



Configuring an IS1 in DeltaV Explorer

Configuring an IS1 in DeltaV Explorer

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Ordering code

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Applicable to: IS1

Target group:

Persons who uses IS1 together with DeltaV

Subject to change and correction without notice



Operating Instructions

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Configuring an IS1 in DeltaV Explorer

1. Scope

This operating instructions are indented to give a quick overview how to integrate I.S.1 field stations via Profibus DP into a DeltaV system. Further more it give infos about limitations of the coupling.

This document describes 3 possible ways to integrate I.S.1 into DeltaV:

➤ Use of a GSD file

This supports always the latest features. But all signal definitions inside DeltaV explorer must be must be configured for each new GSD file.

➤ Use of a I.S.1 FHX File

This is a quite convenient compared with the GSD solution. The FHX file already takes care on all signal definitions for the I.S.1 modules in the Library. The FHX file is not always at the latest state as a GSD file is.

➤ Use of a Bulk Edit Tool

R. Stahl provides a Excel based Bulk Edit Tool which allows to configure up to 15 I.S.1 field stations with the I/O signal definitions.

2. Revisions

Rev. 1.2

With rev. 1.2 of this document the "Bulk_Configuration_of_IS1_in_DeltaV_Rev_1_1.xls" was modified due to language problems with Excel. The version 1.0 showed a program abroad during the allocation of field stations.

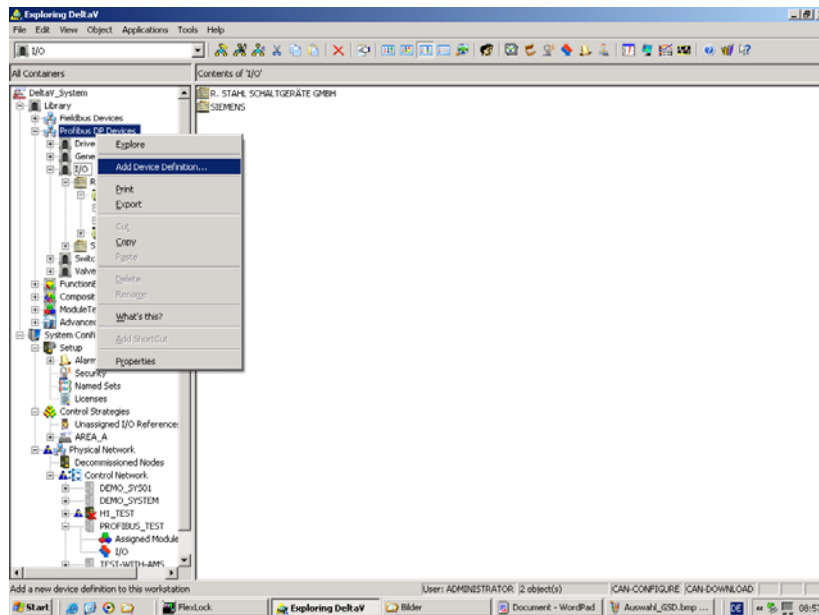
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2. Use of GSD File

2.1. Open DeltaV Explorer

Navigate to the Library => Profibus Devices => I/O.

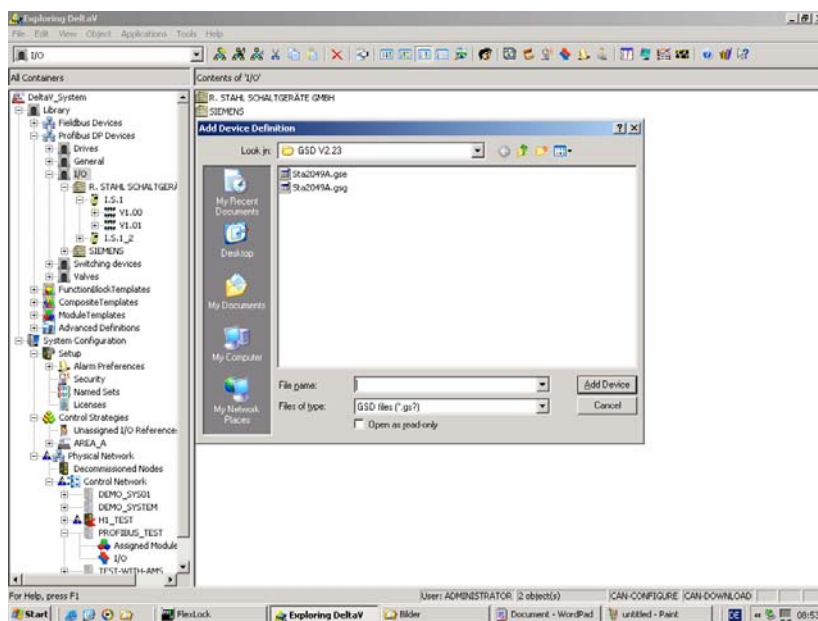
Select with the context menu => “Add Device Definition” (Delta V looks in DeltaV / DVData / Import-Export)



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2.2. Select the appropriate GSD file

For The R.STAHL I.S.1 system there are always 2 GSD file for the some revision available one is in German one is in English. Please select one of them if you select both following each other the last one will be present in DeltaV.



2.3. The File will be imported.

If a sub tree for the IS1 already exists you will be ask if the new GSD file should be added to this .

