Next page, FBox Val (S01_SupplyAirTempSetPoint)

Properties		ą ×
DDC Set points:Integer 2,0		
₽₽₽		
🗄 General	101	
(Name)		
Comment		
🗄 Adjust Parameters		
System functions		
BACnet	Yes	*
- Settions		
BACnet		

#### FBox Cooler (S01_Cooler)

S01_Cooler	
FanStart	
(KB) 4	
Min/Max/PID/SetPt	
l	
	FanStart (KB) 4



022

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Control Systems and Componen





FBox MixedAir (S01_MixedAir)

	Properties		Ψ×
MixedAir	DDC Controller:Mixed air 2.0		•
-EnContr	Y 團 ≜↓ ≫		
-SetPt Y	Inv Reference	FanStart	*
-Temp	Act- Comment		
- RoomTemp Se	Adjust Parameters		
MA2222	PCD Offline Trending (KB)	4	
	BACnet BACnet	Min/Max/PID/SetPt	
+ 7777	🖂 Current values		
	Set point (%C)	21.0	<b>_</b> _
	(Name)		

And finally FBox PreHeater (S01_Preheater)

	Properties		ą×
	ODC Controller:Preheater 2.0		-
EnContr			
	Act (Name)	Preheater	
	Reference	FanStart	
-Temp Se -YCldStrt	Comment		
- ????	🖃 Adjust Parameters		
PH2222	System functions		
	PCD Offline Trending (KB)	4	
+ 3333	BACnet	Min/Max/PID/SetPt	-
	Current values		

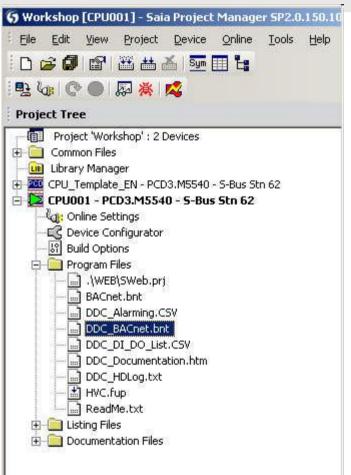




Build program. During build DDC Suite FBoxes creating all BACnet objects and mapping for the selected BACnet functionalities.

This file is called DDC_BACnet.bnt – and it's a fully parameterized BACnet configuration. If there is no need to change something, e.g. like unit or scale, the file can be used immediately to be linked to the program and downloaded.

But first let's have a look into this file.





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#### DDC Suite 2.0 / PG5 Building Advanced BACnet

You see that there is a device "Workshop_BACnet" with ID 3280.

We also see that there are 59 BACnet objects. We took 2 Minutes to define all this BACnet objects in Fupla – simply by selecting functionality in FBox.

🔫 🙂   📩 📩 🗕   🎖   🕾 📯   🖇		
Workshop_BACnet [DE 3280]	Name	Value/Link
D FuseGuard Alm_230_VAC [BI 2]	Location	Murten
D FuseGuard Alm_24_VAC [BI 3]	Description	(***)
D FuseGuard Alm_24_VDC [BI 4]	Max APDU Length Accepted	1476
FuseGuard Alm_General (BI 6)	APDU Segment Timeout	2000
D FuseGuard Alm_Phase [BI 5]	APDU Timeout	3000
Notification Class 0 [NC 0]	Number Of APDU Retries	5
PCD_AntiblockProtection Motor_Hours (AV 0)	Time Synchronization Recipients	0
—      PCD_AntiblockProtection Motor_Schedule (BV 0)     —      PCD_AntiblockProtection Motor Switch (MV 0)	Restart Notification Recipients	2775
D PCD_AntiblockProtection Motor_Switch [MV 0]	Backup Failure Timeout	60
PCD_AntiblockProtection ValveDamper_Pouls [AV 1]     PCD_AntiblockProtection ValveDamper_Schedule [BV 1]	Profile Name	
	Time SyncMode	SLAVE
	Timezone	CET-01CEST-02,M3.5.0/2,M10.5.0/
PCD Monitoring Alm Controller [BI 1]	Password RD DCC	
S01 Cooler Parameter D [AV 13]	Default Log Buffer	12223
S01_Cooler Parameter_I [AV 12]		
S01_Cooler Parameter_P [AV 11]		
D S01_Cooler SetPoint [AV 14]		
🗊 S01_Cooler Valve_Max (AV 10)		
D S01_Cooler Valve_Min (AV 9)		
🗊 S01_ExhaustAir_Fan EnCounter (AV 7)		
💼 S01_ExhaustAir_Fan Feedback [BI 19]		
💼 S01_ExhaustAir_Fan Output [B0 1]		
🖸 S01_ExhaustAir_Fan Service [BI 20]		
S01_ExhaustAir_Fan Workinghours [AV 6]		
S01_ExhaustAir_FanAla Alm_MaintnanceSwitch [BI 16]		
S01_ExhaustAir_FanAla Alm_ManualOverride [BI 18]		
🗊 S01_ExhaustAir_FanAla Alm_MotorProtection [BI 14] 🛛 💌		





Select in object list S01_ExhaustAir_Temp Analog [AI 1]



And you get all properties.

As you can see there are a lot of PCD resources mapped into this object – at least the property Present Value is mapped.

Depending on functionality more than 1 resource has been implemented. So this is real BACnet functionality and not only providing the temperature value for BACnet.

In this example e.g. also the limit low/high and unit low/high are implemented.

Name	Value/Link
🚺 Present Value	%(S01.ExhaustAir.Temperature.Sensor.Istwert)
Description	S01_ExhaustAir_Temp / S01.ExhaustAir.Temperature.S
🚺 Device Type	
Reliability	no-fault-detected
Out Of Service	FALSE
Update Interval	1
🚺 Units	degrees-Celsius
Min Pres Value	%(S01.ExhaustAir.Temperature.Sensor.IstwertY1)
Max Pres Value	%(S01.ExhaustAir.Temperature.Sensor.IstwertY2)
Resolution	0.1
COV Increment	1
Time Delay	0
Notification Class	0
High Limit	%(S01.ExhaustAir.Temperature.Sensor.GwOben)
Low Limit	%(S01.ExhaustAir.Temperature.Sensor.GwUnten)
Deadband	2
Limit Enable	(1,1)
Event Enable	(1.1.1)
Notify Type	alarm
Profile Name	
Unsolicited COV Enabled	FALSE
Event Message Text	

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#### DDC Suite 2.0 / PG5 Building Advanced BACnet

#### Example FBox Sensor

Properties	<b>4</b> х	Name	Value/Link
DC Analogue values:Sensor 2.0	) · · · · · · · · · · · · · · · · · · ·	Present Value	%(AirCond_T2.SupplyAir.Temperature.Sensor.PhysVal)
∰ <b>≜</b> ↓ ≫		PCD Input Reference	···
General		Description	AirCond_T2_SupplyAir_Temp / AirCond_T2.SupplyAir.T
(Name)	AirCond_T2_SupplyAir_Temp	🚺 Device Type	
Reference		Status Flags	(0,0,0,0)
Kererence	1 useduard	Reliability	no-fault-detected
Comment		Out Of Service	FALSE
		Update Interval	1
Adjust Parameters		I Units	degrees-Celsius
Static Symbols		Min Pres Value	%(AirCond_T2.SupplyAir.Temperature.Sensor.PhysValY1
status	AirCond_T2.SupplyAir.Temperature.Sensor.AlaLimHigh F	Max Pres Value	%(AirCond_T2.SupplyAir.Temperature.Sensor.PhysValY2
status	AirCond_T2.SupplyAir.Temperature.Sensor.AlaLimLow F	Resolution	0.1
Physical Value (corrected)	AirCond_T2.SupplyAir.Temperature.Sensor.PhysVal R	COV Increment	1
Correction	AirCond_T2.SupplyAir.Temperature.Sensor.Correction R	Time Delay	0
Smoothening of scanning Sec.		Notification Class	0
Smoothing factor	AirCond_T2.SupplyAir.Temperature.Sensor.ScanFact R		-
Physical. Value min.	AirCond_T2.SupplyAir.Temperature.Sensor.PhysValY1 R	High Limit	%(AirCond_T2.SupplyAir.Temperature.Sensor.LimHigh)
Physical, Value max.	AirCond_T2.SupplyAir.Temperature.Sensor.PhysValY2 R	Low Limit	%(AirCond_T2.SupplyAir.Temperature.Sensor.LimLow)
raw input value min	AirCond_T2.SupplyAir.Temperature.Sensor.RawValX1 R	Deadband	2
raw input value max	AirCond_T2.SupplyAir.Temperature.Sensor.RawValX2 R	Limit Enable	(1.1)
High limit	AirCond_T2.SupplyAir.Temperature.Sensor.LimHigh R	Event Enable	(1.1.1)
Low limit	AirCond_T2.SupplyAir.Temperature.Sensor.LimLow R	Notify Type	alarm
Message suppression	AirCond_T2.SupplyAir.Temperature.Sensor.VoltGrp R	Profile Name	
Card type	AirCond_T2.SupplyAir.Temperature.Sensor.ConvType R	Unsolicited COV Enabled	FALSE
Advanced Info		Event Message Text	



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#### DDC Suite 2.0 / PG5 Building Advanced BACnet

#### Example FBox Motor 1 (Commandable object)

Properties	<b>ч</b> х	Name	Value/Link
DC Controls:Motor 1 speed 2.0			
<b>≜</b> ↓   ≫		Present Value	%(S01.SupplyAir.Fan.Control.Ausgang)
General		Description	S01_SupplyAir_Fan / S01.SupplyAir.Fan.Control.Ausgang
(Name)	501_Supply_Air_Fan	🗾 Device Type	
(Namey		Reliability	no-fault-detected
Comment		Out Of Service	FALSE
Adjust Parameters		Polarity	normal
System functions		Inactive Text	Off
PCD Alarm administration (Inde	5	Active Text	On
BACnet	HMI/fb/Mt/CntH/CntFb	Minimum Off Time	0
- Settings	The area of the second s		
Digital output	16	Minimum On Time	0
HMI Lower prio	On	Priority Array 01	%(A.BACnet.S01_SupplyAir_Fan.Prio01Value),%(A.BACnet.S01_Supp
Start delay (s)	0.0	Priority Array 02	
🛛 Counting		Priority Array 03	
Feedback	0	Priority Array 04	
Message after feedback	2000	Phority Array 05	
Hours	0	Priority Array 06	
Message after hours	5000		
Static Symbols		Priority Array 07	
HMI Lower prio	Controls.Motor1speed_0_ModeLoPri R	Priority Array 08	%(A.BACnet.S01_SupplyAir_Fan.Prio08Value),%(A.BACnet.S01_Sup
5tart delay (s)	Controls.Motor1spear_0.StartDelay R	Priority Array 09	
Message after feedback	Controls.Motor1speed_0.EnCntMax R	Priority Array 10	
Message after hours	Controls.Motor1speed_0.HrsCntMax R	Priority Array 11	122 C
Requested mode Feedback	Controls_Motor1speed_0.Demand F Controls_Motor1speed_0.Feedback F	Priority Array 12	
-ееораск. Maintenance message	Controls.Motor1speed_0.Peedback F	Priority Array 13	
Motor status	Controls Motor1speed 0.GrpAla F	Priority Array 14	200 
Feedback	Controls.Motor1speed_0.EnCnt R		
Hours	Controls.Motor1speed_0.HrsCnt R	Priority Array 15	
Digital output	Controls.Motor1speed_0.RequiredDO R	Priority Array 16	%(S01.SupplyAir.Fan.Control.Ansteuerung),%(A.BACnet.S01_SupplyA
HMI Higher prio	Controls.Motor1speed_0.ModeHiPri R	Relinguish Default	inactive
Output	Controls.Motor1speed_0.Required F	Profile Name	
Advanced Info		Unsolicited COV Enabled	FALSE
Name	Motor 1 speed 2.0		10.417.673
Macro Name	_DDC_COMOTOR21		
Status			



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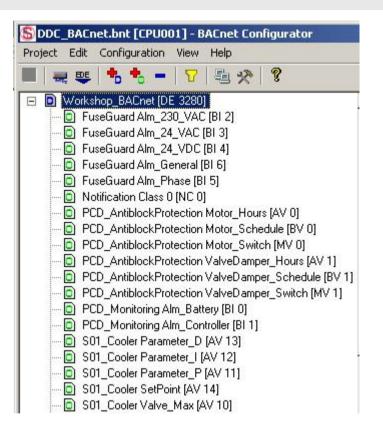


#### DDC Suite 2.0 / PG5 Building Advanced BACnet

As you see in object list the BACnet object names are created automatically using this method:

Use FBox property name and add a detailed information – because one FBox may have more than one BACnet objects.

So the first part can be defined by yourself







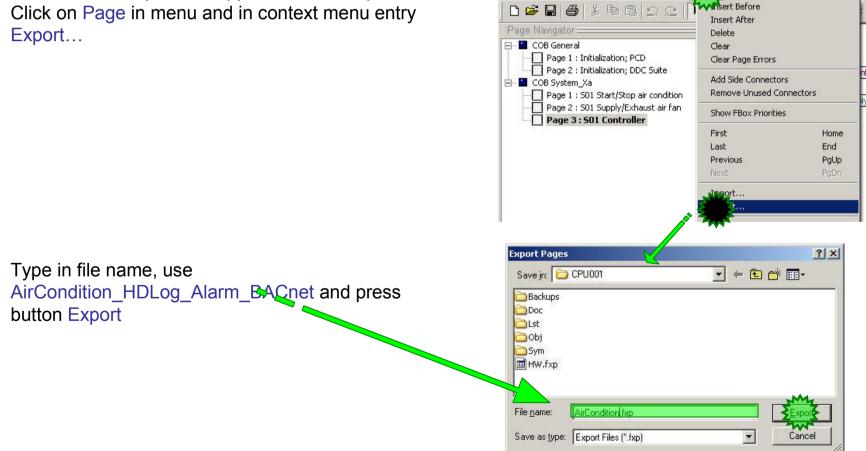
At this point we have created a small and nice air condition application. In real life it would be bigger with much more FBoxes or symbols – but we can reuse this in future if we store it as template.

HEAVAC.fup * [CPU001] - Saia Fupla Editor

File Edit View Project Online Mode Block

Symbols Help

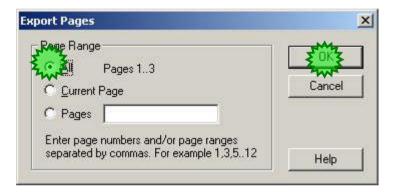
Therefore we export this application as tempalte. Click on Page in menu and in context menu entry







Within Dialog Export Pages select option All and finish with button OK.



End of engineering a Fupla application. With DDC Suite FBoxes we reduce the manual work to define symbols for FBoxes – only the symbols in the side connectors must be defined manually.







PG5 Building Advanced / DDC Suite 2.0 BACnet

# BACnet with DDC Suite AddOn tool





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

All parameters are mapped in the right way – but there's no parameter to select the unit in the FBox – and therefore the BACnet object is defined by default with unit °C.

This can be changed manually very easy and it's not a big thing – but the file DDC_BACnet.bnt will be created during the build and all changes done manually in this file will be lost.

On the other side the object ID (a number from  $0 \dots ??$ ) must be always the same for an object, e.g. the outdoor temperature once created as AI 67 must be always AI 67 – because other BACnet client may use this object to get the outside temperature from our PCD.

But also this ID may be changed if the program is build and a new FBox has been placed – because the DDC Suite will always start from ID 0 for all objects.

To fix this problem the BACnet add on tool must be used.





Let's prepare the Fupla for a clarification how the AddOn tool will work in detail.

Jump to Page 1 of air condition



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And disable in FBox Sensor for supply air	S01 Supply Ai	r Temp.ref EuseGuard 🚺 🔍 💻	SplyTemp	2 20 20 20 20 E
temperature then BACnet option. Select No	Sensor	Properties		Ψ×
	-Inp Value-	DDC Analogue values:Sensor 2.0		۰.
	AlaHigh-	8 2 >		
	AlaLow-	General		
	AIdLOW	(Name)	S01_Supply_Air_Temp	
	S01 Exhaust A	Reference	FuseGuard	
And Build the program.	Sensor	Comment		
	-Inp Value-	Adjust Parameters		-
	AlaHigh-	System functions		
		PCD Offline Trending (KB)	4	
	AlaLow-	PCD Alarm drainistration (Inde	1	
		BACnet	No	•

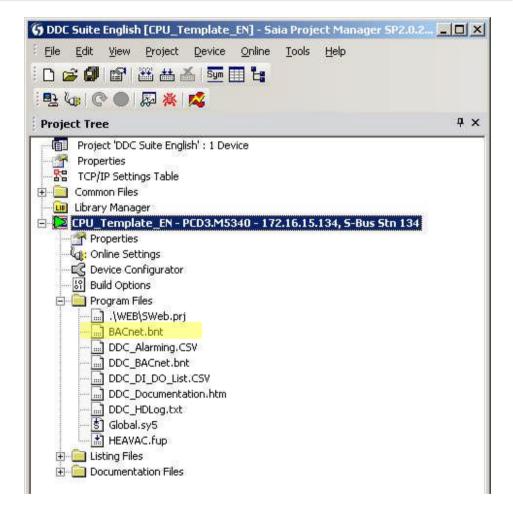


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#### DDC Suite 2.0 / PG5 Building Advanced BACnet

Within PG5 project manager / CPU001 we already have a BACnet.bnt configuration. This contains only the device and a notification class and should remember you to link this file to the program and not the file DDC_BACnet.bnt.





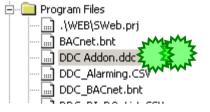


When the PG5 project has been build, you can find the DDC_BACnet.bnt file in the device folder. Also visible under "Program Files" in the PG5 project tree.

Start the DDC Suite Addon Tool by clicking the *.ddc file from the Program Files.

Note: When you use the BACnet Addon for the first time the option "Force Update" must be activated.

Press the "Generate" button. If no MessageBox occurs and the update, creation has been successful. The updates are shown in a log file.



BACnet		
Creates the 'BACnet.bnt' file using	the 'DDC_BACnet.bnt'.	
Force Update (Clear the cont <u>Open Log file</u>	nt of 'BACnet.bnt' before the update)	
)evice path:		Generate

If you use the BACnet Addon later on the "Force Update" option sholud be always deactivated to avoid overwriting the content of the BACnet.bnt file.





Open BACnet configurator to check the settings.

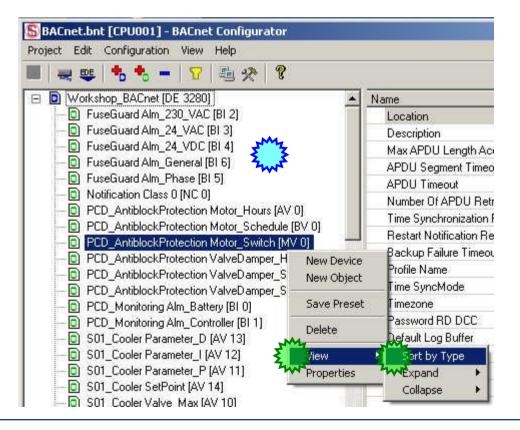


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For better understanding we have to sort the objects by type.

Click in context menu on entry "View" and then "Sort by Type"







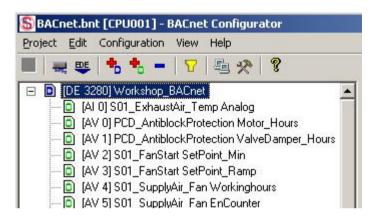
You'll see that object AI 0 (analogue input ID 0) is defined from Sensor FBox with name property

S01_ExhaustAir_Temp

because this was the first FBox generating an analogue input object.

Maybe now a client will be parameterized to read Al 0 from device 3280 to get the exhaust air temperature.

If we change the ID of an object than also all clients must be updated! Therefore it's absolutely necessary to keep them unchanged!



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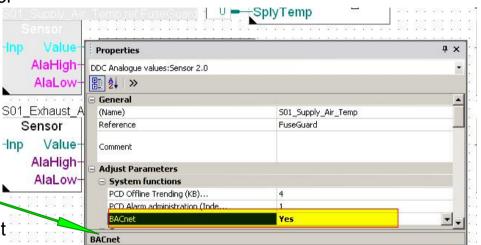


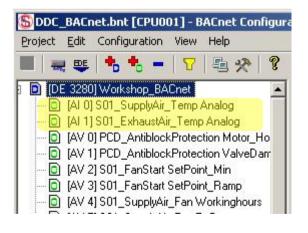
Close BACnet configurator and turn on in Sensor FBox of supply air temperature the BACnet option to Yes

And build the program.

Open file DDC_BACnet.bnt – and you'll see that within this configuration the exhaust air temp. object now is ID 1 – because the Sensor FBox for supply air temp. is in front of the exhaust air temp.

So after a build the object ID in DDC_BACnet.bnt file can be always different – depending on the settings or if you removed/added an FBox!







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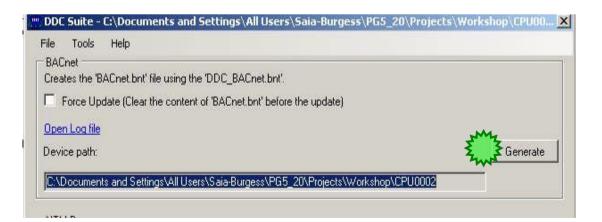


OK – but we use the BACnet.bnt file and this file is not changed from DDC Suite. So exhaust air temp. object is still 0 – but we have to add the new supply air temp. object.

But this object also is defined with ID 0 – and two objects of same type cannot have the same ID.

How to solve this problem? The AddOn will do this for you.

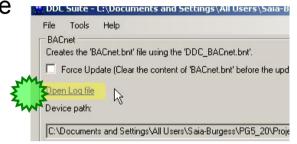
Start the DDC AddOn and press the generate button.





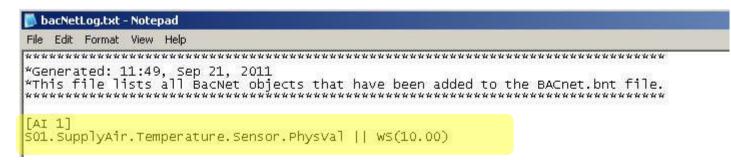


The tool generates an Log file that lists all bacnet objects that have been added to the bacnet but file



The tool checks the last used object ID – in this case ID 0 was the last AI ID used – and copies the new object into BACnet.bnt file – updating the original ID (which is in fact not relevant) to the next free ID.

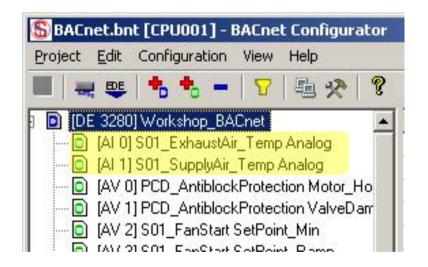
So we have moved the new object into BACnet.bnt without changing ID enumeration of existing objects.







When now checking the BACnet.bnt file you'll see that the exhaust air temp. object is still AI 0 and supply air temp. object has become AI 1.







To check if an object is already existing in BACnet.bnt file the BACnet AddOn tool must be sure that it is handling the objects in a proper way. You can e.g. change in BACnet.bnt file manually

- Object ID
- Object name
- Description
- or any other property

So how can the tool find out that e.g. object "AI 27 SupplyAirTemp" in BACnet.bnt file is the same as "AI13 AnyName" ?

The tool is checking the property "Present Value" of all objects. The BACne configurator accepts a symbol reference only once in a whole project. So if the symbol is the same – the tool expects that it is the same object – even if everything else is different!

Name	Value/Link
🛂 Present Value	%(S01.ExhaustAir.Temperaturer.Sensor.PhysVal)
Description	S01_ExhaustAir_Temp / S01.ExhaustAir.Temperaturer.Sensor.F
🚺 Device Tune	



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Therefore:

- never change manually file DDC_BACnet.bnt you'll loose all changes after a build
- never link file DDC_BACnet.bnt to program the object ID's may change and a client will get wrong data
- Always use file BACnet.bnt to be linked to program
- update file after a compile to add new BACnet objects from DDC Suite FBoxes into file BACnet.bnt
- change objects only in BACnet.bnt file. AddOn tool won't change any property







PG5 Building Advanced / DDC Suite 2.0 BACnet

## **BACnet – advanced**

# Only use this if you have to modify the creation of BACnet objects by the DDC Suite Fboxes. Advanced knowledge required



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#### DDC Suite 2.0 / PG5 Building Advanced BACnet

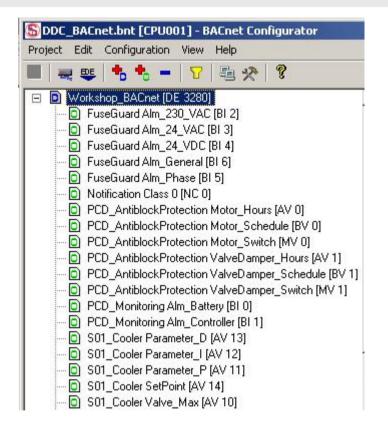
Remember - the BACnet object is created by

FBox property Name

 detailed information – because one FBox may have more than one alarm

So the first part can be defined by yourself – but the second part is "hard coded in FBox", e.g. the FBox "Cooler" from family "Controller" supports the PID parameter "P-range", "Integration time" and "Derivation time".

How can this default texts be customized?









Each FBox generating BACnet objects supports an external file.

• If the file is not present than the "hard coded" detailed information is used.

• if the file is found then the definition how to create the alarm must be declared in this file and the "hard coded" part is ignored.

So the external file disables the "hard coded" definition!

The files are structured with a strong name convention

- BAC_ declares that this file contains BACnet declaration
- DDC_ identifies that this file is used with DDC suite FBoxes
- "Family_" e.g. Alarming_ declares the DDC Suite family
- "FBox" e.g. 1Alarm defines the FBox itself
- .src file extension

Example: BAC_DDC_Alarming_1Alarm.src

But you don't have to know all these file names or create them by yourself.



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### DDC Suite 2.0 / PG5 Building Advanced

Within each DDC Suite template this files are already existing.

**BACnet** 

We just prepared these files to give you the possibility to modify the generation of BACnet objects.

Within a DDC Suite template project you'll find in folder PG5_Templates/FBox_AddOn, subfolder BACnet all files.

Just copy them and paste them into your CPU folder.

File Edit View Favorites Tools H	elp		1	1
🕒 Back 👻 🕥 👻 🎓 💋 Search	Folders Folders Users\Saia-Burgess\PG5_20\Projects\Workshop DDC Suite EN\PG5_Ter	and the step of a dal	<b>-</b>   -> G	
Folders	Name     Name	Size	1.50	ю _
🖂 🛅 Workshop DDC Suite EN	BAC_DDC_Alarming1Alarm.src	2 KB	SRC File	- 10
E CPU_Template_EN	BAC_DDC_Alarming5Alarms.src	10 KB	SRC File	
FbdToDms	BAC_DDC_AlarmingAlarmMessage.src	2 KB	SRC File	
E C Libs	BAC_DDC_AlarmingDelayedAlarm.src	2 KB	SRC File	
	BAC_DDC_AlarmingFireDamper.src	4 KB	SRC File	
E C PG5_Templates	BAC_DDC_AlarmingFrostProtection.src	8 KB	SRC File	
BACnet	BAC_DDC_AlarmingHysteresis.src	4 KB	SRC File	
RESERVICE STORE ST	BAC_DDC_AlarmingMotorDrive1Speed.src	10 KB	SRC File	
Configuration_IO	BAC_DDC_AlarmingMotorDrive2Speed.src	10 KB	SRC File	
Documentation		10 KB	SRC File	
SWeb_Alarmes	BAC_DDC_AlarmingPowerSupply.src	10 KB	SRC File	
🕀 🧰 Fupla_Templates	BAC DDC ControlBoiler.src	10 KB	SRC File	
표 🚞 SWeb_Macros	BAC DDC ControlMotorDrive1Speed.src	8 KB		





Now lets customize the detailed BACnet object information for FBox Cooler.

The FBox Cooler is from FBox family Controller. Lets check if there is a file named

BAC_DDC_Controller_Cooler.src

Unfortunately not – but when we check the files you'll find a file named

BAC_DDC_RegulationCooler.src

During translating DDC Suite into English we hade some different texts within FBoxes, files and description – there may be some small differences – but at the end you can identify them normally.

At least – there is a chapter DDC Suite - advanced – detailed information wherein you'll find for each FBox if it supports an external files for alarming and the file name. Please refer this chapter if you are not able to find the file you're looking for.





Please open file BAC_DDC_RegulationCooler.src with Notepad.

This files contains informations how the Fbox should generate it's BACnet Objects.

It's possible to change names.

	incoding Language Settings Macro Run TextFX Plugins Window ? 😂 🔏 🗅 🌆 D C 📾 🎭 🗷 🤫 📴 🔂 🖆 ୩ 葦 🗊 💌 💌 💓 🔛 🕿 🔺 💌
BAC_DDC_RegulationCo	oler.stc
1 ;	
2 ; E	BACnet - File
3 ; =======	
4 :	
5 \$IF adj_BACn	uet>0
6 ;	
7 ;	Valve min
6 ;	
9	<pre>\$WRFILE "DDC_BACnet.bnt" [AV @A.BACnet.AV.Index@]</pre>
10	<pre>\$WRFILE "DDC_BACnet.bnt" object-name = @&amp;Name@ ValveMin</pre>
11	<pre>\$WRFILE "DDC_BACnet.bnt" present-value = %(@&amp;stc_YMin@)    WS(10.00)</pre>
12	<pre>\$WRFILE "DDC_BACnet.bnt" description = Valve min / @&amp;Name@</pre>
13	<pre>\$WRFILE "DDC_BACnet.bnt" status-flags = (0,0,0,0)</pre>
14	<pre>\$WRFILE "DDC_BACnet.bnt" reliability = no-fault-detected</pre>
15	<pre>\$WRFILE "DDC_BACnet.bnt" out-of-service = FALSE    W</pre>
16	<pre>\$WRFILE "DDC_BACnet.bnt" update-interval = 1</pre>
17	<pre>\$WRFILE "DDC_BACnet.bnt" units = percent</pre>
18	<pre>\$WRFILE "DDC_BACnet.bnt" cov-increment = 1</pre>
19	<pre>\$WRFILE "DDC_BACnet.bnt" unsolicited_cov_enabled = FALSE</pre>
20	\$WRFILE "DDC_BACnet.bnt"
21 :	





Now lets modify the names of the PID parameters.

You have to search for the following lines of code in the .bnt file

;	 	 Proportional range
		<pre>\$WRFILE "DDC_BACnet.bnt" [AV @A.BACnet.AV.Index@] \$WRFILE "DDC_BACnet.bnt" object-name = @&amp;Name@ ProportionalRange \$WRFILE "DDC_BACnet.bnt" present-value = %(@&amp;stc_P_Band@)    WS(10.00)</pre>
;	 	 Integration time
		<pre>\$WRFILE "DDC_BACnet.bnt" [AV @A.BACnet.AV.Index@] \$WRFILE "DDC_BACnet.bnt" object-name = @&amp;Name@ IntegrationTime \$WRFILE "DDC_BACnet.bnt" present-value = %(@&amp;stc_I_Zeit@)    WS(10.00)</pre>
;;	 	 Derivation time
r		<pre>\$WRFILE "DDC_BACnet.bnt" [AV @A.BACnet.AV.Index@] \$WRFILE "DDC_BACnet.bnt" object-name = @&amp;Name@ DerivationTime \$WRFILE "DDC_BACnet.bnt" present-value = %(@&amp;stc_D_Anteil@)    WS(10.00) **********************************</pre>

The Object Name is created with the Fbox Name (@&Name@) plus an extension i.e. Proportional Range This extension can be modifieed according to your needs





Now lets modify the names of the PID parameters.

Please modify "ProportionalRange" into "P_range", "IntegrationTtime" into "I_time" and "DerivationTime" into "D_time". Save file and close Notepad. Attention: the "text" must follow the symbol convention of PG5 – no special characters.

;	 Proportional range				
;	<pre>\$WRFILE "DDC_BACnet.bnt" [AV @A.BACnet.AV.Index@] \$WRFILE "DDC_BACnet.bnt" object-name = @&amp;Name@ ProportionalRange \$WRFILE "DDC_BACnet.bnt" present-value = %(@&amp;stc_P_Band@)    WS(10.00)</pre>				
;	 - Integration time				
;	<pre>\$WRFILE "DDC_BACnet.bnt" [AV @A.BACnet.AV.Index@] \$WRFILE "DDC_BACnet.bnt" object-name = @&amp;Name@ IntegrationTime</pre>				
;	 Derivation time				
;	<pre>\$WRFILE "DDC_BACnet.bnt" [AV @A.BACnet.AV.Index@] \$WRFILE "DDC_BACnet.bnt" object-name = @&amp;Name@ DerivationTime object-name = @&amp;Name@ D_time \$WRFILE "DDC_BACnet.bnt" present-value = %(@&amp;stc_D_Anteil@)    WS(10.00) </pre>				



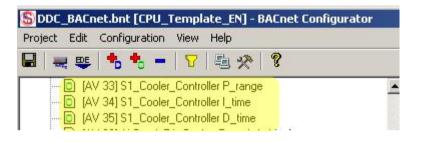


A "Rebuild All Files" is required – we didn't change any file listed in program files folder within PG5 project manager – so we have to force to rebuild the whole program to be sure that the changes in such external files are executed.

Open file DDC_BACnet.bnt in PG5 project manager.

You see it's very easy to customize the default object texts e.g. if it's a demand from end user.

The FBoxes will search for external files 1st in CPU folder, if there not present 2nd in PG5 libs folder, if there not found 3rd "hard coded" definition is used









PG5 Building Advanced / DDC Suite 2.0 Working with Fupla

# **Using templates**





During the last workshops we programmed a nice small air condition with

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

In real life we expect to use this air condition within another CPU in this project or in another project. Therefore it would be nice if we create a template.

Lets see how easy we can do this.





PG5 Building Advanced / DDC Suite 2.0 Working with Fupla

# Creating a new CPU in the project



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**Control Systems and Components** 

🚯 Workshop [CPU_Template_EN] - Saia Project Manage... 💶 🗖 🗙



### DDC Suite 2.0 / PG5 Building Advanced Using templates

ename Device on Import/Paste

CPU_Template_EN Enter a new device name

Help

A device with this name already exists in the Project:

OK.

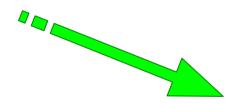
Cancel

We'll start with a new CPU.

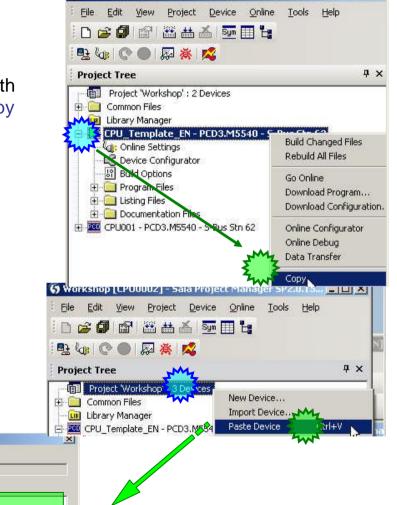
Therefore we use the copy/p0aste in project manager. Click with right mouse button on "CPU _Template_EN" and then Copy in context menu.

Click with right mouse button on "Project 'Workshop'" and then Paste CPU in context menu.

We have to rename the CPU, please use "CPU002" and press "OK".



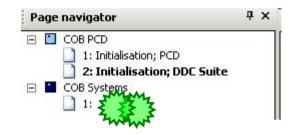
#### Open HEAVAC.fup from CPU002

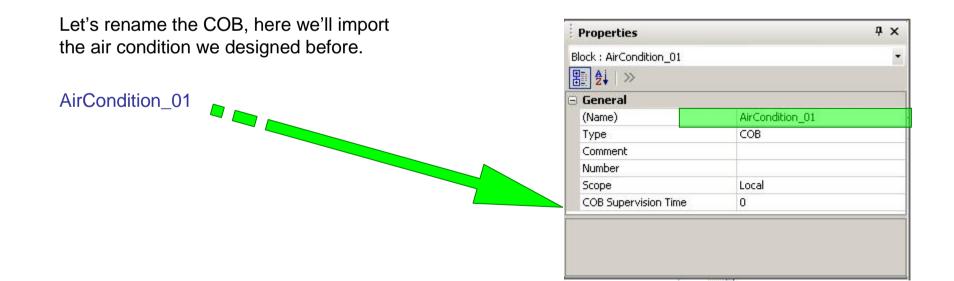






Jump in Fupla to first page of COB System_X







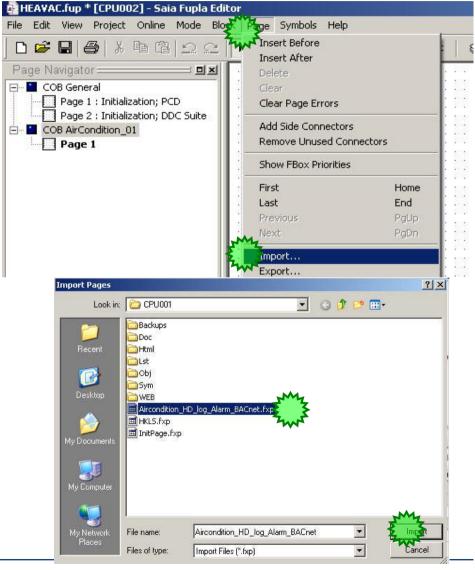


Using templates

Lets reuse the template within this CPU. Click in menu bar at Page and in context menu at Import...

