



APPLICATION NOTE

Advanced Diagnostic Honeywell Experion PKS Integration

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Table of Contents

1	About	3
2	Installation	4
	2.1 Overview.....	4
	Installation of FieldConnex Diagnostic Server (FDS).....	5
	2.2 ADM Project Builder Honeywell.....	8
	2.3 Mapping File for Experion Server.....	8
	2.4 Detail Display and FieldConnex Diagnostic ActiveX.....	8
3	Initial Configuration	9
	3.1 Project Export and Conversion.....	9
	3.2 Experion Server Configuration	14
	3.3 FDS Configuration.....	17
4	Modify Configuration	19
	4.1 Export and Conversion	19
	4.2 Experion Server Configuration	21
	4.3 FDS Configuration.....	21
5	Operation	22
6	Annex: Adding a link from FFLINK detail display to ADM detail display	25

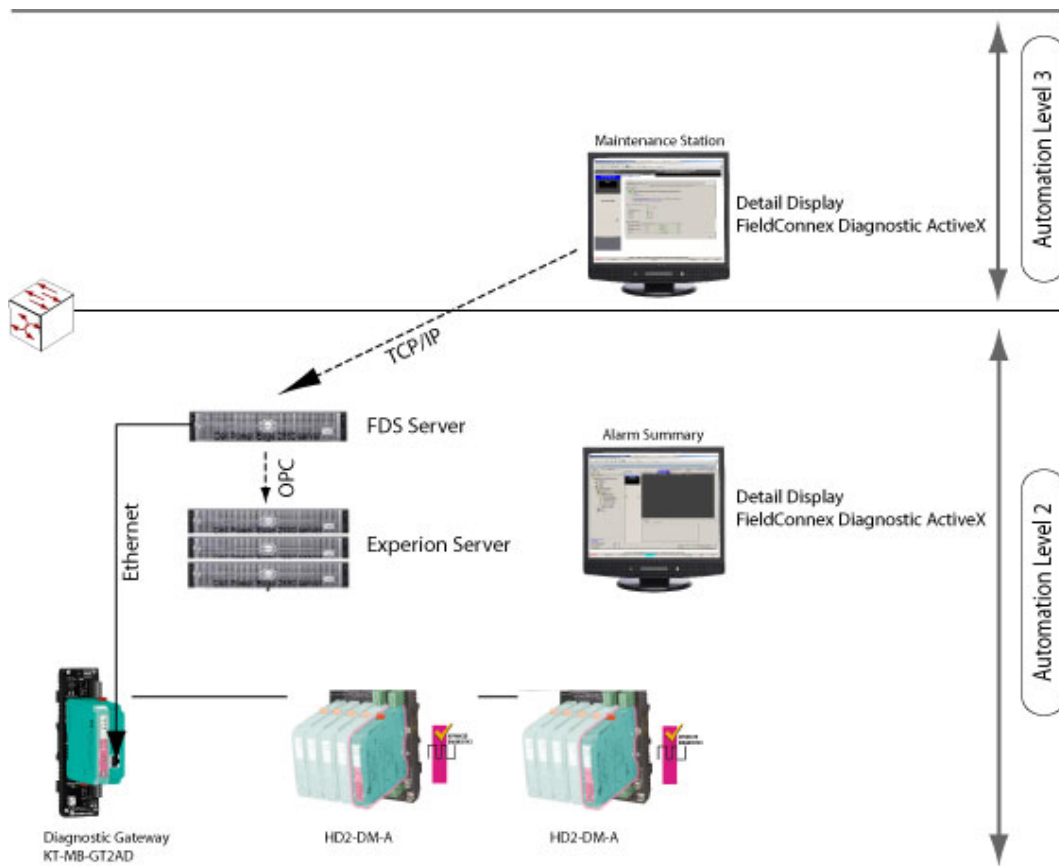
1 About

This document describes how to integrate the Pepperl+Fuchs Advanced Diagnostics into Honeywell Experion PKS environment. It also gives a brief overview about the integration concept and the included and required components to get a general idea of the system as a whole.

The integration concept comprises several software components:

- ADM Project Builder Honeywell
The ADM Project Builder Honeywell is a software tool that allows importing of the Fieldbus Topology Information from Experion to generate the FDS OPC Server and the Experion OPC Client configuration.
- FieldConnex Diagnostic Server with included OPC AE/DA server
The FieldConnex Diagnostic Server (FDS) includes an OPC DA and OPC AE Server. This server provides events and information about the physical layer status of the segments monitored by the Advanced Diagnostic Module.
- Detail Display
A Detail Display for Experion showing the general status of the Physical Layer for the segments monitored by the Advanced Diagnostic Module.
- FieldConnex Diagnostic ActiveX
The FieldConnex Diagnostic ActiveX is a component running within the Detail Display for Experion. It is used to configure the Pepperl+Fuchs ADM System and to monitor and analyze Physical Layer details.

See below a stylized overview, which software components are involved and where there are located.



The FDS runs on Automation Level 2 and receives diagnostic information of the ADMs via the FieldConnex Diagnostic Gateways. This Information is provided to the Experion Server using OPC AE and DA. This means: If the ADM detects a change of Physical Layer status an OPC AE event will be sent out from the FDS via OPC AE. This event will be shown as a system alarm within the alarm summary view.

The user gets more information like the cause of the problem and proposals how to solve the problem by using the Detail Display. On a maintenance tab the FieldConnex Diagnostic ActiveX will provide all features from the ADM like Expert System, Measurement, Diagnostic, Alarm History, Oscilloscope, etc.

2 Installation

2.1 Overview

Required Software

- Honeywell: Experion Release R400.1 or later
- Honeywell: ExperionPKS.R400.Server.Patch107.PAR1-GWBCY1
- Pepperl+Fuchs: ADM Integration Package Honeywell 1.0.0.* or later

The Pepperl+Fuchs ADM Integration Package Honeywell includes the following components:

- 1) FieldConnex Diagnostic Server (FDS)
- 2) ADM Project Builder Honeywell
- 3) Mapping File for Experion Server
- 4) Detail Display and FieldConnex Diagnostic ActiveX

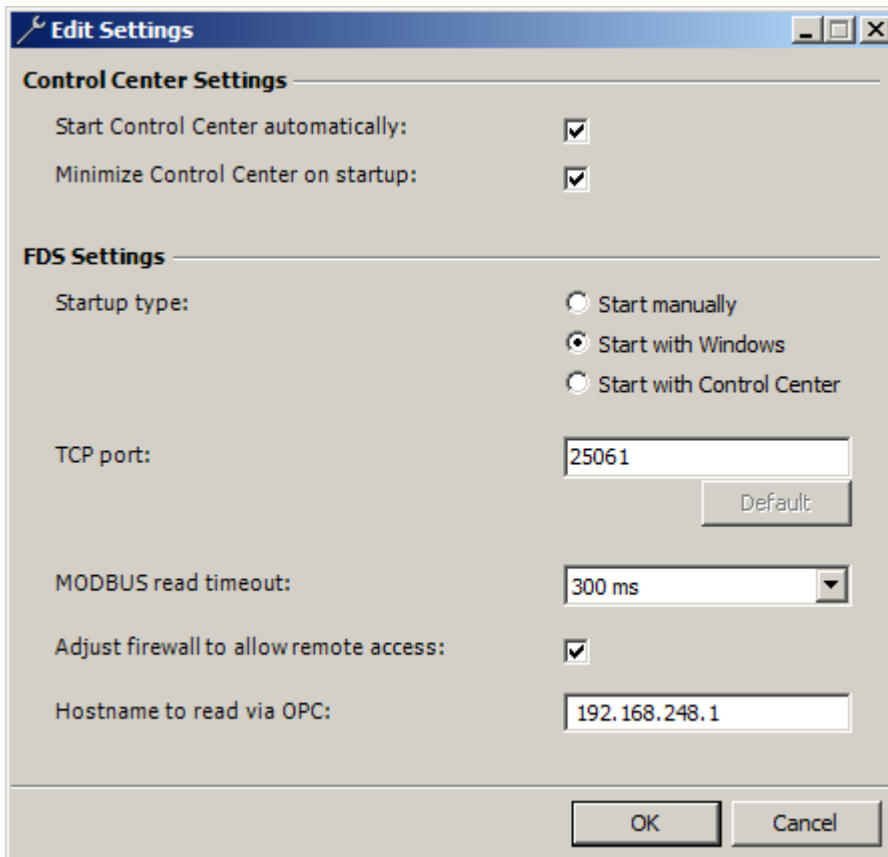
These components may be running on one PC or on several different PCs as required.

Installation of FieldConnex Diagnostic Server (FDS)

Preconditions:

An account named **mnggr** is required on the PC the FDS is running on. This account should have the same password as on the Experion Server to provide OPC access. This account must be a member of the Administrators group.

- 1) Install FieldConnexDiagnosticServerSetup.exe on a Server PC located at automation level 2.
- 2) Open the Start Menu and start Pepperl+Fuchs\FDS Control Center
- 3) From the **Tools** menu, select **Settings...**
 - a. Check the checkbox **Adjust firewall to allow remote access**. If this checkbox is greyed-out the Windows Firewall service is not running. In this case, remote access is possible as if the firewall was adjusted.
 - b. In the textbox **Hostname for OPC clients**, enter a hostname or IP address through which remote clients are able to connect to the FDS. Local IP addresses are shown in the main window of FDS Control Center

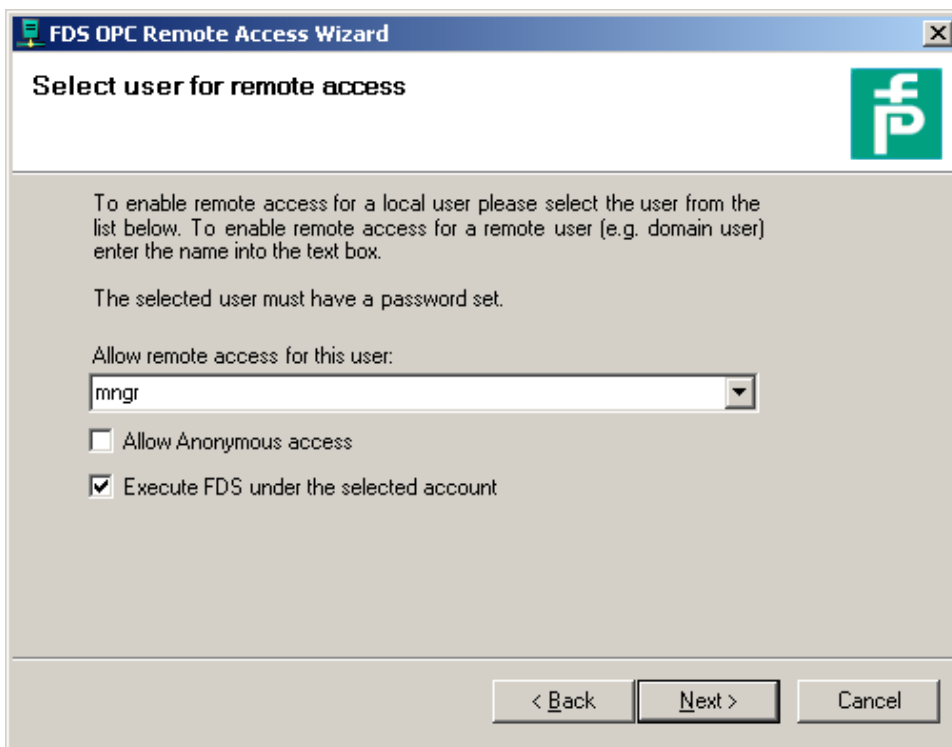


- 4) Press **OK** to apply the changed settings.
- 5) From the **Tools** menu, select **OPC Remote Access...** . This opens the FDS OPC Remote Access Wizard that configures remote access to FDS.