There are 2 groups of GSD files

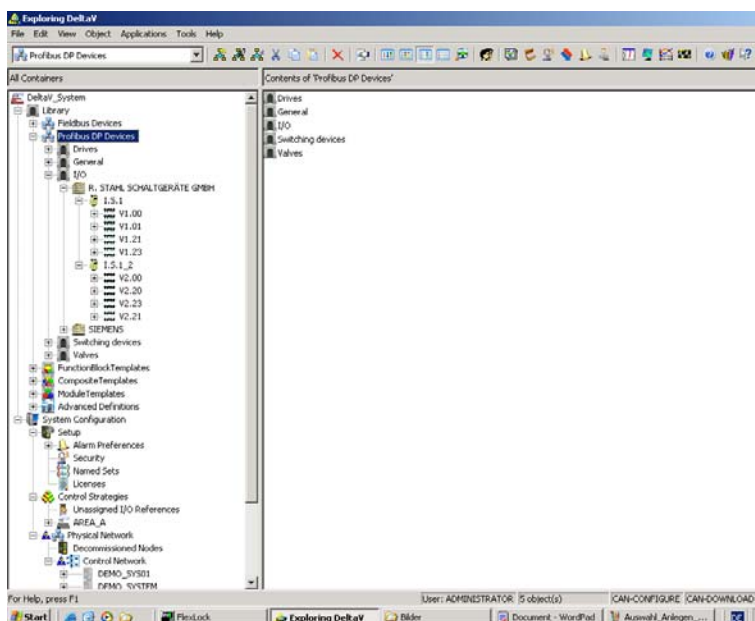
- one is for the standard parameter set, this is located in the DeltaV folder "R.STAHL SCHALRGERÄTE GMBH => I.S.1"
- the second one for the extended parameter set is located in "R.STAHL SCHALRGERÄTE GMBH => I.S.1_2"

For details about the differences please refer to R. STAHL Profibus manuals

- "Operating Instructions IS1 DP 23e.pdf"
- "Operating Instructions IS1 extended parameter 07-05-02_e.pdf"

Please check for the latest revision of the documents.

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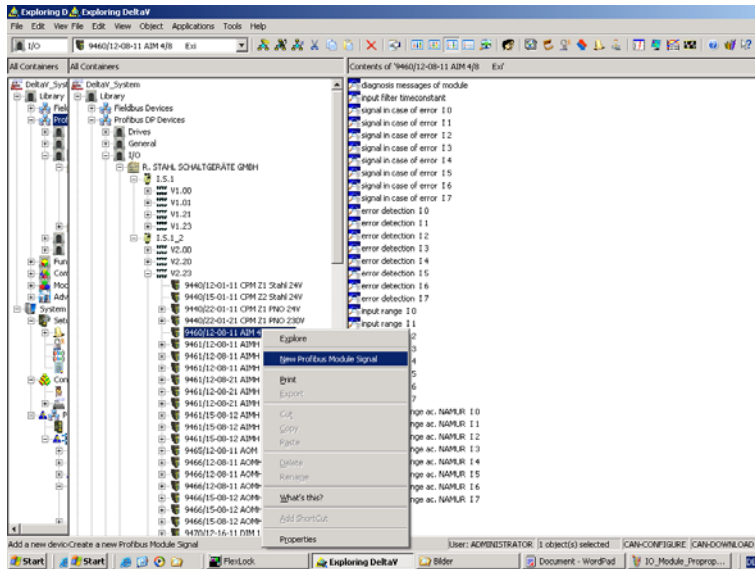
For Information see also the DeltaV Online Books. Check under Index for “Profibus”.

The Library is a powerful item. Before you start using the IS1 modules please think about your standard setting for (error detection, input rage, diagnoses,.....) and for the scaling of the input or output. Also the signal allocation should be done within the library.

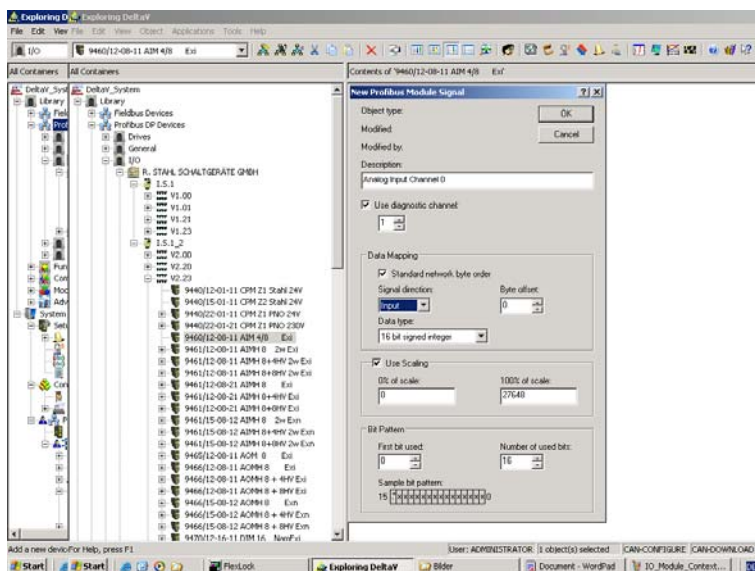
All the setting which were done here are stored in the library. If once one signal of a specific GSD is used in a project Delta V prohibits a change in that GSD until all of the projects were this items were used are deleted.

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2.4. Allocate Signals in the Library for the I/O Modules



High light the module which you want to modify. Select form the context menu “ New Profibus Module Signal”



A new face plate opens. The face plate has some default values in it. Leave them as they are not changed here.