We have generated already 4 templates: -AirCondition -AirCondition_HDLog -AirCondition_HDLog_Alarm -AirCondition_HDLog_Alarm_BACnet

Let's use the complex template. Select file AirCondition_HDLog_Alarm_BACnet.fxp









#### DDC Suite 2.0 / PG5 Building Advanced Using templates

### 1. Uncheck Set Internal Variables to system defined

This is really necessary – otherwise you'll import the template and all FBoxes won't have internal symbols. But we restructured and renamed the groups to reuse them easily!

2. Select option After current page

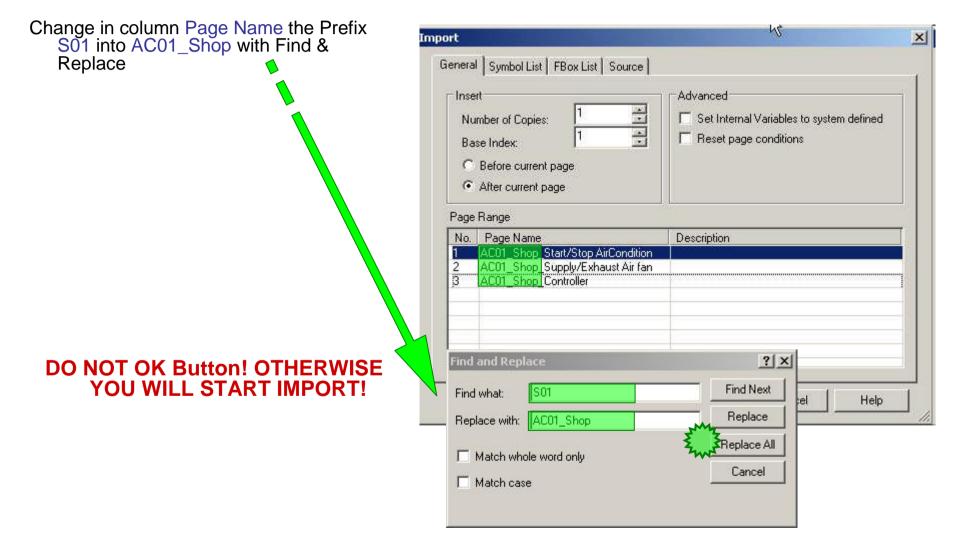
nport General	Symbol List   FBox List   Sou	urce
Bas	t mber of Copies: se Index: Before current page After current page	Advanced Set Internal Variables to system defined Reset page conditions
Page	Range	
No.	Page Name S01_Start/Stop AirCondition	Description
2	S01_Supply/Exhaust Air fan S01_Controller	
-		
		OK Cancel Help







Using templates



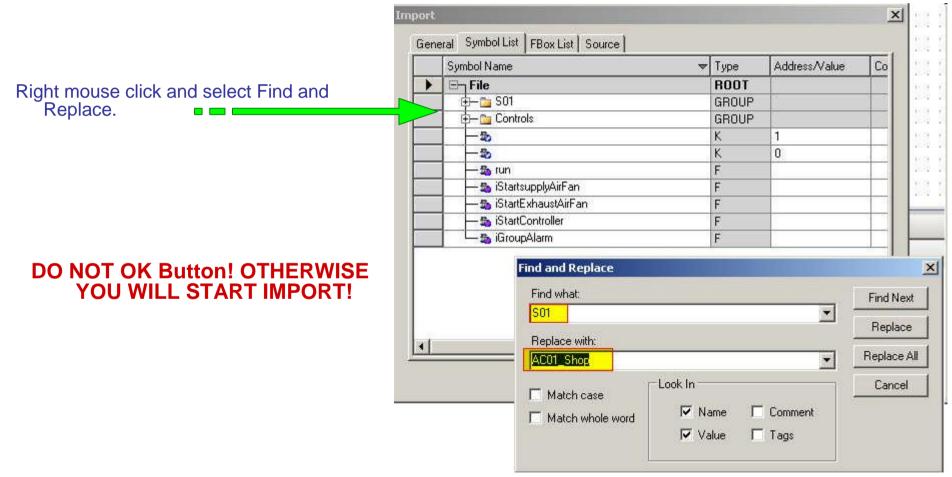






Using templates

#### Activate tab Symbols List









### DDC Suite 2.0 / PG5 Building Advanced Using templates

Activate tab FBox List

Click right mouse button and select from context menu Replace prefix

ort	0	
hu	£	
eneral Symbol List FE	lox List Source	
	1.15	
FBox Name	Description	Macro
[501_Switch		DDC EN
SU1_FanStart	Replace prefix	_DDC_EN
S01_Supply_Air_Temp	handexing	_DDC_AN
		DDC AN







Using templates

Enter in text field Find what:	S01_ •	Replace Prefix	?×
		Leowhat: S01_	<u>F</u> ind Next
		Replace with: AC01_Shop_	<u>R</u> eplace
Enter in text field Replace with:	AC01_Shop_	☐ Match <u>w</u> hole word only ☐ Match <u>c</u> ase	Replace All Cancel
Click on button Replace All.			

Click on button Cancel to close dialog.

And start import by clicking on button OK.

Box Name	Description	Macro
C01_Shop_Switch	10 Di	DDC EN
C01 Shop FanStart		DDC EN
C01_Shop_SupplyAir_Temp		_DDC_AN
C01_Shop_ExhaustAir_Temp	5	_DDC_AN
C01_Shop_SupplyAir_Fan		_DDC_CO
C01_Shop_ExhaustAir_Fan		_DDC_CO
C01_Shop_SupplyAir_FanAla	a	_DDC_AL
C01_Shop_ExhaustAir_Fan.		_DDC_AL
C01_Shop_Cooler		_DDC_RE
C01_Shop_MixedAir		_DDC_RE
C01_Shop_PreHeater		_DDC_RE
100 Stop Supporte Tan		_DDC_SP
2		
		•



### DDC Suite 2.0 / PG5 Building Advanced Using templates

With this few changes during import we have a complete copy from our air condition, everything renamed into AC01_Shop

iroup/Symbol	Туре
3 🚔	
🕀 🧰 PCD	GROUP
庄 🔄 AC01_Shop	GROUP
庄 🧰 PreHeater	GROUP
🕀 🧰 MixedAir	GROUP
🕀 🧰 System	GROUP
🕀 🧰 SupplyAir	GROUP
🕂 🧰 ExhaustAir	GROUP
🕂 🧰 Cooler	GROUP

HEAVAC.fup [CPU002] - Saia Fupla Edito File Edit View Project Online Mode Bloc	
Page Navigator COB General Page 1 : Initialization; PCD Page 2 : Initialization; DDC Suite COB AirCondition_01 Page 1 : AC01_Shop Start/Stop air Page 2 : AC01_Shop Supply/Exhat Page 3 : AC01_Shop Contrtolle	AC01





Using templates

Documentation file DDC_HDLog.txt now also contains historic data information from AC01_Shop

DDC_HDLog.txt - Notepad	
Eile Edit Format View Help	
signal : - min. difference (unit, raw format) : 20 - minimum delay (seconds) : 60 - cyclic delay (seconds) : 0 - type (0=Fill&stop, 1=Ringbuffer) : 1	<u> </u>
Steuern : - min. difference (unit, raw format) : 0 - minimum delay (seconds) : 60 - cyclic delay (seconds) : 0 - type (0=Fill&Stop, 1=Ringbuffer) : 1	
Record FBox [Measurement - Sensor]	
Type : actual value FBox Properties Name : ACO1_Shop_SupplyAir_Temp Use symbol for Sweb : A.HDLog.ACO1_Shop_SupplyAir_Tem Effective symbol in record stored : ACO1_Shop.SupplyAir.Temperature Used memory : 1 KB	ıp 2. Sensor . Phy:
Record FBox [Measurement – Sensor]	
Type : actual value FBox Properties Name : AC01_Shop_ExhaustAir_Temp Use symbol for Sweb : A.HDLog.AC01_Shop_ExhaustAir_Te Effective symbol in record stored : AC01_Shop.ExhaustAir.Temperatur Used memory : 1 KB	mp er.Sensor.Pl
Record FBox [Regulation - Cooler]	
Type : Signal valve FBox Properties Name : AC01_Shop_Cooler Use symbol for Sweb : A.HDLog.AC01_Shop_Cooler Effective symbol in record stored : AC01_Shop.Cooler.Controller.Sig Used memory : 1 KB	jnal
Record FBox [Regulation - Mixed Air]	•





Using templates

Also alarm file DDC_Alarming.csv now also contains alarm numbers and text information from AC01_Shop

M	licrosoft Excel	- DDC_Alarmir	ig.csv			
8	<u>D</u> atei <u>B</u> earbe	iten <u>A</u> nsicht	Einfügen Fo	rma <u>t</u> E <u>x</u> tras	Date <u>n</u> Eenste	er <u>2</u>
D	🛩 🖬 📆	a d. 💖 🛛	X 🖻 🛍 •	10 × 01	- 3 🚇 -	
125	ta ta 🖂 🛙	manufactor in	and the second second	' arbeitung zurück <u>s</u>	- 10 A.	
	A1 -		stDefinition=1			
-	A	B	С	D	Ē	F
1	ListDefinition	GeneralAlarm	List			
2	List 1		Alarm 1	FuseGuard 2	30 VAC missi	ng
3	List_1	2	Alarm_2	FuseGuard 2	4 VAC missin	g
4	List_1	3	Alarm_3	FuseGuard 2	4 VDC missin	g
5	List_1	4	Alarm_4	FuseGuard p	hase missing	
6	List_1	5	Alarm_5	FuseGuard c	ontrol voltage	
7	List_1	11	Alarm_11	AC01_Shop_	SupplyAir_Te	mp limit
8	List_1		Alarm_12		SupplyAir_Te	
9	List_1		Alarm_13	and the second se	ExhaustAir_T	
10	List_1		Alarm_14	And advantacion in the providence with a biological sector of the sector	ExhaustAir_T	to a fact the second second second second second
11	List_1	1466.600	Alarm_16		SupplyAir_Fa	
12	List_1		Alarm_17		SupplyAir_Fa	
13	List_1		Alarm_18		SupplyAir_Fa	
14	List_1	-	Alarm_19		SupplyAir_Fa	
15	List_1		Alarm_20		SupplyAir_Fa	
16	List_1		Alarm_15		SupplyAir_Fa	
17	List_1	in the second	Alarm_22	and the descent of the last of the second	ExhaustAir_F	
18	List_1	1	Alarm_23		ExhaustAir_F	
19	List_1		Alarm_24	and the second	ExhaustAir_F	
20	List_1		Alarm_25	and the second	ExhaustAir_F	
21	List_1		Alarm_26		ExhaustAir_F	
22	List_1	21	Alarm_21	ACUI_Snop_	ExhaustAir_F	an Servi





Using templates

And of course also BACnet file DDC_BACnet.csv now contains all BACnet objects from AC01_Shop

SDDC_BACnet.bnt [CPU002] - BACnet Configurator
Project Edit Configuration View Help
🔳   🔫 🖳 📩 📥 🔽   🕾 🛠   😵
DeviceName (DE 1)     AC01_Shop_Cooler Parameter_D [AV 13]     AC01_Shop_Cooler Parameter_I [AV 12]     AC01_Shop_Cooler Parameter_P (AV 11]     AC01_Shop_Cooler SetPoint [AV 14]     AC01_Shop_Cooler Valve_Max (AV 10]     AC01_Shop_Cooler Valve_Max (AV 10]     AC01_Shop_ExhaustAir_Fan EnCounter (AV 7]     AC01_Shop_ExhaustAir_Fan EnCounter (AV 7]     AC01_Shop_ExhaustAir_Fan Service (BI 20]     AC01_Shop_ExhaustAir_Fan Service (BI 20]     AC01_Shop_ExhaustAir_Fan Ala Alm_MaintanceSwitch (BI 16     AC01_Shop_ExhaustAir_FanAla Alm_MaintanceSwitch (BI 18)     AC01_Shop_ExhaustAir_FanAla Alm_MotorProtection (BI 14)     AC01_Shop_ExhaustAir_FanAla Alm_NoFeedback (BI 15)     AC01_Shop_ExhaustAir_FanAla Alm_NoFeedback (BI 15)     AC01_Shop_ExhaustAir_Temp Analog (AI 1)     AC01_Shop_ExhaustAir_Temp Analog (AI 1)     AC01_Shop_Enstatt SetPoint_Ramp (AV 3)     AC01_Shop_MixedAir Damper_Max (AV 16)     AC01_Shop_MixedAir Parameter_D (AV 19)     AC01_Shop_MixedAir Parameter_D (AV 19)     AC01_Shop_MixedAir Parameter_D (AV 19)     AC01_Shop_MixedAir Parameter_D (AV 19)     AC01_Shop_MixedAir Parameter_D (AV 17)     AC01_Shop_MixedAir Parameter_D (AV 19)     AC01_Shop_MixedAir Parameter_D (AV 19)
Number of Objects: 59







PG5 Building Advanced / DDC Suite 2.0 Working with Fupla

# **Multiple Import**



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### DDC Suite 2.0 / PG5 Building Advanced Using templates – multiple import

Often we need the same template more than once in our CPU, e.g. a heating circuit will be up to 5 times implemented.

- We can import it 5 times and replace always the prefix manually. This is quite fast – but it can be faster. Therefore Fupla provides a "Multiple import" which is based on indexing.
- Let's create a new block to import the heating cirquit 5 times.

Type in Heating_Circuit

	4 Þ 🗙	Page navigator	ąΧ
25 25 25 25 25 25 2 10 10 10 10 10 10		COB PCD 1: Initialisation; PCD 2: Initialisation; DDC Suite COB AirCondition 21	
Open Page	Enter	1: AC01_Shop_5tart Stop	AirCondition
New Block		COB 1_Shop_Supply/Ex	
Insert Page	Ins	1_Shop_Contro	ller
Delete	Del	FB	
Cut		PB	
Сору			
Paste			
Import Pages			
Export Pages			
Add to Templates			

Properties	<b></b>
Block : COB_0	
∄ <b>≜</b> ↓   ≫	
General	
(Name)	Heating_Circuit
Туре	СОВ
Comment	
Number	
Scope	Local
COB Supervision Time	0



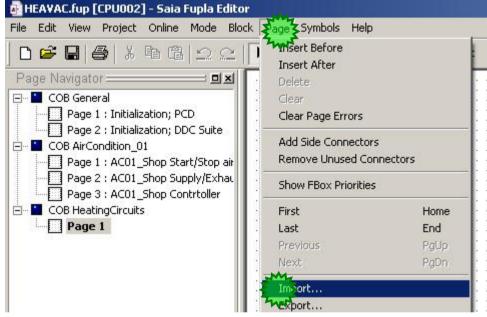
Sala-JUGESS Control Systems and Components



DDC Suite 2.0 / PG5 Building Advanced

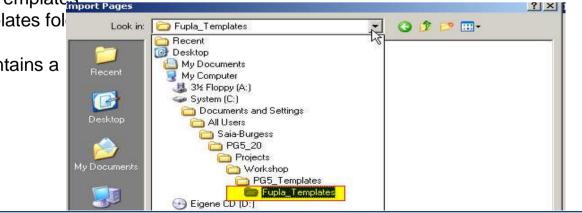
Using templates – multiple import

Lets reuse the template within this CPU. Click in menu bar at Page and in context menu at Import...



The DDC Suite already contains some basic templates. We have to go to the PG5_Templates folder and there select the Fupla_Templates fol

Then you'll see that the project also contains a folder "Fupla Templates"





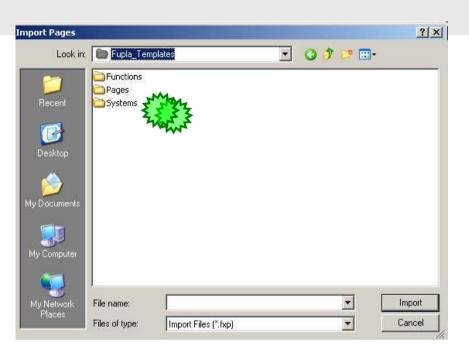


Using templates – multiple import

Open the folder "Fupla_Templates" with a double click.

We have some templates for systems - heating circuit, air condition - and functionalities – like calendar.

Open folder "Systems" with a double click.



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Select from "Systems" folder the "HeatCircuit" folder.

Import Page	5		<u>? ×</u>
Look jn: 🔀	) Systems		* 📰 •
AirConditio	PMZML		
HeaCircu:	with		
File <u>n</u> ame:	Ï		İmport
Files of type:	Import Files (*.fxp)	•	Cancel

And there we'll import the template 20_HeatCircuit_Inflow_Controlled_1Pump.







DDC Suite 2.0 / PG5 Building Advanced Using templates – multiple import

1. Uncheck Set Internal Variables to system defined

This is really necessary – otherwise you'll import the template and all FBoxes won't have internal symbols. But we restructured and renamed the groups to reuse them easily!

2. Select option After current page

Base	ber of Copies: Index: efore current page	Advanced to system defined Reset page conditions
age F	ange Page Name	Description
1	HeatCirc_T1	General
	HealCirc_T1	Alam/Report
	HeatCirc_T1 HeatCirc_T1	Enable Regulation/Pump



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### DDC Suite 2.0 / PG5 Building Advanced Using templates – multiple import

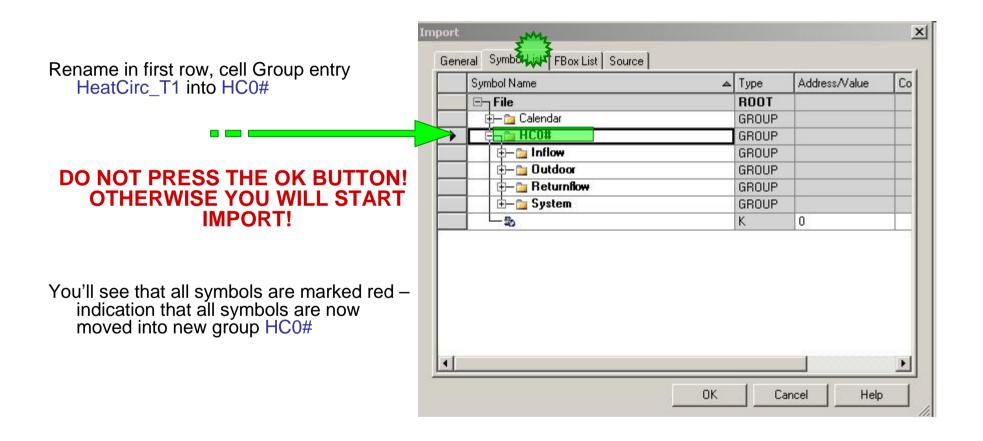
We'd like to import the heating circuit template immediately 5 times. Therefore we have to define the parameter "Copies Number" to 5

Number to 5	Import	
	General Symbol List FBox Lis	t Source
Change in column Page Name the Prefix HeatCirc_T1 into HC0# You can also use Find & Reptace to do this	Insert Number of Copies: Base Index: C Before current page	Advanced Set Internal Variables to system defined Reset page conditions
The "#" will be replaced with the "Base Index" and incremented x-times depending on "Copies Numbers:"	<ul> <li>After current page</li> <li>Page Range</li> </ul>	
depending on Copies Numbers.	No. Page Name	Description General
Select all pages 14 in Page Range area		Alarm/Report Enable Regulation/Pump
DO NOT USE OK Button! OTHERWISE YOU WILL START IMPORT!		OK Cancel Help





#### Activate tab Global Symbols





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### DDC Suite 2.0 / PG5 Building Advanced Using templates – multiple import

#### Activate tab FBox List

button and select from context menu Replace prefix	General Symbol List FBox Dat	Source	
	FBox Name	Description	Macro
	HC0#_System_Manual		_DDC_GE
	HC0#_Outdoor_Ttemp		_DDC_AN
	HC0#_Mode		_DDC_EN
	HC0#_Inflow_Temp		_DDC_AN
O NOT PRESS THE OK BUTTON!	HC0#_Returnflow_Temp		_DDC_AN
OTHERWISE YOU WILL START	HC0#_Inflow_Temp_Toleran	12	_DDC_ALI
	HC0#_HeatPeriod_Scheduler		_DDC_SP
IMPORT!	HC0#_Inflow_Controller		_DDC_RE
	HC0#_Returnflow_Controller		_DDC_RE
	HC0#_Returnflow_Valve		_DDC_CO
	HC0#_Inflow_Pump		_DDC_CO
	HC0#_Inflow_Pump_SM		_DDC_ALI
	Imported Name: HeatCirc_T1_Inflow_Pump_SM		
			1.100
		OK Cancel	l Help





Cancel

0K

Help

#### DDC Suite 2.0 / PG5 Building Advanced Using templates – multiple import

**Replace** Prefix ? X Enter in text field Find what: HeatCirc T1 **Find Next** Find what: HeatCirc_T1 Replace Replace with: HC0# Replace AIR Match whole word only Enter in text field Replace with: HC0# Cancel Match case Click on button Replace All. Import × Click on button Cancel to close dialog. General Symbol List FBox List Source FBox Name Description Macro HC0#_System_Manual _DDC_GE HC0#_Outdoor_Ttemp DDC_AN DDC_EN HC0#_Mode HC0#_Inflow_Temp And start import by clicking on button OK. DDC_AN HC0#_Returnflow_Temp _DDC_AN _DDC_ALI _DDC_SP _DDC_RE HC0#_Inflow_Temp_Toleran.. HC0#_HeatPeriod_Scheduler HC0#_Inflow_Controller HC0#_Returnflow_Controller _DDC_RE _DDC_CO HC0# Returnflow Valve HC0# Inflow Pump DDC_CO DDC ALI 4 F Imported Name: HeatCirc_T1_Inflow_Pump_SM



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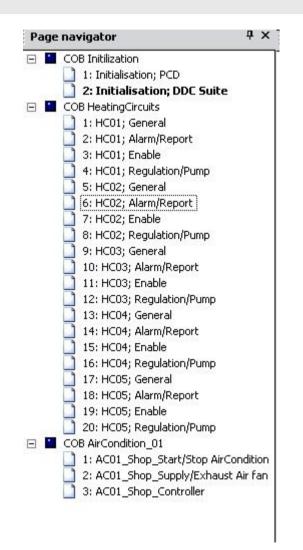


### DDC Suite 2.0 / PG5 Building Advanced

Using templates – multiple import

With this few changes during import we have 5 times a complete copy from the heating circuit template from DDC Suite, everything renamed into HC01, HC02 .. HC05

	+   1   A C S			la .	
Symbol N		Туре	Address/Val	Comment	
⊡ HVI	C.fup	ROOT			
<b>⊕−</b> _	PCD	GROUP			
<b>∲−</b> ``	AC01_Shop	GROUP			
<b>_</b>	Controls	GROUP			
• • •	Calendar	GROUP			
	HC01	GROUP			
¢-0	HC02	GROUP			
	🛅 Inflow	GROUP	-9.		
<b></b>	🛅 Returnflow	GROUP			
	🛅 Outdoor	GROUP			
	🛅 System	GROUP			
	•				_
<b>⊕</b>	HC03	GROUP			
<b>⊕</b>	HC04	GROUP		-	
	HC05	GROUP			







On YouTube you can find a video, that explains how to do a multiple import :

http://www.youtube.com/watch?v=E0LJsXTtN1Y





PG5 Building Advanced / DDC Suite 2.0 Working with Fupla

# ToDo's after an import



Saia-burgess Control Systems and Components

Control Systems and Components

burgess

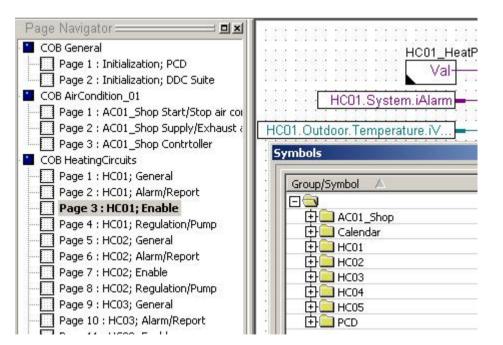


#### **DDC Suite 2.0 / PG5 Building Advanced** Using templates – ToDo's after an import

After import a "build" should work without errors.

But we have to check all topics of a template, maybe we have to modify some data due to duplicate addresses or definitions. Let's check them step by step:

Application itself. Good structured template systems, like the air condition we created during this workshop and all DDC Suite templates, are using strong groups and prefixes. During import we renamed immediately Page description/Groups and FBox properties (Name/Ref) – so each imported template has his own data. Nothing else to do after import (at least a quick check in SymbolEditor)





Control Systems and Components



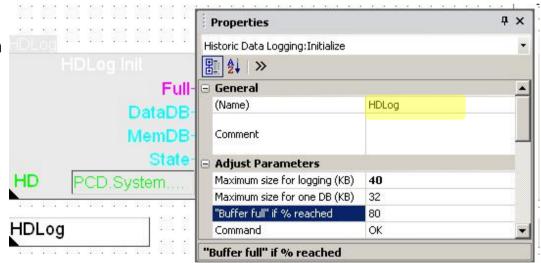
### DDC Suite 2.0 / PG5 Building Advanced

Using templates – ToDo's after an import

HDLog – each FBox parameterized for historic data will create depending on the FBox property Name all code and symbols for SWebEditor automatically. Due to strict name convention (point before) we are sure that each FBox has a unique name – which is a must when using DDC Suite (and also HEAVAC FBoxes).

At least the reserved memory in HDLog FBox itself must be maybe increased if we have a lot of historic data – but during compile you'll get maybe an error message with information about HDA. Check last error message and add just both memory information in error text, 24 KB reserved and 16 B additional needed = 40 KB and set the definition in HDLog FBox to this size.

DDC-Suite - Control - Valve/Damper analog V2.0.0 Error 165: HEAVAC.fbd: Line 4141: HDA : Speicherplatz um <mark>16 KB ü</mark>berschritten. <mark>24 KB</mark> reserviert., BACnet Objects for HC05_Returnflow_Valve generated BACnet: Total 278 objects generated DDC-Suite - General - Register low V1.5.0 DDC-Suite - Alarming - Motor drive 1 speed V2.0.0 BACnet Objects for HC05 Inflow Pump SM generated Message DDC-Suite - Control - Pump V2.0.0 BACnet Objects for HC05 Inflow Pump generated BACnet: Total 288 objects generated 16 errors, 0 warnings Ready



Control Systems and Components

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### DDC Suite 2.0 / PG5 Building Advanced

Using templates – ToDo's after an import

Let's check the alarm numbers, especially if all systems are connected to the same alarm list.

When we check the file "DDC_Alarming.csv" and sort by column A and B then we'll see that a lot of alarm numbers are multi defined.

By default the templates are defined in FBox "AlarmHdr" to use alarm no. 11 as first alarm.

Now we have to reorganize the alarm numbers. Lets check the file and find out how many alarms the air condition and a heating circuit defines. (sort by column "C")

Air condition: 16 Heating circuit: 17

	A	В	С	D	E	
1	List <u>1</u>	1	Alarm_1	FuseGuard 23	30 VAC missii	ng
2	List_1	2	Alarm_2	FuseGuard 24	4 VAC missing	g
3	List_1	3	Alarm_3	FuseGuard 24	4 VDC missing	g
4	List_1	4	Alarm_4	FuseGuard pl	nase missing	
5	List_1	5	Alarm_5	FuseGuard c	ontrol voltage	
6	List_1	11	Alarm_11	AC01_Shop_	SupplyAir_Ter	np lirr
7	List_1	11	Alarm_11	HC01_Outdoo	or_Ttemp limit	high
8	List_1	11	Alarm_11	HC02_Outdoo	or_Ttemp limit	high
9	List_1	11	Alarm_11	HC03_Outdoo	or_Ttemp limit	high
10	List_1	11	Alarm_11	HC04_Outdoo	or_Ttemp limit	high
11	List_1	11	Alarm_11	HC05_Outdoo	or_Ttemp limit	high
12	List_1	12	Alarm_12	AC01_Shop_	SupplyAir_Ter	np lirr
13	List_1	12	Alarm_12	HC01_Outdoo	or_Ttemp limit	low
14	List_1	12	Alarm_12	HC02_Outdoo	or_Ttemp limit	low
10	h			11000 0 11		•



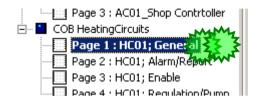


#### **DDC Suite 2.0 / PG5 Building Advanced** Using templates – ToDo's after an import

The air condition is the first system in Fupla – so the default start alarm number 11 can stay as it is.

We have to modify it from second system in Fupla, this will be heating circuit HC01. Jump to Page "HC01;General"

Open adjust window of FBox "Alarm Hdr". First system starts with 11 and needs 16 alarms, so 11+16=27. The next free alarm would be 28.



**Control Systems and Compone** 



Lets have some spare and start with 31.		Properties		Ψ×
	ret GeneralAlarmList	DDC Initialisation:Alarm Head	er 2.0	•
	Alarm Hdr	2↓ ≫		
		General		-
		(Name)		
	Addres Addres	Reference	GeneralAlarmList	
		Comment		
		Comment		
		😑 Adjust Parameters		
		Base alarm index	31	
		🖃 Advanced Info		
		Name	Alarm Header 2.0	-



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### DDC Suite 2.0 / PG5 Building Advanced

Using templates – ToDo's after an import

Repeat this with all other systems. Let's take the following base alarm numbers:

HC01: 31

HC02: 51

HC03: 71

HC04: 91

HC05: 111

After compile we should have an alarm list without double defined alarm numbers.