6) Press Next

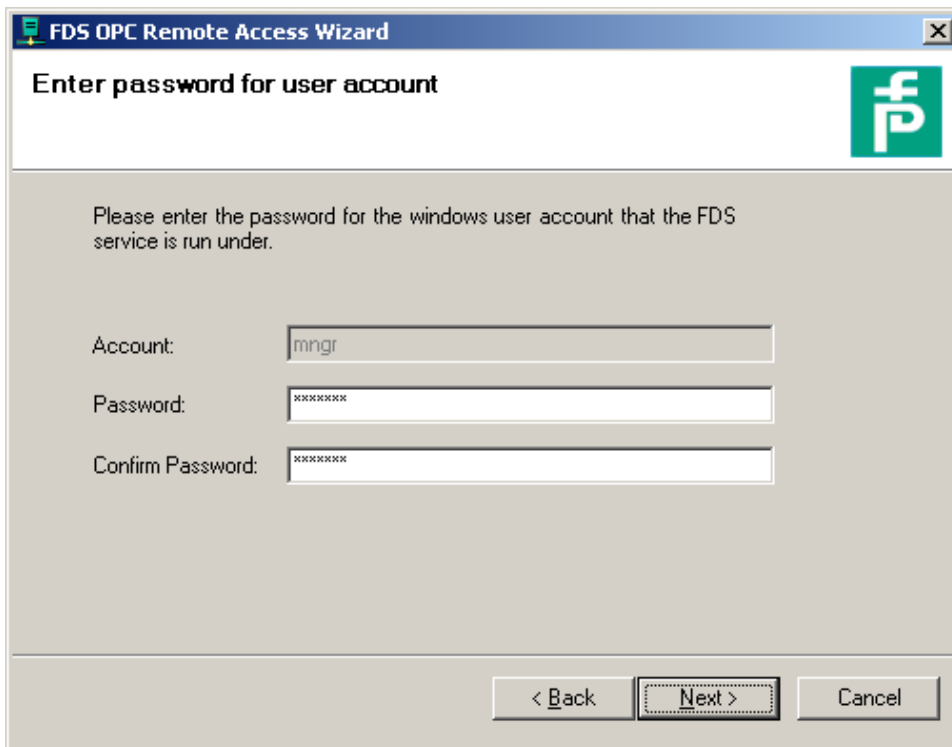


- 7) Choose user **mngr**.
Untick checkbox **Allow anonymous access**.
Tick checkbox **Execute FDS under the selected account**.



8) Press Next

9) Enter the password for the windows account **mng**r and press Next.



FDS OPC Remote Access Wizard

Enter password for user account

Please enter the password for the windows user account that the FDS service is run under.

Account:

Password:

Confirm Password:

< Back Next > Cancel

10) After configuration is completed press OK. Reboot the PC the FDS is running on to take over the new settings.



FDS OPC Remote Access Wizard

OPC Remote Access Wizard finished successfully

The OPC server on this computer is now configured to be accessed from remote OPC clients.

Restarting Windows is required for the settings to take effect.

< Back Next > OK

2.2 ADM Project Builder Honeywell

The ADM Project Builder Honeywell is a software tool that allows importing of the Fieldbus Topology Information from Experion to generate the configuration for the FDS OPC Server and the Experion OPC Client. This Program can be installed on any PC of your choice. Pepperl+Fuchs suggest to install it on the same PC as the FDS.

For installation execute ADMProjectBuilderHoneywellSetup.exe and proceed with the Installation Wizard.

2.3 Mapping File for Experion Server


Copy the file **FDSOPC.xml** supplied by Pepperl+Fuchs to the Experion PKS Server data mapping directory (e.g. "C:\ProgramData\Honeywell\Experion PKS\Server\Data\mapping\")

2.4 Detail Display and FieldConnex Diagnostic ActiveX

On each PC station install the detail display. To be able to access more advanced information beside the basic status, also install the FieldConnex Diagnostic ActiveX.

- 1) Copy the P+F detail display files to a folder where Experion PKS can find it (e.g. "c:\Program Data\Honeywell\Experion PKS\Client\Abstract\")
- 2) Execute the FieldConnexDiagnosticActiveXSetup.exe and proceed with the Installation Wizard
- 3) Start the Pepperl+Fuchs Activation Tool and enter the License Number



 If there is a TCP/IP firewall between the station running the Diagnostic Manager ActiveX and the FDS PC, this firewall (see figure above) must be configured to let pass the FDS communication (default port is 25061). To change the default port values please refer to the manual Advanced Diagnostics of Pepperl+Fuchs.

3 Initial Configuration

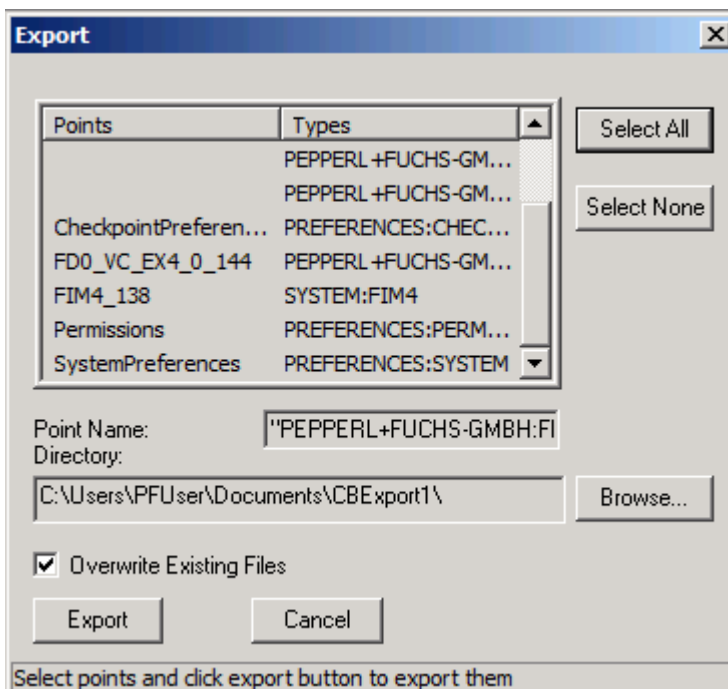
To get a general idea of the integration process the required steps are listed below in short:


- Export the Fieldbus Part of Project data from Experion
- Import this data into ADM Project Builder Honeywell. This tool creates two specific files for configuration of FDS and Points for integration of the Advanced Diagnostic into Experion PKS.
- Configure the FDS.
- Import the Points to the Experion configuration

3.1 Project Export and Conversion

1. On Experion Server, open Configuration Studio and select **Control Strategy > Configure process control strategies** to open the Control Builder.
2. Right-Mouse Click on a Root within Project Assignment Window. Choose **Export**.

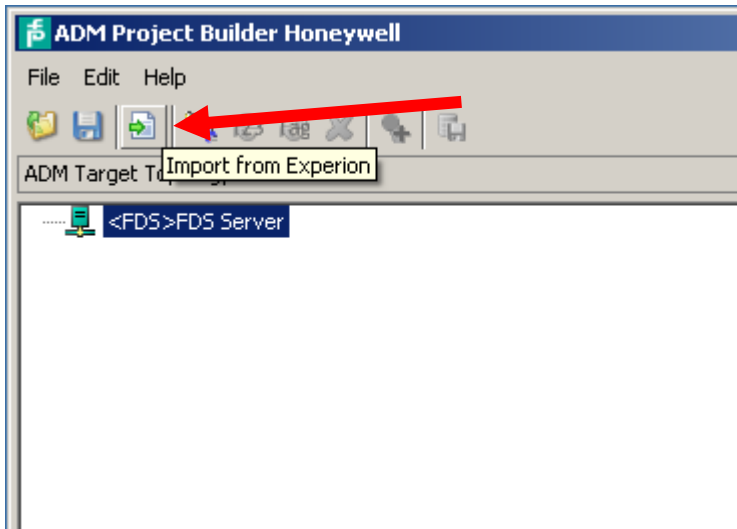
Select at least all **FIM4, FIM8, Fieldbus Devices and Templates for Fieldbus Devices**, select a directory to export to and press **Export**. Typically it is the best way to select all and export.