- Select “use diagnostic channel” and select the number according the I/O modules channel number + 1 e.g. I/O module channel 0 = channel 1 for the diagnostic
- Leave the “Standard network byte order” checked

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- Select according the type of I/O module if it is an input or output signal
- Next enter the byte offset. See for the data representation "Operating Instructions IS1 DP 21e.pdf". In case of a 9460/61 analog input module:

Channel of I/O module	Byte offset
0	0
1	2
•	•
7	14

Be aware if you are configuring I/O modules with input and output data, both data area starts counting at "0".

- Next select the "data type" for:

I/O - Signal	Data type
Anlog input/output	16 bit signed integer
Digital input	Boolean
Digital input (channel 14 and 15 for counter and frequency measurement)	16 Bit unsigned integer
Digital output	Boolean
Temperature input	16 bit signed integer

- Next select "Use scaling". This is used only for the 0/4-20mA signals. The setting is:

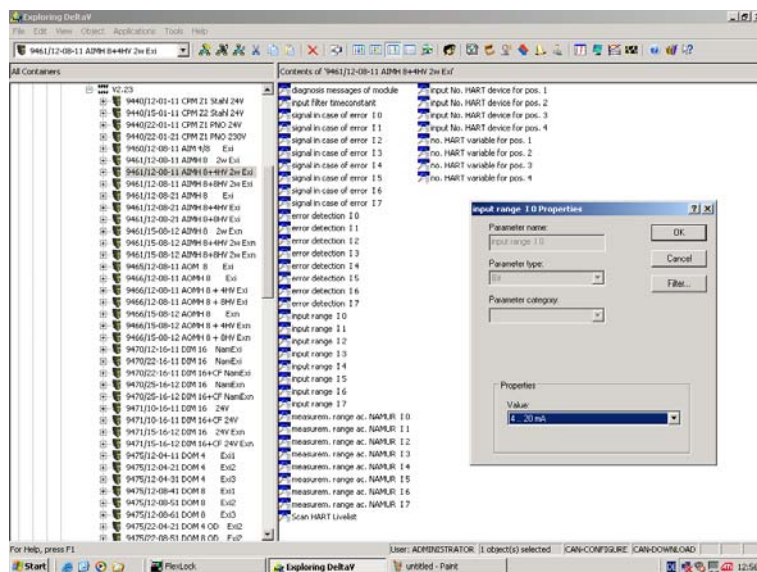
Low scale	High scale
0%	100%
0 dec.	27648 dec.

- For the temperature signals coming from the modules 9480 and 9481 the scaling may be done in the function block by dividing the digital value by 10.
- For the counter and frequency measurement of the 9470 module no scaling must be applied. The digital value represents the actual valve.
- For the digital input and output no scaling is necessary.
- Next "Bit pattern". Here the number of bit used and the first bit used must be entered. For the analog signals 16 bit must be selected and the first used bit is always "0".

For the digital input and output the number of used bits is always "1". The entry in "First bit used" depends on the I/O modules channel number.

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Channel of I/O Module	First bit used	Byte offset
0	0	0
1	1	0
•	•	•
7	7	0
8	0	1
•	•	•
15	7	1
Status of Channel		
0	0	2
•	•	•
15	7	3



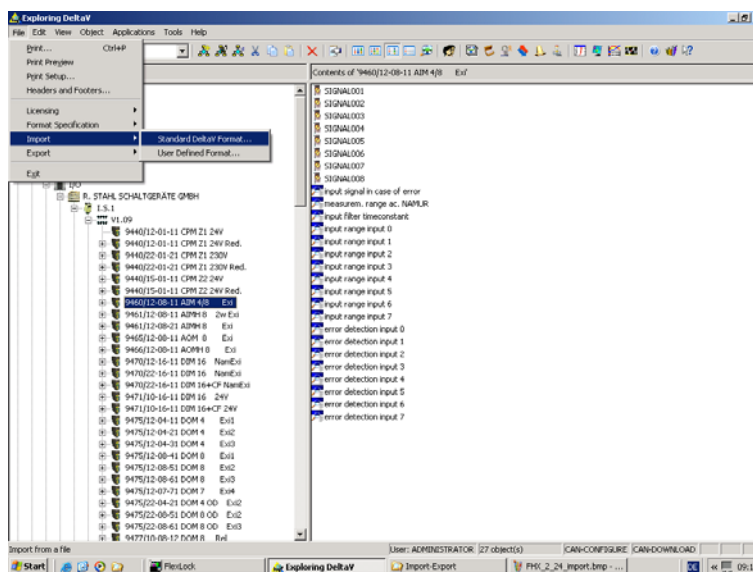
This figure shows all parameters of a module. These parameters are set by default values as described in the R. STAHL coupling description mentioned before. If settings are required different from the standard one, please think about doing this inside the library instead of doing it for each project again and again.

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3. Use of a I.S.1 FHX file

To use a I.S.1 FHX file it must be imported to the DeltaV Explorer. To do so follow the steps below:

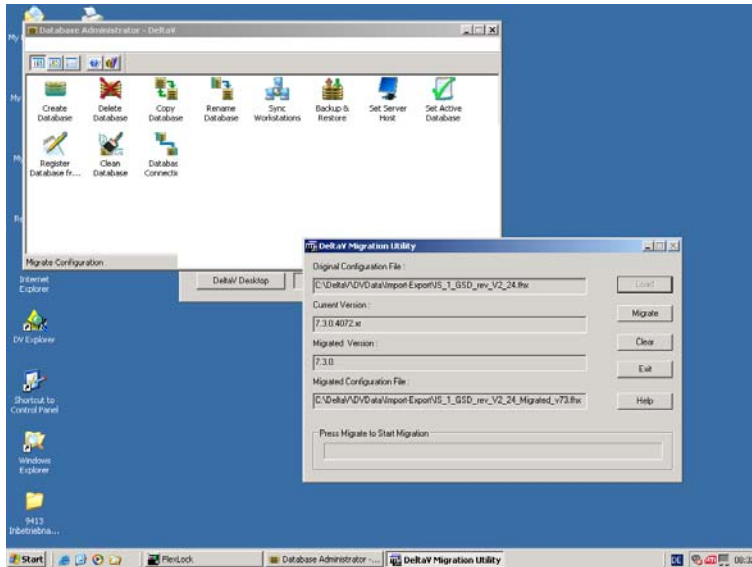
1. Copy the FHX file IS_1_GSD_rev_Vx_xx.fhx (x_xx is the revision number) to the DeltaV Explorer folder "Import-Export"
2. Go to DeltaV Explorer open "File => Import => Standard DeltaV Format"