List_1         12         Alarm_12         AC01_Shop_SupplyAir           List_1         13         Alarm_13         AC01_Shop_ExhaustAi           List_1         14         Alarm_14         AC01_Shop_ExhaustAi           List_1         15         Alarm_15         AC01_Shop_SupplyAir           List_1         16         Alarm_16         AC01_Shop_SupplyAir           List_1         17         Alarm_17         AC01_Shop_SupplyAir           List_1         18         Alarm_18         AC01_Shop_SupplyAir           List_1         19         Alarm_20         AC01_Shop_SupplyAir           List_1         20         Alarm_21         AC01_Shop_ExhaustAi           List_1         21         Alarm_22         AC01_Shop_ExhaustAi           List_1         22         Alarm_23         AC01_Shop_ExhaustAi           List_1         23         Alarm_24         AC01_Shop_ExhaustAi           List_1         26         Alarm_26         AC01_Shop_ExhaustAi           List_1         31         Alarm_31         HC01_Outdoor_Ttemp li           List_1         32         Alarm_33         HC01_Inflow_Temp_Tolk           List_1         33         Alarm_36         HC01_Inflow_Temp_Iok           Li	List 1	11 Alarm 11	AC01_Shop_SupplyAir_
List_1         13         Alarm_13         AC01_Shop_ExhaustAi           List_1         14         Alarm_14         AC01_Shop_ExhaustAi           List_1         15         Alarm_15         AC01_Shop_SupplyAir           List_1         16         Alarm_17         AC01_Shop_SupplyAir           List_1         17         Alarm_17         AC01_Shop_SupplyAir           List_1         18         Alarm_18         AC01_Shop_SupplyAir           List_1         19         Alarm_20         AC01_Shop_SupplyAir           List_1         20         Alarm_21         AC01_Shop_ExhaustAi           List_1         21         Alarm_22         AC01_Shop_ExhaustAi           List_1         22         Alarm_23         AC01_Shop_ExhaustAi           List_1         23         Alarm_24         AC01_Shop_ExhaustAi           List_1         24         Alarm_25         AC01_Shop_ExhaustAi           List_1         26         Alarm_32         HC01_Outdoor_Ttemp li           List_1         32         Alarm_33         HC01_Inflow_Temp_Tok           List_1         33         Alarm_36         HC01_Inflow_Temp limit           List_1         36         Alarm_37         HC01_Returnflow_Valve <td< td=""><td>List 1</td><td>12 Alarm 12</td><td></td></td<>	List 1	12 Alarm 12	
List_1         14         Alarm_14         AC01_Shop_ExhaustAi           List_1         15         Alarm_16         AC01_Shop_SupplyAir           List_1         16         Alarm_17         AC01_Shop_SupplyAir           List_1         17         Alarm_18         AC01_Shop_SupplyAir           List_1         19         Alarm_19         AC01_Shop_SupplyAir           List_1         20         Alarm_20         AC01_Shop_ExhaustAi           List_1         21         Alarm_21         AC01_Shop_ExhaustAi           List_1         22         Alarm_23         AC01_Shop_ExhaustAi           List_1         22         Alarm_23         AC01_Shop_ExhaustAi           List_1         24         Alarm_24         AC01_Shop_ExhaustAi           List_1         26         Alarm_26         AC01_Shop_ExhaustAi           List_1         26         Alarm_32         HC01_Outdoor_Ttemp li           List_1         31         Alarm_33         HC01_Inflow_Temp_Tolk           List_1         33         Alarm_36         HC01_Inflow_Temp limit           List_1         36         Alarm_37         HC01_Returnflow_Temp           List_1         36         Alarm_37         HC01_Returnflow_Temp <t< td=""><td>List 1</td><td>13 Alarm 13</td><td></td></t<>	List 1	13 Alarm 13	
List_1         15         Alarm_15         AC01_Shop_SupplyAir_           List_1         16         Alarm_16         AC01_Shop_SupplyAir_           List_1         17         Alarm_17         AC01_Shop_SupplyAir_           List_1         19         Alarm_18         AC01_Shop_SupplyAir_           List_1         19         Alarm_19         AC01_Shop_SupplyAir_           List_1         20         Alarm_20         AC01_Shop_SupplyAir_           List_1         20         Alarm_21         AC01_Shop_ExhaustAi           List_1         21         Alarm_23         AC01_Shop_ExhaustAi           List_1         23         Alarm_23         AC01_Shop_ExhaustAi           List_1         24         Alarm_24         AC01_Shop_ExhaustAi           List_1         25         Alarm_26         AC01_Shop_ExhaustAi           List_1         26         Alarm_31         HC01_Outdoor_Ttemp li           List_1         32         Alarm_33         HC01_Inflow_Temp_Tolk           List_1         33         Alarm_36         HC01_Inflow_Temp_Iimit           List_1         36         Alarm_37         HC01_Returnflow_Valve           List_1         36         Alarm_42         HC01_Inflow_Pump_Siv	List_1	14 Alarm_14	
List_1         16         Alarm_16         AC01_Shop_SupplyAir_           List_1         17         Alarm_17         AC01_Shop_SupplyAir_           List_1         18         Alarm_18         AC01_Shop_SupplyAir_           List_1         19         Alarm_19         AC01_Shop_SupplyAir_           List_1         20         Alarm_20         AC01_Shop_SupplyAir_           List_1         21         Alarm_21         AC01_Shop_ExhaustAi           List_1         22         Alarm_23         AC01_Shop_ExhaustAi           List_1         23         Alarm_24         AC01_Shop_ExhaustAi           List_1         24         Alarm_25         AC01_Shop_ExhaustAi           List_1         26         Alarm_26         AC01_Shop_ExhaustAi           List_1         26         Alarm_31         HC01_Outdoor_Ttemp li           List_1         31         Alarm_33         HC01_Inflow_Temp_Tolk           List_1         33         Alarm_36         HC01_Inflow_Temp_Iimit           List_1         36         Alarm_37         HC01_Returnflow_Temp           List_1         36         Alarm_38         HC01_Inflow_Temp           List_1         37         Alarm_41         HC01_Returnflow_Valve	List_1	15 Alarm_15	
List_1         17         Alarm_17         AC01_Shop_SupplyAir_           List_1         18         Alarm_18         AC01_Shop_SupplyAir_           List_1         19         Alarm_19         AC01_Shop_SupplyAir_           List_1         20         Alarm_20         AC01_Shop_SupplyAir_           List_1         21         Alarm_21         AC01_Shop_ExhaustAi           List_1         22         Alarm_23         AC01_Shop_ExhaustAi           List_1         23         Alarm_24         AC01_Shop_ExhaustAi           List_1         24         Alarm_25         AC01_Shop_ExhaustAi           List_1         26         Alarm_26         AC01_Shop_ExhaustAi           List_1         26         Alarm_27         AC01_Shop_ExhaustAi           List_1         26         Alarm_28         AC01_Shop_ExhaustAi           List_1         31         Alarm_31         HC01_Outdoor_Ttemp li           List_1         32         Alarm_33         HC01_Inflow_Temp_Tolk           List_1         33         Alarm_36         HC01_Inflow_Temp limit           List_1         36         Alarm_37         HC01_Returnflow_Temp           List_1         37         Alarm_38         HC01_Returnflow_Valve      List_1	List_1	16 Alarm_16	
List_1         18         Alarm_18         AC01_Shop_SupplyAir_           List_1         19         Alarm_19         AC01_Shop_SupplyAir_           List_1         20         Alarm_20         AC01_Shop_SupplyAir_           List_1         21         Alarm_21         AC01_Shop_ExhaustAi           List_1         22         Alarm_22         AC01_Shop_ExhaustAi           List_1         23         Alarm_23         AC01_Shop_ExhaustAi           List_1         24         Alarm_24         AC01_Shop_ExhaustAi           List_1         25         Alarm_26         AC01_Shop_ExhaustAi           List_1         26         Alarm_27         AC01_Shop_ExhaustAi           List_1         26         Alarm_28         AC01_Shop_ExhaustAi           List_1         31         Alarm_31         HC01_Outdoor_Ttemp li           List_1         32         Alarm_33         HC01_Inflow_Temp_Tolk           List_1         33         Alarm_36         HC01_Inflow_Temp limit           List_1         36         Alarm_37         HC01_Returnflow_Temp           List_1         37         Alarm_38         HC01_Returnflow_Temp           List_1         38         Alarm_41         HC01_Returnflow_Valve      List_1	List_1	17 Alarm_17	
List 1         20         Alarm 20         AC01_Shop_SupplyAir           List 1         21         Alarm 21         AC01_Shop_ExhaustAi           List 1         22         Alarm 22         AC01_Shop_ExhaustAi           List 1         23         Alarm 23         AC01_Shop_ExhaustAi           List 1         24         Alarm 24         AC01_Shop_ExhaustAi           List 1         26         Alarm 25         AC01_Shop_ExhaustAi           List 1         26         Alarm 26         AC01_Shop_ExhaustAi           List 1         26         Alarm 26         AC01_Shop_ExhaustAi           List 1         31         Alarm 31         HC01_Outdoor_Ttemp li           List 1         32         Alarm 33         HC01_Inflow_Temp_Tole           List 1         33         Alarm 34         HC01_Inflow_Temp limit           List 1         36         Alarm 37         HC01_Inflow_Temp limit           List 1         36         Alarm 37         HC01_Returnflow_Temp           List 1         37         Alarm 41         HC01_Returnflow_Temp           List 1         41         Alarm 42         HC01_Returnflow_Valve           List 1         42         Alarm 44         HC01_Inflow_Pump_SN	List_1	18 Alarm_18	
List_1         21         Alarm_21         AC01_Shop_ExhaustAi           List_1         22         Alarm_22         AC01_Shop_ExhaustAi           List_1         23         Alarm_23         AC01_Shop_ExhaustAi           List_1         24         Alarm_24         AC01_Shop_ExhaustAi           List_1         25         Alarm_25         AC01_Shop_ExhaustAi           List_1         26         Alarm_26         AC01_Shop_ExhaustAi           List_1         31         Alarm_31         HC01_Outdoor_Ttemp li           List_1         32         Alarm_32         HC01_Inflow_Temp_Tolk           List_1         33         Alarm_33         HC01_Inflow_Temp_Tolk           List_1         36         Alarm_36         HC01_Inflow_Temp_Imit           List_1         36         Alarm_37         HC01_Returnflow_Temp           List_1         37         Alarm_38         HC01_Returnflow_Temp           List_1         37         Alarm_41         HC01_Returnflow_Valve           List_1         41         Alarm_43         HC01_Returnflow_Valve           List_1         42         Alarm_44         HC01_Inflow_Pump_SM           List_1         43         Alarm_45         HC01_Inflow_Pump_SM	List_1	19 Alarm_19	AC01_Shop_SupplyAir_
List         1         22         Alarm         22         AC01         Shop         ExhaustAi           List         1         23         Alarm         23         AC01         Shop         ExhaustAi           List         1         24         Alarm         24         AC01         Shop         ExhaustAi           List         1         25         Alarm         25         AC01         Shop         ExhaustAi           List         1         26         Alarm         26         AC01         Shop         ExhaustAi           List         1         31         Alarm         26         AC01         Shop         ExhaustAi           List         1         32         Alarm         32         HC01         Outdoor         Ttemp           List         1         33         Alarm         34         HC01         Inflow         Temp         Tok           List         1         36         Alarm         36         HC01         Inflow         Temp         Temp           List         1         37         Alarm         Alarm         Temp         Temp         List         Temp         List         Temp         Te	List_1	20 Alarm_20	
List         1         23         Alarm         23         AC01         Shop         ExhaustAi           List         1         24         Alarm         24         AC01         Shop         ExhaustAi           List         1         25         Alarm         25         AC01         Shop         ExhaustAi           List         1         26         Alarm         26         AC01         Shop         ExhaustAi           List         1         31         Alarm         26         AC01         Shop         ExhaustAi           List         1         31         Alarm         32         HC01         Outdoor         Ttemp         Ii           List         1         32         Alarm         33         HC01         Inflow         Temp         Tolk           List         1         34         Alarm         34         HC01         Inflow         Temp         Tolk           List         1         36         Alarm         36         HC01         Inflow         Temp         Imit           List         1         37         Alarm         37         HC01         Returnflow         Valve           List<	List_1	21 Alarm_21	AC01_Shop_ExhaustAi
List         1         24         Alarm         24         AC01_Shop_ExhaustAi           List         1         25         Alarm         25         AC01_Shop_ExhaustAi           List         1         26         Alarm         26         AC01_Shop_ExhaustAi           List         1         31         Alarm         31         HC01_Outdoor_Ttemp li           List         1         32         Alarm         32         HC01_Outdoor_Ttemp li           List         1         33         Alarm         33         HC01_Inflow_Temp_Tolk           List         1         35         Alarm         34         HC01_Inflow_Temp_Tolk           List         1         36         Alarm         36         HC01_Inflow_Temp_Tolk           List         1         36         Alarm         36         HC01_Inflow_Temp_Tolk           List         1         37         Alarm         38         HC01_Returnflow_Temp           List         1         37         Alarm         48         HC01_Returnflow_Valve           List         1         41         Alarm         44         HC01_Inflow_Pump_SN           List         1         42         Alarm         45 </td <td>List_1</td> <td>22 Alarm_22</td> <td>AC01_Shop_ExhaustAi</td>	List_1	22 Alarm_22	AC01_Shop_ExhaustAi
List         1         25         Alarm         25         AC01         Shop         ExhaustAi           List         1         26         Alarm         26         AC01         Shop         ExhaustAi           List         1         31         Alarm         32         HC01         Outdoor         Ttemp Ii           List         1         32         Alarm         32         HC01         Outdoor         Ttemp Ii           List         1         33         Alarm         33         HC01         Inflow         Temp         Tok           List         1         34         Alarm         34         HC01         Inflow         Temp         Tok           List         1         36         Alarm         36         HC01         Inflow         Temp Iimit           List         1         36         Alarm         36         HC01         Inflow         Temp Iimit           List         1         37         Alarm         37         HC01         Returnflow         Temp           List         1         41         Alarm         41         HC01         Returnflow         Valve           List         1	List_1		AC01_Shop_ExhaustAi
List_1         25         Alarm_25         AC01_Shop_ExhaustAi           List_1         26         Alarm_26         AC01_Shop_ExhaustAi           List_1         31         Alarm_31         HC01_Outdoor_Ttemp li           List_1         32         Alarm_32         HC01_Outdoor_Ttemp li           List_1         33         Alarm_33         HC01_Inflow_Temp_Tolk           List_1         34         Alarm_34         HC01_Inflow_Temp_Tolk           List_1         35         Alarm_35         HC01_Inflow_Temp_Tolk           List_1         36         Alarm_37         HC01_Inflow_Temp_Iimit           List_1         36         Alarm_37         HC01_Returnflow_Temp           List_1         37         Alarm_37         HC01_Returnflow_Valve           List_1         41         Alarm_42         HC01_Returnflow_Valve           List_1         42         Alarm_43         HC01_Returnflow_Valve           List_1         43         Alarm_44         HC01_Inflow_Pump_SN           List_1         44         Alarm_45         HC01_Inflow_Pump_SN           List_1         45         Alarm_47         HC01_Inflow_Pump_SN           List_1         46         Alarm_47         HC01_Inflow_Pump_SN		24 Alarm_24	AC01_Shop_ExhaustAi
List         1         31         Alarm         31         HC01_Outdoor_Ttemp li           List         1         32         Alarm         32         HC01_Outdoor_Ttemp li           List         1         33         Alarm         33         HC01_Inflow_Temp_Tolk           List         1         34         Alarm         34         HC01_Inflow_Temp_Tolk           List         1         35         Alarm         36         HC01_Inflow_Temp_Tolk           List         1         36         Alarm         36         HC01_Inflow_Temp_Tolk           List         1         36         Alarm         37         HC01_Returnflow_Temp           List         1         37         Alarm         38         HC01_Returnflow_Temp           List         1         38         Alarm_47         HC01_Returnflow_Valve           List         1         41         Alarm         42         HC01_Inflow_Pump_SN           List         1         42         Alarm         44         HC01_Inflow_Pump_SN           List         1         44         Alarm         44         HC01_Inflow_Pump_SN           List         1         46         Alarm         47	List_1		AC01_Shop_ExhaustAi
List_1         32         Alarm_32         HC01_Outdoor_Ttemp li           List_1         33         Alarm_33         HC01_Inflow_Temp_Tolk           List_1         34         Alarm_34         HC01_Inflow_Temp_Tolk           List_1         35         Alarm_35         HC01_Inflow_Temp_Tolk           List_1         36         Alarm_36         HC01_Inflow_Temp_Iimit           List_1         36         Alarm_37         HC01_Returnflow_Temp           List_1         37         Alarm_37         HC01_Returnflow_Temp           List_1         38         Alarm_41         HC01_Returnflow_Valve           List_1         41         Alarm_42         HC01_Returnflow_Valve           List_1         42         Alarm_43         HC01_Returnflow_Valve           List_1         43         Alarm_44         HC01_Inflow_Pump_SN           List_1         44         Alarm_45         HC01_Inflow_Pump_SN           List_1         45         Alarm_47         HC01_Inflow_Pump_SN           List_1         46         Alarm_48         HC01_Inflow_Pump_SN           List_1         47         Alarm_49         HC01_Inflow_Pump_SN           List_1         49         Alarm_51         HC02_Outdoor_Ttemp_IN <tr< td=""><td></td><td></td><td></td></tr<>			
List_1         33         Alarm_33         HC01_Inflow_Temp_Tole           List_1         34         Alarm_34         HC01_Inflow_Temp_Tole           List_1         35         Alarm_35         HC01_Inflow_Temp_Imit           List_1         36         Alarm_36         HC01_Inflow_Temp limit           List_1         36         Alarm_37         HC01_Returnflow_Temp           List_1         37         Alarm_38         HC01_Returnflow_Temp           List_1         38         Alarm_41         HC01_Returnflow_Valve           List_1         41         Alarm_42         HC01_Returnflow_Valve           List_1         42         Alarm_43         HC01_Returnflow_Valve           List_1         43         Alarm_44         HC01_Inflow_Pump_Ser           List_1         44         Alarm_45         HC01_Inflow_Pump_SN           List_1         45         Alarm_46         HC01_Inflow_Pump_SN           List_1         47         Alarm_47         HC01_Inflow_Pump_SN           List_1         47         Alarm_48         HC01_Inflow_Pump_SN           List_1         47         Alarm_51         HC02_Outdoor_Ttemp li           List_1         51         Alarm_53         HC02_Outdoor_Ttemp li <t< td=""><td></td><td>31 Alarm_31</td><td></td></t<>		31 Alarm_31	
List         1         34         Alarm         34         HC01         Inflow         Temp         Tolk           List         1         35         Alarm         35         HC01         Inflow         Temp         Imit           List         1         36         Alarm         36         HC01         Inflow         Temp         Imit           List         1         36         Alarm         36         HC01         Returnflow         Temp           List         1         37         Alarm         37         HC01         Returnflow         Temp           List         1         38         Alarm         38         HC01         Returnflow         Valve           List         1         41         Alarm         41         HC01         Returnflow         Valve           List         1         42         Alarm         42         HC01         Returnflow         Valve           List         1         43         Alarm         43         HC01         Inflow         Valve           List         1         44         Alarm         44         HC01         Inflow         Valve           List			
List_1         35         Alarm_35         HC01_Inflow_Temp limit           List_1         36         Alarm_36         HC01_Inflow_Temp limit           List_1         37         Alarm_37         HC01_Returnflow_Temp           List_1         38         Alarm_38         HC01_Returnflow_Temp           List_1         41         Alarm_41         HC01_Returnflow_Valve           List_1         42         Alarm_42         HC01_Returnflow_Valve           List_1         43         Alarm_43         HC01_Returnflow_Valve           List_1         43         Alarm_44         HC01_Inflow_Pump_Ser           List_1         44         Alarm_45         HC01_Inflow_Pump_SN           List_1         45         Alarm_46         HC01_Inflow_Pump_SN           List_1         46         Alarm_47         HC01_Inflow_Pump_SN           List_1         47         Alarm_48         HC01_Inflow_Pump_SN           List_1         48         Alarm_49         HC01_Inflow_Pump_SN           List_1         49         Alarm_51         HC02_Outdoor_Ttemp li           List_1         51         Alarm_52         HC02_Outdoor_Ttemp li           List_1         53         Alarm_54         HC02_Inflow_Temp_Tole <tr< td=""><td>List_1</td><td>33 Alarm_33</td><td></td></tr<>	List_1	33 Alarm_33	
List_1         36         Alarm_36         HC01         Inflow_Temp limit           List_1         37         Alarm_37         HC01_Returnflow_Temp           List_1         38         Alarm_38         HC01_Returnflow_Temp           List_1         41         Alarm_41         HC01_Returnflow_Valve           List_1         42         Alarm_42         HC01_Returnflow_Valve           List_1         43         Alarm_43         HC01_Returnflow_Valve           List_1         43         Alarm_44         HC01_Inflow_Valve           List_1         44         Alarm_45         HC01_Inflow_Pump_SN           List_1         45         Alarm_46         HC01_Inflow_Pump_SN           List_1         46         Alarm_47         HC01_Inflow_Pump_SN           List_1         47         Alarm_48         HC01_Inflow_Pump_SN           List_1         48         Alarm_49         HC01_Inflow_Pump_SN           List_1         49         Alarm_51         HC02_Outdoor_Ttemp li           List_1         51         Alarm_53         HC02_Inflow_Temp_Tole           List_1         53         Alarm_54         HC02_Inflow_Temp_Tole           List_1         55         Alarm_55         HC02_Inflow_Temp_Tole			
List         1         37         Alarm_37         HC01_Returnflow_Temp           List         1         38         Alarm_38         HC01_Returnflow_Temp           List_1         41         Alarm_41         HC01_Returnflow_Valve           List_1         42         Alarm_42         HC01_Returnflow_Valve           List_1         42         Alarm_42         HC01_Returnflow_Valve           List_1         43         Alarm_43         HC01_Returnflow_Valve           List_1         43         Alarm_44         HC01_Inflow_Valve           List_1         44         Alarm_45         HC01_Inflow_Pump_SV           List_1         45         Alarm_46         HC01_Inflow_Pump_SV           List_1         46         Alarm_47         HC01_Inflow_Pump_SV           List_1         47         Alarm_48         HC01_Inflow_Pump_SV           List_1         49         Alarm_49         HC01_Inflow_Pump_SN           List_1         51         Alarm_51         HC02_Outdoor_Ttemp li           List_1         52         Alarm_53         HC02_Inflow_Temp_Tolk           List_1         53         Alarm_54         HC02_Inflow_Temp_Tolk           List_1         55         Alarm_55         HC02_Inflow_Tem			HC01_Inflow_Temp limit
List_1         38         Alarm_38         HC01_Returnflow_Temp           List_1         41         Alarm_41         HC01_Returnflow_Valve           List_1         42         Alarm_42         HC01_Returnflow_Valve           List_1         43         Alarm_43         HC01_Returnflow_Valve           List_1         43         Alarm_43         HC01_Inflow_Pump_Ser           List_1         44         Alarm_44         HC01_Inflow_Pump_SN           List_1         45         Alarm_46         HC01_Inflow_Pump_SN           List_1         46         Alarm_47         HC01_Inflow_Pump_SN           List_1         47         Alarm_48         HC01_Inflow_Pump_SN           List_1         48         Alarm_49         HC01_Inflow_Pump_SN           List_1         49         Alarm_51         HC02_Outdoor_Ttemp IN           List_1         51         Alarm_52         HC02_Outdoor_Ttemp IN           List_1         53         Alarm_53         HC02_Inflow_Temp_Tolk           List_1         54         Alarm_54         HC02_Inflow_Temp_Tolk           List_1         55         Alarm_55         HC02_Inflow_Temp_Tolk			
List         1         41         Alarm_41         HC01_Returnflow_Valve           List_1         42         Alarm_42         HC01_Returnflow_Valve           List_1         43         Alarm_43         HC01_Returnflow_Valve           List_1         43         Alarm_44         HC01_Inflow_Pump_Ser           List_1         44         Alarm_45         HC01_Inflow_Pump_SN           List_1         45         Alarm_46         HC01_Inflow_Pump_SN           List_1         46         Alarm_47         HC01_Inflow_Pump_SN           List_1         47         Alarm_48         HC01_Inflow_Pump_SN           List_1         48         Alarm_49         HC01_Inflow_Pump_SN           List_1         49         Alarm_51         HC02_Outdoor_Ttemp_IN           List_1         51         Alarm_52         HC02_Outdoor_Ttemp_IN           List_1         53         Alarm_53         HC02_Inflow_Temp_Tolk           List_1         54         Alarm_54         HC02_Inflow_Temp_Tolk           List_1         55         Alarm_55         HC02_Inflow_Temp_Iinit			
List_1         42         Alarm_42         HC01_Returnflow_Valve           List_1         43         Alarm_43         HC01_Returnflow_Valve           List_1         44         Alarm_44         HC01_Inflow_Pump_Ser           List_1         45         Alarm_45         HC01_Inflow_Pump_SN           List_1         46         Alarm_46         HC01_Inflow_Pump_SN           List_1         47         Alarm_47         HC01_Inflow_Pump_SN           List_1         47         Alarm_48         HC01_Inflow_Pump_SN           List_1         48         Alarm_49         HC01_Inflow_Pump_SN           List_1         49         Alarm_51         HC02_Outdoor_Ttemp_IN           List_1         51         Alarm_52         HC02_Outdoor_Ttemp II           List_1         53         Alarm_53         HC02_Inflow_Temp_Tolk           List_1         54         Alarm_54         HC02_Inflow_Temp_Tolk           List_1         55         Alarm_55         HC02_Inflow_Temp_Iinit			
List_1         43         Alarm_43         HC01_Returnflow_Valve           List_1         44         Alarm_44         HC01_Inflow_Pump Ser           List_1         45         Alarm_45         HC01_Inflow_Pump_SN           List_1         46         Alarm_46         HC01_Inflow_Pump_SN           List_1         46         Alarm_47         HC01_Inflow_Pump_SN           List_1         47         Alarm_48         HC01_Inflow_Pump_SN           List_1         48         Alarm_48         HC01_Inflow_Pump_SN           List_1         49         Alarm_51         HC02_Outdoor_Ttemp_SN           List_1         51         Alarm_52         HC02_Outdoor_Ttemp li           List_1         52         Alarm_53         HC02_Inflow_Temp_Tolk           List_1         53         Alarm_54         HC02_Inflow_Temp_Tolk           List_1         54         Alarm_55         HC02_Inflow_Temp_Tolk		_	
List_1         44         Alarm_44         HC01_Inflow_Pump_Ser           List_1         45         Alarm_45         HC01_Inflow_Pump_SN           List_1         46         Alarm_46         HC01_Inflow_Pump_SN           List_1         47         Alarm_47         HC01_Inflow_Pump_SN           List_1         47         Alarm_47         HC01_Inflow_Pump_SN           List_1         48         Alarm_48         HC01_Inflow_Pump_SN           List_1         49         Alarm_49         HC01_Inflow_Pump_SN           List_1         51         Alarm_51         HC02_Outdoor_Ttemp Ii           List_1         52         Alarm_52         HC02_Outdoor_Ttemp Ii           List_1         53         Alarm_53         HC02_Inflow_Temp_Tolk           List_1         54         Alarm_54         HC02_Inflow_Temp_Tolk           List_1         55         Alarm_55         HC02_Inflow_Temp_Iinit			
List_1         45         Alarm_45         HC01_Inflow_Pump_SM           List_1         46         Alarm_46         HC01_Inflow_Pump_SM           List_1         47         Alarm_47         HC01_Inflow_Pump_SM           List_1         47         Alarm_47         HC01_Inflow_Pump_SM           List_1         48         Alarm_48         HC01_Inflow_Pump_SM           List_1         49         Alarm_49         HC01_Inflow_Pump_SM           List_1         51         Alarm_51         HC02_Outdoor_Ttemp li           List_1         52         Alarm_52         HC02_Outdoor_Ttemp li           List_1         53         Alarm_53         HC02_Inflow_Temp_Tolk           List_1         54         Alarm_54         HC02_Inflow_Temp_Tolk           List_1         55         Alarm_55         HC02_Inflow_Temp limit			
List_1         46         Alarm_46         HC01_Inflow_Pump_SN           List_1         47         Alarm_47         HC01_Inflow_Pump_SN           List_1         48         Alarm_48         HC01_Inflow_Pump_SN           List_1         49         Alarm_49         HC01_Inflow_Pump_SN           List_1         51         Alarm_51         HC02_Outdoor_Ttemp li           List_1         52         Alarm_52         HC02_Outdoor_Ttemp li           List_1         53         Alarm_53         HC02_Inflow_Temp_Tole           List_1         54         Alarm_54         HC02_Inflow_Temp_Tole           List_1         55         Alarm_55         HC02_Inflow_Temp_Iimit	-		HC01_Inflow_Pump Ser
List_1         47         Alarm_47         HC01_Inflow_Pump_SM           List_1         48         Alarm_48         HC01_Inflow_Pump_SM           List_1         49         Alarm_49         HC01_Inflow_Pump_SM           List_1         51         Alarm_51         HC02_Outdoor_Ttemp li           List_1         52         Alarm_52         HC02_Outdoor_Ttemp li           List_1         53         Alarm_53         HC02_Inflow_Temp_Tole           List_1         54         Alarm_54         HC02_Inflow_Temp_Tole           List_1         55         Alarm_55         HC02_Inflow_Temp limit		_	
List_1         48         Alarm_48         HC01_Inflow_Pump_SN           List_1         49         Alarm_49         HC01_Inflow_Pump_SN           List_1         51         Alarm_51         HC02_Outdoor_Ttemp li           List_1         52         Alarm_52         HC02_Outdoor_Ttemp li           List_1         53         Alarm_53         HC02_Inflow_Temp_Tolk           List_1         54         Alarm_54         HC02_Inflow_Temp_Tolk           List_1         55         Alarm_55         HC02_Inflow_Temp limit			
List_1         49         Alarm_49         HC01_Inflow_Pump_SM           List_1         51         Alarm_51         HC02_Outdoor_Ttemp li           List_1         52         Alarm_52         HC02_Outdoor_Ttemp li           List_1         53         Alarm_53         HC02_Inflow_Temp_Tole           List_1         54         Alarm_54         HC02_Inflow_Temp_Tole           List_1         55         Alarm_55         HC02_Inflow_Temp limit			
List_1         51         Alarm_51         HC02_Outdoor_Ttemp li           List_1         52         Alarm_52         HC02_Outdoor_Ttemp li           List_1         53         Alarm_53         HC02_Inflow_Temp_Tole           List_1         54         Alarm_54         HC02_Inflow_Temp_Tole           List_1         55         Alarm_55         HC02_Inflow_Temp limit	-		
List_1         52         Alarm_52         HC02_Outdoor_Ttemp li           List_1         53         Alarm_53         HC02_Inflow_Temp_Tole           List_1         54         Alarm_54         HC02_Inflow_Temp_Tole           List_1         55         Alarm_55         HC02_Inflow_Temp limit	-		
List_1     53     Alarm_53     HC02_Inflow_Temp_Tole       List_1     54     Alarm_54     HC02_Inflow_Temp_Tole       List_1     55     Alarm_55     HC02_Inflow_Temp limit		_	
List_1 54 Alarm_54 HC02_Inflow_Temp_Tole List_1 55 Alarm_55 HC02_Inflow_Temp limit	-		
List_1 55 Alarm_55 HC02_Inflow_Temp limit			
List 1 56 Alarm 56 HC02 Inflow Temp limit			
	List_1	56 Alarm_56	HC02_Inflow_Temp limit





At least we have to update the SWebText.csv file in Sweb application with the Sweb Alarm AddOn tool.

ACnet reates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.	
- Charles and the second se	
Force Update (Clear the content of 'BACnet.bnt' before the update)	
pen Log file	
evice path:	Generate
:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Projects\Workshop\CPU0002	
ITM Doc	
eads the HTML documents from dorpument directory and creates the .SRC files in the device directory.	
ocument directory:	Generate
\Documents and Settings\All Users\Saia-Burgess\PG5_20\Projects\Workshop\PG5_Templates\FBo	Browse
larming	
eads the 'DDC_Alarming.csv' file from the device directory and updates the alarm texts in the output	4
utput file:	Generate
nts and Settings\All Users\Saia-Burgess\PG5_20\Projects\Workshop\CPU0002\WEB\SWebText.csv	Browse

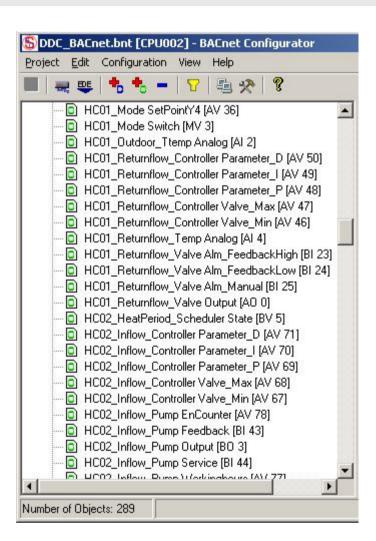


## DDC Suite 2.0 / PG5 Building Advanced

Using templates – ToDo's after an import

BACnet – each FBox parameterized for BACnet will create depending on the FBox property Name all code and symbols and objects automatically.

Due to strict name convention (point before) we are sure that each FBox has a unique name – which is a must when using DDC Suite (and also HEAVAC FBoxes).



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At least we have to update the BACnet configuration which is linked to the program – BACnet.bnt. If we added some FBoxes/templates with BACnet configuration we have to start the DDC BACnet AddOn tool.

It will check if maybe some new objects are created from DDC Suite FBoxes and add them to the linked BACnet.bnt configuration file.

BACnet	
Creates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.	
Force Update (Clear the content of 'BACnet.bnt' before the update)	
<u>Dpen Log file</u>	L
Device path:	Generate
C:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Projects\Workshop\CPU0002	
HTM Doc	
Reads the HTML documents from dorument directory and creates the .SRC files in the device directory.	
Document directory:	Generate
	D
: D:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Projects\Workshop\PG5_Templates\FBo	Browse
C:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Projects\Workshop\PG5_Templates\FBo	Browse
C:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Projects\Workshop\PG5_Templates\FBo	Browse
C:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Projects\Workshop\PG5_Templates\FBo Alarming Reads the 'DDC_Alarming.csv' file from the device directory and updates the alarm texts in the output file.	
C:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Projects\Workshop\PG5_Templates\FBo	Browse Generate





After checking the settings for HDLog, alarming and BACnet we have to rebuild the program to be sure that all files are updated before downloading the program.





PG5 Building Advanced / DDC Suite 2.0 Working with Fupla

# **Predefined templates**



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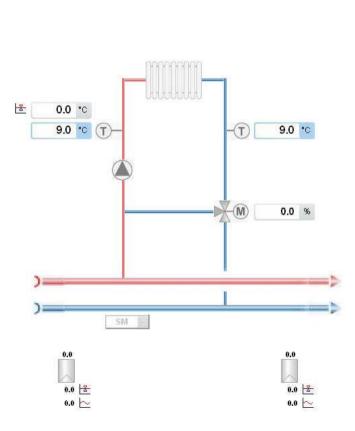
(T)

9.0 °C

**Using templates – Predefined templates** 

### HeatCircuit_T1_Inflow_Controlled_1Pump

- Outdoor temp. sensor
- Inflow temp. sensor
- Returnflow temp. sensor
- Pump
- Valve
- Set point calculated via outdoor temp.
- Inflow temp. controlled
- Returnflow temp. max. controlled



Heating circuit



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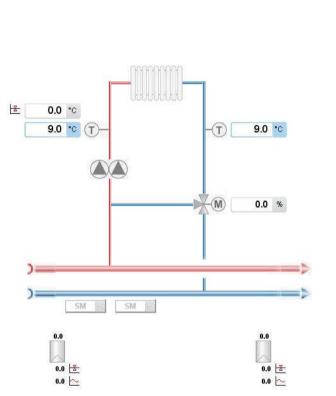
(T)

9.0 °C

**Using templates – Predefined templates** 

### HeatCircuit_T2_Inflow_Controlled_2Pump

- Outdoor temp. sensor
- Inflow temp. sensor
- Returnflow temp. sensor
- 2 Pump
- Valve
- Set point calculated via outdoor temp.
- Inflow temp. controlled
- Returnflow temp. max. controlled
- Automatic pump sequencing



Heating cirquit



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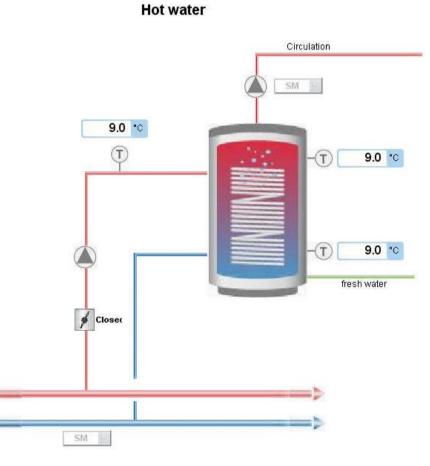
**Using templates – Predefined templates** 

### HotWater_T1_Primary_Uncontrolled_Circulation

- Tank temp. (top) sensor
- Tank temp. (bottom) sensor
- Inflow temp. sensor
- Max. temp. limiter
- Pump
- Valve
- Inflow temp. controlled
- Disinfection

Circulation:

Pump





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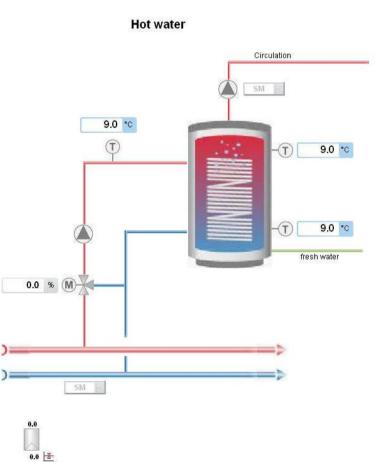
**Using templates – Predefined templates** 

### HotWater_T2_Primary_Controlled_Circulation

- Tank temp. (top) sensor
- Tank temp. (bottom) sensor
- Inflow temp. sensor
- Max. temp. limiter
- Pump
- Flap
- Start/Stop Inflow temp.
- Disinfection

### Circulation:

Pump



0.0 ~



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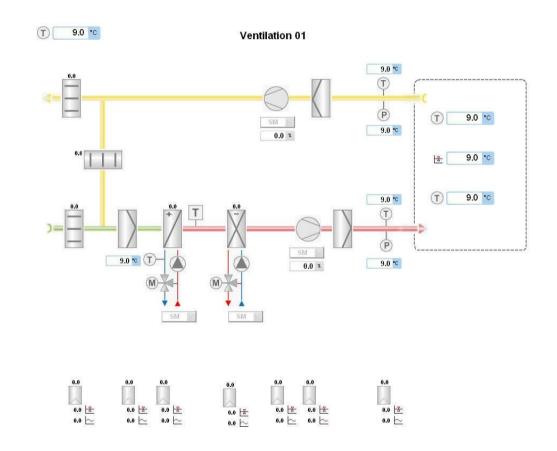
**Control Systems and Componen** 



**Using templates – Predefined templates** 

### AirCondition_T1_PressContr_Master_CoolMixAirHeat

- Outdoor temp. sensor
- Supply air temp. sensor
- Exhaust air temp. sensor
- 2 room temp. sensor
- Room set point correction
- Cooler/Mixed Air/Heater
- Supply/Exhaust fan
- Air condition sequence start
- Master-Sequence cascade
- Heater frost protection
- Summer night cooling
- Room frost protection





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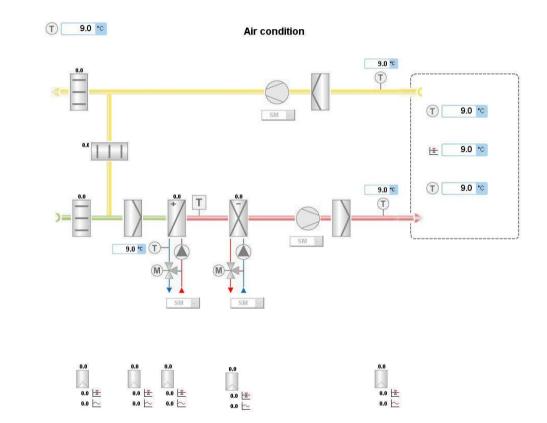
**Control Systems and Compone** 



**Using templates – Predefined templates** 

### AirCondition_T2_1speed_Master_CoolMixAirHeat

- Outdoor temp. sensor
- Supply air temp. sensor
- Exhaust air temp. sensor
- 2 room temp. sensor
- Room set point correction
- Cooler/Mixed Air/Heater
- Supply/Exhaust fan
- Air condition sequence start
- Master-Sequence cascade
- Heater frost protection
- Summer night cooling
- Room frost protection





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PG5 Building Advanced / DDC Suite 2.0
Documentation

# **DDC Suite - Documentation**





DDC Suite FBoxes are object oriented in functionality. Therefore each FBox contains a function, like "Sensor measurement", and all necessary data point.

So it's possible have a clear description with all parameter for a FBox like:

	01_Outdoo	r_1	Гe	m	ıp,	,re	ef;l	Fι	ļŞ	e(	ΞĻ	ļà	rd		
S	ensor	•	·	·								•	•		
Inp	Value-														
1	AlaHigh-		:	:	:	:	:	:	:	:	:	:	:		
	AlaLow-	<u> </u>	:	:	:	:	:	:	:	:	:	:	:		
<u> </u>		· 1	•	·	·	·	·	·	·	·	·	•	•		

Recording of the measurement reading with calibration, filtering and limit value monitoring. The connected analogue value can be upgraded according to the type.

PCD2.W220 NI1000 DIN : The raw score is supplied by the card (standard/analogue module/PCD2.W220) and the physical value calculated here PCD2.W340 NI1000 DIN : The raw score is supplied by the card (standard/analogue module/PCD2.W340) and the physical value calculated here The physical value is already attached at the input contact. Conversion: An arbitrary value (mostly from an active sensor) is converted by means of a linear equation.

The recorded measurement reading can be calibrated by specifying an adjustment. Subsequently, the measurement reading is filtered. The frequency of the measurement reading can be set, the smoothing factor states the allotment, which is included in the new measurement reading in case of a measured value alteration.



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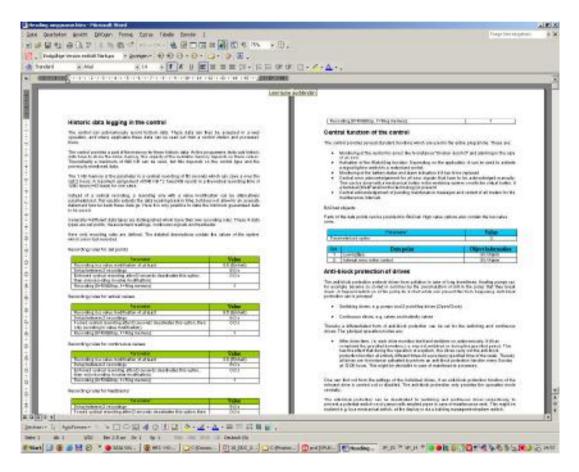


# DDC Suite 2.0 / PG5 Building Advanced

This could be the detailed description from FBox help, but normally this is too detailed or provides too many possibilities how to use the FBox.

The target is to get a documentation file to hand out to the end user or planer with a general description and all useful parameter settings. And this document should be updated on each build to have always an "up to date" description including parameter.

And this document can be used to add some more general information or pictures from Sweb or ViSi.Plus application.







DDC Suite FBoxes are able to do this. Each FBox supports an external file.

• If the file is not present then no documentation is created from this FBox

if the file is found then the definition for documentation is parsed in this file
 So the external file enables the documentation!

### There are 2 kind of files

- files which are parsed from the FBox during build they are not editable
- Source files, editable e.g. with MS Word and saved in HTML format

The first type of files are structured with a strong name convention

- DOC_ declares that this file contains documentation information
- DDC_ identifies that this file is used with DDC suite FBoxes
- "Family_" e.g. Alarming declares the DDC Suite family
- "FBox" e.g. 1Alarm defines the FBox itself
- .src file extension

Example: DOC_DDC_Alarming_1Alarm.src

But you don't have to know all these file names or create them by yourself.





The source files are structured with a strong name convention

- DOC_ declares that this file contains documentation information
- DDC_ identifies that this file is used with DDC suite FBoxes
- "Family_" e.g. Alarming declares the DDC Suite family
- "FBox" e.g. 1Alarm_ defines the FBox itself
- addendum "Main" general part, must exist
- addendum "HDLog" this part contains the description about historic data (optional)
- addendum "Alarm" this part contains the description about alarm data points (optional)
- addendum "BACnet" this part contains the description BACnet data points (optional)
- .src file extension

So one 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)

But you don't have to know all these file names or create them by yourself.

And these source files must be converted into the file the FBox is able to parse during build. This will do the AddOn tool.



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### DDC Suite 2.0 / PG5 Building Advanced

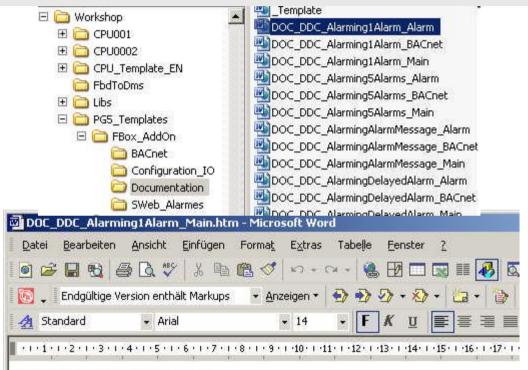
Documentation

You'll find already predefined HTML files in a DDC Suite project in folder "FBox_AddOn" and there in subfolder "Documentation).

It's allowed to edit these files e.g. with MS Word to modify the text, format or colour – but also parameter to be displayed – or not.

There are some special definitions:

- @@&name@@ will display later the FBox property name at this position
- @@&ref@@ will display later the FBox property reference at this position
- @adj_SYMBOL@ displays a parameter (addendum .0p or .1p is the definition if value has to displayed without or with decimal sings)



#### Error signal @@&name@@

Logging of a signal with inversion and optional requirement of acknowledgement.