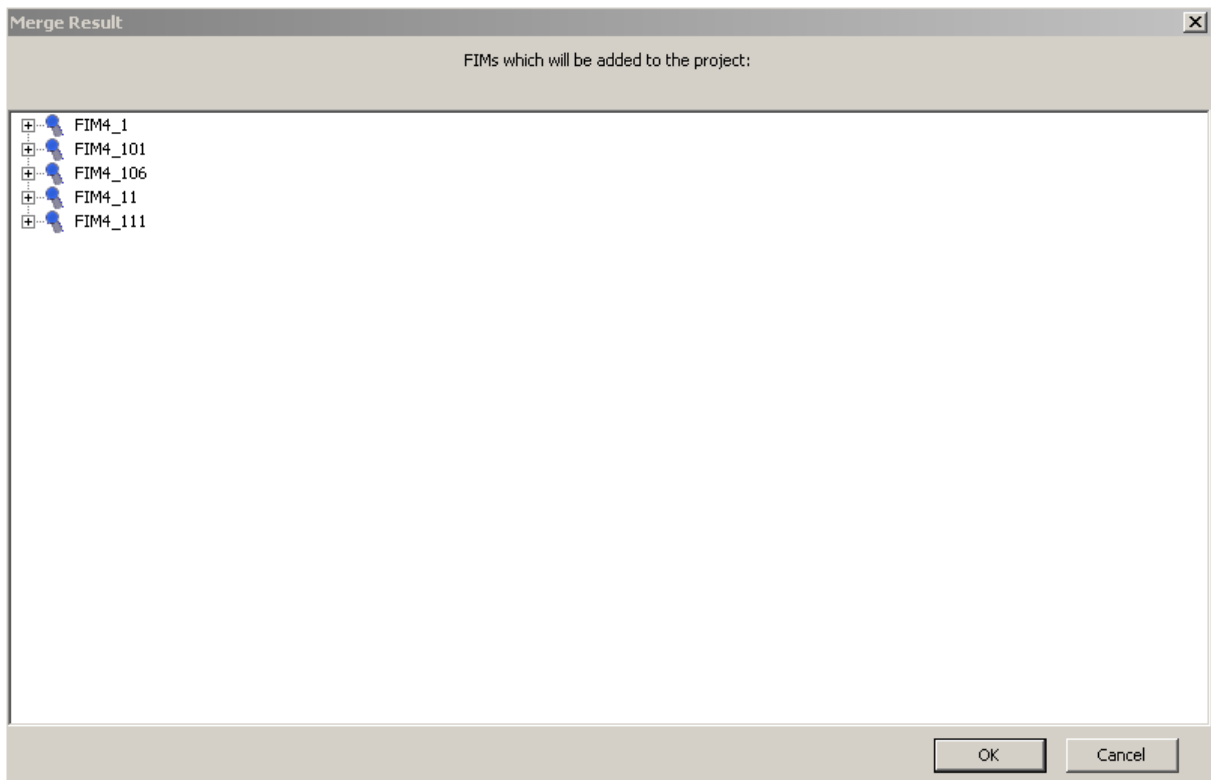
 Since there is a one-to-one relation between FIM and ADM, ADM Project Builder Honeywell tries to use the FIM's device index as ADM address for simplicity. However, this only works for device indices lower than 248. If there are device indices higher than that, ADM addresses will be assigned automatically starting from 1.

3. Close Control Builder.
4. Open P+F ADM Project Builder Honeywell.

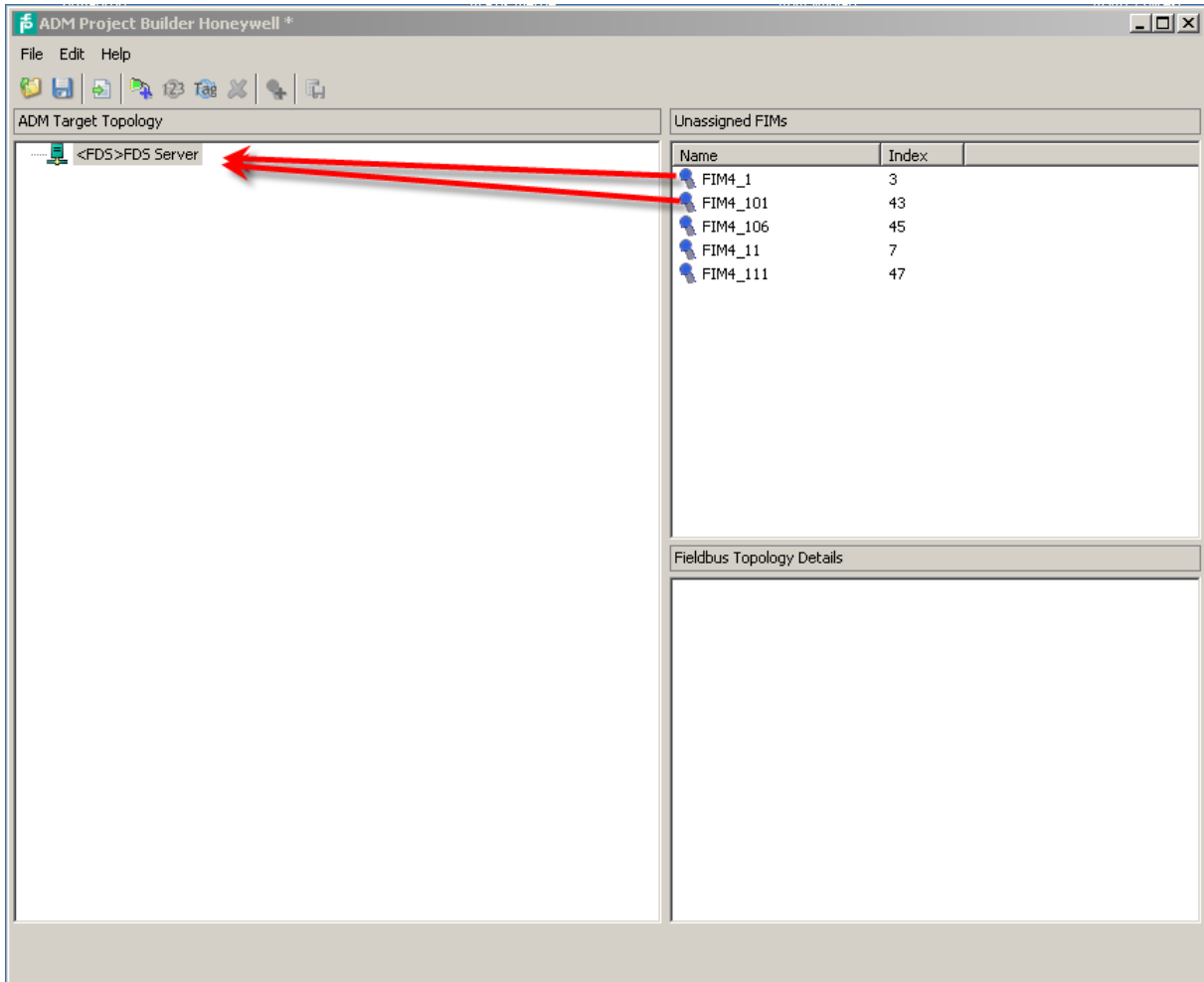
5. Press Button **Import from Experion**, browse to the directory containing the exported FIM data and choose the file "Export.sl" to import the FIM data created before.



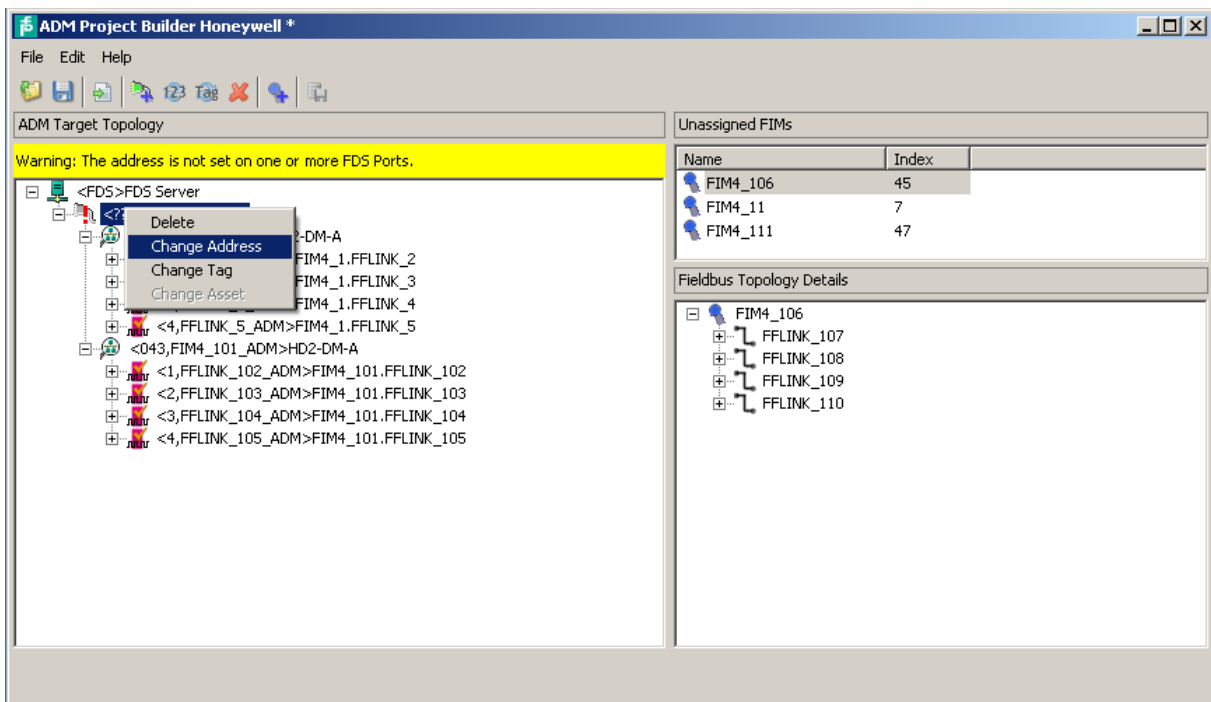
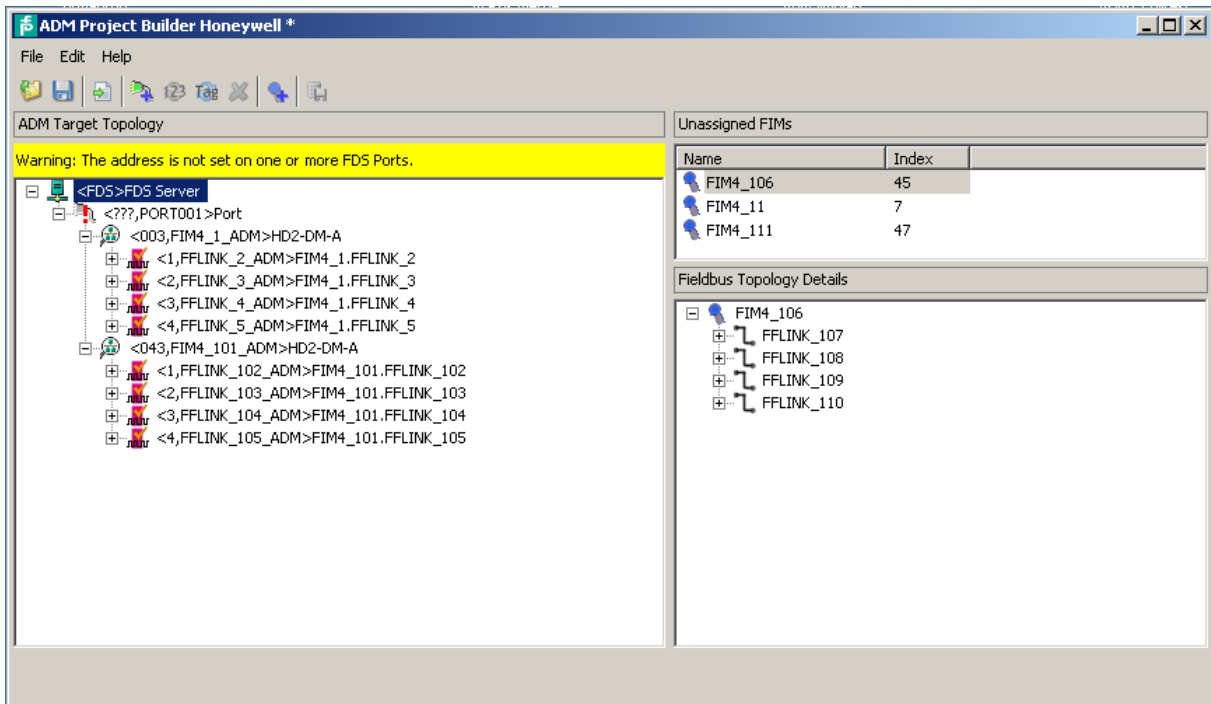
6. Accept the imported data by clicking **OK** in the **Merge Result** dialog.