3. Select the appropriated import file " _1_GSD_rev_Vx_xx.fhx". The file will be copied to the DeltaV Explorers Library tree under "Library => Profibus DP Devices => I/O => R. STAHL SCHALTGERÄTE GMBH => IS1_2 => Vxx.xx"
4. The FHX file supplied with DeltaV is rather old and should be replaced by a new one in at the release date of this document the revision based on the GSD V2.24 is the lasted FHX file name "IS_1_GSD_rev_V2_24.fhx".

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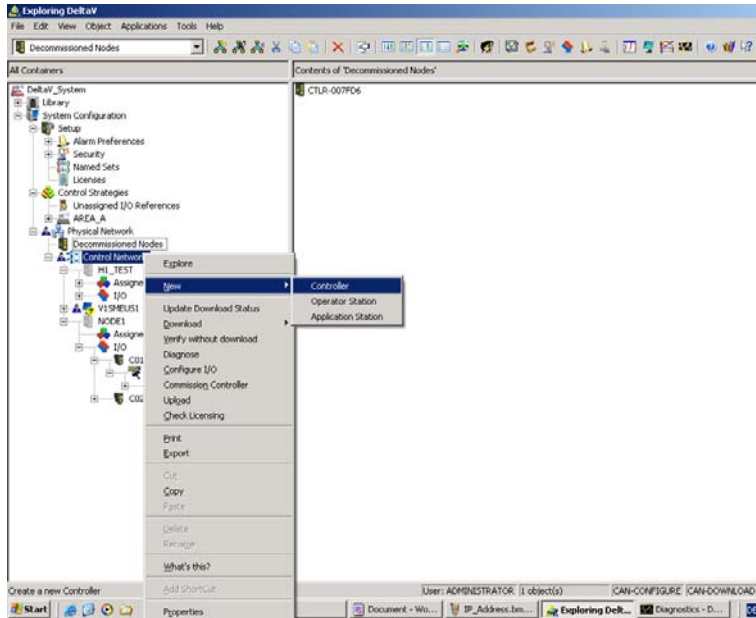
- It might be necessary to migrate the FHX file to the DeltaV version used. The "IS_1_GSD_rev_V2_24.fhx" is based on a DeltaV rev. 7.3.



To do the migration open the Database administrator folder and start the migration program. Select the file you want to migrate and start the process. The output is a FHX file which can be used with the actual DeltaV version.

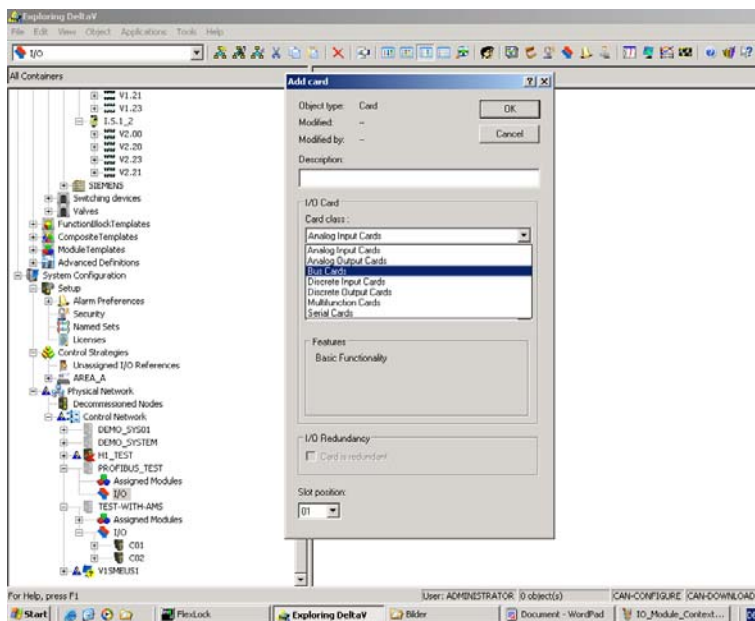
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4. Create a configuration for I.S 1 in DeltaV Explorer



To create an I.S.1 configuration a tree under “ Physical network” must be created .