To prevent ghost signals in case of a fuse failure, a rejection of signal can take place depending on the ass-

Parameter	Value
Normal status of the signal contact (0=NO, 1=NC)	@adj_NoNc.Op@
Requiring acknowledgement (0=No, 1=Yes)	@adj_QuitTyp.Op@
Rejection of failure in case of absent fuse (0=never, 1=always, 2=230 VAC, 3=24 VAC, 4=24 VDC, 5=phase monitor, 6=control voltage)	@adj_SpgGrp.Op@
Associated fuse monitoring	@@&ref@@





After changing the file you must save it – but in a special format.

Select from menu "File&Save as" and select file type "Website, filtered (*.htm).

This will produce a slim HTML file – if you save it as default HTML file type – it won't work!

Speichern in:	Docum	entation 🗾	🗕 - 🖻 🔕 🗡	🛗 📰 🕶 B	i⊻tras <b>*</b>
	Templa	te.htm			C_AlarmingFireDamp
3	DOC_DD	C_Alarming1Alarm_Alarm.htm		DOC_DD	C_AlarmingFireDamp
Verlauf	DOC_DD	C_Alarming1Alarm_BACnet.htm		DOC_DD	C_AlarmingFireDam
( Critical	DOC_DD	C_Alarming1Alarm_Main.htm		DOC_DD	C_AlarmingFrostPro
TAN	DOC_DD	C_Alarming5Alarms_Alarm.htm		DOC_DD	C_AlarmingFrostPro
	DOC_DD	C_Alarming5Alarms_BACnet.htm		DOC_DD	C_AlarmingFrostPro
Eigene Dateien	DOC_DD	C_Alarming5Alarms_Main.htm			C_AlarmingHystere:
	DOC_DD	C_AlarmingAlarmMessage_Alarm.h	itm	DOC_DD	C_AlarmingHystere:
		C_AlarmingAlarmMessage_BACnet			C_AlarmingHystere
	DOC_DD	C_AlarmingAlarmMessage_Main.ht	m	DOC_DD	C_AlarmingMotorDr
Desktop	DOC_DD	C_AlarmingDelayedAlarm_Alarm.ht	tro	and the second se	C_AlarmingMotorDr
	and the second se	C_AlarmingDelayedAlarm_BACnet.		the second se	C_AlarmingMotorDr
*	DOC_DD	C_AlarmingDelayedAlarm_Main.htr	n		C_AlarmingMotorDr
					)
Favoriten	Seitentitel:	Heading @&name@	1	1	
	Jeicendeen	riedding @diname@	Titel änd	ern	-
	Dateiname:	DOC_DDC_Alarming1Alarm_Main.	htm	-	Sgeichern
÷	Datei <u>t</u> yp:	Webseite (*.htm; *.html)		-	Abbrechen
		Word-Dokument (*.doc) Webseite (*.htm; *.html)			
		Webseite, gefiltert (*.htm; *.html	))		
		IWab Orchin (* robt) * robtrol)			
		Web Archiv (*.mht; *.mhtml) Dokumentvorlage (*.dot)			





After modifying the source files to your belongings we have to combine the (up to) 4 source files into the *.SRC file which is used from the FBox.

These source files must be converted into the file the FBox is able to parse during build. This will do the DDC AddOn tool.

Start the *.ddc Addon tool by double clicking on it.







The DDC-Suite Addon will be started.

First we have to define where the source files – HTML files – are located.

Click on browse button and navigate to your project, subfolder "FBox_AddOns" and there "Documentation".

ile Tools Help	
BACnet Creates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.	
Force Update (Clear the content of 'BACnet.bnt' before the update)	
Open Log file	
Device path:	Generate
:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Projects\Citywin Lüftung\CPU001_Citywin	
HTM Doc-	
Reads the HTML documents from document directory and creates the .SRC files in the device directory.	
Document directory:	Generate
gs\All Users\Saia-Burgess\PG5_20\Projects\Workshop\PG5_Templates\FBox_AddOn\Documentation	Browse



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## DDC Suite 2.0 / PG5 Building Advanced

**Documentation** 

Then click on button "Generate". This may take some seconds – the tool has to combine the (up to) 4 HTML files per FBox into 1 SRC file and save it in a special format.

If no MessageBox occurs and the success text in the status strip occurs, the created SRC files should appear in the device folder.

If Conversion Error occurred: One of the document files may be write-protected.

Now start a "Rebuild all" in PG5 project manager.

BACnet	
Creates the 'BACnet.bnt' file using the 'DDC_BACnet.bnt'.	
Force Update (Clear the content of 'BACnet.bnt' before the update)	
Open Log file	
Device path:	Generate
:\Documents and Settings\All Users\Saia-Burgess\PG5_20\Projects\Citywin Lüftung\CPU001_Citywin	
HTM Doc	
Reads the HTML documents from document directory and creates the SRC files in the device directory.	- Free
Document directory:	Generativ
gs\All Users\Saia-Burgess\PG5_20\Projects\Workshop\PG5_Templates\FBox_AddOn\Documentation	Browse



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## DDC Suite 2.0 / PG5 Building Advanced

**Documentation** 

Open the document with a double click – by default it will be displayed with your default browser.

🖃 🞑 CPU0002 - PCD3.M55	4U - 3-DI	us sen e	D2	
🖓 🖓 Online Settings				
🖃 🧰 Program Files				
.\WEB\SWeb.prj				
BACnet.bnt				
DDC_Alarming.C	5V			
DDC_BACnet.bn				
DDC_DI_DO_List		2 3	2 2	
		2.3	Ent	
Heading amp;name -   SAIA-BURGESS MURTEN   M	icrosoft®Inter	netExplorer		
Eile Edit View Favorites Iools Help				
🕤 Back + 🕥 + 💌 🔰 🎧 🔎 Search 🌱	😽 Favorites 🧹	8 🖂 ·		8
ddress 📴 C:\Promos14\proj\DDC_Suite_V2_T5_EN_AirCo\p	icd\CPU002\DDC	_Documentatio	n.htm 🗾 🔁 G	io Links
Historic data logging in the cont	rol			
The control can autonomously record historic data. and where applicable these data can be read out fro				eration,
Not be considered a considered on a finite of the second first considered at the constitution of the const				
The control provides a part of the memory for thes data have to share the same memory, the capac Theoretically a maximum of 640 KB can be used, b mentioned data.	ty of the avail	able memory	depends on these	values.
The 1 KB memory is the parameter in a cyclical re hours. A maximum assignment of 640 KB * 2 ho hours (=53 days) for one value.				
Instead of a cyclical recording, a recording o parameterised. This usually extends the data reac statement how far back these data go. Here it is o be saved.	hing back in t	ime, but doe	es not allow for an a	accurate
Generally 4 different data types are distinguished types are set points, measurement readings, contin				e 4 data
Here only recording rules are defined. The detailec are in fact recorded.	descriptions	contain the	values of the syster	n which
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 (O seconds de then only recording in value modification)	eactivates this	option,	0.0 s	
Recording (0=Fill&Stop, 1=Ring memory)			1	
Recording rules for actual values				





**Documentation** 

You'll see that the FBox property name is also displayed and all the basic parameter (grey table).

Additional – depending on parameterized features – you'll also see

- alarm information (orange table)
- historic data definition (green table)
- BACnet configuration (blue table)



#### 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	
RAC net ahierts		
Done	My Co	mputer





If you like to edit this file we have to save it once from MS IE.

MS IE displays all parts from all FBoxes – MS Word will only display the first FBox part ....

So we have to do a "save as".

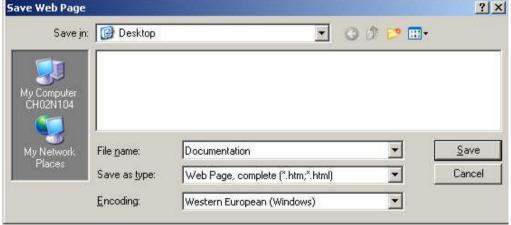
Just save it at desktop as "Documentation" with type "Web Page complete", close MS IE and open the saved file with MS Word – or your preferred word processor.



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PG5 Building Advanced / DDC Suite 2.0
Documentation

# **System description**





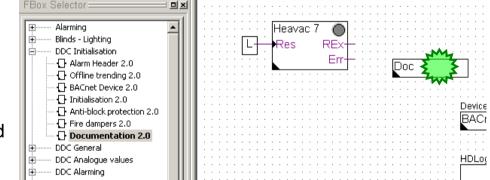
Now you can add some general text like

### Aircondition

This air condition is controlled by room temperature sensor an uses cooler, mixed air and preheater ....

If you like to generate such general description with Fupla you have to use the special FBox "Documentation" – located in family "DDC Initialization".

Open Fupla, first page from "COB General" and place FBox on page.





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# DDC Suite 2.0 / PG5 Building Advanced

This FBox supports up to 20 user defined documentation files – they are already existing in folder with HTML files and named

DOC_DDC_UserModule(1..20)_Main.htm

User module 1 is already used for a general description about the format. Let's see what happens.

Select "No.1", save and build program.

Properties	2 Marry	Ψ×
DC Initialisation:Documenta	ation 2.0	-
₽ ₽↓ >>		
General		
(Name)	documentation	M
Comment		E S
Adjust Parameters		
Documentation macro	<b>y</b> 6. 1	1
Advanced Info	No. 1	
Name	No. 2	
Macro Name	INg. 3	
DOC_DDC_UserModule		
	ype: HTML Document	
DOC_DDC_UserMod D	ate Modified: 05.02.2009 09:32	
DOC_DDC_UserModule		1
DOC_DDC_UserModule	사람이 가 집중 옷이 있다. 같은 것은 것 같은 것이 같은 것이 같은 것이 같은 것이 같이 있다. 것이 같은 것이 같은 것이 같은 것이 같은 것이 같은 것이 같은 것이 같이 있다.	
DOC_DDC_UserModule		
	anallum unun	



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## DDC Suite 2.0 / PG5 Building Advanced

**Documentation** 

Open file DDC_Documentation.htm and you'll see that a new description (user module 1) has been added at this position.

If you use this mechanism in front of each system (e.g. first page of AC01, first page of HC01 ... and so on) then you are able to insert a general description for the different systems and you only have to add then some pictures into the document.

•		
Nomenclature in the documentation -   SAIA-BURGESS MURTEN   Mi	icrosoft®InternetExplorer	
e <u>E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp		
) Back + 🕗 + 🖹 💈 🏠 🔎 Search 🤺 Favorites 🤗	) 🖾 • 😓 🚾 • 🔜 🚷	
dress 🕎 C:\Promos14\proj\DDC_Suite_V2_T5_EN_AirCo\pcd\CPU002\DDC_Du	ocumentation.htm	💌 🛃 Go 🛛 Links 🌺
Iomenclature in the documentation his documentation is a copy of the programmed functions in a pla escribed and the parameters as well as optional capabilities like fo		
ont 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	
General parameters of the function, e.g. limit value, set po	ints. These tables have a table headin Value	ng in grey colour.
Designation	Value	
<ul> <li>Data points that are autonomously and historically logged colour.</li> </ul>	in the control. These tables have a ta	ble heading in green
Reserved memory	0 KB	
&nb		
Alarm data points that are integrated in an alarm manage colour.	ement in the control. These tables hav	ve a table heading in orange
Alarm designation	Number	
Data points that are provided by the control as BACnet ob	jects. These tables have a heading in	
		blue colour.
Opt. Data point	Object inform	
Opt. Data point		
listoric data logging in the control		







PG5 Building Advanced / DDC Suite 2.0 Dokumentation

# **I/O Allocation**





Dokumentation

As you remember we can assign the digital I/O's online in the adjust parameters of the Fbox.

But how can we get an overview which I/O is used by which Fbox?

Properties		<b>4</b> >
DC Alarming:Control voltages 2.0		
General		
(Name)	FuseGuard	1
(name)	1 330 333 13	
Comment		
Adjust Parameters		
System functions		
PCD Alarm administration (Inde	0	
BACnet	No	
🖃 Parameter		
Start up delay (s)	2.0	
🖃 230 VAC		
Digital input	0	
Normal input state	opened	
Acknowledgement mandatory	No	
🖃 24 VAC		
Digital input	1	
Normal input state	opened	
Acknowledgement mandatory	No	
🖃 24 VDC		
Digital input	2	
Normal input state	opened	
Acknowledgement mandatory	No	
🕞 Phase watch		
Digital input	3	
Normal input state	opened	
Acknowledgement mandatory	No	
Alarm 230 VAC/24 VAC/24 VDC	Yes	
🖃 Control voltage		2

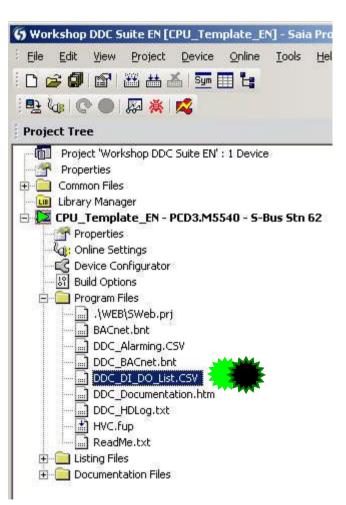




After a build you can see the I/O allocation in the following file.

DDC_DI_DI_List.csv

You can double click it to view it with MS Excel







**Dokumentation** 

In this file you see the following info

- •Name of Datapoint
- Type digital I/O
- Adress digital I/O
- Fbox Property Name
- Name of Fbox
- Family of FBox

				Properties			Ŧ
			DE	DDC Alarming:Control voltages 2.0			
ollowing informations:							
				General			
					FuseGuard		
			(Name)		Tuseduaru		
	$\mathbf{N}$			Comment			
			9	Adjust Parame	eters		
	$\setminus$ $\setminus$			🗉 System fund	ctions		
$\langle \langle \rangle$			PCD Alarm administration (Inde		0		
	$\backslash \backslash$			BACnet		No	
			🗉 Parameter				
$\land$ $\land$ $\land$ $\land$			Start up delay (s)		2.0		
$\langle \langle \rangle \rangle$			E 230 VAC				
		$ \land \land \land$		Digital input		/ 0	
				Normal input s		opened	
$\land$ $\land$ $\land$ $\land$ $\land$			Acknowledgement mandatory		No		
	$\mathbf{N}$			□ 24 ¥AC			
				Digital input		1	
			$\setminus$ $\setminus$ $\setminus$	Normal input s		opened	
					ment mandatory	No	
$\mathbf{N}$							
		$\land$		Digital input		2	
	A	в	C	Normal input s	state	opened	
1		FBox	Name	Adresse Typ		140	
2		Initialisierung	PCD_Ueberwachung		Reset-Knopf	/ 3	
						opened	
3		Initialisierung	PCD_Ueberwachung	-1 70		No	
4	Störungen	Steuerspannungen		0 D	230 VAC	Yes	
5	Störungen	Steuerspannungen		1 DI	24 VA2		
6	Störungen	Steuerspannungen		2 DI	24 VDC		
7	Störungen	Steuerspannungen	A state of the sta	3 01	Phasenwächter		
8	Störungen	Steuerspannungen	FuseGuard	4 DI	Steuerspannung		
9							







PG5 Building Advanced / DDC Suite 2.0 DDC Suite and ViSi.Plus

# **ViSi.Plus**







### **DDC Suite 2.0 / PG5 Building Advanced** Syntax and remarks of actions during workshop

Please follow the teachers advice.

Please:

- use the same symbol names
- use the same group names
- place the FBoxes approx. at the same position
- do not work faster or different even if you are a "frequent 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
- must be a super programmer

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





Syntax and remarks of actions during workshop



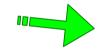
Click with left mouse button at this position



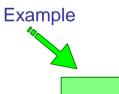
Double-click with left mouse button at this position



Click with right mouse button at this position



Follow the green arrow to next step



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

Watch this area



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PG5 Building Advanced / DDC Suite 2.0 DDC Suite and ViSi.Plus

# **Installation of Visi.Plus**



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Start installer setupvp_1.5.1.18.exe (version number may differ in case of newer versions) and select language.

A password must be typed in to go on. (must be in small letters)







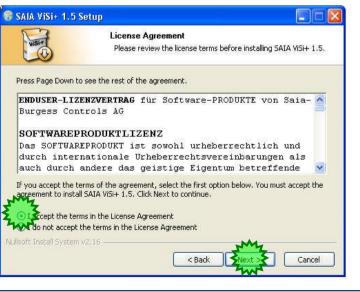




Click on "Welcome ..." dialog at button Next to continue



Select option I accept the terms in the License Agreement and click on button Next.







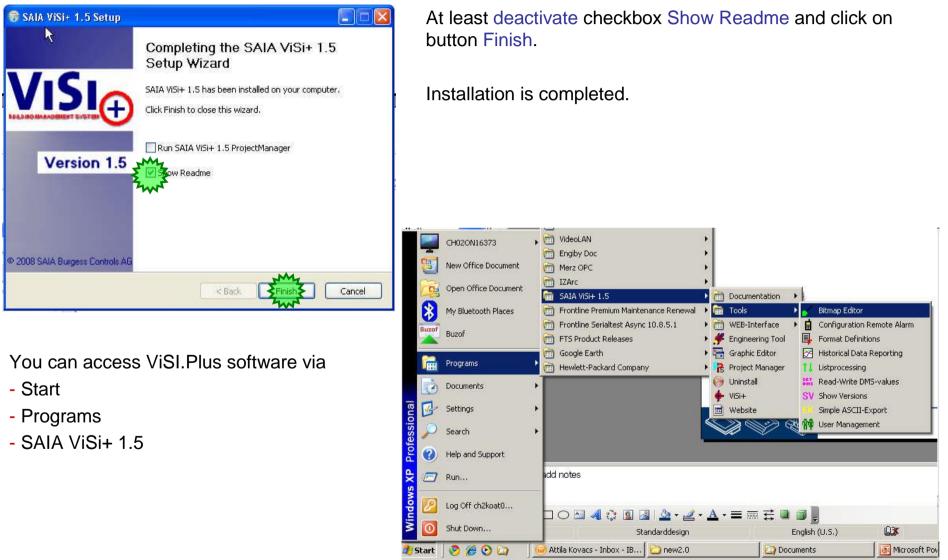
#### Use option Automatic (predefined) and click on button Next.

🗟 SAIA ViSi+ 1.5 Setu	p 🔲 🗖 🔀	😽 SAIA ViSi+ 1.5	Setup			
45 With	Installation Type Please select the installation type, then click Next to proceede with the install.	THE STREET	<b>Installing</b> Please wait whi	ile SAIA ViSi+ 1.5 is being installe	ed.	
Select Install Automa Custom Nullsoft Install System v2.16	atic All program features will be installed. n Select program features you want to install and their installation folder. Recommended for experienced users.	Extract: SaveW Output folder: c Extract: Handbu Extract: Promos Extract: Promos Extract: Promos Extract: Newes Extract: Neweru Extract: User m Nullsoft Install Syste	J.exe 100% ver.exe 100% eb.exe 100% SAIA VISI+ 1.5 Se Completed Completed Create shortcut: C: Create shortcut: C: WriteRegStr HKLM: WriteRegStr HKLM: WriteRegStr HKLM: WriteRegStr HKLM: WriteRegStr HKLM: WriteRegStr HKLM:	etup Installation Complete Setup was completed su Setup was completed su Setup was completed su Setup was completed su Softwarel Microsoft Windows (C Softwarel Microsoft Windows (C	successfully; ers\Desktop\SAIA ViSi+ ers\Desktop\SAIA ViSi+ ers\Desktop\SAIA ViSi+ currentVersion\Dninstall; CurrentVersion\Uninstall; CurrentVersion\Uninstall; CurrentVersion\Uninstall; CurrentVersion\Uninstall;	1.5\Tools\ 1.5\Tools\ \SAIA VISI \SAIA VISI \SAIA VISI \SAIA VISI \SAIA VISI
	When finished click on button Nex	ĸt.	Nullsoft Install System va		< Back	Cancel



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## DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

Or via file explorer within C:\ProMosNT.

ProMos is the product name from developer MST (Müller System Technik / Belp – near Bern)

File Edit View Favorites Tools Help				
🕝 Back 🔹 🕥 🖌 🏂 🔎 Search 🌔 Folders	•			
Address 🛅 C:\PromosNT				💌 🔁 Go
Folders ×	Name 🔺	Size	Туре	Date Modified
Desktop          My Documents         My Computer         My Computer         Documents         Documents and Settings         DriveKey         Drivers         FKeySMTP         Drogram Files         PromosNT         backup         Din         Cfg         In         P15         Proj	backup bin cfg hlp P15 proj InstLog.txt ReadMe.txt SAIA VISI+ SetupReleaseNotes.pdf wuninst.exe	19 КВ 44 КВ 1 КВ 174 КВ 76 КВ	Text Document Internet Shortcut Adobe Acrobat Doc	02.02.2011 06 15.02.2011 06 02.02.2011 06 02.02.2011 06 02.02.2011 06 02.02.2011 06 02.02.2011 06 06.12.2010 16 02.02.2011 06 06.12.2010 16
🗄 🧰 PromosNT_EE	•			•

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



In XI





PG5 Building Advanced / DDC Suite 2.0 DDC Suite and ViSi.Plus

# Start up



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# DDC Suite 2.0 / PG5 Building Advanced

I recommend to access ViSi.Plus modules via file explorer or if you work often with ViSi.Plus create some desktop shortcuts.

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.





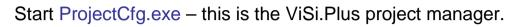


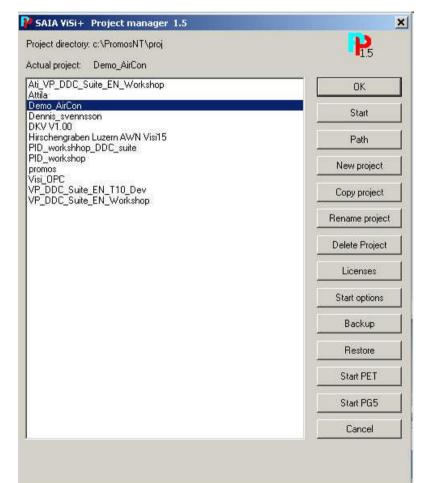


Help	
arch 🔀 Fold	ters .
arch 100 Fold	Jers
	💌 🄁 Go
Size	Туре 🔺 🔄
2'136 KB	Application
408 KB	Application
1'232 KB	Application
604 KB	Application
228 KB	Application
548 KB	Application
420 KB	Application
552 KB	Application
308 KB	Application
232 KB	Application
444 KB	Application
1'284 KB	Application
	Size 2'136 KB 408 KB 1'232 KB 604 KB 228 KB 548 KB 420 KB 552 KB 308 KB 232 KB 444 KB

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 for PG5 or PET (data base from ViSi.Plus)









PG5 Building Advanced / DDC Suite 2.0 DDC Suite and ViSi.Plus

# Creating a new project





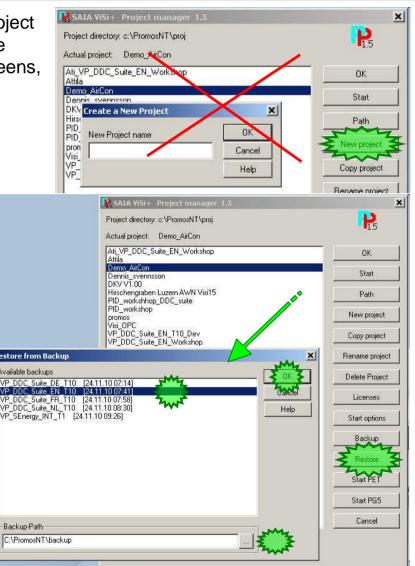
A new ViSi.Plus DDC Suite project could be started within project manager via "New project ". But then the user has to integrate manually all he'd like to use, e.g. HMI, BACnet, graphics, screens, pictures and so on.

We recommend to start a new project via "Restore", that means we are using a predefined DDC Suite template projects where a lot of settings or pages, templates are already prepared.

Therefore those template projects include everything what can be used in a project, e.g. FBox libraries, Fupla template pages, SWeb template objects

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 updated with 3rd party libraries and backup-ed as new template project.







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 ...

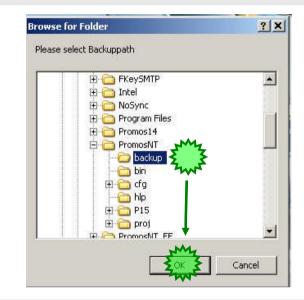
First we have to select the folder wherein the templates are available and click on button OK.

From Visi.Plus version 1.5.1.18 the VP_DDC_Suite_XX_YY templates are available the backup folder of PromosNT (C:\PromosNT\backup)

(Get the newest templates from SBC Support HomePage <u>www.sbc-support.ch</u> within Software/PG5/DDC Suite)

Now you'll see in list Available backups all project templates. Select a project and press "OK" and the template project will be used as base for our Workshop project.

(DDC_Suite_V2_T2_ViSiPlus_International_VER_08.10.08 16.27.zip)



estore from Backup	×
vailable backups	J J IK Z
VP_DDC_Suite_DE_T10. [24.11.10 07:14] VP_DDC_Suite_EN_T10 [24.11.10 07:41] VP_DDC_Suite_FR_T10 [24.11.10 07:58] VP_DDC_Suite_NL_T10 [24.11.10 08:30] VP_SEnergy_INT_T1 [24.11.10 09:26]	Carcel Help
Backup-Path	



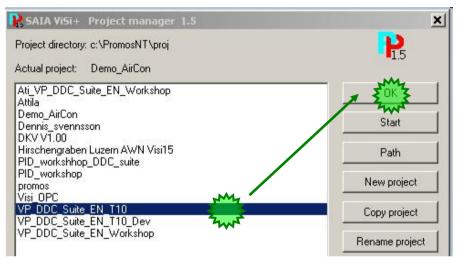


After restoring the template project just select it in project list and click on button OK.

The project manager will terminate and nothing else happens. By clicking on button OK we just define the selected project as default project ViSi.Plus will work with when we start manually some modules.

Of course this is not the way the end user has to start ViSi.Plus! Therefore we have a project starter modules which will start all necessary modules in a defined way.

I recommend to use the method I show for engineering – because is more comfortable.

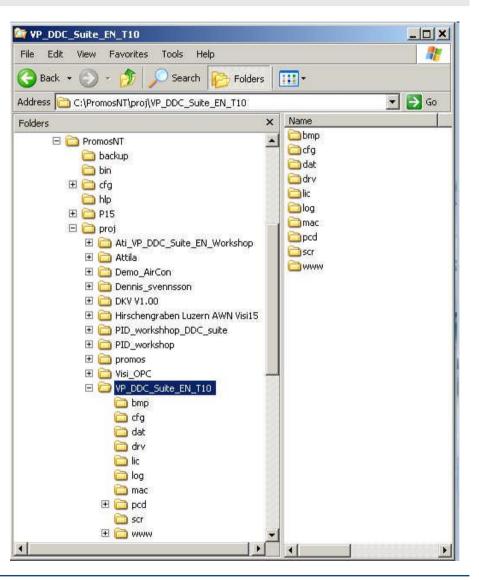






If we have a look into our workshop project (use Windows File Explorer) we'll see that already some folders are included:

- bmp: all BMP or GIF 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

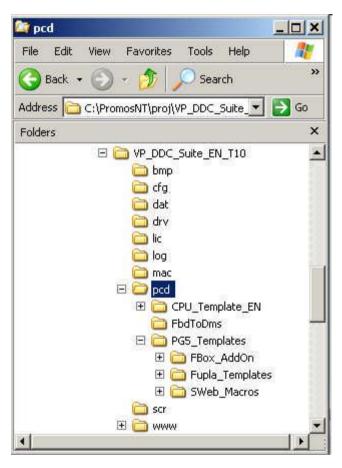






If we have a look into the folder pcd we'll see that already a complete PG5 project is embedded:

- CPU-Template : a CPU template which should be used for each new CPE we have to add in this project. (When you open PG5 2.0 this template is shown in red colour to indicate that it is read only.)
- FbdToDms : Containing some information if a ViSi.Plus SCADA system should be used
- FBox_AddOns : Containing some files for some language depending definitions and also some additional features
- FBox_Libraries :Change! See next chapter "FBox libraries" in Guideline "DDC Suite Fupla"
- Fupla_Templates : here you'll find some predefined Fupla pages or systems, to be imported into Fupla
- Sweb_Objects : Graphical objects and adjust objects (pages) for SWeb applications designed with SWebEditor.









Why?

A ViSi.Plus project does not only contain some pictures and graphics – it should also contain the PG5 project itself because ViSi.Plus can get 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 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 pcd within pcd folder. If you rename the PG5 project ViSi.Plus cannot find the PG5 project anymore – this is a hard restriction.







PG5 Building Advanced / DDC Suite 2.0 DDC Suite and ViSi.Plus

# **Basic settings**



Control Systems and Components



## DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

Start module dms.exe from C:\ProMosNT\bin folder. DMS is the shortcut for Data Management System – the core of ViSi.Plus. Without running DMS you're not able top start other modules – they try to connect a DMS in any way (DMS can also run in network 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 the dialog at right border.

For testing or engineering you do not need an official 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.

Or you can have PG5 2.0 license which has Visi.Plus Engineering Edition license too. In this case Visi.Plus needs to be restarted once per day and all modules are enabled.

DMS is a service and you normally don't have to interact with this module itself. You'll see 2 bullets in task bar notification area: -Red one is the DMS itself – this is the RAM based data base -Green one is the PDBS - this is the disk drive based data base

	LIMY	
🐓 dms.exe 髦 🚬	1'016 KB	Application
ESPADRIVER.exe	516 KB	Application
ge.exe Descript	ion: ProMoS NT Data Management	System tion
HDAMng Company	y: MST Systemtechnik AG	tion
Logger. File Vers	ion: 1.5.1.116	tion
MalmCfg Size: 0.9	eated: 06.12.2010 09:42 99 MB	tion
MalmMng.exe	000 KD	Application



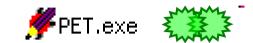






Now we can start pet.exe. PET is a shortcut for Process Engineering Tool.

When starting PET first time after installation it will ask for a PLC-driver. Select the entry SDRIVER.PET.





Finally you see PET application.

PET - Process Engineering Tool (SAIA ViSi+) 1.4	
Eile Edit Templates Options SAIA-PG5 View About	
	?
Description	DMS-name Object type
Process-objects   Detail view   Digital Signals	
Press F1 to get help 5	howing templatetype   Filter: CPU02 //



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File Ed

G

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 2.0 and finish by clicking on button OK.

- Process Engineering t Templates Options	AIA-P55 View About		_
+ - / <u>#</u> <u></u>	Project Manager SPM Create new PLC Create new PG5-file		
D	Import Labels	name	Object
	Generate ressources for AWL/IL (.src)         Generate ressources for FUPLA (.rxp)         Code Generator PCD (Only one PCD)       F7         Code Generator PCD (All PCD)       F8         Function Generator       PLC-PLC-Communication		
	Options PG5	Import Set	tings
	Export Options	Settings IL	
	Version PG5	PG5 Version	×
	Promos Communication Driver PG5 Version 2.0		
	• · · · · · · · · · · · · · · · · · · ·	L Cance	1
	SAIA Communication Driver	_	
	PG5 Version 2.0		







PG5 Building Advanced / DDC Suite 2.0 DDC Suite and ViSi.Plus

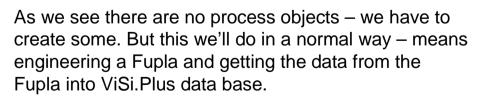
# **Preparation**





OK – basic preparations finished. What we can see in PET:

- symbol bar with icons with PG5 connectivity
- tab Process objects where all objects from data base are listed



Therefore just click on symbol PG5

PET - Process Engineering Tool (SAIA ViSi+) 1.5	
File Edit Templates Options SAIA-PG5 View About	
	8
Description	DMS-name
	-
Cetail view A	Ľ
ress F1 to get help	Ľ
PET - Process Engineering To	Ŀ
rress F1 to get help	
File Edit Templates Options SA	<u>•</u>
PET - Process Engineering To	<u>•</u>
File Edit Templates Options SA	





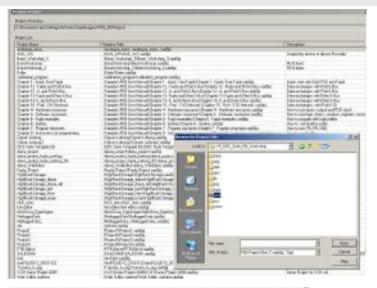


PET will start the PG5 project manager.

We have to select the desired project PCD within the ViSi.Plus project in Project/ Open

Back to Guideline "DDC Suite Using Templates":

Back to PET.



🗿 pcd [CPU_Example] - Saia Project Manage	r 5P2.0.	<u>-   ×</u>
<u>File Edit View Project Device Online</u>	<u>T</u> ools	Help
🖳 🕼 🕐 🕘 🖾 🎘 🗖		
Project Tree		ąх
<ul> <li>Common Files</li> <li>Library Manager</li> <li>CPU_Example - PCD3.M5540 - S-Bus S</li> <li>CPU_Template_EN - PCD3.M5540 - S-Bus St</li> <li>Office - PCD3.M5540 - 192.168.12.62, S-Bu</li> <li>Online Settings</li> <li>CDU: Online Settings</li> <li>Device Configurator</li> <li>Build Options</li> <li>Program Files</li> <li>Listing Files</li> <li>Documentation Files</li> </ul>	n 62	





PG5 Building Advanced / DDC Suite 2.0 DDC Suite and ViSi.Plus

# **Importing data from Fupla**



saia-burgess

**Control Systems and Components** 



Be aware that at least the Fupla has been compiled – I recommend to build the program successfully. During compile or build a file is created which is necessary for ViSi.Plus import functionality!

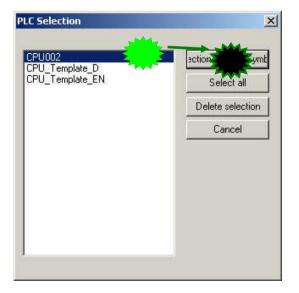
Select from menu SAIA-PG5 entry Import Labels.



**Control Systems and Compone** 

sala-burgess

In next dialog you see that ViSi.Plus also knows all CPU's in PG5 project. Select CPU002 from list and click on button Selection for PG5 Symbols.







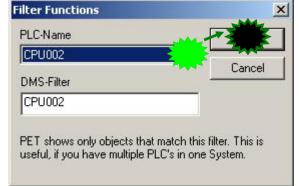
A progress dialog is shown and ViSi.Plus is parsing a file in PG5 project in CPU002 to find all DDC Suite FBoxes and the depending group structure.

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.

# Import PG5 Symbols X Durchsuche: CPU002_Global.sy5 Import: CPU002.AC01.SupplyAir.Filter.Monitoring.Verzoegerung









Now we see that PET imported 81 process objects.

If you'd like – count the DDC Suite FBoxes (with internal data) in Fupla – and you'll count 81 FBoxes.

In fact – PET handles DDC Suite FBoxes as object – not as single data points.

	+ - / 🗰 🖬 🔏 🖻 🛱	14 🗉 🔋 <u>G</u> 🚟 🖺 🖳 💥			
	Description	DMS-name	Object type	Scheme	
57	HC04 System Status	CPU002:HC04:System:Status	vloAmpel		_
58	HC04 System HeatPeriod	CPU002:HC04:System:HeatPeriod	DdcSpGener21	9	
59	HC04 System Mode	CPU002:HC04:System:Mode	DdcEnHeatc21	[	
0	HC04 Outdoor Temperature Sensor	CPU002:HC04:Outdoor:Temperature:Sensor	DdcAnGener21	9 2 - 10 - 10 - 10 - 10 - 10 - 10 - 10	
51	HC04 Inflow Temperature Sensor	CPU002:HC04:Inflow:Temperature:Sensor	DdcAnGener21	9	
32	HC04 Inflow Temperature Tolerance	CPU002:HC04:Inflow:Temperature:Tolerance	DdcAlGener27	9	
33	HC04 Inflow Temperature Controller	CPU002:HC04:Inflow:Temperature:Controller	DdcReContr21	9	
64	HC04 Inflow Pump Alarming	CPU002:HC04:Inflow:Pump:Alarming	DdcAlMotor21	9	
5	HC04 Inflow Pump Control	CPU002:HC04:Inflow:Pump:Control	DdcCoPump21		
6	HC04 Returnflow Temperature Sensor	CPU002:HC04:Returnflow:Temperature:Sensor	DdcAnGener21		
37	HC04 Returnflow Temperature Controller	CPU002:HC04:Returnflow:Temperature:Controller	DdcReLimit21		
8	HC04 Returnflow Valve Control	CPU002:HC04:Returnflow:Valve:Control	DdcCoValvd21		
9	HC05 System Manual	CPU002:HC05:System:Manual	DdcGeManua21		
0	HC05 System Status	CPU002:HC05:System:Status	vloAmpel		
9	HC05 System HeatPeriod	CPU002:HC05:System:HeatPeriod	DdcSpGener21		
2	HC05 System Mode	CPU002:HC05:System:Mode	DdcEnHeatc21		
3	HC05 Outdoor Temperature Sensor	CPU002:HC05:Outdoor:Temperature:Sensor	DdcAnGener21		
4	HC05 Inflow Temperature Sensor	CPU002:HC05:Inflow:Temperature:Sensor	DdcAnGener21		
'5	HC05 Inflow Temperature Tolerance	CPU002:HC05:Inflow:Temperature:Tolerance	DdcAlGener27		
6	HC05 Inflow Temperature Controller	CPU002:HC05:Inflow:Temperature:Controller	DdcReContr21		
7	HC05 Inflow Pump Alarming	CPU002:HC05:Inflow:Pump:Alarming	DdcAlMotor21		
8	HC05 Inflow Pump Control	CPU002:HC05:Inflow:Pump:Control	DdcCoPump21		
9	HC05 Returnflow Temperature Sensor	CPU002:HC05:Returnflow:Temperature:Sensor	DdcAnGener21		
30	HC05 Returnflow Temperature Controller	CPU002:HC05:Returnflow:Temperature:Controller	DdcReLimit21		
31	HC05 Returnflow Valve Control	CPU002:HC05:Returnflow: Valve:Control	DdcCoValvd21	1	-



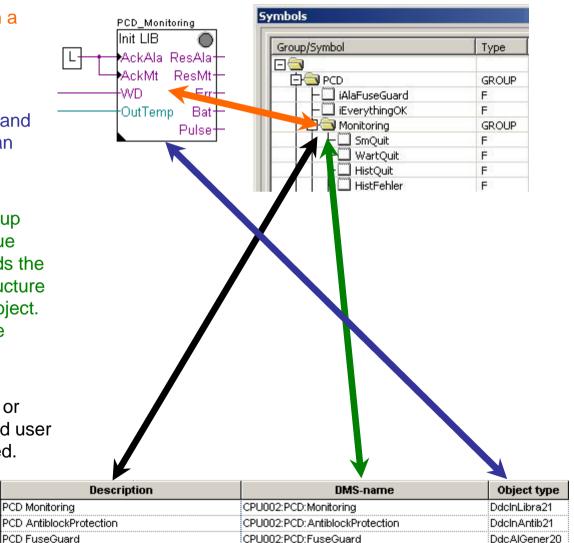


1. Each FBox has corresponding symbols in a group structure. Here it's PCD.Monitoring.

2. PET identifies during import FBox InitLIB and thru import rules PET creates in data base an object of type DdcInLibra21.