7. Drag&Drop the FIMs to the FDS Server node. For each FIM4 one entry with the TAG of the FIM is created. For each FIM8 two entries with the TAG of the FIM8 and the suffix A and B are created. Link 1-4 are connected to the entry with suffix A and 5-8 to the one with suffix B.



- To set topology data: Right-Mouse Click on the FDS Port node. Choose **Change Address/Change Tag** and adjust FDS Port and network settings. Before exporting, all addresses must be assigned so that no warnings are shown.



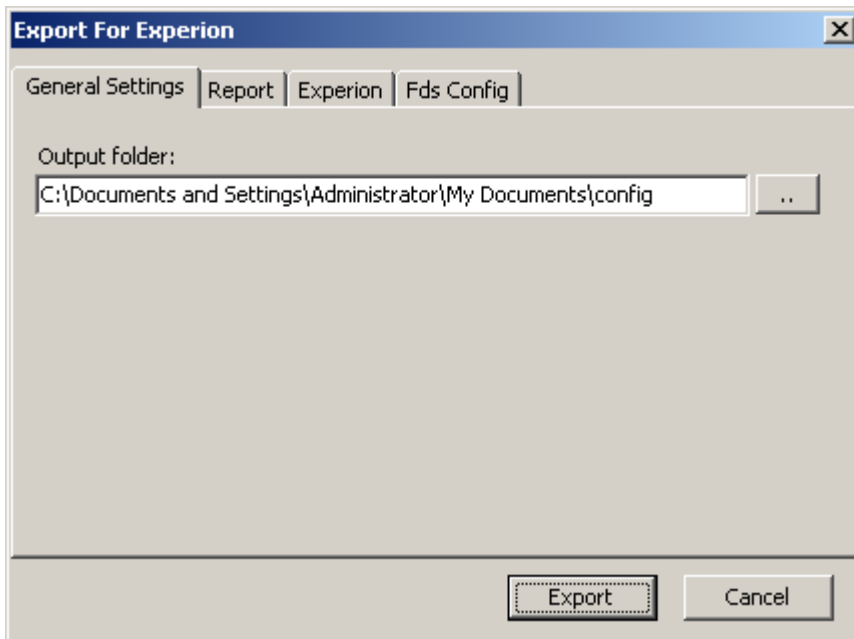
9. Configure Assets

Without any further action all FF-H1 Segments monitored by the ADM belong to the system. If required it is also possible to assign them to Assets. Right-Mouse Click on an ADM or Segment node and select **Change Asset**. It is possible to enter an Asset here to create a scope of responsibility also for segments monitored by an ADM. If an Asset is set for an ADM this Asset is also valid for all of its segments.

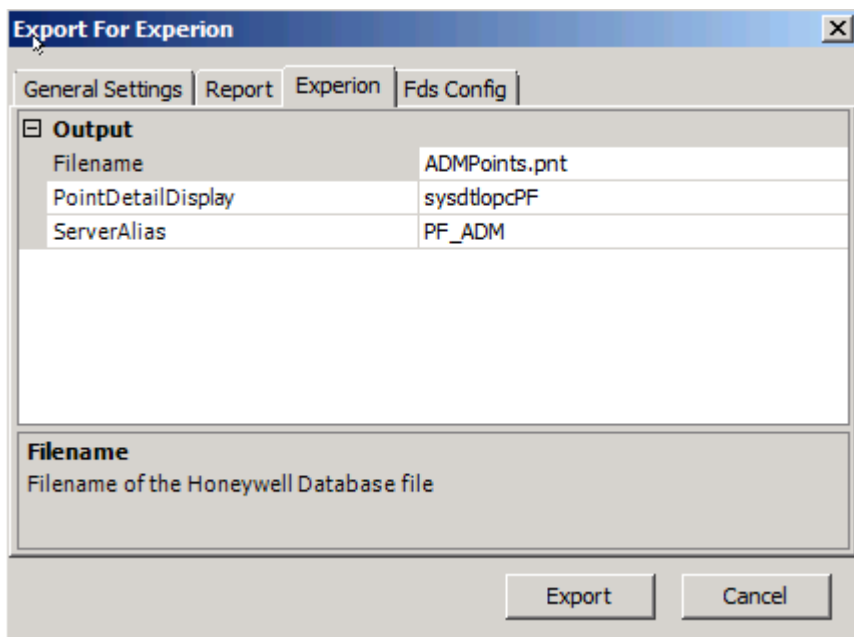
10. Press Button **Export Project**.



11. Export setting window appears. Choose Output folder.



Within the Experion tab you may adjust the server alias (although it is recommended to use the default setting).