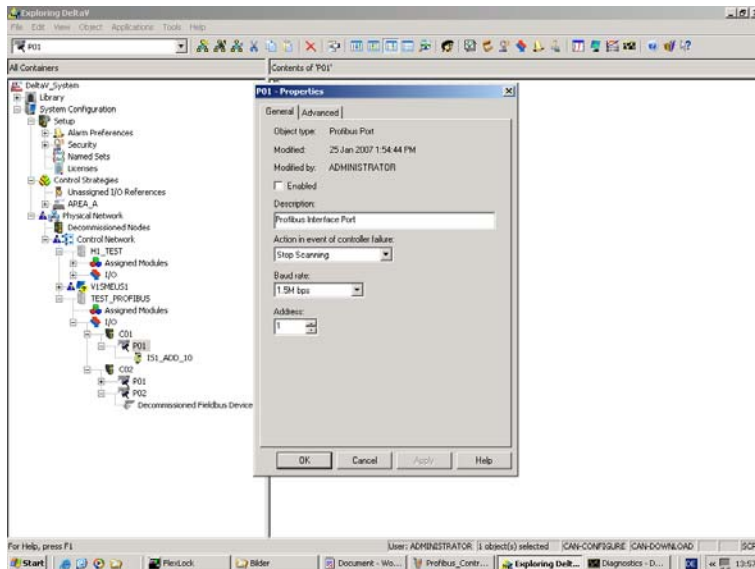
1. Control Network
2. Add a Controller and name it
3. Open tree below the controller
4. Select I/O



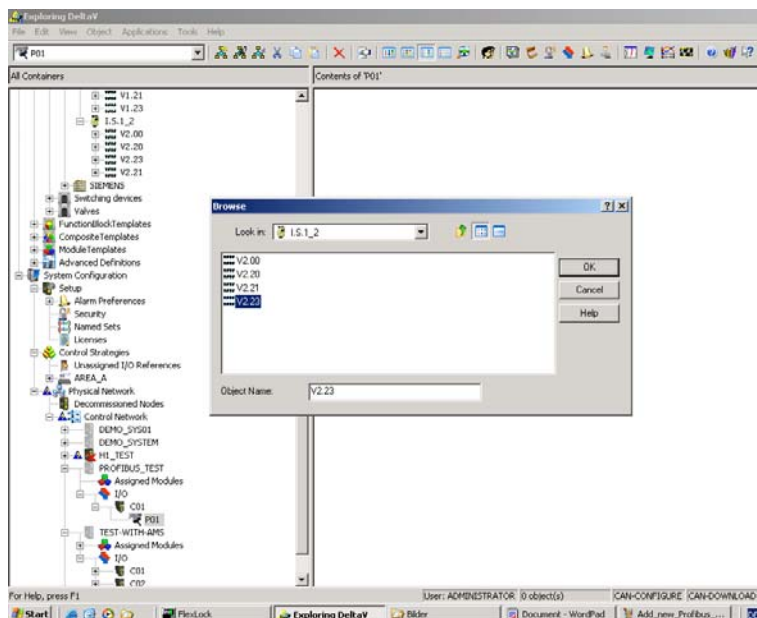
5. Add a bus card and select the slot were the card is located.

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6. Select the type of bus card => Profibus Card



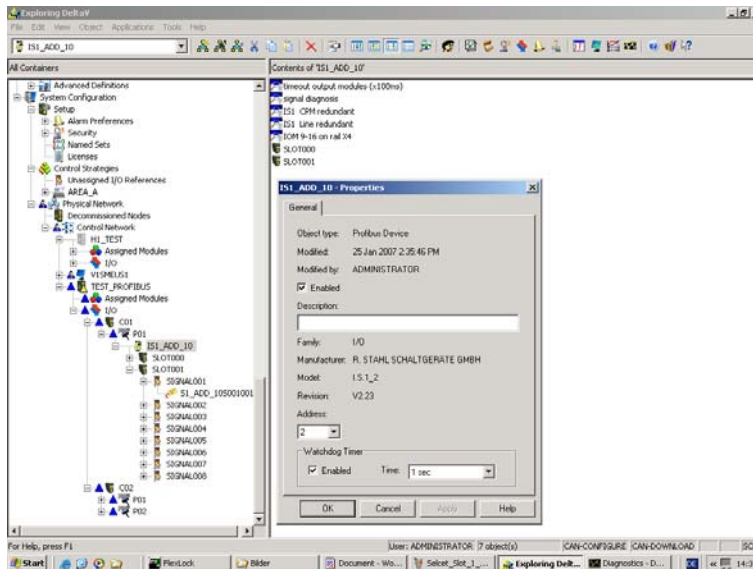
7. Select properties of the Profibus port.
 - a. Check "Enable"
 - b. Select action in event of controller failure => Recommend leave "Stop Scanning"
 - c. Set the Baud Rate " I.S.1 supports 9k6 till 1M5 Bits/s
 Set the Profibus Masters address



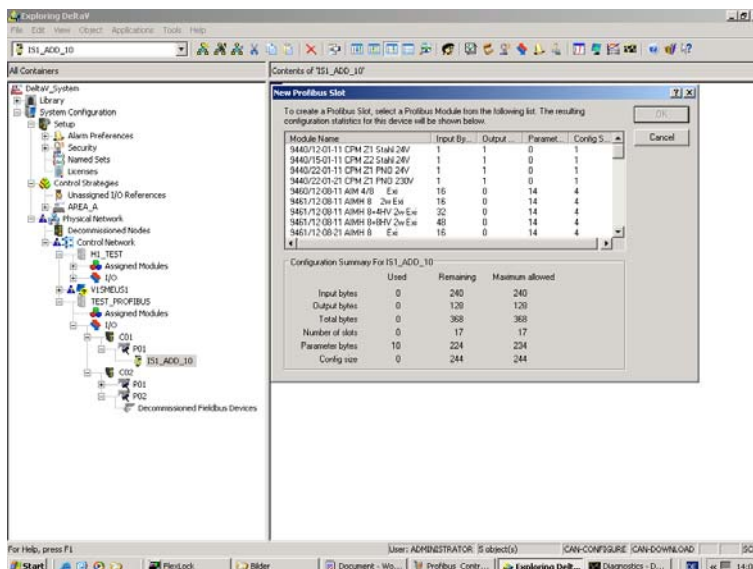
8. Select the Profibus port and add a IS1 device definition you may select between the standard parameter set " I.S.1" and the extended parameter set "I.S.1_2"
9. Next is to select the GSD version. You may have only one version of GSD files. In this example four GSD files are shown. Please remember to configure your GSD file already in the library to avoid unnecessary or duplicated work.