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 is write protect.

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.









Click at tab Detail view to get more details of the objects (you also can say FBoxes).

Scroll down to line 70. This should be the almost top line.

As you can see this is the FBox with group structure

AC01 ExhaustAir Temperature Sensor

		ew About
G	🚟 🔛 🖻 🖳 👗	
	Description	DMS-name
152	AC01 ExhaustAir Temperature Sensor	CPU002:AC01:ExhaustAir:Temperatur
153		
154		
155		
156		
157		
158		
159		
158 159 160 161	-	



Adj	ust Window	+				Ф
	🗪 😭 🕌 Edit Data	+				
	Description	Online Value	1	1	Modify Value	Static Symbol
•	DDC Analogue values: Sensor 20					
	🛱 🖏 Sensor			1		
t i	Card type	Conversion	+	$\rightarrow$		HeatCirc.Inflow.Temperature.Sensor.ConvType R
	Physical Value (corrected)	75.0				HeatCirc.Inflow.Temperature.Sensor.PhysVal R
		0.0	+	$\rightarrow$		HeatCirc.Inflow.Temperature.Sensor.Correction R
	🛱 🖧 Filtering					
	Smoothening of scanning Sec.	1.0	-	-		HeatCirc.Inflow.Temperature.Sensor.ScanTime R
	Smoothing factor	10	-	$\rightarrow$		HeatCirc.Inflow.Temperature.Sensor.ScanFact_R
	🔁 🖧 Conversion					
	Physical. Value min.	5.0	+	$\rightarrow$		HeatCirc.Inflow.Temperature.Sensor.PhysVaIY1_R
	Physical. Value max.	120.0	+	$\rightarrow$		HeatCirc.Inflow.Temperature.Sensor.PhysVaIY2_R
	🛛 🚽 🛶 raw input value min	-10000	+	$\rightarrow$		HeatCirc.Inflow.Temperature.Sensor.RawValX1_R
	🛛 🚽 🖃 raw input value max	10000	+	$\rightarrow$		HeatCirc.Inflow.Temperature.Sensor.RawValX2_R
	Message suppression	for appl. vltg.	-	$\rightarrow$		HeatCirc.Inflow.Temperature.Sensor.VoltGrp_R
	占 🛶 🖏 Alarm limit values					
		100.0	-	-		HeatCirc.Inflow.Temperature.Sensor.LimHigh R
	🕂 📲 status	Ok				HeatCirc.Inflow.Temperature.Sensor.AlaLimHigh F
	Low limit	10.0	+	$\rightarrow$		HeatCirc.Inflow.Temperature.Sensor.LimLow R
	🕂 🛥 status	Ok				HeatCirc.Inflow.Temperature.Sensor.AlaLimLow F

You see that all symbols from a FBox are also in PET available.

And thru the import rules they get in PET automatically a default trending or alarming definition.

That means by importing you get automatically additional predefined options in ViSi.Plus.

22	E- Brown HeatCirc								predefined optior in ViSi.Plus.	
	Ē	Controller	_	ļ	IrendYMin	[Trend Signal minimalwer]	FLI	į <b>U.UUU</b>	<u> </u>	
	الساب	 	HeatCirc Inflow Temperature Se	Office:HeatCirc:Inflo	AlaLimHigh	<ol><li>Alarm Value bigger t</li></ol>	BIT	OFF	SOCKET F4648	📿 Alarm
	$\square$	🗕 🔷 ConvType			AlaLimLow	(1) Alarm Value less tha	BIT	OFF	SOCKET F4649	📿 Alarm
		— 🔷 LimHigh				(5) Selection of the con	FLT	0.000	SOCKET R2475	
_		-      PhysVal		Correction	(5) Correction value in p		0.000	SOCKET R2476	,	
		— ∳ RawVa⊠2 — ∳ LimLow			Einheit		STR	•C		
		← ◇ LIMLOW ← ◇ ScanTime	-							
		-   Correction			Einheit2		STR	rF		
		AlaLimHigh			LimHigh	<li>(4) High limit, for passiv</li>	FLT	0.000	SOCKET R2477	
		VoltGrp			LimLow	(4) Low limit, for passiv	FLT	0.000	SOCKET R2478	
		— ♦ RawVa⊠1		·						
		— 🔷 AlaLimLow								
		— 🤣 ScanFact								
_		— 🔷 PhysValY1								
		— 🔷 PhysVaM2								



Symbol Name





To make it clear:

- 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 ig they produce a data overhead in Fupla – you never have to parameterize those functionalities

- 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!





PG5 Building Advanced / DDC Suite 2.0 DDC Suite and ViSi.Plus

# Addressing the resources



saia-burgess

**Control Systems and Components** 





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.

By default the symbols in Symbol Editor have no address so we have to define the address.

🖃 🔄 Sensor	GROUP	
- MessTyp	R	(5) Selection of the co
H Rohwert X2	R	(5) Maximum raw valu
- 🛄 FilterFaktor	R	(5) Factor for influence
- 🖾 RohwertX1	R	(5) Minimum raw valu
- 🛄 Istwert	R	(1) Physical value of t
- 🖾 GwUnten	R	(4) Low limit, for pass
- 🛄 IstwertY1	R	(5) Minimum physical
⊢∭ GwOben	R	(4) High limit, for pas:
- 🛄 FilterZeit	R	(5) Scanning time of t
- SmGwOben	F	(1) Alarm Value bigge
- 🛄 Korrektur	R	(5) Correction value i
- 🖾 SpgGrp	R	(5) Associated voltag
- 🛄 IstwertY2	R	(5) Maximum physical
니티 SmGwUnten	F	(1) Alarm Value less tl

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.





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.

But the addresses are still 0 for each data point - because in Symbol Editor nothing has been defined.

	+ - / 🗮 🖬 🕅	x B B 🖨 🗉 የ								
G	💥 🖭 🖻 📑 👗									
	Bezeichnung	DMS-Name	Kommentar	Channel	Station	T-Nr.	Тур	Adresse	Logik	1.
	AC01 Cooler Controller	CPU002:AC01:Cooler:Controller:M	(3) unbenutzt, Vorhaltu	S-Bus_USB	2	11	Flag	0	Normal	-
	AC01 Cooler Controller	CPU002:AC01:Cooler:Controller:M	(3) unbenutzt, Vorhaltu	S-Bus_USB	2	-11	Flag	0	Normal	
	AC01 Cooler Controller	CPU002:AC01:Cooler:Controller:Si	(4) Vorwahl Handübers	S-Bus_USB	2	11	Flag	0	Normal	1
	AC01 Cooler Controller	CPU002:AC01:Cooler:Controller:Si	(4) Vorwahl von Min/Ma	S-Bus_USB	2	11	Flag	0	Normal	1
	AC01 Cooler Controller	CPU002:AC01:Cooler:Controller:S	(5) Auswahl ob Sollwer	S-Bus_USB	2	11	Flag	0	Normal	1
	AC01 Cooler Pump Alarming	CPU002:AC01:Cooler:Pump:Alarmi	(1) Störmeldung Betrieb	S-Bus_USB	2	11	Flag	0	Normal	1
£.	AC01 Cooler Pump Alarming	CPU002:AC01:Cooler:Pump:Alarmi	(5) Auswahl des Norma	S-Bus_USB	2	11	Flag	0	Normal	1
	AC01 Cooler Pump Alarming	CPU002:AC01:Cooler:Pump:Alarmi	(1) Störmeldung fehlend	S-Bus_USB	2	11	Flag	0	Normal	
	AC01 Cooler Pump Alarming	CPU002:AC01:Cooler:Pump:Alarmi	(5) Auswahl des Norma	S-Bus_USB	2	11	Flag	0	Normal	1
)	AC01 Cooler Pump Alarming	CPU002:AC01:Cooler:Pump:Alarmi	(1) Störmeldung Handüb	S-Bus_USB	2	11	Flag	0	Normal	
1	AC01 Cooler Pump Alarming	CPU002:AC01:Cooler:Pump:Alarmi	(5) Auswahl des Norma	S-Bus_USB	2	11	Flag	0	Normal	
2	AC01 Cooler Pump Alarming	CPU002:AC01:Cooler:Pump:Alarmi	(5) Vorwahl ob die Stör	S-Bus_USB	2	11	Flag	0	Normal	-
3	AC01 Cooler Pump Alarming	CPU002:AC01:Cooler:Pump:Alarmi	(1) Störmeldung Motors	S-Bus_USB	2	11	Flag	0	Normal	
4	AC01 Cooler Pump Alarming	CPU002:AC01:Cooler:Pump:Alarmi	(5) Auswahl des Norma	S-Bus_USB	2	11	Flag	0	Normal	
5	AC01 Cooler Pump Alarming	CPU002:AC01:Cooler:Pump:Alarmi	(5) Vorwahl ob die Stör	S-Bus_USB	2	11	Flag	0	Normal	
6	AC01 Cooler Pump Alarming	CPU002:AC01:Cooler:Pump:Alarmi	(1) Störmeldung RepS	S-Bus_USB	2	11	Flag	0	Normal	
7	AC01 Cooler Pump Control	CPU002:AC01:Cooler:Pump:Contr	(2) Anzeige Ansteuerun	S-Bus_USB	2	11	Flag	0	Normal	-
8	AC01 Cooler Pump Control	CPU002:AC01:Cooler:Pump:Contr	(2) Anzeige Ansteuerun	S-Bus_USB	2	11	Flag	0	Normal	-
9	AC01 Cooler Pump Control	CPU002:AC01:Cooler:Pump:Contr	(3) Anzeige Bedarf nac	S-Bus_USB	2	11	Flag	0	Normal	
0	AC01 Cooler Pump Control	CPU002:AC01:Cooler:Pump:Contr	(3) Anzeige Bedarf nac	S-Bus_USB	2	11	Flag	0	Normal	-
1	AC01 Cooler Pump Control	CPU002:AC01:Cooler:Pump:Contr	(2) entspricht dem Einga	S-Bus_USB	2	-11	Flag	0	Normal	
2	AC01 Cooler Pump Control	CPU002:AC01:Cooler:Pump:Contr	(1) Sperre des Motors d	S-Bus_USB	2	-11	Flag	0	Normal	-
3	AC01 Cooler Pump Control	CPU002;AC01:Cooler:Pump:Contr			2	11	Flag	0	Normal	-
4	AC01 Cooler Valve Control Process-objects A Detail view	CRI 012 ACD1 Cooler: Valve: Contr. Digtal Signals & Analog Signals		S-Bus LISB	2	11	Flag	0	Normal	1





Within this workshop we do not have a lot of data points and USB communication is quite fast – that 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 tale 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. This number indicates 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 and then never, e.g. SetPoints (update them if HMI or SWeb in use)

(5) only at start up and then never, always commissioning data points (open/closed and so on)

	8	my my				1	1	4
	3	Comment	Channel	Station	T-Nr.	Тур	Address	
imp:Al	(1)	Stormeldung Motors	S-Bus_USB	2	11	Flag	0	N
in:Alar	(1)	Störmeldung Motors	S-Bus_USB	2	11	Flag	0	N
Alarmi	(1)	Störmeldung Motors	S-Bus_USB	2	11	Flag	0	N
:Alarmi	(1)	Störmeldung RepS	S-Bus_USB	2	11	Flag	0	N
an:Ala	(1)	Störmeldung RepS	S-Bus_USB	2	11	Flag	0	N
imp:Al	(1)	Störmeldung RepS	S-Bus_USB	2	11	Flag	0	N
in:Alar	(1)	Störmeldung RepS	S-Bus_USB	2	11	Flag	0	N
Alarmi	(1)	Störmeldung RepS	S-Bus_USB	2	11	Flag	0	N
an:Co	(2)	Anzeige Ansteuerun	S-Bus_USB	2	11	Flag	0	N
in:Cont	(2)	Anzeige Ansteuerun	S-Bus_USB	2	11	Flag	0	N
Contr	(2)	Anzeige Ansteuerun	S-Bus_USB	2	11	Flag	0	N
mp:Co	(2)	Anzaida Anstauarun	S Bue LISB	2	11	Flag	i n	N







Now let's define the real address. Scroll up to first line and type in 100 in Column Address/Row 1

Click on column header Address – the whole column is getting selected.

Click with right mouse button on column header Address – all flags getting ascending numbered.

That's quite easy ©

	T-Nr.	Туре		Logic
1	11	Flag	10	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	Flea	0	Normal

Туре	<u>6</u> 3	Logic
Flag	100	Normal
Flag	0	Normal

Туре	A SS	Logic		
Flag	THAD	Normal		
Flag	101	Normal		
Flag	102	Normal		
Flag	103	Normal		
Flag	104	Normal		
Flag	105	Normal		
Flag	106	Normal		
Flag	107	Normal		
Floo	108	Normal		





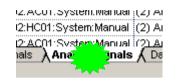
We have to repeat the same procedure at tab Analog Signals. Herein all registers are listed. Activate tab.

Double click at column header Comment to sort by communication priority

Now let's define the real address. Scroll up to first line and type in 200 in Column Address/Row 1

Click on column header Address – the whole column is getting selected.

Click with right mouse button on column header Address – all registers getting ascending numbered.



**Control Systems and Compone** 

-burgess

	-		
Comr	K	Channel	
em (1) Physical value of	the	S_Bus_US	
be (1) Physical value of	the	S_Bus_US	
L	11	C Due LIC	

Туре	Address	SPS Lo	SPS Hi
Register		0	10
Register	2435	0	10
Register	2436	0	10
Deviates	0407 I	0	40

			8
Туре	é s	SPS Lo	SPS Hi
Register	200	0	10
Register	2594	0	10
Register	2665	0	10
	0005	~	

	M		
Туре	Ac s	SPS Lo	SPS Hi
Register	200	0	10
Register	201	0	10
Register	202	0	10
Perinter	202	0	40





Finally save your work by clicking at disk symbol.



Control Systems and Componen

saia-burgess

Now we must get the address information back into PG5 Symbol Editor. Select from menu SAIA-PG5 entry Export Options.

The second se	ool (SAIA ViSi+) 1.5	
tes Options S	IA-PG View About	
/ <u>#</u> @ } <u>#</u> /	Project Manager SPM Create new PLC Create new PG5-file	
Bezeichnui	Import Labels	
austAir Temper :er Temperatur loorAir Temper	Resourcenliste für AWL/IL generieren (.src) Resourcenliste für FUPLA generieren (.rxp)	
eater Returnflc	Code Generator PCD (Only one PCD)	F7
n Temperature n Temperature olyAir Tempera	Code Generator PCD (All PCD) Function Generator PLC-PLC-Communication	F8
w Temperature	Options PG5	
oor Temperatu	Export Options	





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 ....

er		
_C-Name	my	DMS-Filter
PU002		
	w	Export-Filter (beginning of DMS-Name)
Generate PLC-Resources autor	oaticallu	Delete character at the beginning







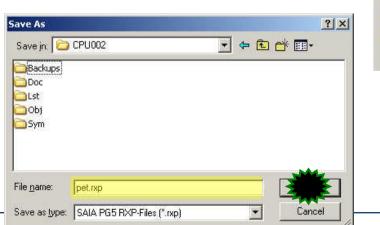


Select from menu SAIA-PG5 entry Resourcenliste für FUPLA generieren (.rxp)

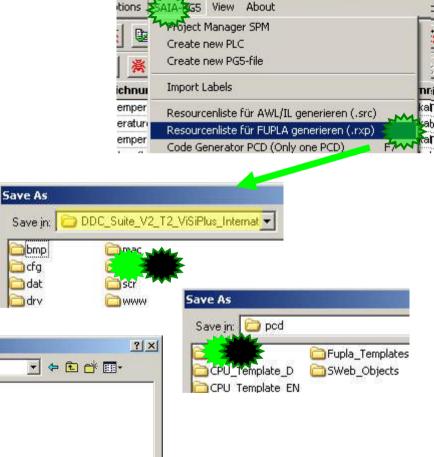
By default you should be located in project base folder.

open folder pcd

open folder CPU002 and click on button Save. An export file pet.rxp will be created.







ering Tool (SAIA ViSi+) 1.5



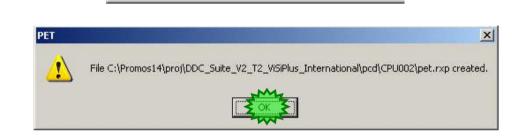
You may see a progress dialog during exporting data into file

PET - ProMoS Engineering Tool

**Control Systems and Componen** 

saia-burgess

And finally the information that the file has been created. Close dialog.



That's all what we have to within PET. Close PET.

har	Edit Templates C	
Im	ve Ctrl- port port	+5 <u>8</u> 1
Up	date from DMS F6	ng
Pri	nt Ctrl-	+P fature Sensor
	eview	e SetPointPoti
	tup printer	ature Sensor
<b>•</b> 56		ow Sensor
Ex	t 💈 🏅	_1 Sensor
8	ACOMNOOM Temp	erature_2 Sensor
7	AC01 SupplyAir T	emperature Sensor
8	HC01 Inflow Temp	erature Sensor



Saia-burgess



### DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

At least we have to import the file from PET into PG5 Symbol Editor.

Switch to Fupla / Symbol Editor.

Click with right mouse button into symbol editor, select Advanced and in sub menu entry Import Symbols...

Group/Symbol	Type Addre	ess/ Comm	ient
AC01      Preheater      MixedAir      Cooler      Dim SupplyAir	New Symbol Insert Symbol Before Insert Symbol After New Group	Ins Alt+Ins Ctrl+U Ctrl+G	
And Ster	Cut Copy Paste Delete	Ctrl+X Ctrl+C Ctrl+V Del	
iAlaSensor	Edit Text/DB		
	Sensor Filter		tion of the conversion of the value connect. mum raw value of the input card
FilterFaktor     RohwertX1     Stwert	Cross-Reference List Symbol References	Ctrl+R	or for influencing a change in reading in the . num raw value of the input card ical value of the sensor = Output Value
GwUnten	Expand All Collapse All		imit, for passive sensors e.g. short circuit num physical value limit, for passive sensors e.g. cable break
FilterZeit	Move Up Move Down	Ctrl+Up Ctrl+Dawn	ning time of the sensor value for filtering Nalue bigger than High limit ertion value in physical quantity
SpgGrp	Advanced		Make Global
ListwertY2	List View • Group View	~	Make Local  Use Local Declaration
C uinnal I HEALAST 200 Shore	Help		Import Symbols





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.

mport Symt	ols			?
Look in: 🔀	CPU002	•	🖛 🔁 📥	•
Backups				
Doc				
Lst				
🛅 Obj				
Sym				
bet.rxp				
pet.rxp				
bet.rxp		_		
bet.rxp File <u>n</u> ame:	pet.rxp			
	pet.rxp VisiPlus Symbol Files (*.rxp)	_		Cancel

You'll see a dialog to inform you that there is NO UNDO possible.

I do Not see this pop up in PG5 2.0 why !!!!







Fupla detects during import that there is already a symbol existing in symbol table with name XYZ and the same symbol is also existing in file to be imported.

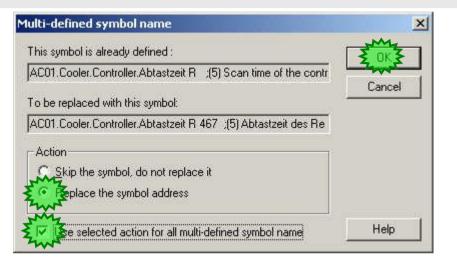
For sure – because we imported this information from Fupla into PET and now back – but we gave the data points an address.

Therefore select option Replace the symbol address

and activate checkbox Use selected action for all multidefined symbol name

Otherwise you have to repeat this dialog hundreds or thousand times ...

The import may take some seconds but finally you should see all groups with FBox data addressed:



Sym	bol Name	Туре	Address/Val	Comment	Tags	Scope
	🗄– 📁 Monitoring	GROUP				
- 3	🕀 🚞 Antiblocking	GROUP				14
	E- D FuseGuard	GROUP				
	AC230NoNc	F	396	PCD FuseGuard / (5) Alarm1 - Select.		Public
	AC230MbAck	F	385	PCD FuseGuard / (5) Alarm 1 - Selec		Public
	AC24NoNc	F	386	PCD FuseGuard / (5) Alarm 2 - Selec		Public
	- AC24MbAck	F	387	PCD FuseGuard / (5) Alarm 2 · Selec		Public
	- OC24NoNc	F	388	PCD FuseGuard / (5) Alarm 3 - Selec		Public
	- OC24MbAck	F	389	PCD FuseGuard / (5) Alarm 3 - Selec		Public
	- 🔶 PhaseNoNc	F	390	PCD FuseGuard / (5) Alarm 4 - Selec		Public
-	- 🔶 PhaseMbAck	F	392	PCD FuseGuard / (5) Alarm 4 - Selec		Public
	- I VoltageNoNc	F	393	PCD FuseGuard / (5) Alarm 5 - Selec		Public
	- 🔶 VoltageMbAck	F	395	PCD FuseGuard / (5) Alarm 5 - Selec		Public
	- 🔶 PhaseOvr	F	391	PCD FuseGuard / (5) Alarm 4 · Selec		Public
	- 🔶 VoltageOvr	F	394	PCD FuseGuard / (5) Alarm 5 - Selec		Public
	AlaAC230	F	100	PCD FuseGuard / (1) Alarm 1 - Alar		Public
	- 🔶 AlaAC24	F	101	PCD FuseGuard / (1) Alarm 2 - Alar		Public
	- 🔶 AlaDC24	F	102	PCD FuseGuard / (1) Alarm 3 - Alar		Public
	🗕 🧄 AlaPhase	F	103	PCD FuseGuard / (1) Alarm 4 - Alar		Public
	- 🔶 AlaVoltage	F	104	PCD FuseGuard / (1) Alarm 5 · Alar		Public
	- 🔷 DI230AC	R	579	PCD FuseGuard / (5) Alarm 1 - Digit		Public
	- 🖉 DI24AC	B	580	PCD FuseGuard / (5) Alarm 2 - Digit		Public
	- 🖉 DI24DC	R	581	PCD FuseGuard / (5) Alarm 3 · Digit		Public
	🗕 🥏 DIPhase	R	582	PCD FuseGuard / (5) Alarm 4 - Digit		Public
	- 🖉 DIVoltage	R	583	PCD FuseGuard / (5) Alarm 5 - Digit		Public
	— 🤣 Delay	R	673	PCD FuseGuard / (5) Delay until nor		Public
	— 🔷 iAlaFuseGuard	F		* internal		Public
	— 🔷 iEverythingOK	F		* internal		Public





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.

Symbol Name	Туре	Address/Val	Comment	Tags	Scope
🔄 🔁 ExhaustAir	GROUP	1	-	1	
E- Cemperature	GROUP				
Sensor	GROUP				
ConvTy	pe R	.937	AC01 ExhaustAir Temperature Sens	1	Public
🚽 🚽 🔶 LimHigh	n B	387	AC01 ExhaustAir Temperature Sens		Public
- 🔶 PhysVa	M1 B	836	AC01 ExhaustAir Temperature Sens		Public
AlaLimL	.ow F	180	AC01 ExhaustAir Temperature Sens		Public
🔰 🚽 🔶 RawVa	K1 B	858	AC01 ExhaustAir Temperature Sens		Public
🛛 🚽 🔶 RawVa	K2 R	820	AC01 ExhaustAir Temperature Sens		Public
🔰 🚽 🥔 ScanTi	me R	920	AC01 ExhaustAir Temperature Sens	1	Public
Correct	on R	639	AC01 ExhaustAir Temperature Sens	1	Public
VoltGrp	B	616	AC01 ExhaustAir Temperature Sens		Public
LimLow	В	421	AC01 ExhaustAir Temperature Sens		Public
- 🔶 PhysVa	B	200	AC01 ExhaustAir Temperature Sens		Public
🔰 🚽 🧼 Scan Fa	ict R	738	AC01 ExhaustAir Temperature Sens	3	Public
🔰 🚽 🔶 PhysVa	M2 R	798	AC01 ExhaustAir Temperature Sens		Public
AlaLimH	ligh F	164	AC01 ExhaustAir Temperature Sens		Public
				1	1
iAlaSenso	r F		* intern	1	Public
🔰 🗌 🔶 iBawValue	e B		* intern		Public







PG5 Building Advanced / DDC Suite 2.0 DDC Suite and ViSi.Plus

### Go online





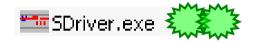


Till now we only imported FBoxes into ViSi.Plus (via PET) – addressing data points and exporting back into Fupla.

1st – lets start the ViSi.Plus communications driver. Start SDriver.exe from folder C:\ProMosNT\bin

SDriver is a service and also 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 SDriver symbol in task bar and select Show.









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#### DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

SDriver list on left side all Channels defined within PET. Of course – we got this information during import from PG5 but SDriver handles this only as name. The real physical layer must be defined now.

#### Good to know:

- E Communication disabled
- trying to initiate communication
- communication established
- communication failed

Click with right mouse button on channel, dialog For detailed communication settings will prompted

Eile Settings View Help			
Channel: S-Bus_USB	DMS-Name		DM
Ready		Tel/Sec: 0	

5Driver	S-Bus_USB: Unknown type	×.
File Settic	Driver activated	OK -
Charnel:	Comm. DK (0)	Cancel
- ma	Active Stations Error Statisti	cs Setup SCOMM
	Poll interval (between telegram read acce	isses) ms: 100
	IP-Node:	Station: 1







Click at button Setup SCOMM to define the physical layer.

Select in drop down list Channel / Name entry S-Bus USB

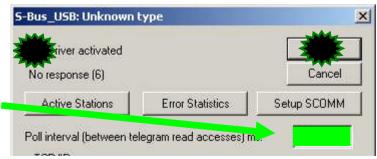
Deactivate checkbox PGU

And set S-Bus Station to 2

Finish by clicking on button OK.

Driver activated		ОК
No response (6)		Cancel
Active Stations	Error Statistics	Seto MM
line Settings [sdriver]		2
Channel		ОК
Name: S-Bus USB	5	etup Cancel
S-Bus USB		
Connection CPU Number: 0		Help
CFO NUMBER 10		

At least activate checkbox Driver activated, set parameter Poll interval (between telegram read accessess) ms: 200 and finish by clicking on button OK.







After a view seconds you should see a green PCD2 symbol in channel list – you are connected with PCD

Close SDriver window. SDriver will work in background. From this moment we can get already a lot of information out of the PCD without additional work.

SDriver 1.4	
<u>Eile S</u> ettings ⊻iew <u>H</u> elp	400
Channel: S-Bus_USB	DMS-Name
Ready	Tel/Sec: 5







PG5 Building Advanced / DDC Suite 2.0 DDC Suite and ViSi.Plus

## Alarm management



Ider C:\ProM	OS	NT\bin
	4	SAIA ViSi+ AlarmViewer - 1.5
	Eile	e Edit Filter Settings View Help
	0	D 🗊 🗐 P1 P2 P3 P4 P5 All 🖻 🎒 🗙 🤋
ont end for		8 Alarms not acknowledged of 8 alarms
	1	09:10:2008 15:01:02 Kommt CPU002:AC01:SupplyAir:Temperature:Sensor:SmGwUnten Grenzwert
edge alarms		09.10.2008 15:01:02 Kommt CPU002:AC01:ExhaustAir:Temperature:Sensor:SmGwUnten Grenzwer
	0	00.10.2009.15:01:02. Kempt CDU002: 1 C01: Resp: Temperature, 1: Separat: SmCuel later, Crestaurature

Let's check if we have some active alarms.

1st – lets start the ViSi.Plus Alarm Manager. Start AlmMng.exe from folder C:\ProMosNT\bin. AlmMng is a service and also available in task bar notification area.

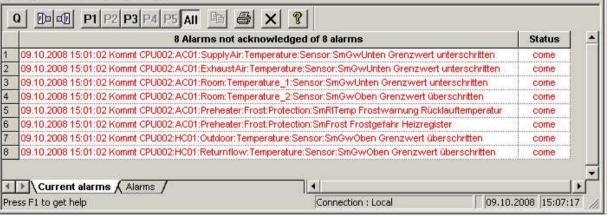
Start AlmView.exe from fold

2nd - to view the alarms we have to start the Alarm viewer.

The alarm viewer is the from End user to view/acknowle and/or search in alarm history







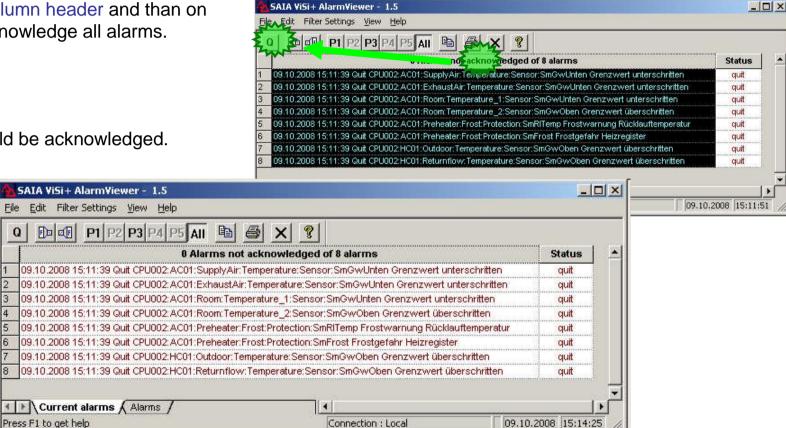


- 0 ×

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First click on column header and than on button Q to acknowledge all alarms.



All alarms should be acknowledged.

Q

3

4

5

6

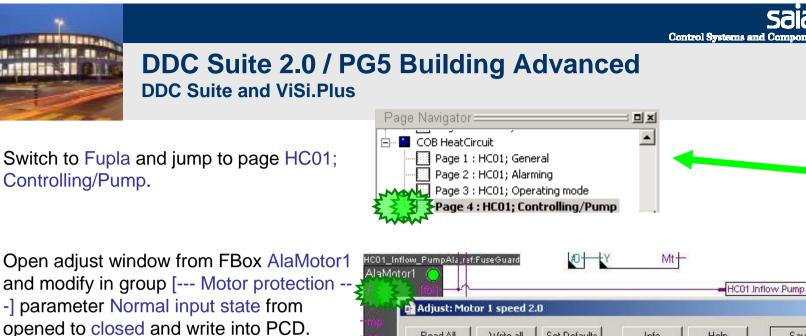
8



Press F1 to get help

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HC01.Inflow.Pump.iFeedbackRun - 0 × Read All Write all Set Defaults Info Help Save Close . --- Motor protection --- i Digital input > -1 > 0π > No Acknowledgement mandatory > No < 0π > Normal input state Spened 0m opened Alarm suppression for appl. vitg. > for appl. vitg. 0π Alarm status ok 0π

#### You will see immediately in alarm viewer a

new entry.

05.10.2000 10.11.05 Guil Ch0002.AC01.Freneater.ht0st.ht0st.ht0st.ht0st.ht0st.ht0stgefahr heiztegister yuit 09.10.2008 15:11:39 Quit CPU002:HC01:Outdoor:Temperature:Sensor:SmGwOben Grenzwert überschritten auit 8 09.10.2008 15:11:39 Quit CPU002:HC01:Returnflow:Temperature:Sensor:SmGwOben Grenzwert überschritten quit 9 09.10.2008 15:43:05 Kommt CPU002:HC01:Inflow:Pump:Alarming:MotSm Motorschutz ausgelöst come Current alarms / Alarms • 09.10.2008 15:43:20 Press F1 to get help Connection : Local [09.10.2008 15:11:39 Quit CP0002:HC01:Returnflow:Temperature:Sensor:SmGwOben Grenzwert uberschritten quit 9 09:10:2008 15:45:01 Geht CPU002:HC01:Inflow:Pump:Alarming:MotSm Motorschutz ausgelöst do ( ) Current alarme 4



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## **Historical data**



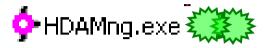


Let's check if we have some active alarms.

1st – lets start the ViSi.Plus Historic Data Manager. Start HDAMng.exe from folder C:\ProMosNT\bin. HDAMng is a service and also available in task bar notification area.

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.





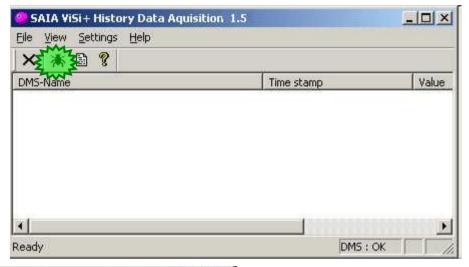






First moment the window stays empty – we have to activate the debug mode by clicking on in symbol bar on "Bug" button.

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)



File View Settings Help				
X 🔉 🖻 💡	Time stamp	Value	Registration	-
System:NT:Perf:PDBS	09.10.08 15:55:25	1.00	Difference	_
System:NT:Perf:PDBS	09.10.08 15:55:24	9.00	Difference	
 CPU002:HC01:Returnflow:Temperature:Controll	09.10.08 15:55:23	0.00	Cycle Save	
CPU002:HC01:Returnflow:Temperature:Controll		499.90	Cycle Save	
CPU002:HC01:Returnflow:Temperature:Controll	09.10.08 15:55:23	55.00	Cycle Save	-
CPU002:HC01:Returnflow:Temperature:Sensor:	09.10.08 15:55:23	499.90	Cycle Save	
CPU002:HC01:Inflow:Temperature:Controller:Si	09.10.08 15:55:23	0.00	Cycle Save	
CPU002:HC01:Inflow:Temperature:Controller:Is	09.10.08 15:55:23	0.00	Cycle Save	
CPU002:HC01:Inflow:Temperature:Controller:S	09.10.08 15:55:23	20.00	Cycle Save	
CPU002:HC01:Inflow:Temperature:Sensor:Istwert	09.10.08 15:55:23	0.00	Cycle Save	
CPU002:HC01:Outdoor:Temperature:Sensor:Ist		120.00	Cycle Save	
CPU002:AC01:Preheater:Returnflow:Controller:	09.10.08 15:55:23	100.00	Cycle Save	
CPU002:AC01:Preheater:Returnflow:Controller:	09.10.08 15:55:23	0.00	Cycle Save	
CPU002:AC01:Preheater:Returnflow:Controller:	09.10.08 15:55:23	12.00	Cycle Save	
Ready			DMS ; OK	







Deactivate debug mode by clicking again in symbol bar on "Bug" button.

Close HDAMng window. HDAMng will work in background.

File <u>View</u> Settings <u>H</u> elp		
× 🗱 👔 🦹		
DMS-Name	Time stamp	Value
(		







PG5 Building Advanced / DDC Suite 2.0 DDC Suite and ViSi.Plus

### **User Front-End**





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#### DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

The systems must be visualized – therefore have to use the graphics editor - GE.

1st – lets start the ViSi.Plus graphics editor. Start GE.exe from folder C:\ProMosNT\bin.

The graphics 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 .."