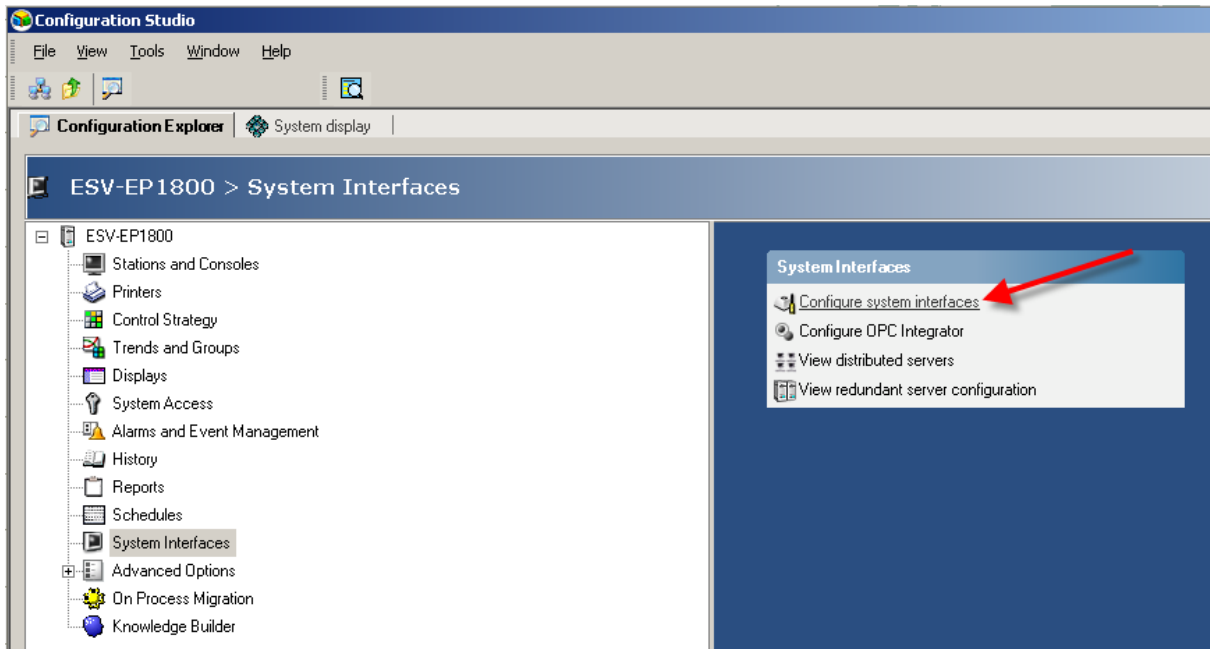
12. Press Export

13. Save the Project Builder file for later changes (File Menu, save project file).

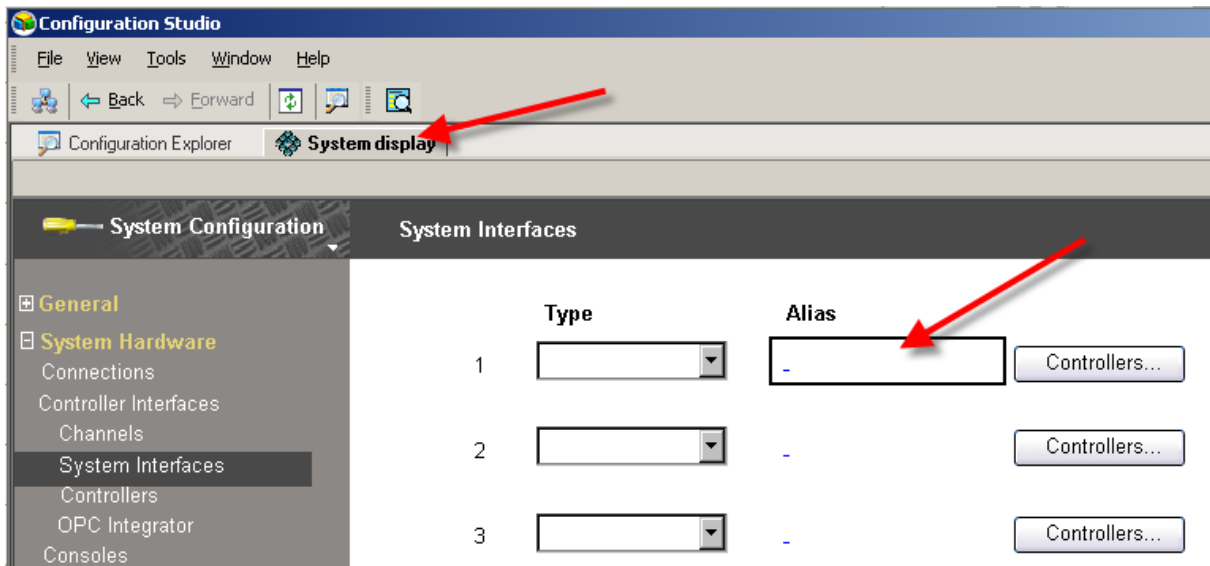
14. Close Honeywell Project Builder

3.2 Experion Server Configuration

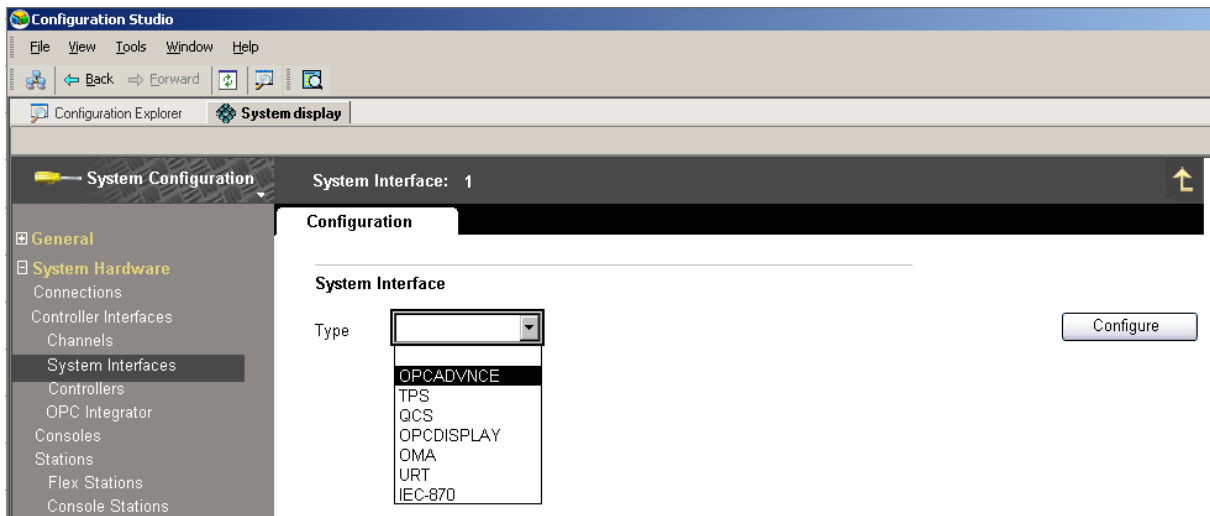
1. At the Experion Server, open Configuration Studio. Choose **System Interfaces > Configure system interfaces**.



2. Double Click the **Alias** box within the **System display** tab.



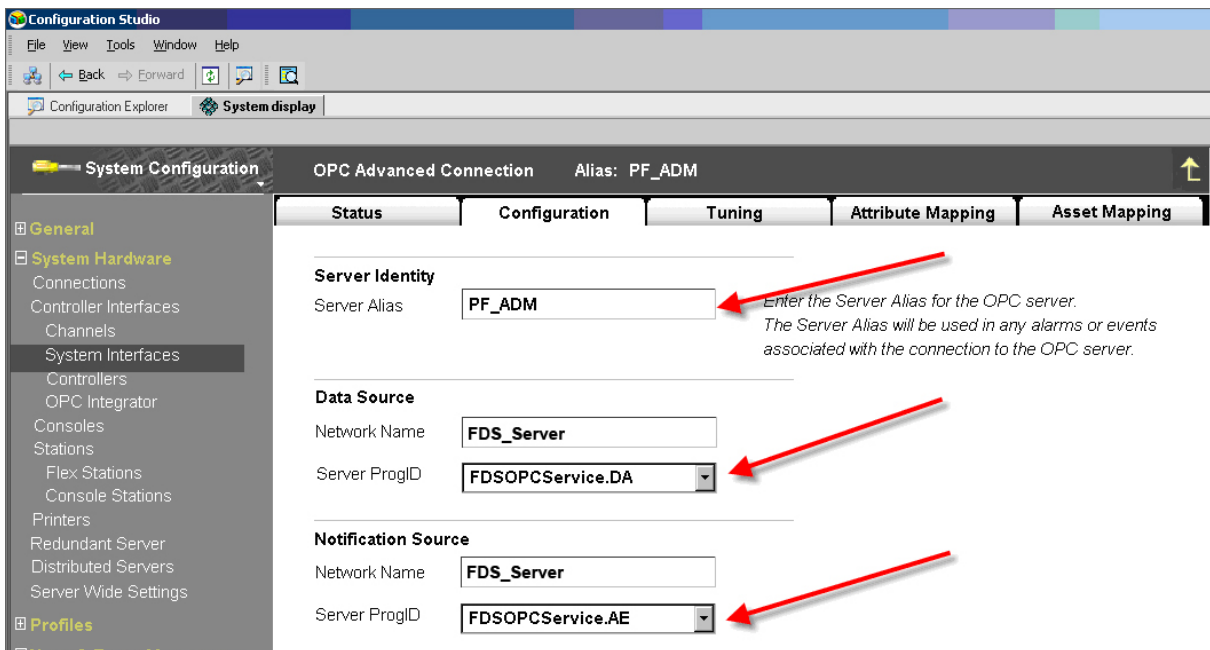
- From the System Interface Type drop down box, choose **OPCADVNCE** and press **Configure**.



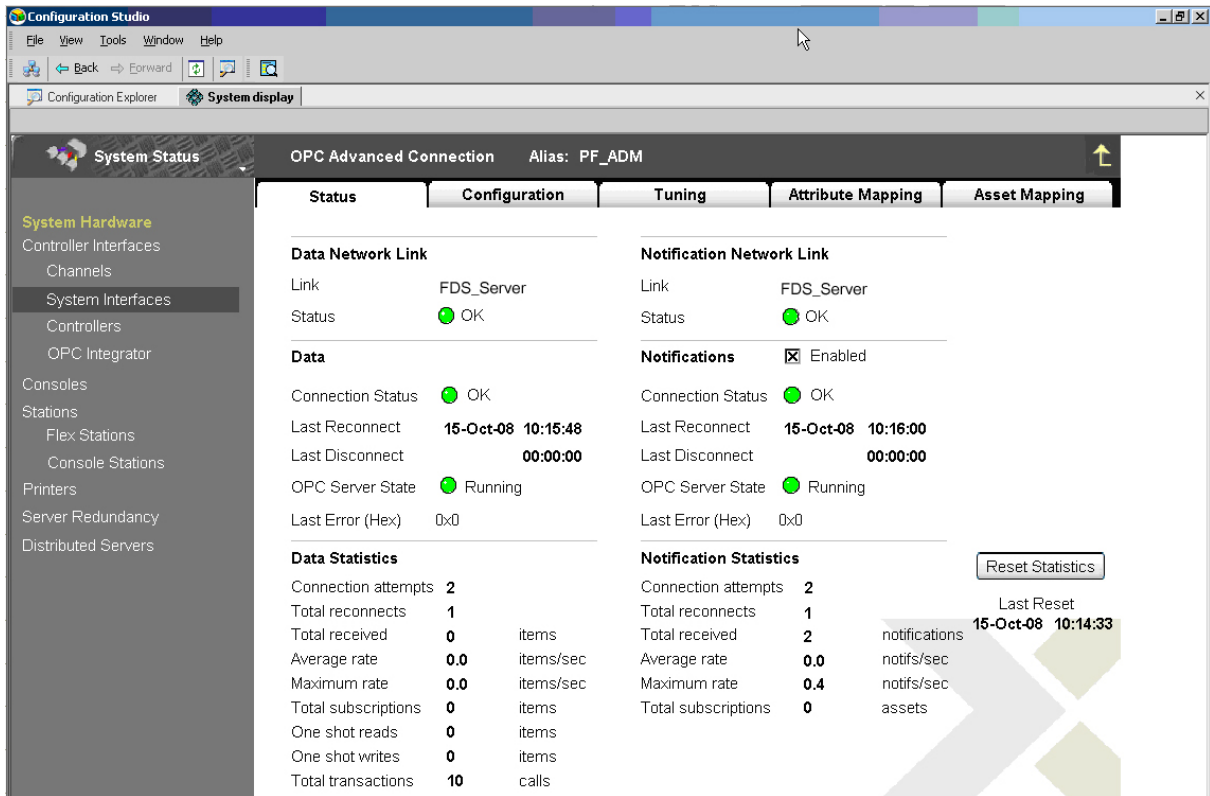
- On tab **Attribute Mapping**, enter **FDSOPC** as Mapping File.
- On tab **Configuration**, enter Server Alias, Network Name and adjust Server ProgID settings.

Server Alias: Same entry as in the P+F Project Builder Software before (see step 11, default value is PF_ADM).

Network Name: IP-address of the FDS Server, the same entry as the **Hostname for OPC Clients** entered in FDS Control Center (see chapter 0).



- Change to the **Status** tab and check network and connection status. It might take a while for the OPC connection to start. Make sure the **Notifications Enabled** check box is ticked.