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10. Name the I.S.1 station the default name will be "NODE..". In the figure below the name is IS1_ADD_10.

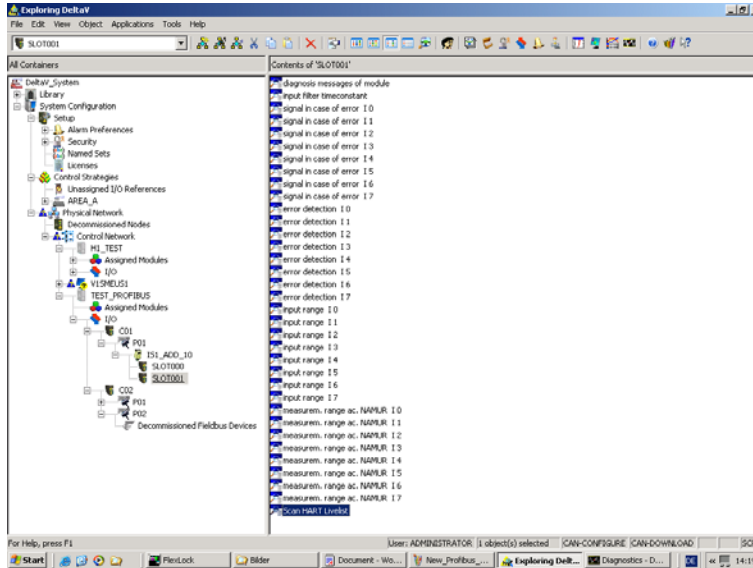


11. Select the properties of the I.S.1 station
- Check the enable box
 - Set the Slave address (this must be unique)
- Check the enable box for the Watchdog Timer



12. Add new profibus slot. The first module shall be a CPM type 9440 this module must be in slot 0. Add all other modules as they appear on the IS1 bus rail. Please remember type 9440/12 and 9440/22 are supporting only 8 I/O modules. Type 9440/15 supports 16 I/O modules.
13. The figure above shows the number of available input and output bytes. If the number of bytes are used up its not possible to add another input or output module.

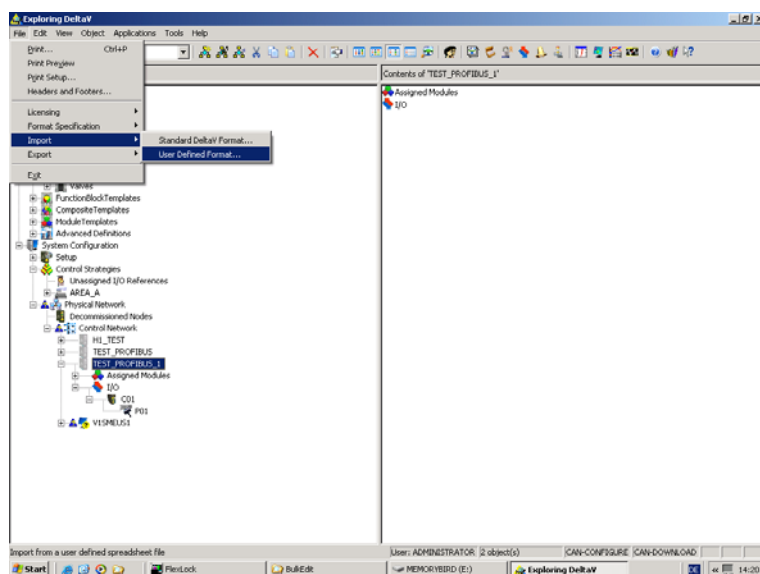
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14. Next select the properties of the appropriated slot. This is similar to Chap. 4.1

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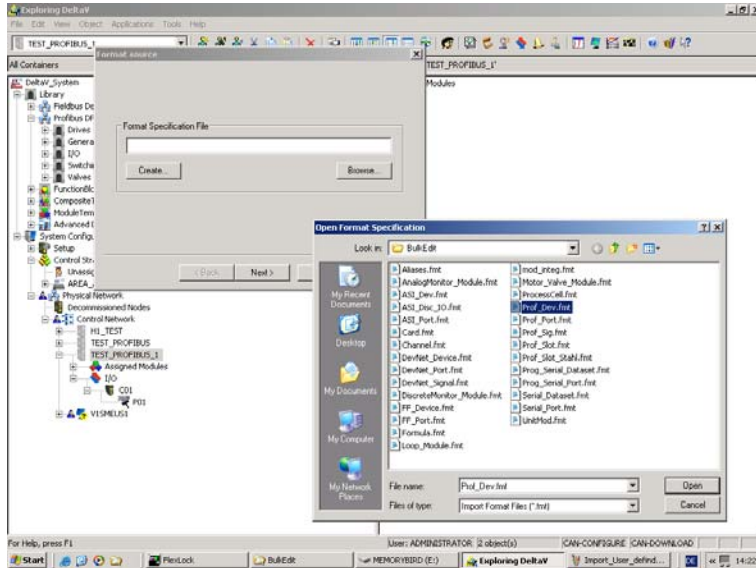
5. Create a configuration for I.S 1 in DeltaV Explorer using the user defined import (“Bulk Edit”)



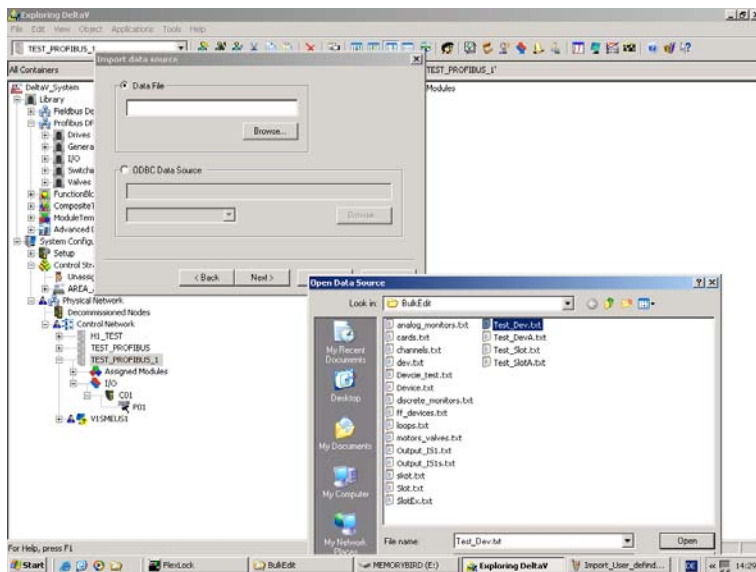
1. To use this feature you must have 3 import filter and 3 import text files.
 - a. A device definition file Profi_Dev.fmt
 - b. A port definition file Profi_Slot.fmt
 - c. A signal definition file Profi_Sig.fmt
2. To generate the import text files a tool is needed. R. STAHL provides such a tool “Bulk_Configuration_of_IS1_in_DeltaV_Rev_x_xx.xls” this is an Excel macro which allows the generation to configuration for up to 15 IS1 field stations. As output there are 3 files. To use this import utility a controller, the Profibus Master shall be configured in the DeltaV Explorer. The name of the controller and the slot number of the Profibus Master must be identical to the entries in the Excel Macro.

Adjust the security setting of Excel (options/safety setting button macro safety) to medium. If the setting is high or very high no macro can be executed by Excel!

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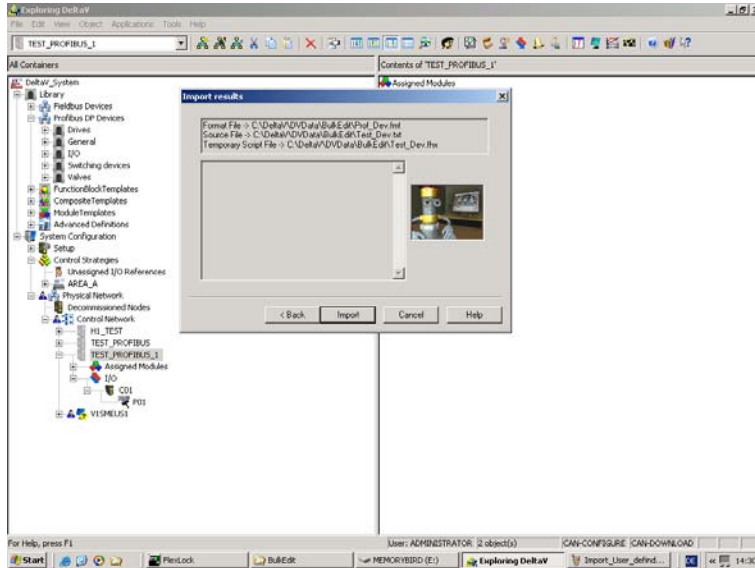


- To begin the import you must first select the import definition file. The first file to import is the Prof_Dev. This imports the IS1 field stations as structure below the Profibus Master.

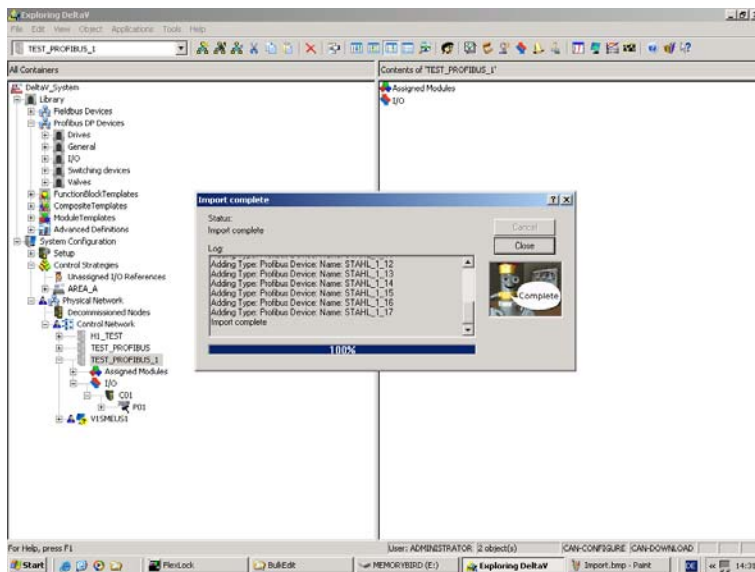


- Select the file to be imported.