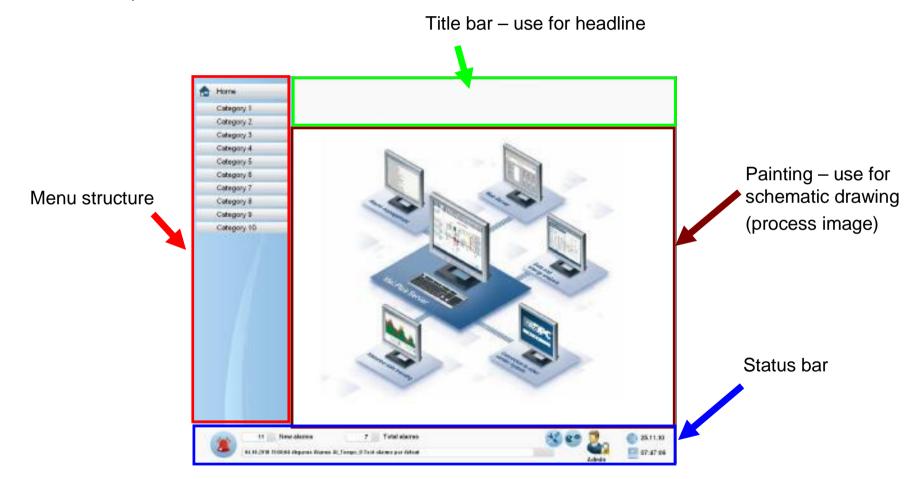


🖶 ge.exe





The screen is separated in 4 areas:









## DDC Suite 2.0 / ViSi.Plus Template

Status bar displays basic information:

- Alarm bell icon, grey if there is no alarm, red if min. 1 alarm active (click for alarm list view)
- number of new (not yet acknowledged) alarms and total active alarms

- User name logged on
- "User" Icon > click for login dialog
- Or press CTRL+L to get the login window
- Username: Admin
- Password: admin

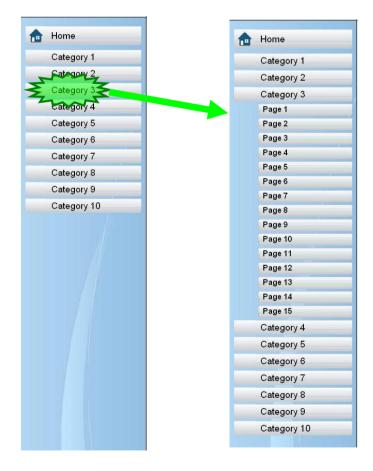
alarms <ul> <li>last alarm text</li> </ul>		Image: SATA VISI + - Login 1.5       Username       Password	Login Cancel
	<ul> <li>Icon "settings" &gt; click to setup menu structure</li> <li>Icon "talk" &gt; click to setup use (both icons only visible if user r</li> </ul>	Sala Burgess Controls AG	Licence
	level 16 active)	.Aur	<ul> <li>Date and time</li> </ul>
11 New ala 04.10.2010 15:04:04 disp.	rms 7 Total alarms arue Alarme Al_Tempo_0 Text alarme par défaut		Image: Second system       Image: Second system       25.11.10         Image: Admin       Image: Second system       07:53:02



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# DDC Suite 2.0 / 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 2.0 / 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



0	Categories
~	Category 1
	Category 2
	Category 3
	Category 4
	Category 5
	Category 6
	Category 7
	Category 8
	Category 9
	Category 10

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

Home	
Catego	lavigation_Config
Categoi	2 Categories
	Category 2



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Select number of visible pages of category. Text of category and pages can be modified by clicking on texts.

Navigation_Config_Katx		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				
•	Page 8 Page 9 Page 10 Page 11 Page 12 Page 13 Page 14 Page 15		Home Sanitary Hot water Boiler Category 2	Navigation_Config	Sanitary	







#### DDC Suite 2.0 / ViSi.Plus Template DDC Suite and ViSi.Plus

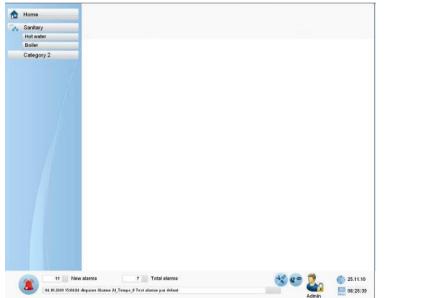
Menu structure can be used in 2 different modes:

Permanent visible

- reduces area for painting
- but navigation is easy, always visible

Pop up menu

- enlarges area for painting
- but navigation always via pop up window









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.

🐂 SAIA ViSi+ 1.	5 - Home.psc (saved)		
File Edit View	Objects Attributes Project	: Settings Window Help	
	< <b>10</b> 40 40 X	🖻 🖪 死 🎗	
SAIA VISH Library	× Ho		
	anning miss	ne	
ddo anali	Window-properties	2	si
ddo o	Backgroundcolor		]
ddcı	Text		
ddo <mark>:</mark>	Master	Background_with_Na 💌	1
dde ini [,]	Windowattribute	MX HS VS	<u> </u>
ddc sy			<b>-</b> January (1997)
ddo system	sand clocks	Hot water	
		Boller	





If you like to change all pages from "permanent" to "pop up" menu structure style open file "Background_with_PopUp_NavBar.psc"

🖶 SAIA ViSi+	1.5 - Home	
File Edit View	v Objects Attributes Project Settings Window Help	
	× 40 40 40 % BB 🕮 死 🔋	
		<b>■</b> [+]
SAIA VISH-LIb d	Load picture	<u>? ×</u>
ddc∡ d	Suchen in: 🔁 scr	▼ ← € ↔ Ⅲ•
a ( dd; dd; ddc;sy	<ul> <li>AirCondition_T1_PressContr_Master_CoolMixAirHeat.psc</li> <li>AirCondition_T2_1speed_Master_CoolMixAirHeat.psc</li> <li>HeatCircuit_T1_Inflow_Controlled_1Pump.psc</li> <li>HeatCircuit_T2_Inflow_Controlled_2Pump.psc</li> <li>HeatCircuit_T1_Primary_Uncontrolled_Circulation.psc</li> <li>HotWater_T2_Primary_Controlled_Circulation.psc</li> <li>Background.psc</li> </ul>	<ul> <li>Background_1280x1024.psc</li> <li>Background_Dialog.psc</li> <li>Background_with_NavBar.psc</li> <li>Background_with_PopUp_NavBar.psc</li> <li>Cat1Pag1.psc</li> <li>Cat1Pag2.psc</li> <li>Cat1Pag3.psc</li> </ul>
Weekly clock	Dateiname: Background_with_PopUp_NavBar.psc	 Ŭffnen
	Dateityp: ProMoS Image Files (*.psc)	Abbrechen

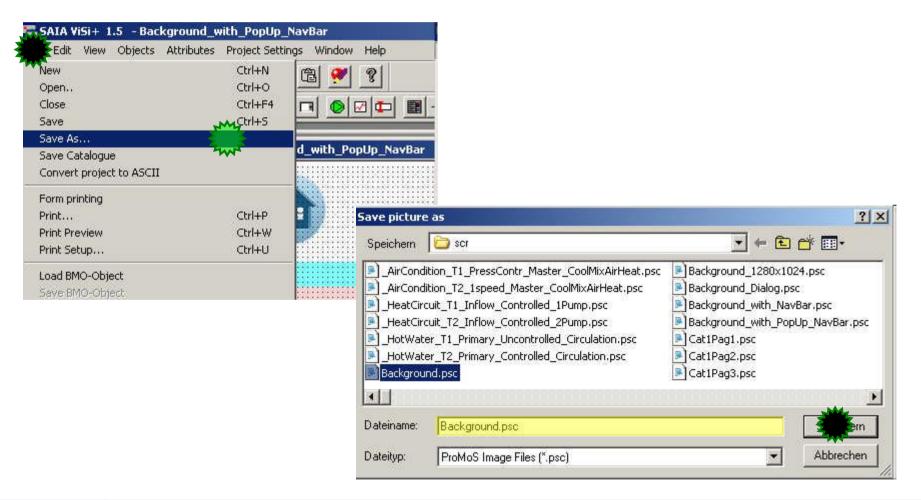






#### DDC Suite 2.0 / ViSi.Plus Template DDC Suite and ViSi.Plus

And save file (overwrite) as "Background.psc"



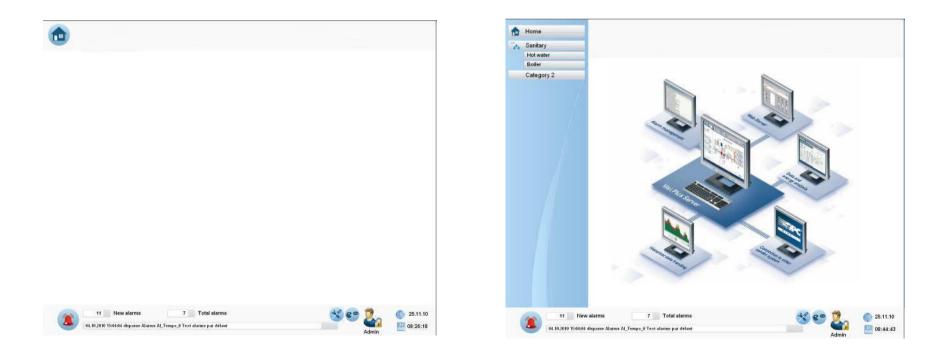




Pages are defined to use "Background.psc" as master, so all pages are updated immediately. Only "Home.psc" (main page) is defined to use "Background_with_NavBar.psc" to display menu structure

by default, but this can also be modified.

Screen resolution for pages is predefined for 1280x1024 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)









PG5 Building Advanced / DDC Suite 2.0 DDC Suite and ViSi.Plus

# **Drawing picures**

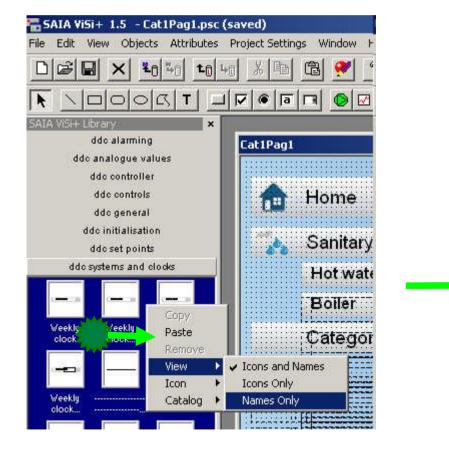


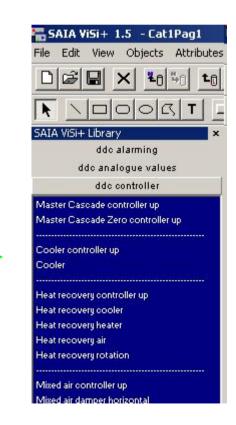




### DDC Suite 2.0 / ViSi.Plus Template DDC Suite and ViSi.Plus

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".



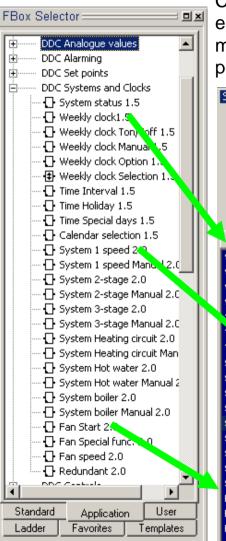




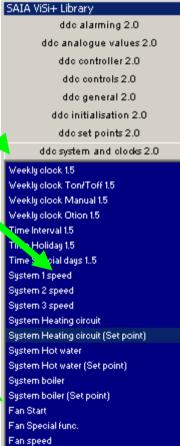
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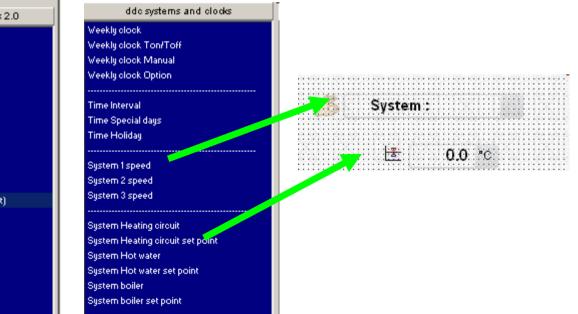
#### DDC Suite 2.0 / ViSi.Plus Template DDC Suite and ViSi.Plus



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".



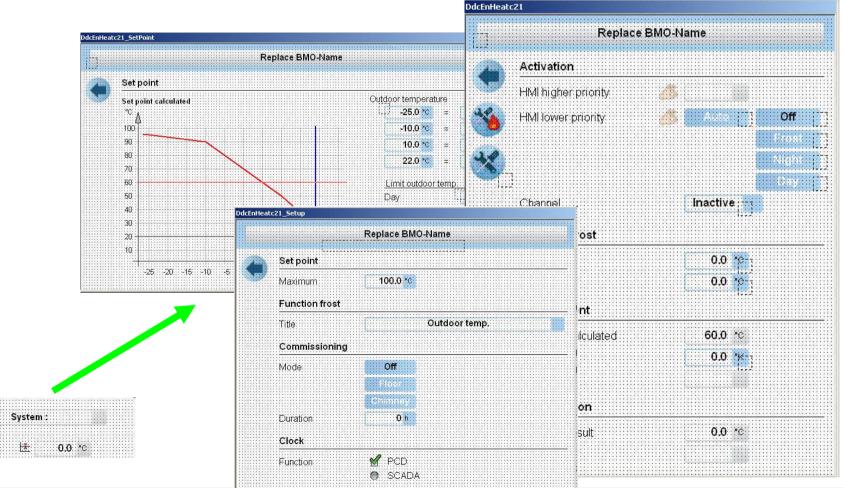
In this case the object with "short" name is the default object, displaying the main information (System On/Off ..), the "extended" ("set point") object is just an adaption and displays in this case the set point – but both objects will show the same adjust window when clicking on it.







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.





Control Systems and Components

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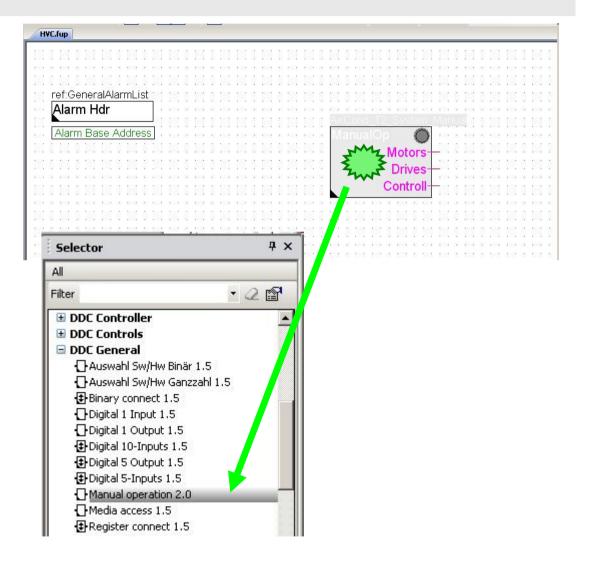


#### DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

Let's check the first Fupla page (General) of our air condition. There are 3 FBoxes to be displayed in ViSi.Plus:

- Alarm header no Visi.Plus template
- Manual operation
- Sensor Outdoor air temperature

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 General"





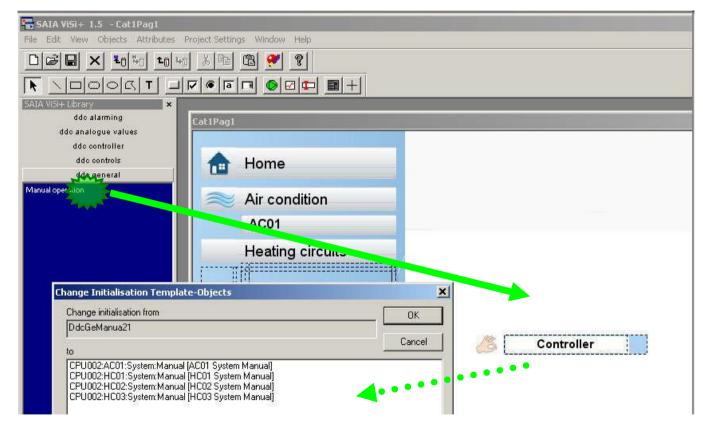




Lets find a related ViSi.Plus object in GE. Select catalogue "DDC General" and check if there is an object "Manual operation" available.

Let us select the Air Condition  $\rightarrow$  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" ...





Control Systems and Components

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#### DDC Suite 2.0 / 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 three for Heat Circuits – listed in field "to"

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".

hange Initialisation Template-Objects	×
Change initialisation from	
DdcGeManua21	
to ML	Cancel
CPU002:AC01:System Marual (AC01:System Manual) CPU002:HC01:System Manual (HC01:System Manual) CPU002:HC02:System:Manual (HC02:System Manual) CPU002:HC03:System:Manual (HC03:System Manual)	

File Edit View Objects Attributes	1	
Grid Grid Settings	6 K 🖻 🖻 死 શ	
Screen Backgroundcolor		
SAIA VISH 🗸 Show Invisible Objects		
Show Initialisation	t1Pag1	
dc Toolbars	Home	
Manual operation	Air condition	
	AC01	
	Heating circuits	



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#### DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

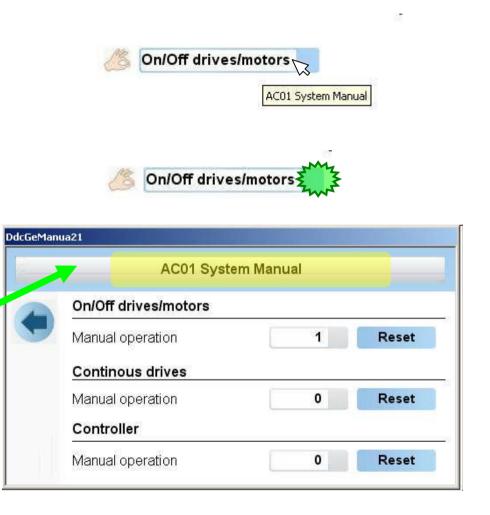
When you move the mouse over the object and wait 2 seconds you'll see a tool tip – this tool tip displays the object name – and the object name is generated during import by using the group structure of the FBox symbols.

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





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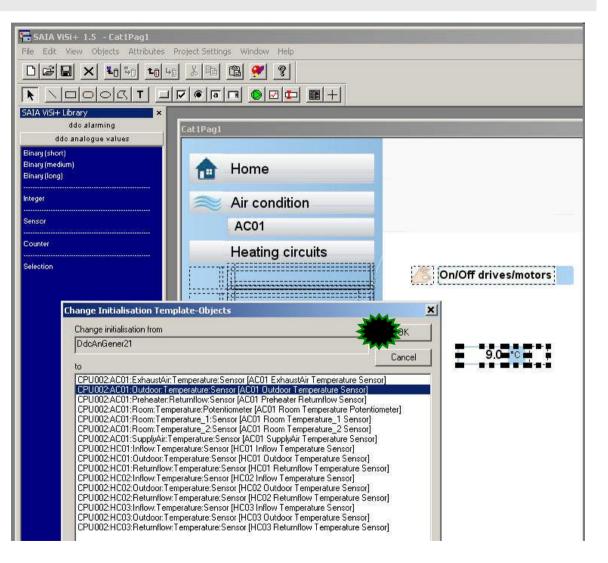
#### DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

Close pop up window and switch back to edit mode by pressing key "E". Now its easy to engineer the other FBoxes from first page.

Now we get a list with a lot of entries. Of course all "Sensor" FBoxes in ViSi.Plus database will be displayed.

Drag&Drop object "Sensor" from "ddc analogue values 2.0" into page and connect it with FBox.

We can select it from the list, but maybe you'll select a sensor from a wrong system.







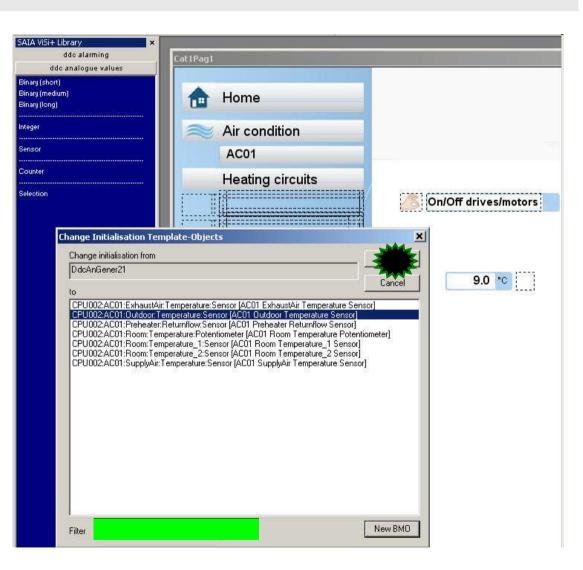
So we can set a filter in the dialog (bottom). The filter is case sensitive.

Type in CPU002:A

And you'll see only the FBoxes from the Air Condition 01.

Connect it with FBox "AC01:Outdoor:Temperature:Sensor"

**Result:** 





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0.0=°C = ___



#### DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

On/Off drives/motors

So this Fupla page is done – next page contains 2 FBoxes:

- Or no Visi.Plus template
- System status

Select from catalogue bar "DDC system and clocks" the object "System status".

ange Initialisation Template-Objects	<u>×</u>
Change initialisation from	Z OK Z
vlaAmpel	- wit
0	Cancel
CPU002:AC01:System:Status (AC01 System Status)	



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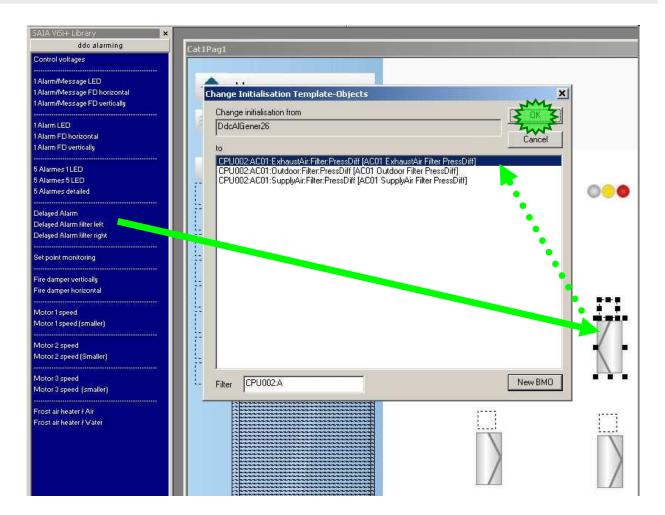
#### DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

So this Fupla page is done – next page does not contain FBox which has template. So let us go to the page "Filter". There are 3 FBoxes there:

 3 times AlaDelay – Delayed Alarm

Drag and drop from catalogue bar "DDC alarming" the object "Delayed Alarm filter right" 2 times and "Delayed Alarm filter left" once.

The "right" ones should be connected to the Outdoor filter and the Supply air filter while the "left" one should be connected to the Exhaust air filter.





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#### DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

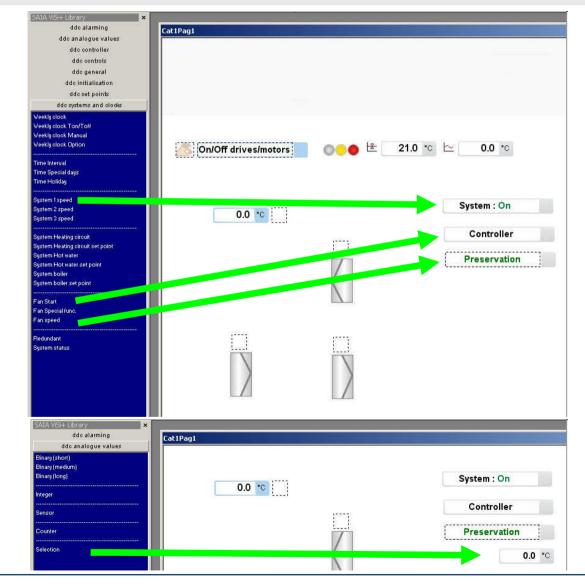
So this Fupla page is done – next page contains 4 Fboxes should be placed and connected as we have done before:

- System 1sp
- Fan Start
- Fan special
- Selection

Drag and drop from catalogue bar "DDC system and clocks" the objects "System 1 speed", "Fan start" and "Fan Special func.".

Drag and drop from catalogue bar "DDC analogue values" the object "Selection".

And connect them to the FBoxes.



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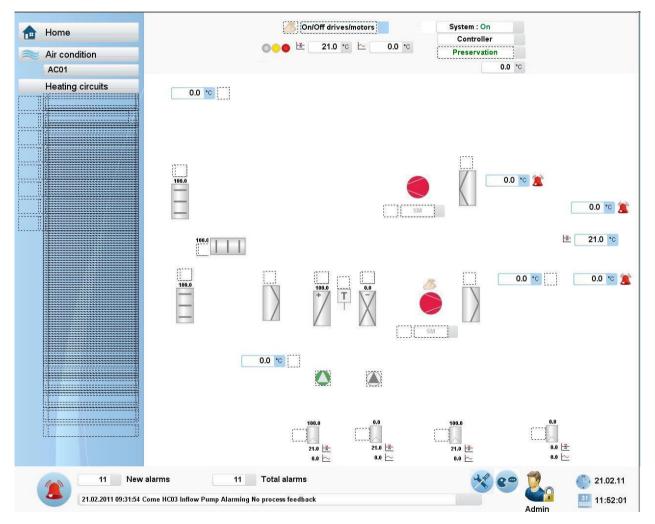


#### DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

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.

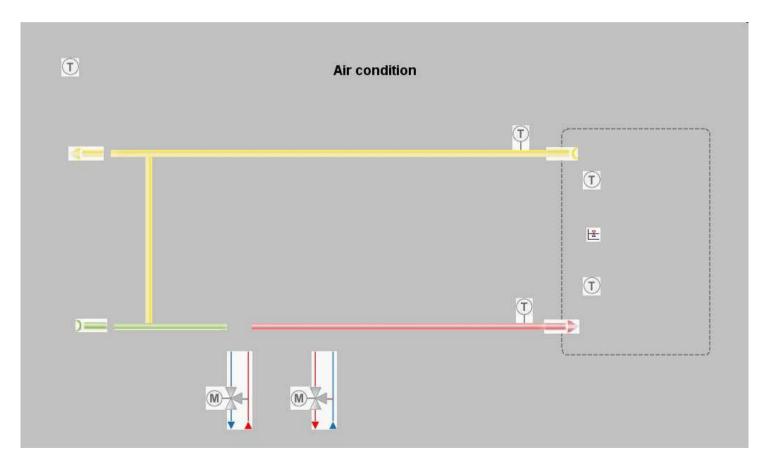






At the end some static drawings

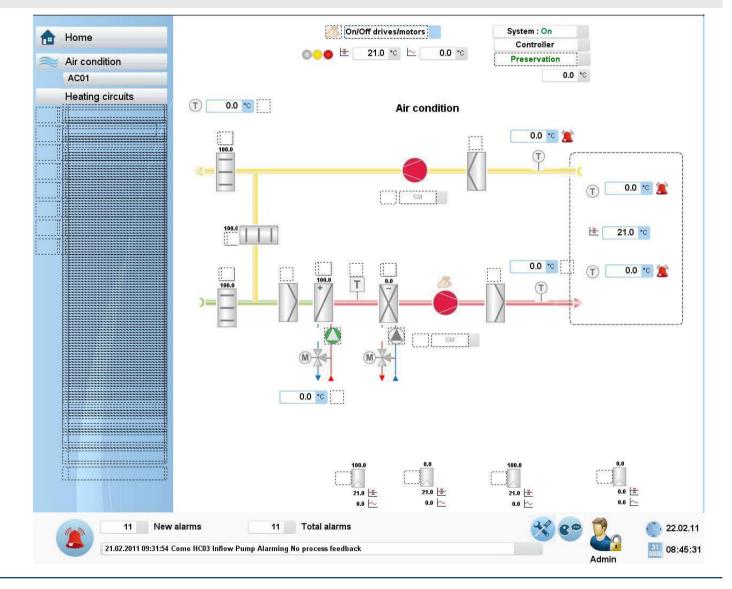
This should be placed on to the screen and should be organised nicely.







If something is missing it is easy to place and connect afterwards.





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**Control Systems and Components** 



PG5 Building Advanced / DDC Suite 2.0 DDC Suite and ViSi.Plus

# **Engineering with templates**



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**Control Systems and Components** 



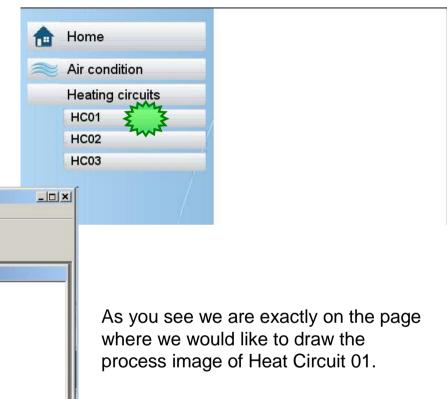


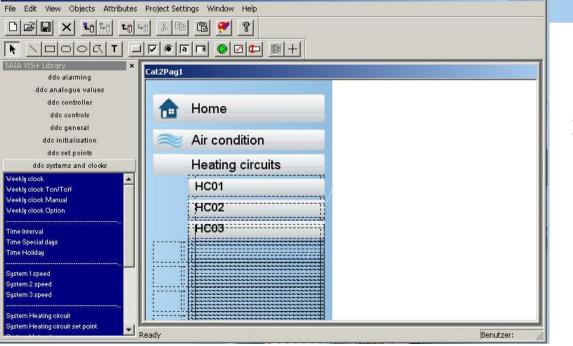
🔚 SAIA ViSi+ 1.5 - Cat2Pag1.psc (saved)

#### DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

The air condition was programmed in Fupla to our own belongings and therefore we had to engineer the drawing in ViSi.Plus step by step.

But we also used in Fupla a template – heating circuit – 3 times. Navigate to "Home" – "Heating Circuit" and finally "HC01" and switch to edit mode.



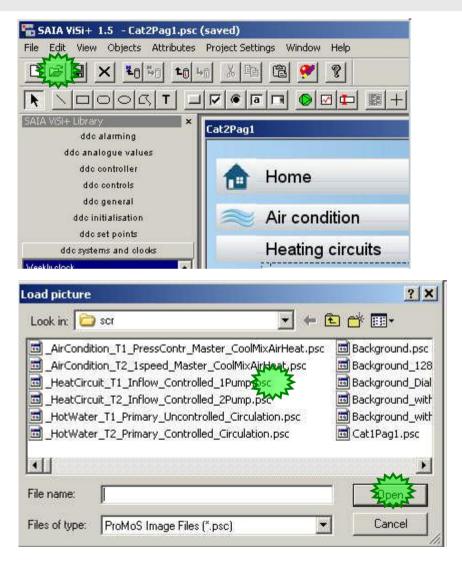




In Fupla we used a template – and this template was predefined by DDC Suite. You'll also find a related template in ViSi.Plus to such Fupla templates.

Click on icon "Load picture" (or menu "File/Open"). The Fupla template was named "HeatCircuit_Inflow_Controlled_1Pump".

Select the file with the same name and click on the Open button.

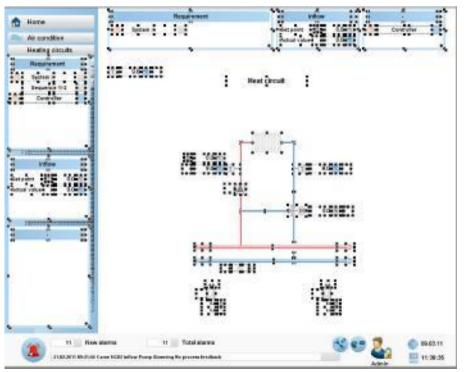


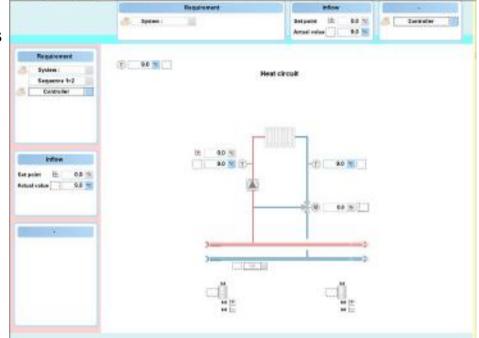




When the file is opened you can see the predefined heating circuit template. It's created in the same way as we did before – only the connection to FBoxes is not done.

Press short key "CTRL+A" to mark all objects





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Press short key "CTRL+C" to copy them to clip board

Press short key "CTRL+F4" to close the picture

Press short key "CTRL+V" to paste it into our structure – and move the whole template that it fits into the page



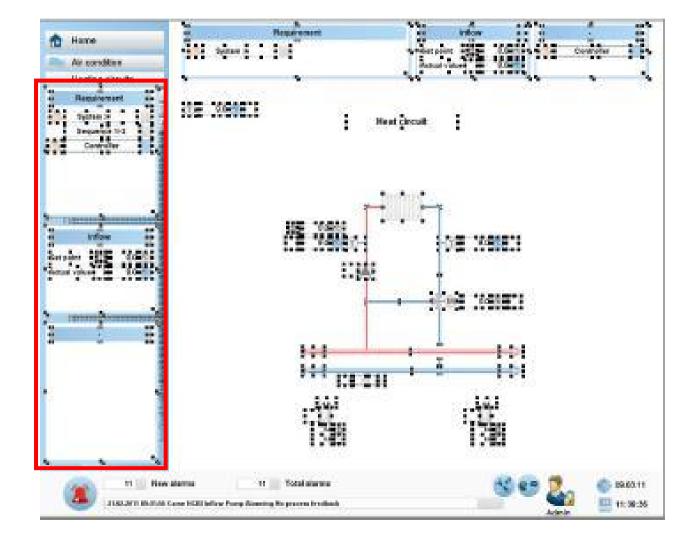
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#### DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

The object on the left side are not necessary if we use permanent navigation bar .

Please select the unnecessary objects and delete them.





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Heat circuit



#### DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

Now we have to assign to each object an FBox from out heating circuit HC01.

Unselect by clicking into an empty place on page and click on first object "Requirement" to mark it.

Press "Space bar" (key "space") and the dialogue to assign a FBox will be displayed.

The filter "CPU002:A" is still active – we have to modify it. Change filter into "CPU002:HC01" to be sure that we select always objects from HC01.

Assign the FBox to object and click OK



Change initialisation from DdcAnGener21	OK
	Cancel
to	
CPU002:HC01:Inflow:Temperature:Sensor [HC01 Inflo	w Temperature Sensor]
CPU002:HC01:Inflow:Temperature:Sensor [HC01 Inflo CPU002:HC01:Outdoor:Temperature:Sensor [HC01 0 CPU002:HC01:Returnflow:Temperature:Sensor [HC01	Itdoor Temperature Sensor Beturnflow Temperature Sensor
Cr. Coozi recimicanti emperadale densor (ricor	





Repeat this for objects you see. If you don't know if a object can be assigned to a FBox – just click on it, press key "space".

If the first entry "Change initialisation from" is empty then this object is a simple static object – nothing to do.

You see that it's easy to use also templates in ViSi.Plus. It takes maybe 1 minute to assign all objects to related FBoxes.

But we have to do still 2 more heating circuits. HC02 to HC03.

Here we can use a mechanism which is quite close to the Fupla import mechanism.

Save the page (CTRL+S)

ange In	itialisation Template-Objects
Change i	nitialisation from
to	
2	

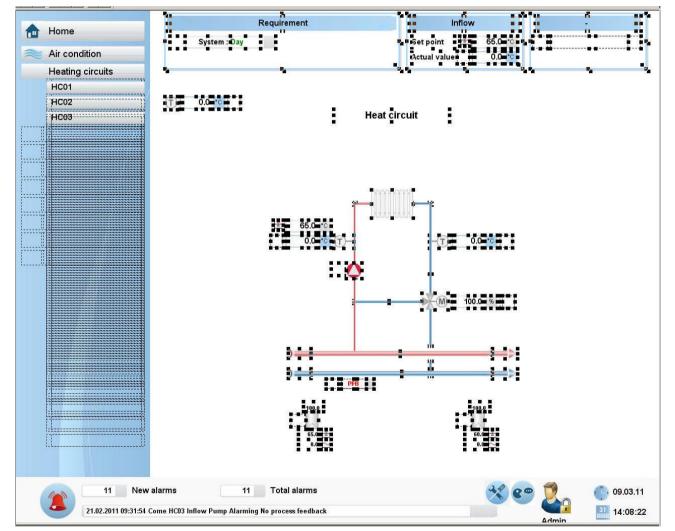




Be sure that all objects are connected to a FBox from HC01.

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 from HC01.





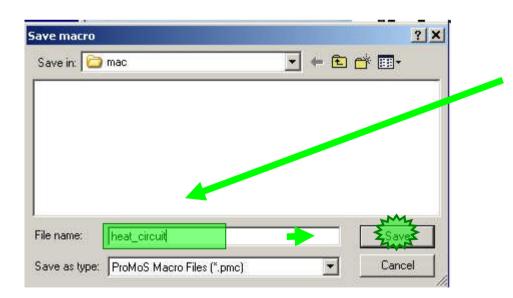




Click on icon "Save macro" (or menu File/Save macro).

Type in heat_circuit

and click on button Save



ile Edit View Objects Attributes	Project Settings Wind
New	Ctrl+N
Open	Ctrl+O
Close	Ctrl+F4
Save	Ctrl+S
Save As	
Save Catalogue	
Save WEB-Images	
Convert project to ASCII	
Form printing	
Print	Ctrl+P
Print Preview	Ctrl+W
Print Setup	Ctrl <del>ii</del> U
Load BMO-Object	
Save BMO-Object	
Load Macro	M
Save Macro	
Icon Editor	-
Switch Runtime/Edit Modes	e
1 DdcEnHeatc21_Setup.psc	
2 DdcEnHeatc21.psc	
3 _HeatCircuit_T1_Inflow_Controlled_1	1Pump.psc
4 Cat2Pag1.psc	
Exit System	
Exit GE	



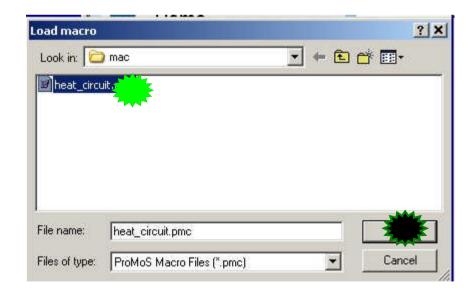


Switch to runtime mode, navigate to HC02 and switch back to edit mode.

Click on icon "Load macro" (or menu File/Load macro)



Select the macro we saved before: heat_circuit.pmc and press "Open"





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#### DDC Suite 2.0 / PG5 Building Advanced DDC Suite and ViSi.Plus

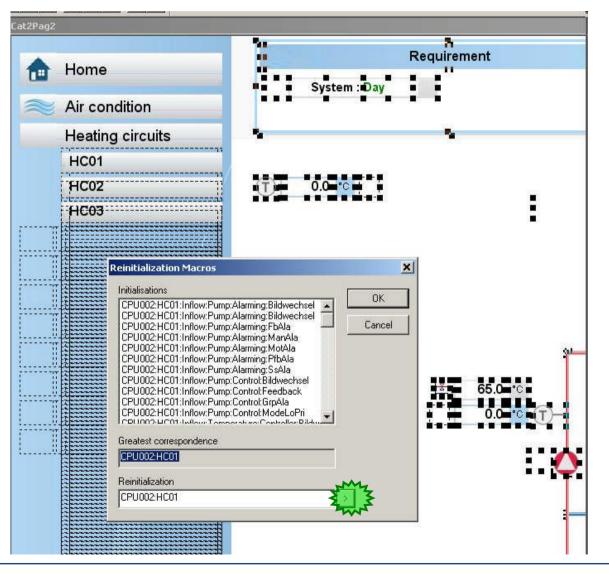
ViSi.Plus will import the macro – but it detects also that all objects in this macro are assigned to a unique group structure

#### 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 modify the ending HC01 into HC02 immediately in field "Reinitialisiation" – but this may give the chance of type writing errors)



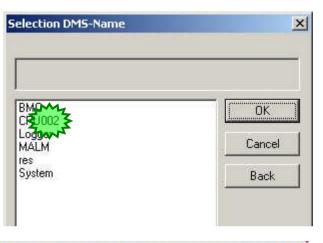


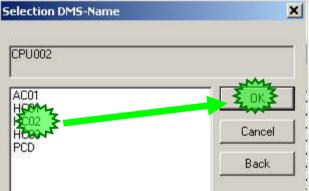


The data base structure navigator opens and now we can navigate to the "system" HC02 to assign all the objects.

A single click on entry "CPU002" – the next layer (group) will be listed.

A single click on entry "HC02" and then button OK.









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.

einitalisation 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:ManAla CPU002:HC01:Inflow:Pump:Alarming:MatAla CPU002:HC01:Inflow:Pump:Alarming:MatAla CPU002:HC01:Inflow:Pump:Alarming:PfbAla CPU002:HC01:Inflow:Pump:Alarming:SAla CPU002:HC01:Inflow:Pump:Alarming:SAla	Cancel
Greatest correspondence CPU002:HC01	_
Reinitialization	

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.







#### Any problems?

#### Yes: rewind to first slide and repeat all lessons ...

# **Everything OK: Congratulation**



# DDC Suite - advanced – detailed information

Saia® PCD2.M5

Stephan Hintze / 05.12.2008



## **DDC Suite Advanced**

# **Overview**



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DDC Suite FBoxes are able to implement additional external source files. Those files are available for SWebAlarming, BACnet, Documentation and ExtraAddOn.

Depending of FBox functionalities it can be any combination of those files. In the following description you'll have on top the FBox name and then a definition which files are supported and their file names:

BACnet:BAC_DDC_InitLibrary.srcDoc-File:DOC_DDC_InitialisationLibrary.srcAddOn:AddOn_DDC_InitialisationLibrary.src

These files are normally predefined and used to change some texts (alarming) or optimize BACnet object – but they can also be used to implement additional functionality into the FBox or to improve functions. This can be handled like an object inherit mechanism

In fact if you improve e.g. for FBox "1 Alarm" the functionality in an external file – all FBoxes in the program will inherit this new improvement. This is a very powerful possibility.

**<u>NOTE</u>**: There are only AddOn files for the FBoxes that have online I/O addressing.





## **DDC Suite Advanced – Overview**

For improving functionality you need the internal symbolic definitions for the In/Out of FBox parameter and also the internal data available in adjust window. This information is the content of the following pages. You'll find a page for each FBox and the description

-FBox IN label an the internal symbol

-FBox itself

-FBox OUT label an the internal symbol

-FBox internal symbol and the default symbol name which is used in SymbolEditor

Always just use the names in column "Symbol" within the extra files!

Label	Symbol
AckAla	in_QuitStoerung
AckMt	in_QuitWartung
WD	in_WatchDog
OutTemp	in_Aussentemp

Init LIB 🛛 🔘	Label	Symbol
····· •	ResAla	out_ResetStoerung
AckAla ResAla	ResMt	out_ResetWartung
AckMt ResMt	Err	out_Error
-WD Err-	Bat	out_Batterie
-OutTemp Bat-	Pulse	out_SekundenPuls
Pulse		

Symbol	Default Symbol
stc_QuitStoerung	SmQuit
stc_QuitWartung	WartQuit
stc_QuitDiagnose	HistQuit
stc_DiagnoseSm	HistFehler
stc_ResetStoerungPuls	SmQuitHwImp
stc_DiagXob	HistMeldung
stc_DiagPrgL	HistProgLine
stc_Diagldx	HistIndex
stc_DiagCobL	HistCobLine
stc_DiagNL1L	HistCall1
stc_DiagNL2L	HistCall2
stc_DiagNL3L	HistCall3
stc_DiagNL4L	HistCall4
stc_DiagNL5L	HistCall5
stc_DiagNL6L	HistCall6
stc_DiagNL7L	HistCall7
stc_DiagRes	HistReserve
stc_SmBatterie	SmBatterie
stc_QuitDI	QuitDI
stc_QuitD0	QuitDO





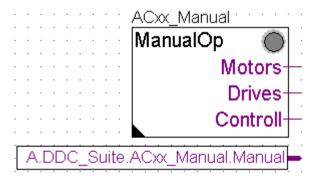
Example: The FBox "ManualOp" has 3 outputs to indicate if there is a FBox in manual mode. If you'd like to have one symbol if any output is high than you can use of course an "OR" gate – but you can improve the FBox itself.

In file "AddOn_DDC_GeneralManualInfo.src" we could type in:

A.DDC_Suite.Name.Manual equ f ; New symbol indicating any FBox under manual operation publ A.DDC_Suite.Name.Manual ; make it available in symbol editor system tab

sth	out_Motoren	;	
orh	out_Antriebe	;	
orh	out_Regler	;	
out	A.DDC_Suite.Name.M	anual	;

After a rebuild you'll see the new symbol in system tab an can use it in your program. This example is like "adding an FBox output"









In other cases it could be possible to get the real symbol name (you'll see in the IN or OUT connector in Fupla or the symbols connected to the FBox e.g. to use them (for mapping) in the BACnet configuration.

Therefore you have to use the syntax

@&SYMBOL@

This sequence will display the symbol name it self, e.g. if you add to the fomer example the line

\$report The FBox adjust parameter @&stc_Regler@ contains the number of controllers under manual operation





## **DDC Suite Advanced**

# **Family : Initialisation**



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## **DDC Suite Advanced – Family: Initialisation** Init LIB

BACnet: BAC_DDC_InitLibrary.src Doc-File: DOC_DDC_InitialisationLibrary.src AddOn: AddOn_DDC_InitialisationLibrary.src

Symbol
in_QuitStoerung
in_QuitWartung
in_WatchDog
in_Aussentemp

Init LIB 🛛 🔘		
~	Label	Symbol
AckAla ResAla	ResAla	out_ResetStoerung
AckMt ResMt	ResMt	out_ResetWartung
WD Err-	Err	out_Error
OutTemp Bat	Bat	 out_Batterie
Pulse	Pulse	out_SekundenPuls

Symbol	Default Symbol	
stc_QuitStoerung	SmQuit	
stc_QuitWartung	WartQuit	
stc_QuitDiagnose	HistQuit	
stc_DiagnoseSm	HistFehler	
stc_ResetStoerungPuls	SmQuitHwImp	
stc_DiagXob	HistMeldung	
stc_DiagPrgL	HistProgLine	
stc_DiagIdx	HistIndex	
stc_DiagCobL	HistCobLine	
stc_DiagNL1L	HistCall1	
stc_DiagNL2L	HistCall2	
stc_DiagNL3L	HistCall3	
stc_DiagNL4L	HistCall4	
stc_DiagNL5L	HistCall5	
stc_DiagNL6L	HistCall6	
stc_DiagNL7L	HistCall7	
stc_DiagRes	HistReserve	
stc_SmBatterie	SmBatterie	
stc_QuitDI	QuitDI	
stc_QuitD0	QuitDO	







BACnet: BAC_DDC_InitAntiBlocking.src

Doc-File: DOC_DDC_InitialisationAntiBlocking.src

AddOn: AddOn_DDC_InitialisationAntiBlocking.src

Label	Symbol	Init ABS		Label	Symbol
En2P	in_FreigabeUwp	-En2P	2P-	2P	out_AbsUwp
EnY	in_FreigabeY	EnY	- Y-	Y	out_AbsY

Symbol	Default Symbol
stc_UwpFreigabe	UwpErlaubt
stc_UwpWochenpuls	UwpWoImpuls
stc_YFreigabe	YErlaubt
stc_YWochenpuls	YWoImpuls
stc_UwpVorwahl	UwpVorwahl
stc_UwpStillstand	UwpStillDauer
stc_UwpWochentag	UwpWoTag
stc_UwpUhrzeit	UwpWoUhrzeit
stc_YVorwahl	YVorwahl
stc_YStillstand	YStillDauer
stc_YWochentag	YWoTag
stc_YUhrzeit	YWoUhrzeit



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#### **DDC Suite Advanced – Family: Initialisation Init FD**

BACnet: BAC_DDC_InitFireDamper.src

Doc-File: DOC_DDC_InitialisationFireDamper.src

AddOn: AddOn_DDC_InitialisationFireDamper.src

Label	Symbol
Test	in_StartTest
Reset	in_Reset

	Init FD	Label	Symbol
Test	Test-	Test	out_TestStatus
Reset	Date	Date	out_TestDatum
	Time	Time	out_TestZeit
	Fault	Fault	out_TestErgebnis
	Memory	Memory	out_TestBeendet
	moniory		

Symbol	Default Symbol
stc_TestErgebnis	TestErg
stc_TestStarten	Start
stc_TestStoppen	Abbruch
stc_TestStatus	Zustand
stc_LaufzeitAuf	ZeitZu
stc_LaufzeitZu	ZeitAuf
stc_AnzahlBSK	BskTotal
stc_AnzahlPositiv	BskOk
stc_AnzahlNegativ	BskFehler
stc_TestDatum	TestDatum
stc_TestZeit	TestZeit





#### **DDC Suite Advanced**

### **Family : General**



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# DDC Suite Advanced – Family: General ManualOP

Doc-File: AddOn: DOC_DDC_GeneralManualInfo.src AddOn_DDC_GeneralManualInfo.src

rs out_Motoren
s out_Antriebe
oll out_Regler

Symbol	Default Symbol
stc_Motoren	MotAnzahl
stc_Antriebe	AntrAnzahl
stc_Regler	RegAnzahl
stc_MotorenAuto	MotAuto
stc_AntriebeAuto	AntrAuto
stc_ReglerAuto	RegAuto





#### **DDC Suite Advanced**

### Family : Analogue values



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DDC Suite Advanced – Family: Analogue values Value (binary)

BACnet: BAC_DDC_MeasurementBinary.src Doc-File: DOC_DDC_MeasurementBinary.src

Label	Symbol		Label	Symbol
Value	in_Value	-Value -		out_Value

Symbol	Default Symbol
stc_Value	Flag

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# DDC Suite Advanced – Family: Analogue values Value (integer)

BACnet:	BAC_DDC_MeasurementInteger.src
Doc-File:	DOC_DDC_MeasurementInteger.src

Label	Symbol		Label	Symbol	Symbol	Default Symbol
Value	in_Value	-Value -		out_Value	stc_Value	Register



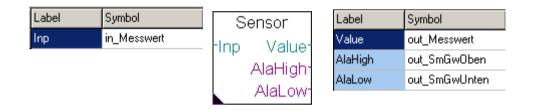
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### DDC Suite Advanced – Family: Analogue values Sensor

Alarming:	ALM_DDC_Measurement_Sensor.src
BACnet:	BAC_DDC_MeasurementSensor.src
Doc-File:	DOC_DDC_MeasurementSensor.src



Symbol	Default Symbol
stc_SmGwOben	SmGwOben
stc_SmGwUnten	SmGwUnten
stc_Messwert	Istwert
stc_Korrektur	Korrektur
stc_FilterZeit	FilterZeit
stc_FilterFaktor	FilterFaktor
stc_MesswertY1	IstwertY1
stc_MesswertY2	IstwertY2
stc_RohwertX1	RohwertX1
stc_RohwertX2	RohwertX2
stc_Gw0ben	GwOben
stc_GwUnten	GwUnten
stc_SpgGrp	SpgGrp
stc_MesswertTyp	MessTyp





#### Sala-Surgess Control Systems and Components DDC Suite Advanced – Family: Analogue values Counter

BACnet:	BAC_DDC_MeasurementCounter.src
Doc-File:	DOC_DDC_MeasurementCounter.src

Label	Symbol	Cour	nter	Label	Symbol
Imp	in_Impuls	Imp	Val	Val	out_Zaehlwert
			Rest	Res	out_Restwert
				LastVal	out_ZaehlwertAlt
			astVal⁻	LastRes	out_RestwertAlt
		La	stRes		

Symbol	Default Symbol
stc_ImpulsFaktor	ImpFaktor
stc_ReduktionsFaktor	RedFaktor
stc_Zaehlwert	Wert
stc_Restwert	Rest
stc_Monat	Monat
stc_Tag	MonatTag
stc_ZaehlwertAlt	SpeicherWert
stc_RestwertAlt	SpeicherRest







# DDC Suite Advanced – Family: Analogue values Selection

BACnet:	BAC
Doc-File:	DOC

AC_DDC_MeasurementSelect.src DC_DDC_MeasurementSelect.src

Label	Symbol	Sel	ection	Label	Symbol
Inp	in_Wert	-Inp0	max	max.	out_Max
				Avg	out_Mittel
		-Inp1	Avg-	min.	out_Min
		-Inp2	min	#1	out_Wahl1
			#1-	#2	out_Wahl2
			#2-		

Symbol	Default Symbol
stc_MitWert1	Wert1Aktiv
stc_MitWert2	Wert2Aktiv
stc_MitWert3	Wert3Aktiv
stc_MitWert4	Wert4Aktiv
stc_MitWert5	Wert5Aktiv
stc_MitWert6	Wert6Aktiv
stc_MitWert7	Wert7Aktiv
stc_MitWert8	Wert8Aktiv
stc_MitWert9	Wert9Aktiv
stc_MitWert10	Wert10Aktiv
stc_Max	Maximal
stc_Mittel	Mittel
stc_Min	Minimal
stc_Wahl1	Auswahl1
stc_Wahl2	Auswahl2
stc_Wert1	Wert1
stc_Wert2	Wert2



#### Sala-burgess Control Systems and Components DDC Suite Advanced – Family: Analogue values A/D

BACnet:	BAC_DDC_MeasurementAnalogDigital.src
Doc-File:	DOC_DDC_MeasurementAnalogDigital.src



Symbol	Default Symbol
stc_Zustand	Wert
stc_GrenzwertOben	High
stc_GrenzwertUnten	Low





#### **DDC Suite Advanced**

## **Family : Alarming**



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### **DDC Suite Advanced – Family: Alarming** Ala Fuse

Alarming:	ALM_DDC_Alarming_PowerSupply.src
BACnet:	BAC_DDC_AlarmingPowerSupply.src
Doc-File:	DOC_DDC_AlarmingPowerSupply.src
AddOn:	AddOn_DDC_AlarmingPowerSupply.src

Label	Symbol	🛛 Ala Fuse 🌘
230	in_230AC	230 GrpAla
24~	in_24AC	− -24~ StartUp
24=	in_24DC	
Ph	in_Phasen	
vltg.	in_Steuerkreis	- Ph [24~]
		[–] vltg. [24=] [.]

use 🔘	Label	Symbol
•	GrpAla	out_Ssm
GrpAla	StartUp	out_StartUp
StartUp	[230]	out_DI230AC
[230]	[24~]	out_DI24AC
[24~]	[24=]	out_DI24DC
[24=]	[Ph]	out_DIPhasen
[Ph]-	[Spg]	out_DISteuerkreis
[Spg]		-

Symbol	Default Symbol
stc_NoNc230AC	AC230NoNc
stc_QuitTyp230AC	AC230QuitPflicht
stc_NoNc24AC	AC24NoNc
stc_QuitTyp24AC	AC24QuitPflicht
stc_NoNc24DC	DC24NoNc
stc_QuitTyp24DC	DC24QuitPflicht
stc_NoNcPhasen	PhasenNoNc
stc_QuitTypPhasen	PhasenQuitPflicht
stc_NoNcSteuerkreis	SpgNoNc
stc_QuitTypSteuerkreis	SpgQuitPflicht
stc_PhasenTyp	PhasenOverride
stc_SteuerkreisTyp	SpgOverride
stc_Sm230AC	SmAC230
stc_Sm24AC	SmAC24
stc_Sm24DC	SmDC24
stc_SmPhasen	SmPhasen
stc_SmSteuerkreis	SmSpg
stc_DI230AC	DI230AC
stc_DI24AC	DI24AC
stc_DI24DC	DI24DC
stc_DIPhasen	DIPhasen
stc_DISteuerkreis	DISteuerkreis
stc_Delay	Verzoeger

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### **DDC Suite Advanced – Family: Alarming** 1 Ala/Msg

Alarming:	ALM_DDC_Alarming_AlarmMessage.src
BACnet:	BAC_DDC_AlarmingAlarmMessage.src
Doc-File:	DOC_DDC_AlarmingAlarmMessage.src
AddOn:	AddOn_DDC_AlarmingAlarmMessage.src

Label	Symbol	🔄 1 Ala/Msg 🔘	Label	Symbol
Inp	in_Kontakt		Alarm	out_Sm
			Message	out_Mld
		Message	[Inp]	out_DI
		[Inp]-		

Symbol	Default Symbol
stc_NoNc	NoNc
stc_QuitTyp	QuitPflicht
stc_Sm	Sm
stc_SpgGrp	SpgGrp
stc_SmTyp	Funktion
stc_AnzugVerz	VerzAnzug
stc_AbfallVerz	VerzAbfall
stc_DI	DIKontakt







### DDC Suite Advanced – Family: Alarming 1 Alarm

ALM_DDC_Alarming_1Alarm.src
BAC_DDC_Alarming1Alarm.src
DOC_DDC_Alarming1Alarm.src
AddOn_DDC_Alarming1Alarm.src

Label	Symbol	1 Alar	m 🔘	Label	Symbol	
Inp	in_Kontakt	Inp	Alarm	Alarm	out_Sm	
		in ip	[Inp]	[Inp]	out_DI	
			[mb]			

Symbol	Default Symbol
stc_NoNc	NoNc
stc_QuitTyp	QuitPflicht
stc_SpgGrp	SpgGrp
stc_Sm	Sm
stc_DI	DIKontakt





# DDC Suite Advanced – Family: Alarming 5 Alarms

Alarming:	ALM_DDC_Alarming_5Alarms.src
BACnet:	BAC_DDC_Alarming5Alarms.src
Doc-File:	DOC_DDC_Alarming5Alarms.src
AddOn:	AddOn_DDC_Alarming5Alarms.src

Label	Symbol	5 Ala	arms 🔘	Label	Symbol
Inp	in_Kontakt	-Inp0	GrpAla	GrpAla	out_Ssm
		-Inp1	Alarm0-	Alarm	out_Sm
		inp i	Alarm1	[Inp]	out_DI
			[Inp]0-		
			[Inp]1-		

Symbol	Default Symbol
stc_NoNc1	Mld1_NoNc
stc QuitTyp1	Mld1_QuitPflicht
stc_NoNc2	MId2 NoNc
stc_QuitTyp2	 MId2_QuitPflicht
stc_NoNc3	MId3_NoNc
stc_QuitTyp3	MId3_QuitPflicht
stc_NoNc4	MId4_NoNc
stc_QuitTyp4	MId4_QuitPflicht
stc_NoNc5	MId5_NoNc
stc_QuitTyp5	MId5_QuitPflicht
stc_SpgGrp1	Mld1_SpgGrp
stc_SpgGrp2	MId2_SpgGrp
stc_SpgGrp3	MId3_SpgGrp
stc_SpgGrp4	MId4_SpgGrp
stc_SpgGrp5	MId5_SpgGrp
stc_Sm1	MId1_Sm
stc_Sm2	MId2_Sm
stc_Sm3	MId3_Sm
stc_Sm4	MId4_Sm
stc_Sm5	MId5_Sm
stc_DI1	Mld1_DIKontakt
stc_DI2	MId2_DIKontakt
stc_DI3	MId3_DIKontakt
stc_DI4	MId4_DIKontakt
stc_DI5	MId5_DIKontakt



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# DDC Suite Advanced – Family: Alarming AlaDelay

Alarming:	ALM_DDC_Alarming_DelayedAlarm.src
BACnet:	BAC_DDC_AlarmingDelayedAlarm.src
Doc-File:	DOC_DDC_AlarmingDelayedAlarm.src
AddOn:	AddOn_DDC_AlarmingDelayedAlarm.src

Label	Symbol	AlaDelay 🔘		Label	Symbol
En	in_Freigabe	-En	Alarm	Alarm	out_Sm
Inp	in_Kontakt	Inp	[Inp]-	[Inp]	out_DI

Symbol	Default Symbol
stc_NoNc	NoNc
stc_VerzoegerungsT	VerzoegerTyp
stc_QuitTyp	QuitPflicht
stc_Dauer	Verzoegerung
stc_SpgGrp	SpgGrp
stc_Sm	Sm
stc_DI	DIKontakt







### **DDC Suite Advanced – Family: Alarming** Ala SetPt

Alarming:	ALM_DDC_Alarming_Hysteresis.src
BACnet:	BAC_DDC_AlarmingHysteresis.src
Doc-File:	DOC_DDC_AlarmingHysteresis.src

Label	Symbol	Ala SetF	Pt 🔴	Label	Symbol
En	in_Freigabe	- En	GrpAla	GrpAla	out_Ssm
SetPt	in_Sollwert			TolHigh	out_SmOben
Sensor	in_Istwert	-SetPt	TolHigh-	TolLow	out_SmUnten
		Sensor	TolLow		

Symbol	Default Symbol		
stc_Startverzoegerung	StartVerzoeger		
stc_HystereseOben	UeberHyst		
stc_VerzoegerungOben	UeberVerz		
stc_HystereseUnten	UnterHyst		
stc_VerzoegerungUnten	UnterVerz		
stc_VerzoegerungEinheit	VerzProEinheit		
stc_HystereseEinheit	SollAendHyst		
stc_SmOben	UeberSm		
stc_SmUnten	UnterSm		
stc_Ssm	SmSammel		
stc_Sollwert	Sollwert		
stc_SollwertTyp	SollwertTyp		



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### **DDC Suite Advanced – Family: Alarming** AlaMotor1

Alarming: BACnet: Doc-File: AddOn:

ALM_DDC_Alarming_MotorDrive1Speed.src BAC_DDC_AlarmingMotorDrive1Speed.src DOC_DDC_AlarmingMotorDrive1Speed.src AddOn_DDC_AlarmingMotorDrive1Speed.src

Label	Symbol
Run	in_Ansteuerung
fb	in_Betrieb
mp	in_Motor
SS	in_RepSchalter
pfb	in_Prozess
man	in_Handeingriff

AlaMo	otor1 🔘	Label	Symbol
Run	[fb!]-	[fb!]	out_DIBetrieb
-fb	[mp]-	[mp]	out_DIMotor
		[\$\$]	out_DIRepSchalter
-mp	[SS] ⁻	[pfb]	out_DIProzess
-SS	[pfb]-	[man]	out_DIHandeingriff
-pfb	[man]	GrpAla	out_Ssm
man	GrpAla		

Symbol	Default Symbol		
stc_ProzessNoNc	DrzNoNc		
stc_MotorQuitTyp	MotQuitPflicht		
stc_MotorNoNc	MotNoNc		
stc_RepSchalterQuitTyp	RepQuitPflicht		
stc_RepSchalterNoNc	RepNoNc		
stc_HandeingriffNoNc	HandNoNc		
stc_BetriebVerzoeger	BrmVerzoeger		
stc_ProzessVerzoeger	DrzVerzoeger		
stc_MotorSpgGrp	MotSpgGrp		
stc_RepSchalterSpgGrp	RepSpgGrp		
stc_HandeingriffSpgGrp	HandSpgGrp		
stc_SmBetrieb	BrmSm		
stc_SmProzess	DrzSm		
stc_SmMotor	MotSm		
stc_SmRepSchalter	RepSm		
stc_SmHandeingriff	HandSm		
stc_BetriebDI	BrmDI		
stc_ProzessDI	DrzDI		
stc_MotorDI	MotDI		
stc_RepSchalterDI	RepDI		
stc_HandeingriffDI	HandDI		
stc_SsmTyp	SsmTyp		



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## DDC Suite Advanced – Family: Alarming AlaMotor2

Alarming: BACnet: Doc-File: AddOn: ALM_DDC_Alarming_MotorDrive2Speed.src BAC_DDC_AlarmingMotorDrive2Speed.src DOC_DDC_AlarmingMotorDrive2Speed.src AddOn_DDC_AlarmingMotorDrive2Speed.src

Label	Symbol	AlaMotor2
Run	in_Ansteuerung	-Run
fb1	in_BetriebSt1	-fb1
fb2	in_BetriebSt2	-fb2
mp1	in_MotorSt1	-mp1
mp2	in_MotorSt2	-mp2
SS	in_RepSchalter	TSS
pfb	in_Prozess	
man1	in_HandeingriffSt1	-pfb [
man2	in_HandeingriffSt2	-man1 [
		tman2 (

2 🔘	Label	Symbol
[fb1!]-	[fb1!]	out_DIBetriebSt1
[fb2!]-	[fb2!]	out_DIBetriebSt2
[mp1]	[mp1]	out_DIMotorSt1
	[mp2]	out_DIMotorSt2
[mp2]-	[88]	out_DIRepSchalter
[ss] ⁻	[pfb]	out_DIProzess
[pfb]-	[man1]	out_DIHandeingriffSt1
[man1]-	[man2]	out_DIHandeingriffSt2
[man2]-	GrpAla	out_Ssm
GrpAla-		-

Symbol	Default Symbol	
stc_ProzessNoNc	DrzNoNc	
stc_MotorQuitTyp	MotQuitPflicht	
stc_MotorNoNc	MotNoNc	
stc_RepSchalterQuitTyp	RepQuitPflicht	
stc_RepSchalterNoNc	RepNoNc	
stc_HandeingriffNoNc	HandNoNc	
stc_BetriebVerzoeger	BrmVerzoeger	
stc_ProzessVerzoeger	DrzVerzoeger	
stc_MotorSpgGrp	MotSpgGrp	
stc_RepSchalterSpgGrp	RepSpgGrp	
stc_HandeingriffSpgGrp	HandSpgGrp	
stc_SmBetrieb	BrmSm	
stc_SmProzess	DrzSm	
stc_SmMotor	MotSm	
stc_SmRepSchalter	RepSm	
stc_SmHandeingriff	HandSm	
stc_BetriebSt1DI	BrmSt1DI	
stc_BetriebSt2DI	BrmSt2DI	
stc_ProzessDI	DrzDI	
stc_MotorSt1DI	MotSt1DI	
stc_MotorSt2DI	MotSt2DI	
stc_RepSchalterDI	RepDI	
stc_HandeingriffSt1DI	HandSt1DI	
stc_HandeingriffSt2D1	HandSt2DI	
stc_SsmTyp	SsmTyp ·	



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#### DDC Suite Advanced – Family: Alarming AlaMotor3

Alarming: BACnet: Doc-File: AddOn:

ALM_DDC_Alarming_MotorDrive3Speed.src BAC_DDC_AlarmingMotorDrive3Speed.src DOC_DDC_AlarmingMotorDrive3Speed.src AddOn_DDC_AlarmingMotorDrive3Speed.src

Label	Symbol	AlaMotor	3 🔘	Label	Symbol
Run	in_Ansteuerung	-Run	[fb1!]-	[fb1!]	out_DIBetriebSt1
<i>і</i> Ь1	in_BetriebSt1	-fb1	[fb2!]-	[fb2!]	out_DIBetriebSt2
fb2	in_BetriebSt2	-fb2	[fb3!]-	[fb3!]	out_DIBetriebSt3
fb3	in_BetriebSt3	-fb3	[mp1]-	[mp1]	out_DIMotorSt1
mp1	in_MotorSt1	-mp1	[mp2]	[mp2]	out_DIMotorSt2
mp2	in_MotorSt2			[mp3]	out_DIMotorSt3
mp3	in_MotorSt3	-mp2	[mp3]-	[\$\$]	out_DIRepSchalter
88	in_RepSchalter	-mp3	[ss] ⁻	[pfb]	out_DIProzess
pfb	in_Prozess	-SS	[pfb]-	[man1]	out_DIHandeingriffSt1
man1	in_HandeingriffSt1	-pfb	[man1]-	[man2]	out_DIHandeingriffSt2
man2	in_HandeingriffSt2	-man1	[man2]-	[man3]	out_DIHandeingriffSt3
man3	in_HandeingriffSt3	-man2	[man3]-	GrpAla	out_Ssm
		man3	GrpAla		

Symbol	Default Symbol	
stc_ProzessNoNc	DrzNoNc	
stc_MotorQuitTyp	MotQuitPflicht	
stc_MotorNoNc	MotNoNc	
stc_RepSchalterQuitTyp	RepQuitPflicht	
stc_RepSchalterNoNc	RepNoNc	
stc_HandeingriffNoNc	HandNoNc	
stc_BetriebVerzoeger	BrmVerzoeger	
stc_ProzessVerzoeger	DrzVerzoeger	
stc_MotorSpgGrp	MotSpgGrp	
stc_RepSchalterSpgGrp	RepSpgGrp	
stc_HandeingriffSpgGrp	HandSpgGrp	
stc_SmBetrieb	BrmSm	
stc_SmProzess	DrzSm	
stc_SmMotor	MotSm	
stc_SmRepSchalter	RepSm	
stc_SmHandeingriff	HandSm	
stc_BetriebSt1DI	BrmSt1DI	
stc_BetriebSt2DI	BrmSt2DI	
stc_BetriebSt3DI	BrmSt3DI	
stc_ProzessDI	DrzDI	
stc_MotorSt1DI	MotSt1DI	
stc_MotorSt2DI	MotSt2DI	
stc_MotorSt3DI	MotSt3DI	
stc_RepSchalterDI	RepDI	
stc_HandeingriffSt1DI	HandSt1DI	
stc_HandeingriffSt2D1	HandSt2DI	
stc_HandeingriffSt3D1	HandSt3DI	
stc_SsmTyp	SsmTyp	



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Label

AirFt

RetT

#### **DDC Suite Advanced – Family: Alarming Ala Frost**

Alarming:	ALM_DDC_Alarming_FrostProtection.src
BACnet:	BAC_DDC_AlarmingFrostProtection.src
Doc-File:	DOC_DDC_AlarmingFrostProtection.src
AddOn:	AddOn_DDC_AlarmingFrostProtection.src

Symbol	Ala Frost		Label	Symbol
in_Thermostat	AirFt	[AirFt]-	[AirFt]	out_DIThermostat
in_Ruecklauftemp		aAirFt-	AlaAirFt	out_SmThermostat
-			AlaRetT	out_SmRuecklaufter
	A 1	laRetT-	AlaFr	out_SmFrost
		AlaFr	QitAla	out_Reset
		QitAla		

Symbol	Default Symbol
stc_ThermostatNoNc	ThermNoNc
stc_RuecklauftempGwEin	RITempGwFrost
stc_Verzoegerung1te	Verzoeger1
stc_Verzoegerung2te	Verzoeger2
stc_ThermostatSpgGrp	ThermSpgGrp
stc_RuecklauftempGwAus	RITempGwOK
stc_SmThermostat	SmTherm
stc_SmRuecklauftemp	SmRITemp
stc_SmFrostprogramm	SmAktiv
stc_SmFrost	SmFrost
stc_ThermostatDI	ThermDI



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# DDC Suite Advanced – Family: Alarming FireDamper

Alarming:	ALM_DDC_Alarming_FireDamper.src
BACnet:	BAC_DDC_AlarmingFireDamper.src
Doc-File:	DOC_DDC_AlarmingFireDamper.src
AddOn:	AddOn_DDC_AlarmingFireDamper.src

Label	Symbol
Open	in_AnforderungAuf
fbC	in_RueckmeldungZu
fbO	in_RueckmeldungAuf
Test	in_Test

FireDa	mper 🔘	Label	Symbol
-Open	Open	Open	out_Auf
-fbC	GrpAla	GrpAla	out_Ssm
-fbO	AlaCt	AlaC	out_SmZu
-Test		AlaO	out_SmAuf
riest	AlaO-	GrpMsg	out_Mld
	GrpMsg	Test	out_Test
	Test-	[fbO!]	out_DIRmAuf
	[fbO!] ⁻	[fbC!]	out_DIRmZu
	[fbC!]-		

Symbol	Default Symbol
stc_QuitTyp	QuitLog
stc_SmZu	SmZu
stc_SmAuf	SmAuf
stc_AnsteuerungAuf	Betrieb
stc_RueckmeldungZu	RmZu
stc_RueckmeldungAuf	RmAuf
stc_Vorwahl	Vorwahl
stc_SmTyp	FunkOut
stc_ZuZeit	DauerZu
stc_AufZeit	DauerAuf
stc_RmAufDI	RmAufDI
stc_RmZuDI	RmZuDI





#### **DDC Suite Advanced**

## Family : Set points



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Saia-burgess Control Systems and Components DDC Suite Advanced – Family: Set points Val (binary)

BACnet: Doc-File: BAC_DDC_SetPointBinary.src DOC_DDC_SetPointBinary.src

Val-	Label	Symbol
var	Val	out_Value

Symbol	Default Symbol
stc_Value	Flag





Saia-burgess Control Systems and Components DDC Suite Advanced – Family: Set points Val (integer)

BACnet: Doc-File: BAC_DDC_SetPointInteger.src DOC_DDC_SetPointInteger.src

Val-	Label	Symbol
Vai	Val	out_Value

Symbol	Default Symbol
stc_Value	Register





#### Saia-burgess Control Systems and Components DDC Suite Advanced – Family: Set points Hysteresis

BACnet:	BAC_DD
Doc-File:	DOC_DI

C_DDC_SetPointWithHysteresis.src C_DDC_SetPointWithHysteresis.src

Label	Symbol	Н	Hysteresis		Symbol
Ext.	in_Extern	-Ext	. +Hyst-	+Hyst	out_SollwertPlus
		,	SetPt-	SetPt	out_Sollwert
				-Hyst	out_SollwertMinus
			-Hyst-		-

Symbol	Default Symbol
stc_Basis	Basis
stc_Sollwert	SollMittel
stc_Hysterese	Hysterese
stc_SollwertPlus	SollPlus
stc_SollwertMinus	SollMinus
stc_TypExtern	ExtFunc
stc_SollwertExtern	Extern





Saia-burgess Control Systems and Components DDC Suite Advanced – Family: Set points Linear2

BACnet:	BAC_DDC_SetPointLinear2Point.src
Doc-File:	DOC_DDC_SetPointLinear2Point.src

Label	Symbol	Linear2		Label	Symbol
X	in_X	×	Y-	Y	out_Y

Symbol	Default Symbol
stc_X1	KurveX1
stc_Y1	KurveY1
stc_X2	KurveX2
stc_Y2	KurveY2
stc_Y	Errechnet





Sala-burgess Control Systems and Components DDC Suite Advanced – Family: Set points Linear4

BACnet:	BAC_DDC_SetPointLinear4Point.src
Doc-File:	DOC_DDC_SetPointLinear4Point.src

Label	Symbol	Linear4		Label	Symbol
×	in_X	×	Y-	Y	out_Y

Symbol	Default Symbol
stc_X1	KurveX1
stc_X2	KurveX2
stc_X3	KurveX3
stc_X4	KurveX4
stc_Y1	KurveY1
stc_Y2	KurveY2
stc_Y3	KurveY3
stc_Y4	KurveY4
stc_Y	Errechnet





Saia-burgess Control Systems and Components DDC Suite Advanced – Family: Set points Room

BACnet: Doc-File: BAC_DDC_SetPointRoom.src DOC_DDC_SetPointRoom.src

Label	Symbol	R	oom	Label	Symbol
Ext	in_Extern	-Ext	SetPt-	SetPt	out_Sollwert
OutTemp	in_Aussentemp	OutTer	mp		

Symbol	Default Symbol
stc_SollwertTyp	SollTyp
stc_SollwertBasis	Basis
stc_DifferenzDIN	DiffDin
stc_SollwertMaximal	Maximal
stc_ExternTyp	ExtFunc
stc_SollwertExtern	Extern
stc_Sollwert	Sollwert







## Family : System and clocks





#### Sala-Surgess Control Systems and Components DDC Suite Advanced – Family: System and clocks System 1sp

BACnet:	BAC_DDC_EnablingSystemSwitch1.src
Doc-File:	DOC_DDC_EnablingSystemSwitch1.src

Label	Symbol	System 1sp	$\bigcirc$	Label	Symbol
Clock	in_Uhr	-Clock E	Ent	En	out_Freigabe
Special	in_Sonder	-Special Demar	ndr	Demand	out_Bedarf
Channel	in_Kanal	Channel			_

Symbol	Default Symbol
stc_UhrTyp	UhrTyp
stc_Uhr	Uhrkanal
stc_Bedarf	Bedarf
stc_Sonder	Sonder
stc_Freigabe	Freigabe
stc_Vorwahl	Vorwahl
stc_Schalter	VorwahlHand
stc_Kanal	Schaltkanal
stc_LED	





#### Sala-Surgess Control Systems and Components DDC Suite Advanced – Family: System and clocks System 2sp

BACnet:	BAC_DDC_EnablingSystemSwitch2.src
Doc-File:	DOC_DDC_EnablingSystemSwitch2.src

Label	Symbol
ClkSp1	in_UhrSt1
ClkSp2	in_UhrSt2
SpcSp1	in_SonderSt1
SpcSp2	in_SonderSt2
Channel	in_Kanal

System 2sp 🛛 🔘	Label	Symbol
-ClkSp1 EnSp1-	EnSp1	out_Freigabe
-ClkSp2 EnSp2-	EnSp2	out_FreigabeSt2
-SpcSp1 Demand	Demand	out_Bedarf
-SpcSp2		
Channel		

Symbol	Default Symbol
stc_UhrTyp	UhrTyp
stc_Uhr	UhrZustand
stc_Bedarf	Bedarf
stc_Sonder	Sonder
stc_Freigabe	Freigabe
stc_Vorwahl	Vorwahl
stc_Schalter	VorwahlHand
stc_Kanal	Schaltkanal









### **DDC Suite Advanced – Family: System and clocks** System 3sp

BACnet:	BAC_DDC_EnablingSystemSwitch3.src
Doc-File:	DOC_DDC_EnablingSystemSwitch3.src

Label	Symbol
ClkSp1	in_UhrSt1
ClkSp2	in_UhrSt2
ClkSp3	in_UhrSt3
SpcSp1	in_SonderSt1
SpcSp2	in_SonderSt2
SpcSp3	in_SonderSt3
Channel	in_Kanal

System 3	Bsp 🔘	Label	Symbol
-ClkSp1	EnSp1-	EnSp1	out_Freigabe
ClkSp2	EnSp2-	EnSp2	out_FreigabeSt2
-ClkSp3	EnSp3-	E-C-0	out_FreigabeSt3
		Llemand	out_Bedarf
SpcSp1[	Demand		
SpcSp2			
SpcSp3			
Channel			

Symbol	Default Symbol
stc_UhrTyp	UhrTyp
stc_Uhr	Uhrkanal
stc_Bedarf	Bedarf
stc_Sonder	Sonder
stc_Freigabe	Freigabe
stc_Vorwahl	Vorwahl
stc_Schalter	VorwahlHand
stc_Kanal	Schaltkanal



Saia-Surgess Control Systems and Components



# DDC Suite Advanced – Family: System and clocks HeatCirc

BACnet:	BAC_DDC_EnablingSystemHeatingCirquit.src
Doc-File:	DOC_DDC_EnablingSystemHeatingCirquit.src

Label	Symbol	HeatCirc	0	Label	Symbol
Winter	in_Freigabe	-Winter	En-	En	out_Heizkreis
Day	in_Tag	-Dav	Day-	Day	out_Tag
OutTemp	in_Aussentemp	-OutTemp	SetPt-	SetPt	out_Sollwert
FrostTmp	in_FrostTemp	FrostTmp	004 1		
Off	in_Vorrang	Off			
Channel	in_Kanal				
		Channel			

Symbol	Default Symbol
stc_Schalter	VorwahlHand
stc_Vorwahl	Vorwahl
stc_NachtAbs	NachtAbs
stc_HeizGwTag	HeizGwTag
stc_FrostGwEin	FrostGwEin
stc_FrostGwAus	FrostGwAus
stc_FbDauer	FbDauer
stc_Anforderung	Anforder
stc_Zustand	Zustand
stc_Sollwert	Sollwert
stc_SollwertAt	Errechnet
stc_KurveX1	KurveX1
stc_KurveY1	KurveY1
stc_KurveX2	KurveX2
stc_KurveY2	KurveY2
stc_KurveX3	KurveX3
stc_KurveY3	KurveY3
stc_KurveX4	KurveX4
stc_KurveY4	KurveY4
stc_Kanal	Schaltkanal
stc_HeizGwNacht	HeizGwNacht
stc_UhrTyp	UhrTyp
stc_Uhr	Uhr
stc_AtGwHyst	AtGwHyst



Sala-burgess Control Systems and Components



## DDC Suite Advanced – Family: System and clocks HotWater

BACnet:	BAC_DDC_EnablingSystemWaterHeater.src
Doc-File:	DOC_DDC_EnablingSystemWaterHeater.src

Label	Symbol
Clock	in_Uhr
Ttop	in_TempOben
Tbot	in_TempUnten
Ala	in_Ssm
Channel	in_Kanal

HotWater	0
-Clock	Ent
-Ttop	Disinfect
-Tbot	SetPtInf-
-Ala	SetPtHw-
-Channel	TempHw-
	Priority

$\odot$	Label	Symbol
En	En	out_Freigabe
nfect	Disinfec	out_LegFreigabe
PtInf-	SetPtInf	out_LadeSollwert
'tHw	SetPtHw	out_Sollwert
	TempHw	out_TempMittel
oHw-	Priority	out_VorFreigabe
ority-		

Symbol	Default Symbol
stc_Freigabe	Freigabe
stc_LegFreigabe	LegFreigabe
stc_VorVorwahl	VorVorwahl
stc_VorFreigabe	VorFreigabe
stc_Vorwahl	Vorwahl
stc_GwEin	GwEin
stc_GwAus	GwAus
stc_LadeHysterese	HystLadeTemp
stc_LadeSollwert	SwLadeTemp
stc_LegVorwahl	LegVorwahl
stc_LegWochentag	LegWoTag
stc_LegZeit	LegUhrzeit
stc_LegGwAus	LegGwAus
stc_LegDauer	LegMaxDauer
stc_VorDauer	VorMaxDauer
stc_Schalter	VorwahlHand
stc_Kanal	Kanal
stc_UhrTyp	UhrTyp
stc_Uhr	Uhr
stc_SsmSperre	Sperre





#### Sala-Surgess Control Systems and Components DDC Suite Advanced – Family: System and clocks Boiler

BACnet:	BAC_DDC_EnablingSystemBoiler.src
Doc-File:	DOC_DDC_EnablingSystemBoiler.src

Label	Symbol	Boiler	$\odot$	Label	Symbol
Winter	in_Freigabe	Winter	En	En	out_Freigabe
OutTemp	in_AussenTemp	OutTemp	SetPt-	SetPt	out_Sollwert
SetPtCon	in_Sollwert	SetPtCon	000 1		

Symbol	Default Symbol
stc_Heizen	Heizperiode
stc_Freigabe	Freigabe
stc_KurveX1	KurveX1
stc_KurveX2	KurveX2
stc_KurveX3	KurveX3
stc_KurveX4	KurveX4
stc_KurveY1	KurveY1
stc_KurveY2	KurveY2
stc_KurveY3	KurveY3
stc_KurveY4	KurveY4
stc_Schalter	VorwahlHand
stc_Vorwahl	Vorwahl
stc_Heizgrenze	Heizgrenze
stc_SollwertVerbr	SolVerbraucher
stc_SollwertAt	SollAt
stc_SollwertHyst	SollErhoehung
stc_Sollwert	Sollwert
stc_LED	







#### **DDC Suite Advanced – Family: System and clocks** FanStart

BACnet:	BAC_DDC_EnablingStartAirCondition.src
Doc-File:	DOC_DDC_EnablingStartAirCondition.src

Label	Symbol	Fan	Start	L
Start	in_Freigabe	-Start	WarmUp-	W
fbD amper	in_RmKlappeAuf	fbDamper	Damper-	D
Ala	in_Stoerung	Ala	SplyFan	S
PreHReT	in_VeRITemp	PreHReT	ExhstFan	Е
AlaFrost	in_SmFrost	AlaFrost	Contr-	С
Dehumid	in_Entfeuchtung			S
SNCool	in_Sommernachtkuehlung	Dehumid	SplyRamp-	s
FrstProt	in_Auskuehlschutz	SNCool	SetPtMon-	s
FredCool	in_Zwangskuehlung	-FrstProt	SplyStPt-	
SplyTemp	in_lstZuluftTemp	FredCool		
		SplyTemp		

Label	Symbol
WarmUp	out_Spuelen
Damper	out_Klappen
SplyFan	out_Zuluft
ExhstFan	out_Abluft
Contr	out_Regler
SplyRamp	out_SwZuluftRampe
SetPtMon	out_Grenzen
SplyStPt	out_Sol⊠uluftTemp

Symbol	Default Symbol
stc_Spuelen	Vorspuehlung
stc_Klappen	Klappen
stc_Zuluft	Zuluefter
stc_Abluft	Abluefter
stc_Regler	Regelung
stc_Grenzen	Grenzwerte
stc_SpuelenDauer	VorspDauer
stc_AbluftVerz	AbluftVerz
stc_ReglerVerz	ReglerVerz
stc_GrenzenVerz	GwVerz
stc_SpuelenAt	GwAt
stc_SpuelenRlGw	GwRITemp
stc_SwZuluftRampe	ZulRampe
stc_SwRampe	ZuVerz
stc_SwZuluftMin	ZulMin
stc_SwZuluftTemp	ZulSoll





DDC Suite Advanced – Family: System and clocks FanSpecial

BACnet:	BAC_DDC_EnablingAirConditionPreservation.src
Doc-File:	DOC_DDC_EnablingAirConditionPreservation.src

Label	Symbol
Demand	in_Bedarf
EnSNCool	in_FrkAnfUhr
Value	in_RaumTemplst
SetPoint	in_RaumTempSoll

FanSpecial		Label
Demand	SNCool	SNCool
EnSNCool	FrstProt	FrstProt
	FredCool	Englished State
SetPoint	SpcSp1-	SpcSp1
	SpcSp2	SpcSp2
		SpcSp3
	SpcSp3-	

Label	Symbol
SNCool	out_Sommernachtkuehlung
FrstProt	out_Auskuehlschutz
FredCool	out_Zwangskuehlung
SpcSp1	out_Stufe1
SpcSp2	out_Stufe2
SpcSp3	out_Stufe3

Symbol	Default Symbol
stc_FrkAt	FrkAtFreigabe
stc_FrkRt	FrkRtFreigabe
stc_FrkFreigabe	FrkFreigabe
stc_AksFreigabe	AksFreigabe
stc_UehsFreigabe	UehsFreigabe
stc_FrkVorwahl	FrkVorwahl
stc_FrkAtMin	FrkAtMin
stc_FrkAtRtHystEin	FrkAtHystRtEin
stc_FrkAtRtHystAus	FrkAtHystRtAus
stc_FrkRtHyst	FrkHystRt
stc_AksVorwahl	AksVorwahl
stc_AksGwEin	AksGwEin
stc_AksGwAus	AksGwAus
stc_UehsVorwahl	UehsVorwahl
stc_UehsHystEin	UehsHystEin
stc_UehsHystAus	UehsHystAus
stc_FrkAnfUhr	FrkAnfUhr

Sala-burgess Control Systems and Components





#### Sala-Surgess Control Systems and Components DDC Suite Advanced – Family: System and clocks FanSpeed

BACnet:	BAC_DDC_EnablingAirConditionDemand2ndSpeed.src
Doc-File:	DOC_DDC_EnablingAirConditionDemand2ndSpeed.src

Label	Symbol	Fan
En	in_Freigabe	-En
ClkSp2	in_Uhr	-ClkSp
SetPt	in_Sollwert	-SetPt
Value	in_Istwert	Value

FanSpeed		Label	Symbol	
n	Sp2-	Sp2	out_Stufe2	
lkSp2	-			
etPt				
alue				

Symbol	Default Symbol
stc_Uhr	Uhr
stc_Last	Last
stc_Stufe2	Stufe2
stc_LastTyp	LastTyp
stc_HystereseEin	HystEin
stc_VerzoegerungEin	VerzEin
stc_HystereseAus	HystAus
stc_VerzoegerungAus	VerzAus





Sala-Surgess Control Systems and Components DDC Suite Advanced – Family: System and clocks Redundant

BACnet:	BAC_DDC_EnablingRedundant.src
Doc-File:	DOC_DDC_EnablingRedundant.src

Label	Symbol	Redu
En1	in_En1	-En1
En2	in_En2	-En2
Ala1	in_Sm1	-Ala1
Ala2	in_Sm2	-Ala2
CntH1	in_Std1	-CntH1
CntH2	in_Std2	CntH2

edundant	Label	Symbol	
Run1-	Run1	out_Uwp1	
2 Run2-	Run2	out_Uwp2	
1			
2			
H1			

Symbol	Default Symbol
stc_Vorwahl	Vorwahl
stc_Typ	Funktion
stc_StdDifferenz	Differenz
stc_Wochentag	WoTag
stc_Uhrzeit	Uhrzeit
stc_Invertieren	Invertieren
stc_Folge	Folge





#### **DDC Suite Advanced**

# **Family : Controls**



Saia-Surgess Control Systems and Components



#### DDC Suite Advanced – Family: Controls Motor 1

Alarming:	ALM_DDC_Control_MotorDrive1Speed.src
BACnet:	BAC_DDC_ControlMotorDrive1Speed.src
Doc-File:	DOC_DDC_ControlMotorDrive1Speed.src
AddOn:	AddOn_DDC_ControlMotorDrive1Speed.src

Label	Symbol	Motor	1 🔘	Label	Symbol
En	in_Anforderung	-En	Run	Run	out_Ausgang
fb	in_Betrieb	fb	CntH-	CntH	out_Stunden
Ala	in_SsmSperre	Ala	CntFb-	CntFb	out_Schaltungen
		Ala	Mt-	Mt	out_Wartung
			IVIL		

Symbol	Default Symbol
stc_HMI	НМІ
stc_Startverzoegerur	StartVerzoeger
stc_SchaltungenMax	SchaltungMax
stc_StundenMax	StundenMax
stc_Ansteuerung	Ansteuerung
stc_Betrieb	Betrieb
stc_Wartung	Wartung
stc_SsmSperre	Sperre
stc_Schaltungen	Schaltung
stc_Stunden	Stunden
stc_AnsteuerungD0	AnsteuerDO
stc_HMISuper	HMISuper
stc_Ausgang	Ausgang





#### DDC Suite Advanced – Family: Controls Motor 2

Alarming:	ALM_DDC_Control_MotorDrive2Speed.src
BACnet:	BAC_DDC_ControlMotorDrive2Speed.src
Doc-File:	DOC_DDC_ControlMotorDrive2Speed.src
AddOn:	AddOn_DDC_ControlMotorDrive2Speed.src

Label	Symbol
En1	in_Anforderung
En2	in_AnforderungSt2
fb1	in_BetriebSt1
fb2	in_BetriebSt2
Ala	in_SsmSperre

Motor	2	Label	Symbol
-En1	Run1-	Run1	out_AnsteuerungSt1
En2	Run2-	Run2	out_AnsteuerungSt2
		11 intH	out_Stunden
-fb1	CntH-	CntFb	out_Schaltungen
-fb2	CntFb	Mt	out_Wartung
Ala	Mt-		

Symbol	Default Symbol
stc_HMI	НМІ
stc_Startverzoegerung	StartVerzoeger
stc_VerzoegerungSt2	VerzoegerSt2
stc_SchaltungenMax	SchaltungMax
stc_StundenMax	StundenMax
stc_VerzoegerungSt1	VerzoegerSt1
stc_Wartung	Wartung
stc_SsmSperre	Sperre
stc_Ansteuerung	Ansteuerung
stc_Betrieb	Betrieb
stc_SchaltungenSt1	SchaltungSt1
stc_StundenSt1	StundenSt1
stc_SchaltungenSt2	SchaltungSt2
stc_StundenSt2	StundenSt2
stc_AnsteuerungSt1D0	AnsteuerSt1D0
stc_AnsteuerungSt2D0	AnsteuerSt2D0
stc_HMISuper	HMISuper





#### DDC Suite Advanced – Family: Controls Motor 3

Alarming:	ALM_DDC_Control_MotorDrive3Speed.src
BACnet:	BAC_DDC_ControlMotorDrive23peed.src
Doc-File:	DOC_DDC_ControlMotorDrive23peed.src
AddOn:	AddOn_DDC_ControlMotorDrive3Speed.src

Label	Symbol	Motor	3
En1	in_Anforderung	-En1	Ru
En2	in_AnforderungSt2	-En2	Ru
En3	in_AnforderungSt3	-En3	R
fb1	in_BetriebSt1	-fb1	C
fb2	in_BetriebSt2		
fb3	in_BetriebSt3	-fb2	Cn
Ala	in_SsmSperre	-fb3	
		Ala	

3 🔘	Label	Symbol
Run1-	Run1	out_AnsteuerungSt1
Run2-	Run2	out_AnsteuerungSt2
Run3-	Run3	out_AnsteuerungSt3
CntH	CntH	out_Stunden
CntFb	CntFb	out_Schaltungen
	Mt	out_Wartung
IVIE-		

Symbol	Default Symbol
stc_HMI	НМІ
stc_Startverzoegerung	StartVerzoeger
stc_VerzoegerungSt2	VerzoegerSt2
stc_SchaltungenMax	SchaltungMax
stc_StundenMax	StundenMax
stc_VerzoegerungSt1	VerzoegerSt1
stc_Wartung	Wartung
stc_SsmSperre	Sperre
stc_Ansteuerung	Ansteuerung
stc_Betrieb	Betrieb
stc_SchaltungenSt1	SchaltungSt1
stc_StundenSt1	StundenSt1
stc_SchaltungenSt2	SchaltungSt2
stc_StundenSt2	StundenSt2
stc_SchaltungenSt3	SchaltungSt3
stc_StundenSt3	StundenSt3
stc_AnsteuerungSt1D0	AnsteuerSt1D0
stc_AnsteuerungSt2D0	AnsteuerSt2D0
stc_AnsteuerungSt3D0	AnsteuerSt3D0
stc_HMISuper	HMISuper





## DDC Suite Advanced – Family: Controls Pump

Alarming:	ALM_DDC_Control_Pump.src
BACnet:	BAC_DDC_ControlPump.src
Doc-File:	DOC_DDC_ControlPump.src
AddOn:	AddOn_DDC_ControlPump.src

Label	Symbol	Pump	0	Label	Symbol
En	in_Anforderung	-En	Run	Run	out_Ausgang
fb	in_Betrieb	-fb	CntH	CntH	out_Stunden
Ala	in_Ssm	- Ala	CntFb	CntFb	out_Schaltungen
Y	in_Y			Mt	out_Wartung
		- C1	Mt-		

Symbol	Default Symbol
stc_HMI	НМІ
stc_Nachlauf	Nachlauf
stc_AbsVorwahl	AbsErlaubt
stc_SchaltungenMax	SchaltungMax
stc_StundenMax	StundenMax
stc_AtFunktion	BedAtFunk
stc_AtGrenzwert	BedAtGw
stc_YFunktion	BedYFunk
stc_YGrenzwert	BedYGw
stc_Ansteuerung	Ansteuerung
stc_Betrieb	Betrieb
stc_Wartung	Wartung
stc_SsmSperre	Sperre
stc_AtAnforderung	BedAt
stc_YAnforderung	BedY
stc_Schaltungen	Schaltung
stc_Stunden	Stunden
stc_AnsteuerungD0	AnsteuerDO
stc_HMISuper	HMISuper
stc_Ausgang	Ausgang



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# DDC Suite Advanced – Family: Controls Continous

Alarming: BACnet: Doc-File: AddOn: ALM_DDC_Control_ValveDamperAnalog.src BAC_DDC_ControlValveDamperAnalog.src DOC_DDC_ControlValveDamperAnalog.src AddOn_DDC_ControlValveDamperAnalog.src

Label	Symbol
Y	in_Signal
Yfb	in_Rueckmeldung
Ovr	in_Zwangssteuerung
man	in_Handeingriff

Lal	inous 🔘	Conti
Y	Y-	(
Yin	Yinv-	ífb
Grp		Dvr
Ala	GrpAla	
Ala	AlaHigh-	nan
[ma	AlaLow	
1.115	[man]-	
	Friend 1	

Label	Symbol	
Y	out_Signal	
Yinv	out_SignalInvers	
GrpAla	out_Ssm	
AlaHigh	out_SmOben	
AlaLow	out_SmUnten	
[man]	out_Handeingriff	

Symbol	Default Symbol
stc_Antiblock	AbsErlaubt
stc_Laufzeit	Laufzeit
stc_SignalHand	SignalHand
stc_Signa⊠wang	Signa⊠wang
stc_SignalRegler	SignalRegler
stc_Signal	Signal
stc_SignalInvers	SignalInvers
stc_RueckmeldungHyst	RmHyst
stc_RueckmeldungSpgGrp	RmSpgGrp
stc_RueckmeldungRohMin	RmRohMin
stc_RueckmeldungRohMax	RmRohMax
stc_Rueckmeldung	RmSignal
stc_HMI	Vorwahl
stc_Zwangssteuerung	ZwangAktiv
stc_Invertieren	Invertieren
stc_RueckmeldungQuit	RmQuitPflicht
stc_RueckmeldungSmOben	RmObenSm
stc_RueckmeldungSmUnten	RmUntenSm
stc_HandeingriffDI	HandDI
stc_HandeingriffNoNc	HandNoNc
stc_HandeingriffSpgGrp	HandSpg
stc_HandeingriffSm	HandSm
stc_SignalAnforderung	Anforder





# DDC Suite Advanced – Family: Controls O/C

Alarming:	ALM_DDC_Control_ValveDamperOpenClose.src
BACnet:	BAC_DDC_ControlValveDamperOpenClose.src
Doc-File:	DOC_DDC_ControlValveDamperOpenClose.src
AddOn:	AddOn_DDC_ControlValveDamperOpenClose.src

fb0 in_R fbC in_R	nforderungAuf
fbC in_R	
_	ueckmeldungAuf
	ueckmeldungZu
Ovr in_Z	wangssteuerung
man in_H	

0/C
-En Up
fbO GrpAla
-fbC AlaO
-Ovr AlaC
man [fbO!]
[fbC!]

[man]

Label	Symbol	
Up	out_AusgangAuf	
GrpAla	out_Ssm	
AlaO	out_RueckmeldungAufSm	
AlaC	out_RueckmeldungZuSm	
[fbO!]	out_RueckmeldungAuf	
[fbC!]	out_RueckmeldungZu	
[man]	out_Handeingriff	

Symbol	Default Symbol
stc_Antiblock	AbsErlaubt
stc_Laufzeit	Laufzeit
stc_RueckmeldungSpgGrp	RmSpgGrp
stc_HMI	Vorwahl
stc_Nachlauf	Nachlauf
stc_Zwangssteuerung	ZwangAktiv
stc_RueckmeldungQuit	RmQuitPflicht
stc_RueckmeldungAufSm	RmAufSm
stc_RueckmeldungZuSm	RmZuSm
stc_Zwangsbefehl	BetriebZwang
stc_AnsteuerungAuf	Betrieb
stc_Rueckmeldung	Rm
stc_RueckmeldungTyp	RmTyp
stc_RmAufDI	RmAufDI
stc_RmZuDI	RmZuDI
stc_HMISuper	HMISuper
stc_HandeingriffDI	HandDl
stc_HandeingriffNoNc	HandNoNc
stc_HandeingriffSpgGrp	HandSpg
stc_HandeingriffSm	HandSm
stc_AusgangAuf	Ausgang
stc_AnstD0	AnsteuerDO





#### **DDC Suite Advanced**

# **Family : Controller**



Saia-Surgess Control Systems and Components





#### **DDC Suite Advanced – Family: Controller Master**

BACnet:	BAC_DDC_RegulationCascadeMaster.src
Doc-File:	DOC_DDC_RegulationCascadeMaster.src

Label	Symbol	N
EnContr	in_FrgRegelung	E
Temp	in_Istwert	- -T
SetPt	in_Sollwert	
SeqMin	in_YMin	-9
SeqMax	in_YMax	
		- Nº

Master	0			Current
	- <b>-</b>	L	.abel	Symbol
-EnContr SetF			SetPtSeq	out_Y
-Temp 🗧	SetPt-	9	SetPt	out_Sollwert
-SetPt		-		
-SeqMin				
SeqMax				

Symbol	Default Symbol
stc_SollwertWahl	SollwertVorwahl
stc_MinMaxWahl	SignalMMVorw
stc_YWahl	SignalHaVorw
stc_Auskuehlschutz	Meldung4
stc_Zwangskuehlung	Meldung5
stc_P_Band	PBand
stc_I_Zeit	Nachstell
stc_D_Anteil	Diffential
stc_Totzone	Totzone
stc_Abtasten	Abtastzeit
stc_YHand	SignalHand
stc_YMin	SignalMin
stc_YMax	SignalMax
stc_Sollwert	Sollwert
stc_lstwert	Istwert
stc_Y	Signal





## DDC Suite Advanced – Family: Controller MasterZero

BACnet:	BAC_DDC_RegulationCascadeMasterNull.src
Doc-File:	DOC_DDC_RegulationCascadeMasterNull.src

Label	Symbol	Ma
EnContr	in_FrgRegelung	-En
Temp	in_Istwert	-Te
SetPtC	in_SollwertKuehlen	-Se
SetPtH	in_SollwertHeizen	
SeqMin	in_YMin	-Se
SeqMax	in_YMax	-Se
		' tSe

asterZe	aro 🦱	
	~	Label
nContr	SeqSPC-	SeqSPC
emp	SeqSPH	SeqSPH
ətPtC	SetPtC-	SetPtC
etPtH	SetPtH-	SetPtH
eqMin		
eqMax		

bel	Symbol
qSPC	out_YKuehlen
qSPH	out_YHeizen
tPtC	out_SollwertKuehlen
tPtH	out_SollwertHeizen

Symbol	Default Symbol
stc_SollwertWahl	SollwertVorwahl
stc_MinMaxWahl	SignalMMVorw
stc_YWahl	SignalHaVorw
stc_Auskuehlschutz	Meldung4
stc_Zwangskuehlung	Meldung5
stc_P_Band	PBand
stc_I_Zeit	Nachstell
stc_D_Anteil	Diffential
stc_Totzone	Totzone
stc_Abtasten	Abtastzeit
stc_YHandKuehlen	SignalHandKh
stc_YHandHeizen	SignalHandHz
stc_YMin	SignalMin
stc_YMax	SignalMax
stc_SollwertKuehlen	SollwertKh
stc_SollwertHeizen	SollwertHz
stc_lstwert	Istwert
stc_YKuehlen	SignalKh
stc_YHeizen	SignalHz







#### **DDC Suite Advanced – Family: Controller** Cooler

BACnet:
Doc-File:

BAC_DDC_RegulationCooler.src DOC_DDC_RegulationCooler.src

Label	Symbol
EnContr	in_FrgRegelung
SetPt	in_Sollwert
Temp	in_Istwert
Lock	in_Sperre

		<u> </u>	1	
	Cooler	0	Label	Symbol
ng	-EnContr	Y-	Y	out_Y
	-SetPt	Act	Act	out_ReglerAktiv
	-Temp	SetPt	SetPt	out_Sollwert
	-Lock			
	C 5555			
	+ ????			

Symbol	Default Symbol
stc_SollwertWahl	SollwertVorwahl
stc_MinMaxWahl	SignalMMVorw
stc_YWahl	SignalHaVorw
stc_Meldung4	Meldung4
stc_Meldung5	Meldung5
stc_P_Band	PBand
stc_I_Zeit	Nachstell
stc_D_Anteil	Diffential
stc_Totzone	Totzone
stc_Abtasten	Abtastzeit
stc_YHand	SignalHand
stc_YMin	SignalMin
stc_YMax	SignalMax
stc_Sollwert	Sollwert
stc_lstwert	Istwert
stc_Y	Signal

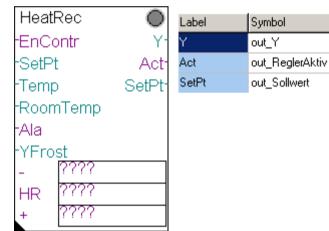




# DDC Suite Advanced – Family: Controller HeatRec

BACnet:	BAC_DDC_RegulationHeatRecovery.src
Doc-File:	DOC_DDC_RegulationHeatRecovery.src

Label	Symbol
EnContr	in_FrgRegelung
SetPt	in_Sollwert
Temp	in_Istwert
RoomTemp	in_Raumtemp
Ala	in_SmWRG
YFrost	in_YFrost



Symbol	Default Symbol
stc_SollwertWahl	SollwertVorwahl
stc_MinMaxWahl	SignalMMVorw
stc_YWahl	SignalHaVorw
stc_Meldung4	Meldung4
stc_Meldung5	Meldung5
stc_P_Band	PBand
stc_I_Zeit	Nachstell
stc_D_Anteil	Diffential
stc_Totzone	Totzone
stc_Abtasten	Abtastzeit
stc_YHand	SignalHand
stc_YMin	SignalMin
stc_YMax	SignalMax
stc_Sollwert	Sollwert
stc_lstwert	Istwert
stc_Y	Signal







#### **DDC Suite Advanced – Family: Controller MixedAir**

BACnet: Doc-File: BAC_DDC_RegulationMixedAir.src DOC_DDC_RegulationMixedAir.src

Label	Symbol
EnContr	in_FrgRegelung
SetPt	in_Sollwert
Temp	in_Istwert
RoomTemp	in_Raumtemp

MixedAir	0	Label	Symbol
-EnContr	Y-	Y	out_YMI
-SetPt	Yinv-	Ylnv	out_YFI
-Temp	Act	Act	out_ReglerAktiv
RoomTemp	SetPt-	SetPt	out_Sollwert
- 2333			
MA ????			
+ 2355			

Symbol	Default Symbol
stc_SollwertWahl	SollwertVorwahl
stc_MinMaxWahl	SignalMMVorw
stc_YWahl	SignalHaVorw
stc_Meldung4	Meldung4
stc_Meldung5	Meldung5
stc_P_Band	PBand
stc_I_Zeit	Nachstell
stc_D_Anteil	Diffential
stc_Totzone	Totzone
stc_Abtasten	Abtastzeit
stc_YHand	SignalHand
stc_YMin	SignalMin
stc_YMax	SignalMax
stc_Sollwert	Sollwert
stc_lstwert	Istwert
stc_Y	Signal





#### **DDC Suite Advanced – Family: Controller Preheater**

BACnet:	BAC_DDC_RegulationPreheater.src
Doc-File:	DOC_DDC_RegulationPreheater.src

EnContr in_FrgRegelung SetPt in_Sollwert Temp in_Istwert	Label	Symbol
	EnContr	in_FrgRegelung
Temp in_Istwert	SetPt	in_Sollwert
	Temp	in_Istwert
YCldStrt in_YKaltstart	YCldStrt	in_YKaltstart

-EnContr	Y
-SetPt	Act
-Temp	SetPt ⁻
-YCldStrt	
- 3333	
PH ????	
+ ????	

 $\bigcirc$ 

PreHeater

Label	Symbol
Y	out_Y
Act	out_ReglerAktiv
SetPt	out_Sollwert

Symbol	Default Symbol
stc_SollwertWahl	SollwertVorwahl
stc_MinMaxWahl	SignalMMVorw
stc_YWahl	SignalHaVorw
stc_Meldung4	Meldung4
stc_Meldung5	Meldung5
stc_P_Band	PBand
stc_I_Zeit	Nachstell
stc_D_Anteil	Diffential
stc_Totzone	Totzone
stc_Abtasten	Abtastzeit
stc_YHand	SignalHand
stc_YMin	SignalMin
stc_YMax	SignalMax
stc_Sollwert	Sollwert
stc_lstwert	Istwert
stc_Y	Signal







BACnet:	
Doc-File:	

BAC_DDC_RegulationHeater.src DOC_DDC_RegulationHeater.src

Label	Symbol
EnContr	in_FrgRegelung
SetPt	in_Sollwert
Temp	in_Istwert



Symbol	Default Symbol
stc_SollwertWahl	SollwertVorwahl
stc_MinMaxWahl	SignalMMVorw
stc_YWahl	SignalHaVorw
stc_Meldung4	Meldung4
stc_Meldung5	Meldung5
stc_P_Band	PBand
stc_I_Zeit	Nachstell
stc_D_Anteil	Diffential
stc_Totzone	Totzone
stc_Abtasten	Abtastzeit
stc_YHand	SignalHand
stc_YMin	SignalMin
stc_YMax	SignalMax
stc_Sollwert	Sollwert
stc_lstwert	Istwert
stc_Y	Signal







### **DDC Suite Advanced – Family: Controller** Humid

BACnet:	BAC_DDC_RegulationHumidifying.src
Doc-File:	DOC_DDC_RegulationHumidifying.src

Label	Symbol
Encontr	in_FrgRegelung
SetPt	in_Sollwert
Humidity	in_lstwert

Humid	$\circ$	Label
Encontr	Y-	Y
SetPt	Act- SetPt-	Act
Humidity	SetPt-	SetPt
Hum		
DeH ????		

abel	Symbol
	out_Y
.ct	out_ReglerAktiv
etPt	out_Sollwert

Symbol	Default Symbol
stc_SollwertWahl	SollwertVorwahl
stc_MinMaxWahl	SignalMMVorw
stc_YWahl	SignalHaVorw
stc_Meldung4	Meldung4
stc_Meldung5	Meldung5
stc_P_Band	PBand
stc_I_Zeit	Nachstell
stc_D_Anteil	Diffential
stc_Totzone	Totzone
stc_Abtasten	Abtastzeit
stc_YHand	SignalHand
stc_YMin	SignalMin
stc_YMax	SignalMax
stc_Sollwert	Sollwert
stc_lstwert	Istwert
stc_Y	Signal





## **DDC Suite Advanced – Family: Controller DeHumid**

BACnet:	BAC_DDC_RegulationDehumidifying.src
Doc-File:	DOC_DDC_RegulationDehumidifying.src

Label	Symbol
EnContr	in_FrgRegelung
SetPt	in_Sollwert
Humidity	in_Istwert
YCooler	in_YKuehler

DeHumid	$\circ$
-EnContr	Y-
-SetPt	Act
-Humidity	Dehumid
-YCoo <u>ler</u>	SetPt-
Hum ????	)
DeH ????	,

Label	Symbol
Y	out_Y
Act	out_ReglerAktiv
Dehumid	out_Entfeuchten
SetPt	out_Sollwert

Symbol	Default Symbol
stc_SollwertWahl	SollwertVorwahl
stc_MinMaxWahl	SignalMMVorw
stc_YWahl	SignalHaVorw
stc_Meldung4	Meldung4
stc_Meldung5	Meldung5
stc_P_Band	PBand
stc_I_Zeit	Nachstell
stc_D_Anteil	Diffential
stc_Totzone	Totzone
stc_Abtasten	Abtastzeit
stc_YHand	SignalHand
stc_YMin	SignalMin
stc_YMax	SignalMax
stc_Sollwert	Sollwert
stc_lstwert	Istwert
stc_Y	Signal





## **DDC Suite Advanced – Family: Controller** Controller

BACnet:	BAC_DDC_RegulationController.src
Doc-File:	DOC_DDC_RegulationController.src

Label	Symbol	Controller	$\odot$	Label	Symbol
En	in_FrgRegelung	-En	Y-	Y	out_Y
Invers	in_Wirksinn	Invers	SetPt-	SetPt	out_Sollwert
ContrVal	in_Istwert	-ContrVal	000 1		
SetPt	in_Sollwert				
YMin	in_YMin	-SetPt			
YMax	in_YMax	-YMin			
	-	YMax			

Symbol	Default Symbol
stc_SollwertWahl	SollwertVorwahl
stc_MinMaxWahl	SignalMMVorw
stc_YWahl	SignalHaVorw
stc_Meldung4	Meldung4
stc_Meldung5	Meldung5
stc_P_Band	PBand
stc_I_Zeit	Nachstell
stc_D_Anteil	Diffential
stc_Totzone	Totzone
stc_Abtasten	Abtastzeit
stc_YHand	SignalHand
stc_YMin	SignalMin
stc_YMax	SignalMax
stc_Sollwert	Sollwert
stc_lstwert	Istwert
stc_Y	Signal







BACnet:	BAC_DDC_RegulationLimitation.src
Doc-File:	DOC_DDC_RegulationLimitation.src

Label	Symbol
ContrVal	in_Istwert
SetPt	in_Sollwert

Limiter 🔘	Label
-ContrVal Y-	Y
SetPt SetPt-	SetPt

Symbol out_Y out_Sollwert

Symbol	Default Symbol	
stc_SollwertWahl	SollwertVorwahl	
stc_MinMaxWahl	SignalMMVorw	
stc_YWahl	SignalHaVorw	
stc_Meldung4	Meldung4	
stc_Meldung5	Meldung5	
stc_P_Band	PBand	
stc_l_Zeit	Nachstell	
stc_D_Anteil	Diffential	
stc_Totzone	Totzone	
stc_Abtasten	Abtastzeit	
stc_YHand	SignalHand	
stc_YMin	SignalMin	
stc_YMax	SignalMax	
stc_Sollwert	Sollwert	
stc_lstwert	Istwert	
stc_Y	Signal	





# DDC Suite – hints & tricks

Saia® PCD2.M5

**HEREITER** 

Stephan Hintze / 05.12.2008



## **DDC Suite Advanced**

# Initialisation



Saia-Surgess Control Systems and Components



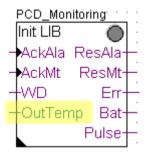
#### **DDC Suite Advanced – Overview**

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.

ymbols					
Group/Symbol	Турс	Address/Value	Comment		
-1₩ 	GROUP				
🗗 🚰 A	GROUP				
🕂 🧱 HDLog	GROUP				
🕂 🧱 Alarm	GROUP				
DDCSuite	GROUP				
🗋 🗃 Init	GROUP				
H AckAlarm	F	4114	Acknowledge all stored alarm.		
CirMaint	F	4115	Clear all maintenance message		
UutdoorTemp	R	2085	Outdoor temperature		



sala-burgess

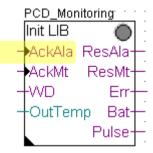
**Control Systems and Compone** 

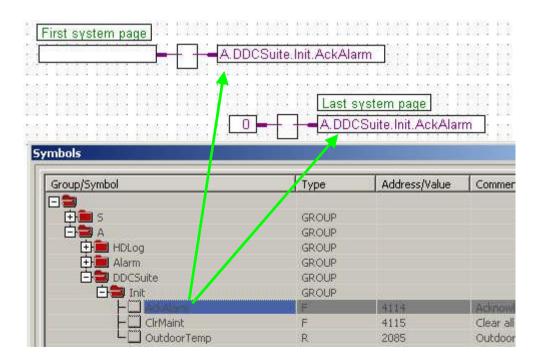




# **DDC Suite Advanced – Overview**

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.









## **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.