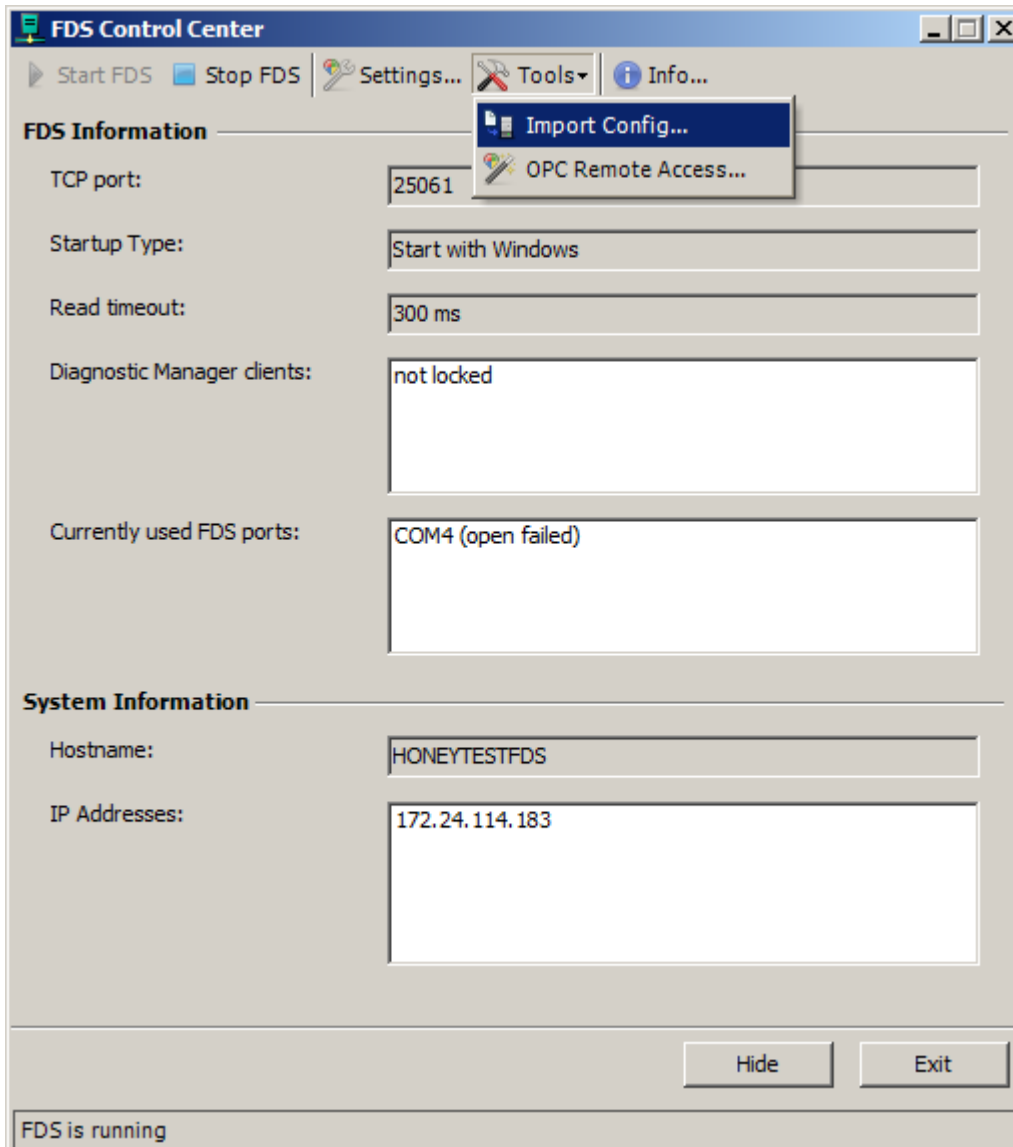


- Close Configuration Studio.
- Open windows **Command Prompt**.
- Change to the ADM Project Builder Honeywell output folder using the `cd` command (i.e. "`cd c:\Users\User\Documents\Export`").
- Use the command line executable **pntbld.exe** to import the point file **ADMPoints.pnt** from the ADM Project Builder Honeywell output folder by passing it as an argument:

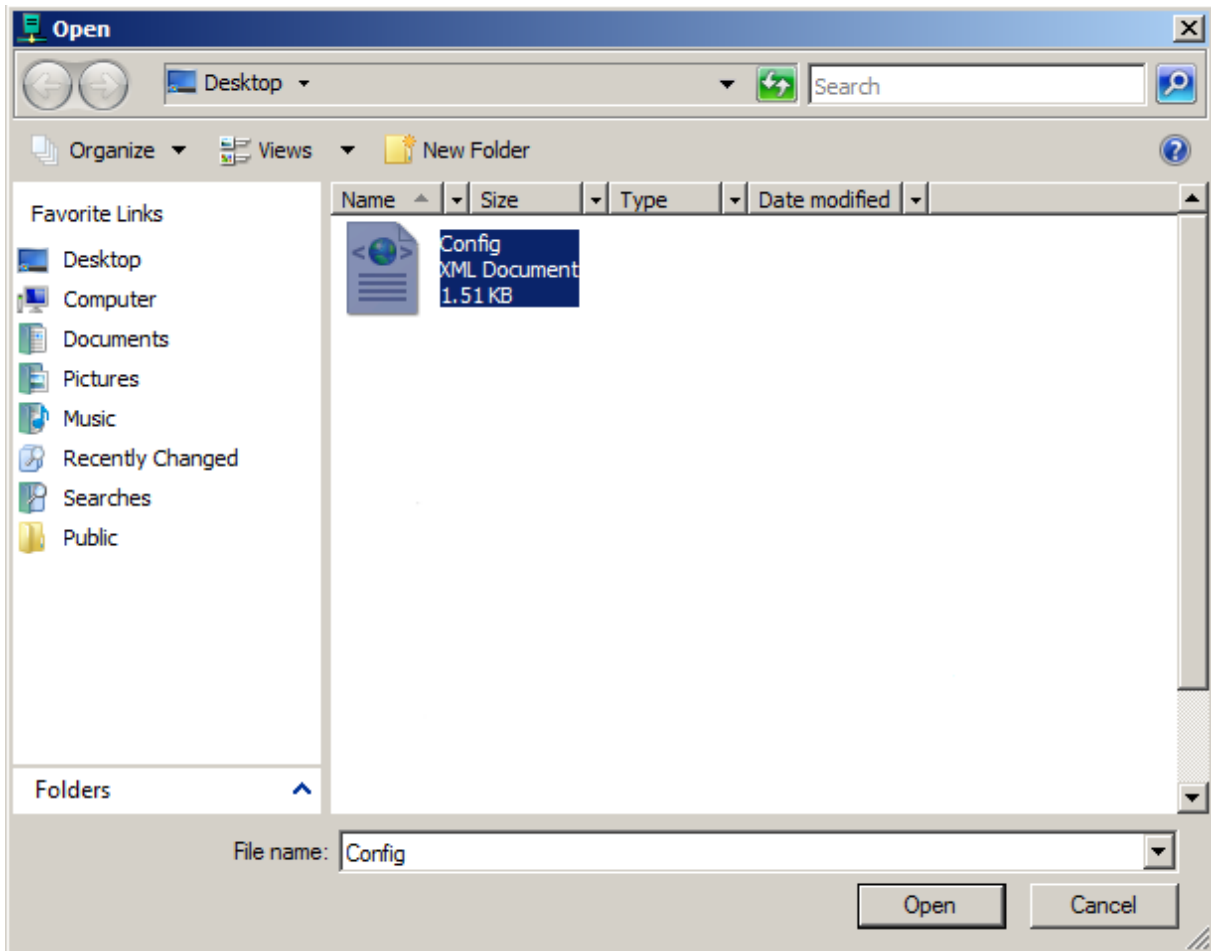

```
pntbld.exe ADMPoints.pnt
```
- Make sure there are no warnings or errors shown and close Command Prompt.
- Keep ADMPoints.pnt for later removal of the points, rename it to CurrentADMPoints.pnt

3.3 FDS Configuration

1. On the PC the FDS is installed, open FDS Control Center.
2. Make sure FDS is running, if not, click **Start FDS** to start it.
3. Choose **Import Config...** from the **Tools** menu in the toolbar.



4. Browse to the output folder of the ADM Project Builder Honeywell (see chapter 3.1) and open file Config.xml.



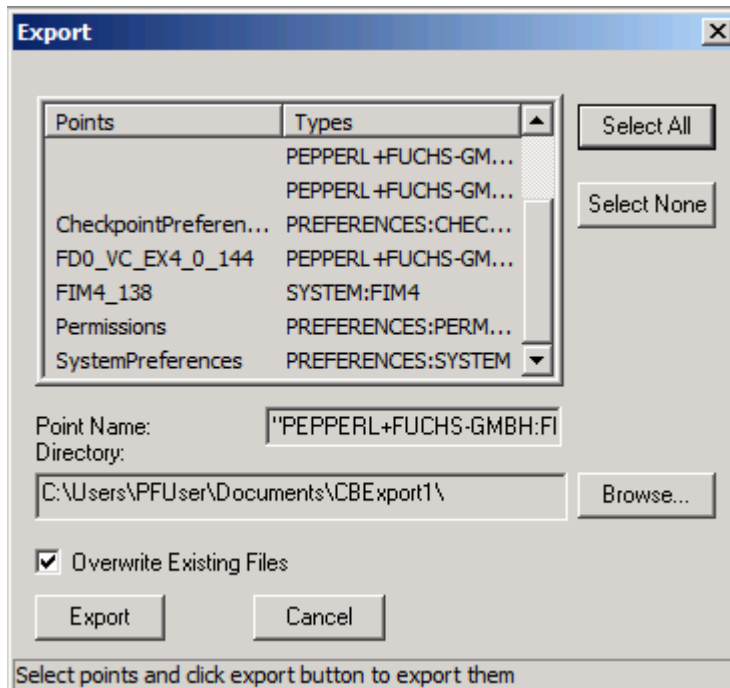
Confirm the dialog box by clicking **OK**.

4 Modify Configuration

4.1 Export and Conversion

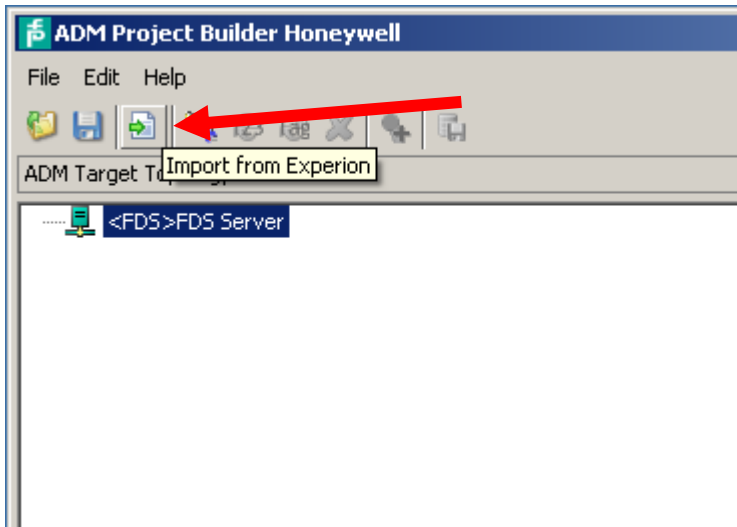
1. On Experion Server, open Configuration Studio and select **Control Strategy > Configure process control strategies** to open the Control Builder.
2. Right-Mouse Click on a Root within Project Assignment Window. Choose **Export**.

Select at least all **FIM4, FIM8, Fieldbus Devices and Templates for Fieldbus Devices**, select a directory to export to and press **Export**. Typically it is the best way to select all and export.