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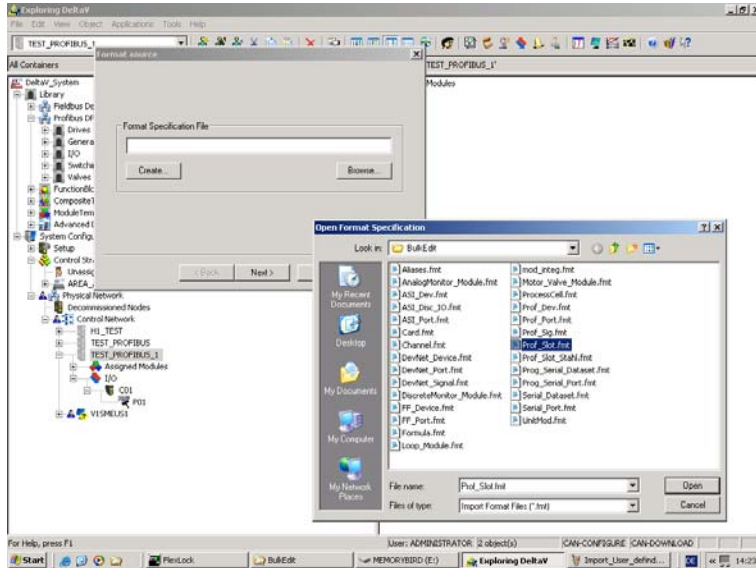


5. Start the import

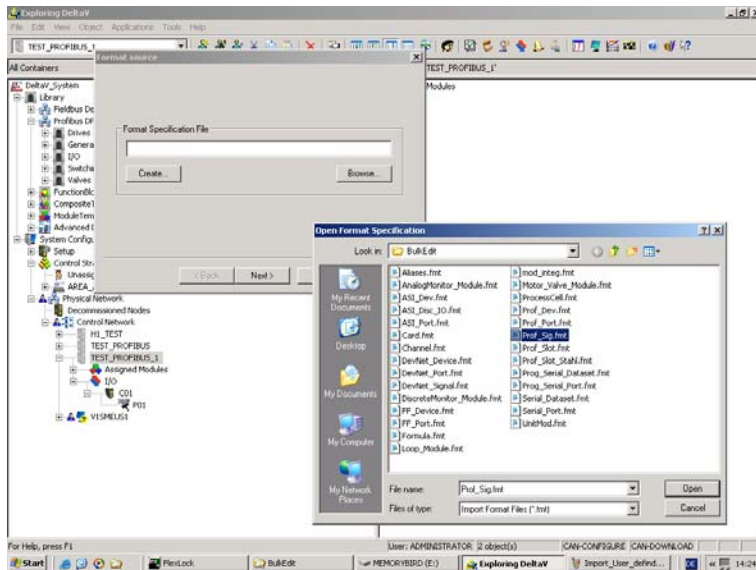


6. Import of the device definition is completed. There are no errors. If there are some errors you must check the data entered in the Excel makro.

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7. Next import the Profi_slot. This adds all slots to the I.S.1 field stations.



8. Next import the Profi_sig. This adds all signal to the IS1 field stations.

9. Now all of the IS1 field stations are configured. The only thing what's left is the configuring of the channel properties for all I.S.1 modules.

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6. Things to do during commissioning

- If during commissioning most of the I/O are open circuit DeltaV will show most of the signals as bad even if some of the carry a valid signal. This is caused by a diagnostic overflow. There are two workarounds:

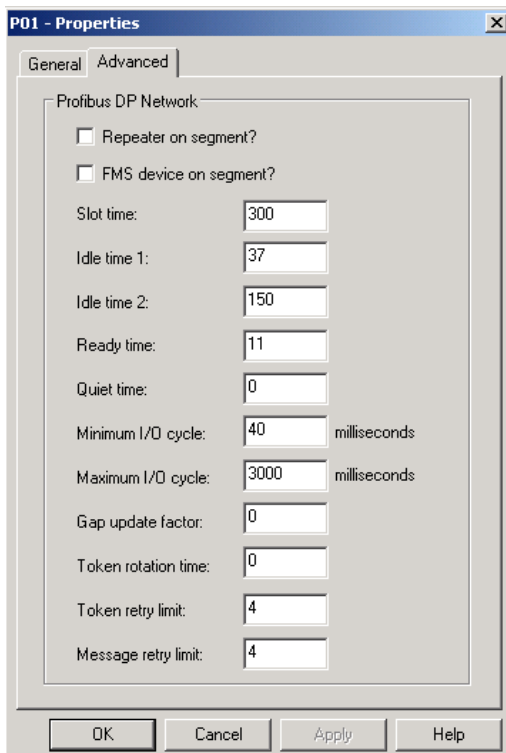
1. For the standard parameter set

If more than 18 I/O signals in fault condition DeltaV will set all of the I/Os of the module with the next I/O error to bad. To avoid this the channel diagnoses of all I/Os shall be switched off or the I/Os are connected with resistors to be good.

2. For the extended parameter set

If more than 30 I/O signals in fault condition DeltaV will set all of the I/Os of the module with the next I/O error to bad. To avoid this the channel diagnoses can be disabled also by the I/O module instead disabling this channel wise.

- Change of bus profile between DP and FMS (observed DeltaV 7.3 and 7.4).



If the bus profile is changed from DP to FMS this will work without any problem. But if the bus profile is changed back from FMS to DP the slaves are not responding anymore. This is due to the fact that the DeltaV Profibusmaster changes the slot time of the master setting before it changes the setting for the slaves. The result is that the slave has to wait until its allowed for him to answer. The master has got the new timing which tells him that the slave is not answering so the master sends a new request next time while the slave was waiting elapses. The slave answers to the master's request before => bus collisions. To correct this the only way is to remove the Profibus connection from the master to restart the bus.

For I.S.1 there is no need to change the bus profile to FMS.