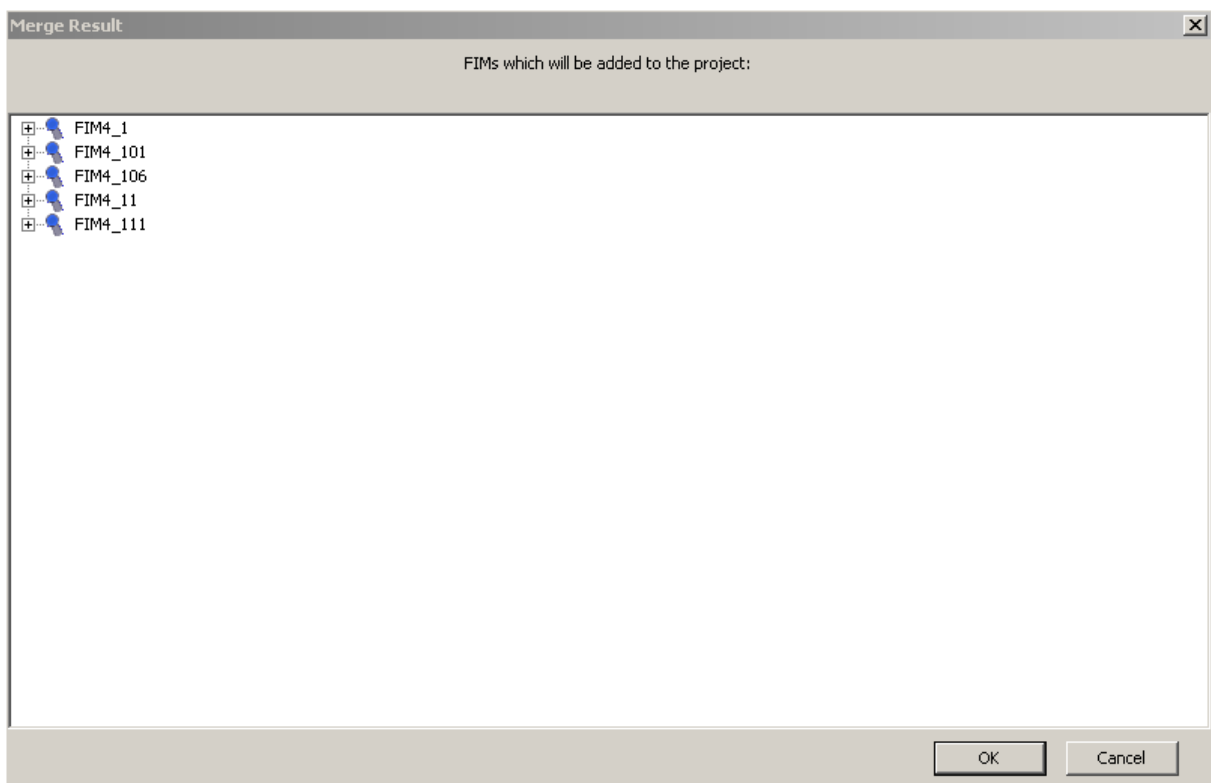


3. Close Control Builder.
4. Open ADM Project Builder Honeywell.
5. Open the Project saved during initial configuration

6. Press Button **Import from Experion**, browse to the directory containing the exported FIM data and choose the file "Export.sl" to import the FIM data created before.



7. Accept the imported data by clicking **OK** in the **Merge Result** dialog.



8. Modify the configuration as required
9. Export Project.
10. Save the Project Builder file for later changes (File Menu, save project file).
11. Close Honeywell Project Builder

4.2 Experion Server Configuration

1. Open windows **Command Prompt**.
2. Change to the ADM Project Builder Honeywell output folder using the **cd** command (i.e. "cd c:\Users\User\Documents\Export").
3. Use the command line executable **pntbld.exe** to remove old points import the point file **ADMPoints.pnt** from the ADM Project Builder Honeywell output folder by passing it as an argument:

```
pntbld.exe CurrentADMPoints.pnt -DEL
```

```
pntbld.exe ADMPoints.pnt
```

4. Make sure there are no warnings or errors shown and close Command Prompt.
5. Delete old CurrentADMPoints.pnt
6. Keep ADMPoints.pnt for later removal of the points, rename it to CurrentADMPoints.pnt

4.3 FDS Configuration

Proceed as described in chapter 3.3

5 Operation

1. If alarm message occurs with Location Tag PF_ADM

The screenshot shows the Honeywell System Status application window. The main area displays a table of alarms with the following data:

Date & Time	Location Tag	Source	Condition	Priority	Description	Trip ...
1/4/2011 16:50:52	ADM5	FFLINK_136_ADM	Diagnostic	H 00	Out of Specification	

The left pane shows a tree view of system components, with 'FFLINK_136_ADM' selected under 'PF_ADM (1)'. A status pane for this component shows 'Out of Specification'. At the bottom, a summary shows: Unacknowledged alarms: 1 of 3; Acknowledged alarms: 0 of 1; Shelved alarms: 0 of 0. Action buttons include 'Shelve Alarm', 'Unshelve Alarm', 'Pause', 'Resume', and 'Acknowledge Page'.

Taskbar information: 04-Jan-11 16:42:12 CDA Comms CDA COMMS U 00 Server: Notifications from CDA UNAVAILABLE. User: honeytestja. Station: Stn01. Operator: Oper.

2. Right-Mouse Click on the appropriate message and choose **Detail Display**.

This screenshot shows a right-click context menu over the alarm row in the table. The menu options are:

- Acknowledge Alarm
- Quick Shelve Alarm
- Shelve Alarm...
- Unshelve Alarm
- Detail Display** (highlighted)
- Associated Display

A tooltip for 'Associated Display' reads: 'Navigate to the detail page of the selected alarm'.

3. Detailed Diagnostic Message appears

Station - Default - Point Detail:FFLINK_136_ADM(sysdtlopcPF.htm)

Fieldbus Diagnostic Detail

Location : /System Components/HONEYTESTJA/System Interfaces/PF_ADM/ADM5_Joerg_ADM

FFLINK_136_ADM

Out of Specification

FFLink Detail Display

Main Maintenance

State: Out of Specification

Message ID: 2007

Phenomenon: Segment specific Out of Specification Alarm raised by ADM

Cause: One or more of the physical layer values measured by the ADM for this fieldbus segment exceeds the limits set by the fieldbus specification

Action: Start the Diagnostic Manager for a detailed analysis

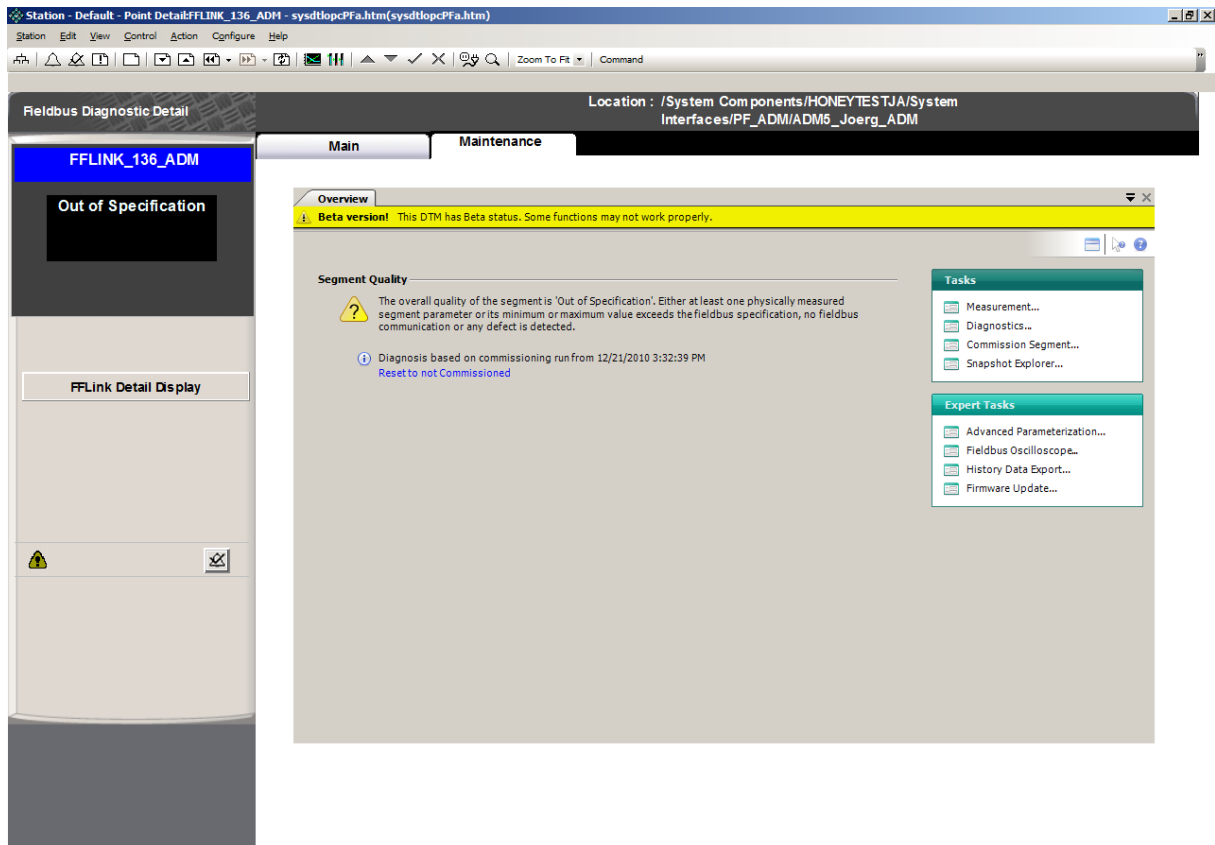
04-Jan-11 16:42:12 CDA Comms CDA COMMS U 00 Server: Notifications from CDA UNAVAILABLE

Honeywell 04-Jan-11 17:01:24 System honeytestja Stn01 Oper

Station - Default - Poi...

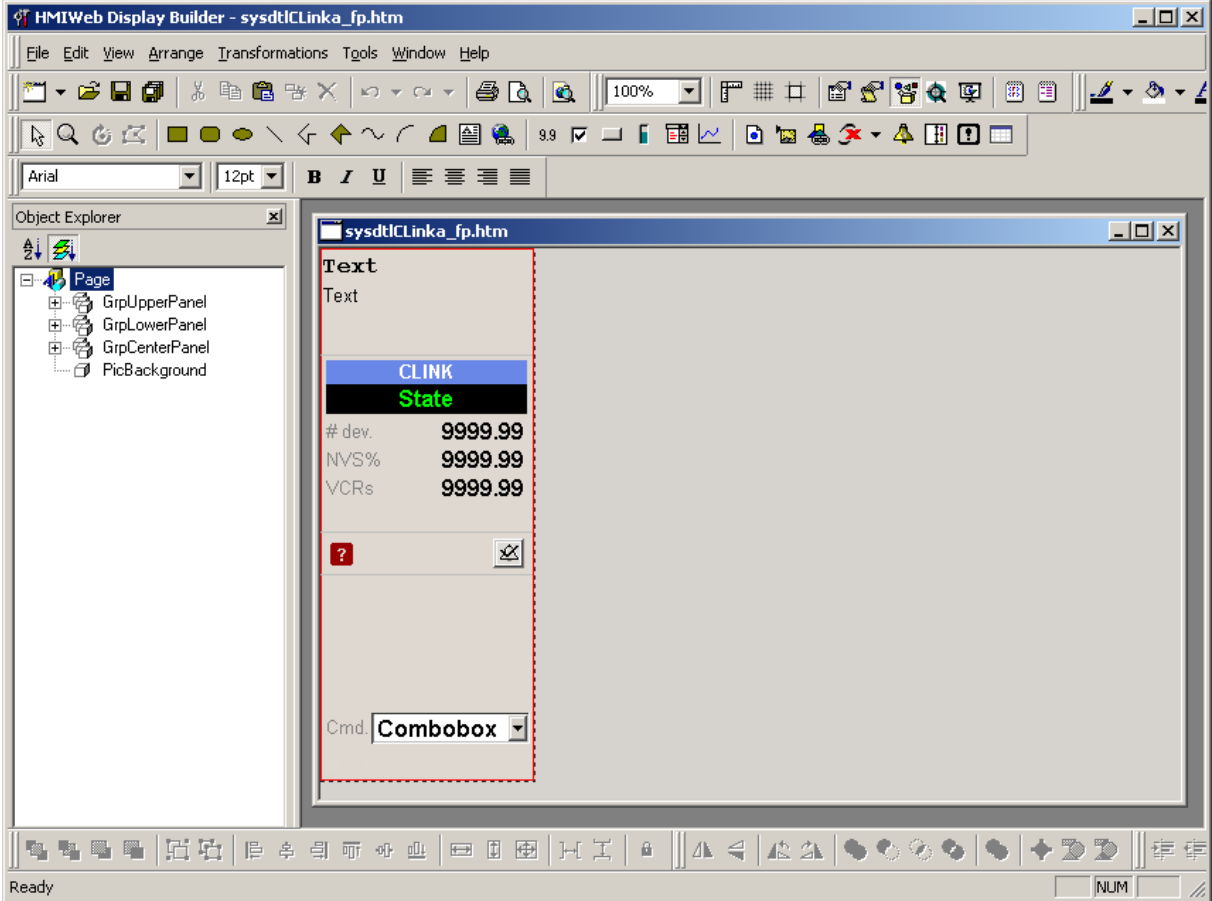
5:01 PM

4. To start the FieldConnex Diagnostic ActiveX, open the Maintenance tab

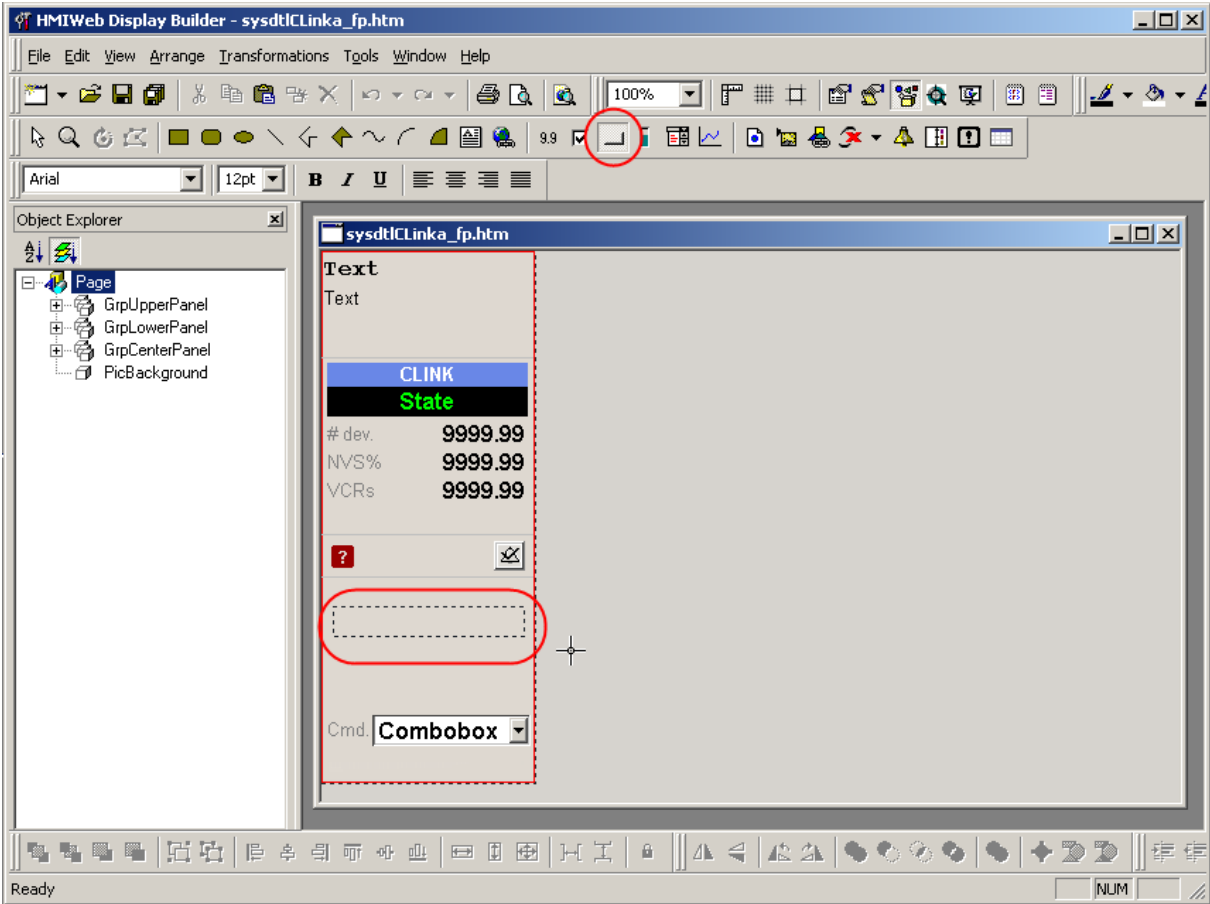


6 Annex: Adding a link from FFLINK detail display to ADM detail display

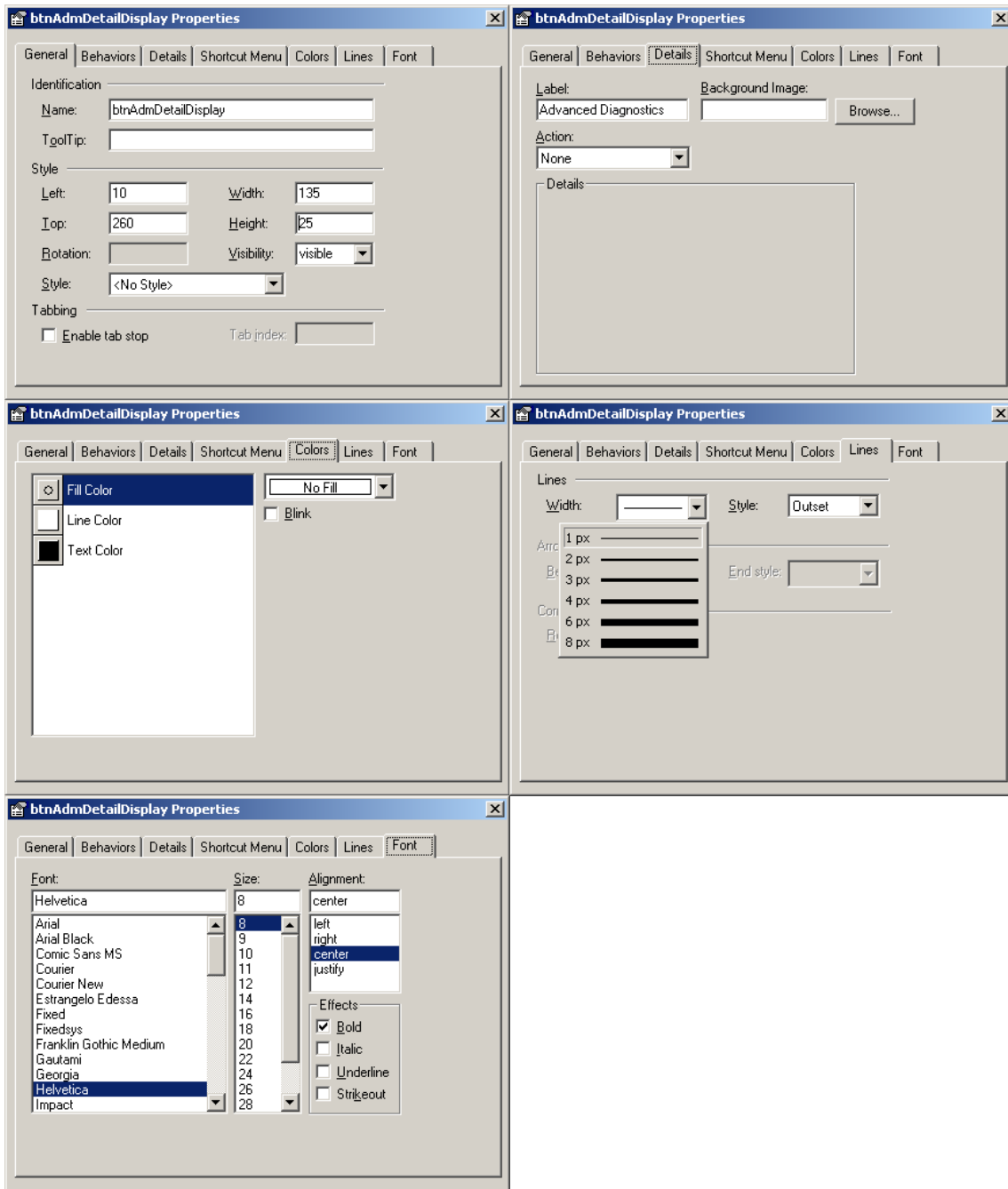
1. Open program “HMIWeb Display Builder”.
2. In HMIWeb Display Builder, open the file “sysdtlCLinka_fp.htm” from the Experion PKS Client System folder (e.g. “C:\Program Files\Honeywell\Experion PKS\Client\System\R400”):



3. Use the "Pushbutton" tool to create a new button:



- Right-click the new button and select “Property Pages...”
Change the button’s properties:



- Right-click the new button and select “Edit Script...”

- In Script Editor, paste this code into btnAdmDetailDisplay's function "onclick"

```
on error resume next
```

```
Dim myDetailPointId
Dim admDetailPointId
Dim pos
' get the detailPointId of the current FFLINK
myDetailPointId = window.external.DetailPointID
' and add the ADM suffix to get the admDetailPointId
' (default suffix is "_ADM" but this is configurable)
admDetailPointId = myDetailPointId + "_ADM"
' "type" the detailPointId of the ADM into the CommandZoneText box
window.external.CommandZoneText = admDetailPointId
' and open its detail display by invoking the menu item "Detail"
window.external.Application.Document.ParentWindow.external.InvokeMenu2
"Detail"
```

- Save the file, close HMIWeb Display Builder.
- Open station and go to an FFLINK detail display.
- Make sure the newly added button appears in the left pane:

