Installation guide

PQF K-I-M-S connectivity in the AIP and OPC server configuration

Industrial IT enabled

ABB

1 Required Hardware and software

1.1 Required hardware

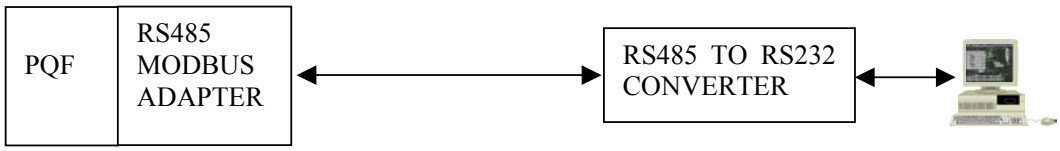
Hardware	Workplace requirements	Server requirements
Processor	Pentium IV 1 GHz as minimum.	Pentium IV 1 GHz as minimum.
Memory	>=512 MB Virtual memory minimum 800 MB	>=512 MB Virtual memory minimum 1.5 GB
Disk	18 GB minimum free space. SCSI disk recommended.	18 GB minimum free space. SCSI disk recommended.
Network Interface Card	Ethernet, 10 Mbps or faster. 100 Mbps recommended.	Ethernet, 10 Mbps or faster. 100 Mbps recommended.
Graphic Card	SVGA graphic card, 16-32 MB. 1280x1024 dpi is the recommended minimum resolution.	SVGA graphic card, 16-32 MB. 1280x1024 dpi is the recommended minimum resolution.

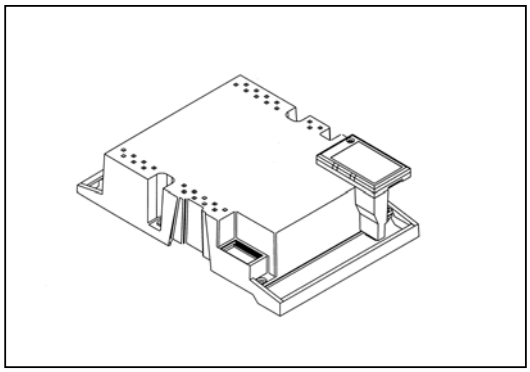
1.2 Required software

- Windows 2000 Professional or Server. U.S. English version
- Windows 2000 Service Pack 3
- DirectX 8.1
- Microsoft Internet Explorer 6.0 with Service Pack 1
- Aspect Integrator Platform v2.1 or later version
- Matrikon Modbus OPC server v3.3.1.268 or later version. (A 30 days trial demo version is given on the CD)
- All support files, documentation, and applications are available on the PQF Modbus CD.

2 Hardware installation

2.1 Install the RS485 Modbus Adapter with the RS485 cable.

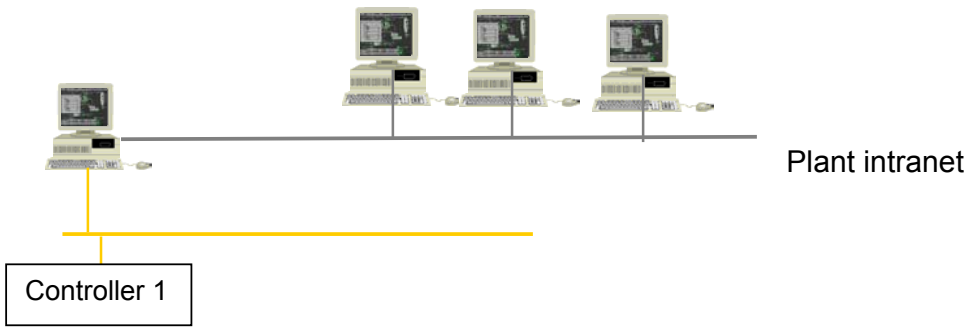




2.2 Connect the A signal of the RS485 MODBUS ADAPTER to DATA+ of the RS485 TO RS232 converter.

2.3 Connect the B signal of the RS485 MODBUS ADAPTER to DATA- of the RS485 TO RS232 converter.

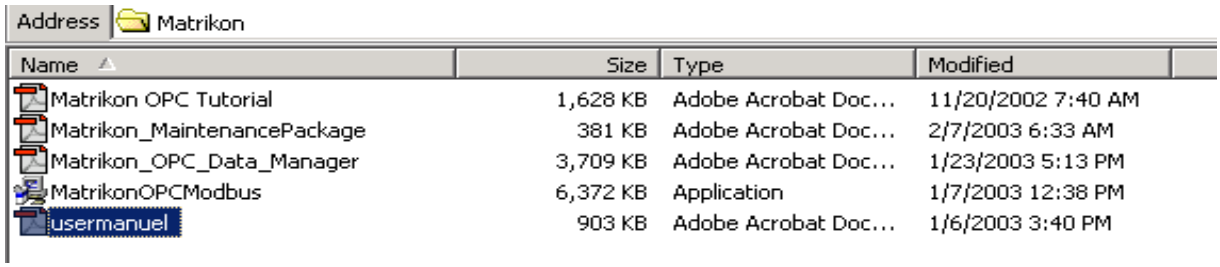
2.4 Connect the RS232 cable to the RS232 port and apply power



3 Matrikon OPC server installation and configuration

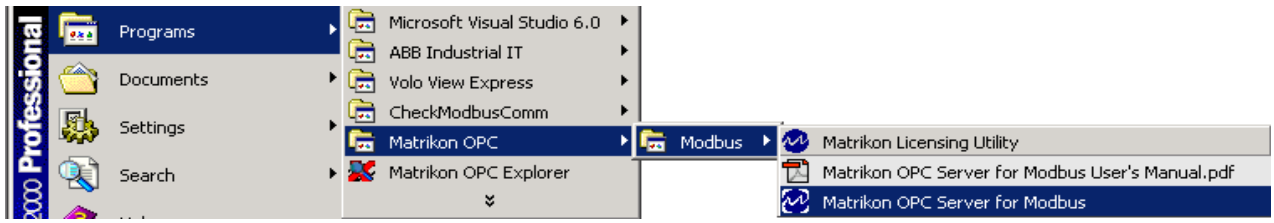
3.1 The installation CD contains a copy of a non registered Matrikon Modbus OPC server (Matrikon/MatrikonOPCModbus.exe). This non-registered version will run for a limited period of time (30 days).
Password: 4489191
Version 3.3.1.268

3.2 A registered version can be found on the web at http://www.matrikon.com .
Refer to the Matrikon usermanual.pdf to get all information on how to order and licensing the Software.

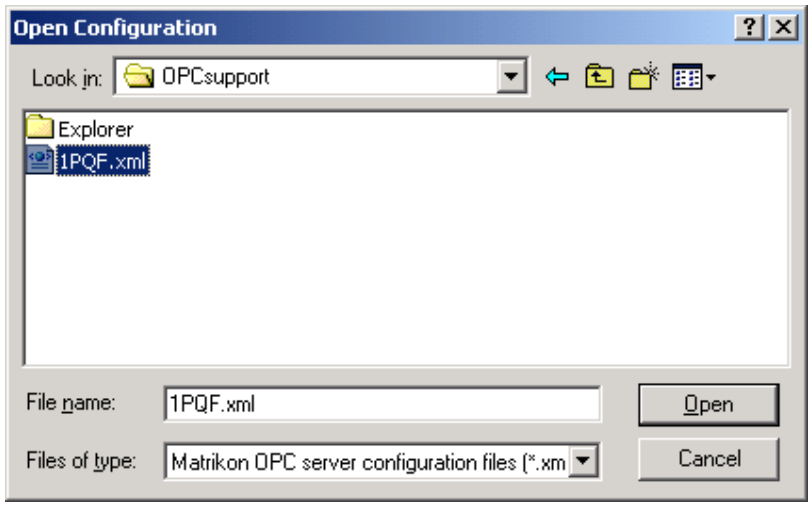


3.3 Install the OPC server by clicking on the application.
At the prompt: Choose server install
Choose install as a service
Choose licence the server
Choose automatically set DCOM permission

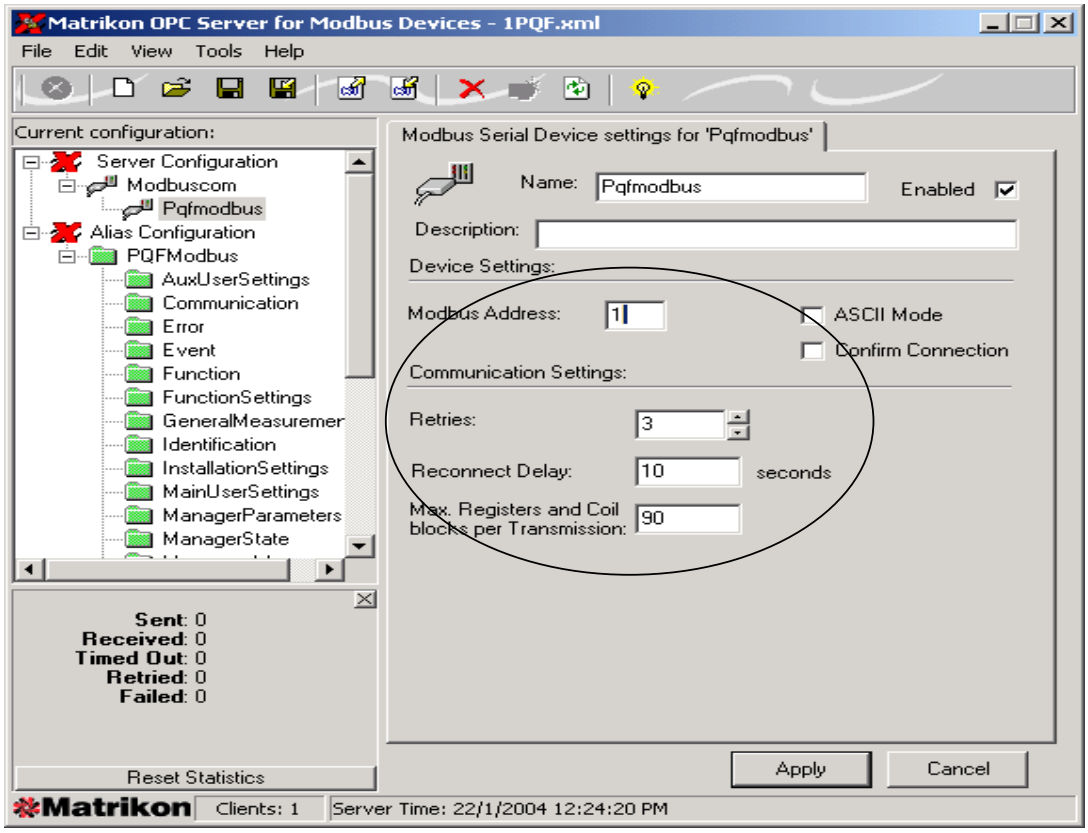
3.4 Start the OPC server by clicking on the installed icon in Start/Programs.
Click on the Matrikon icon in the Windows Taskbar, and then click on 'Configure' to start configuring the OPC server.



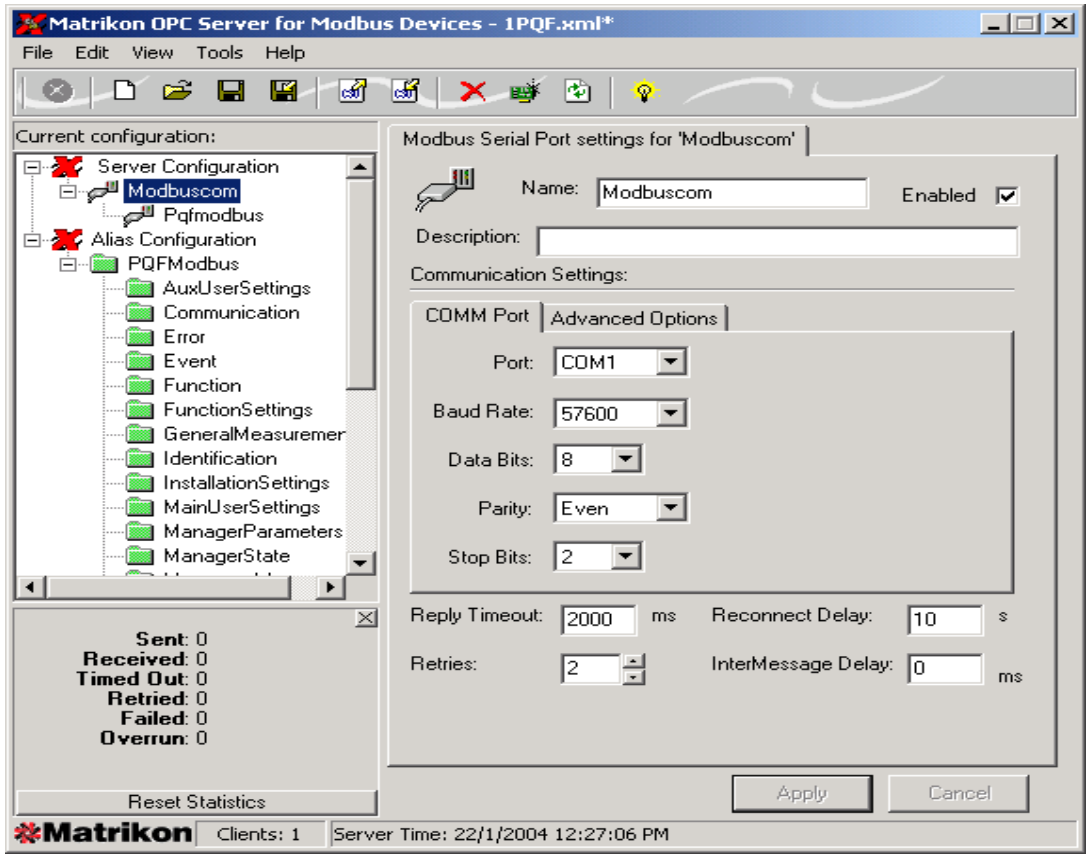
3.5 File / Open the file 1PQF.xml which contains all configuration for the PQF



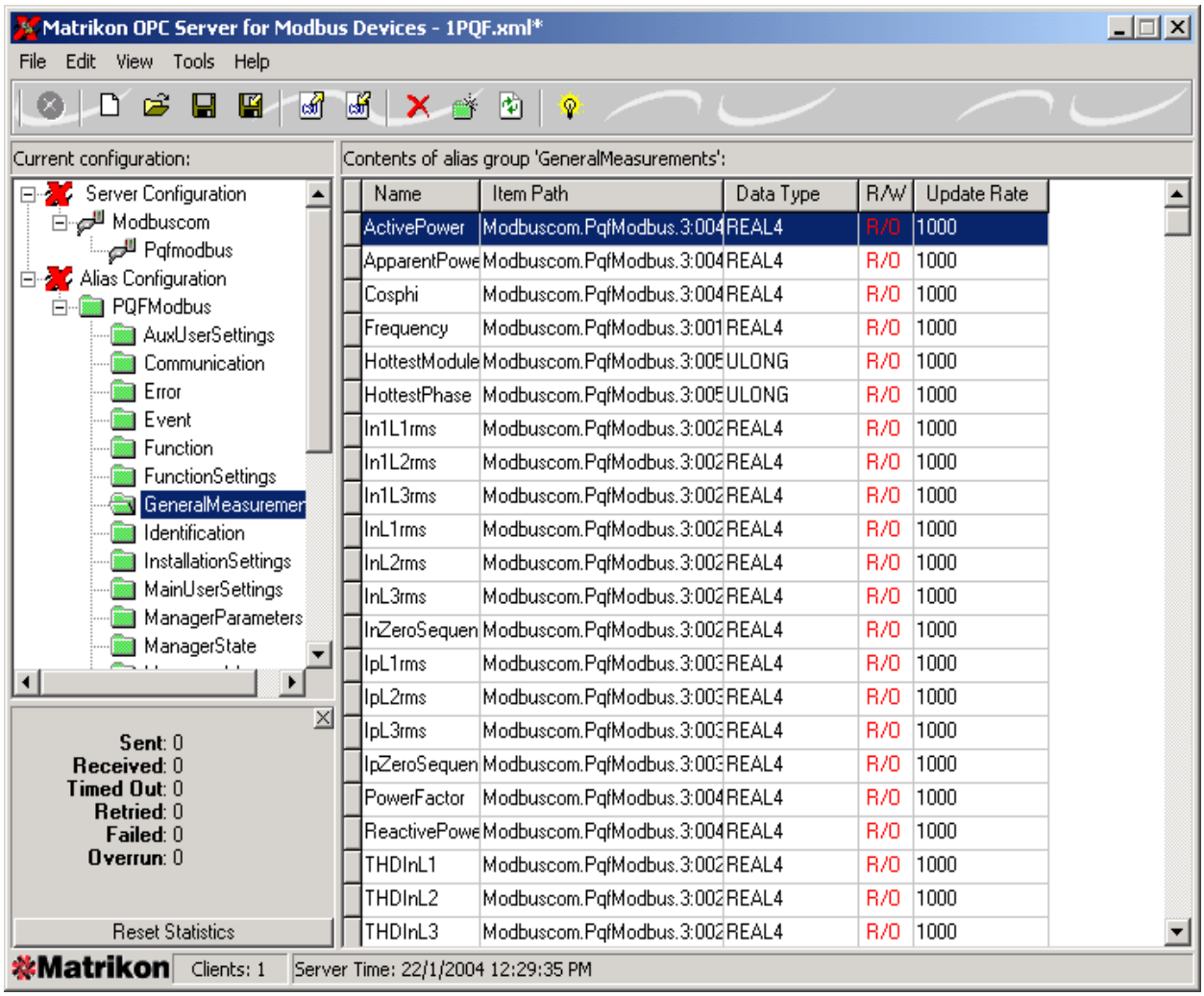
3.6 Configure the hardware connection to the server



3.7 Configure the Modbus serial port with the right parameters

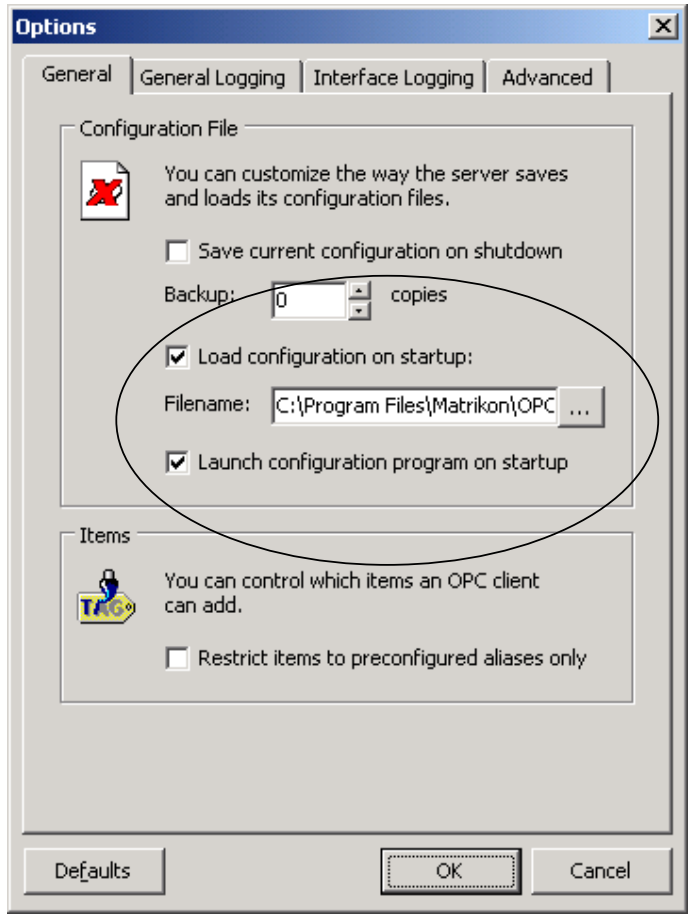


3.8 All tags from the PQF MODBUS are already configured with the right name, address, and data type.



3.9 Then you have to ‘File/Save’ the 1PQF.xml file on your hard disk:
C:\Program Files\Matrikon\OPC\Common\ 1PQF.xml

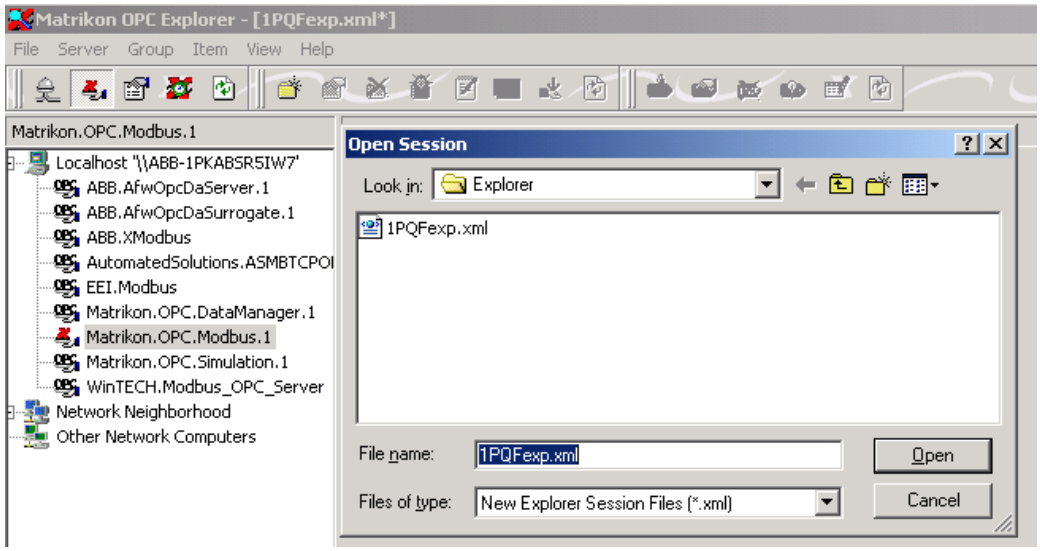
3.10 Finally you have to configure the OPC server in ‘View/Options’ so that the XML file is loaded at start up. Enter the full path and filename where the XML file is stored.



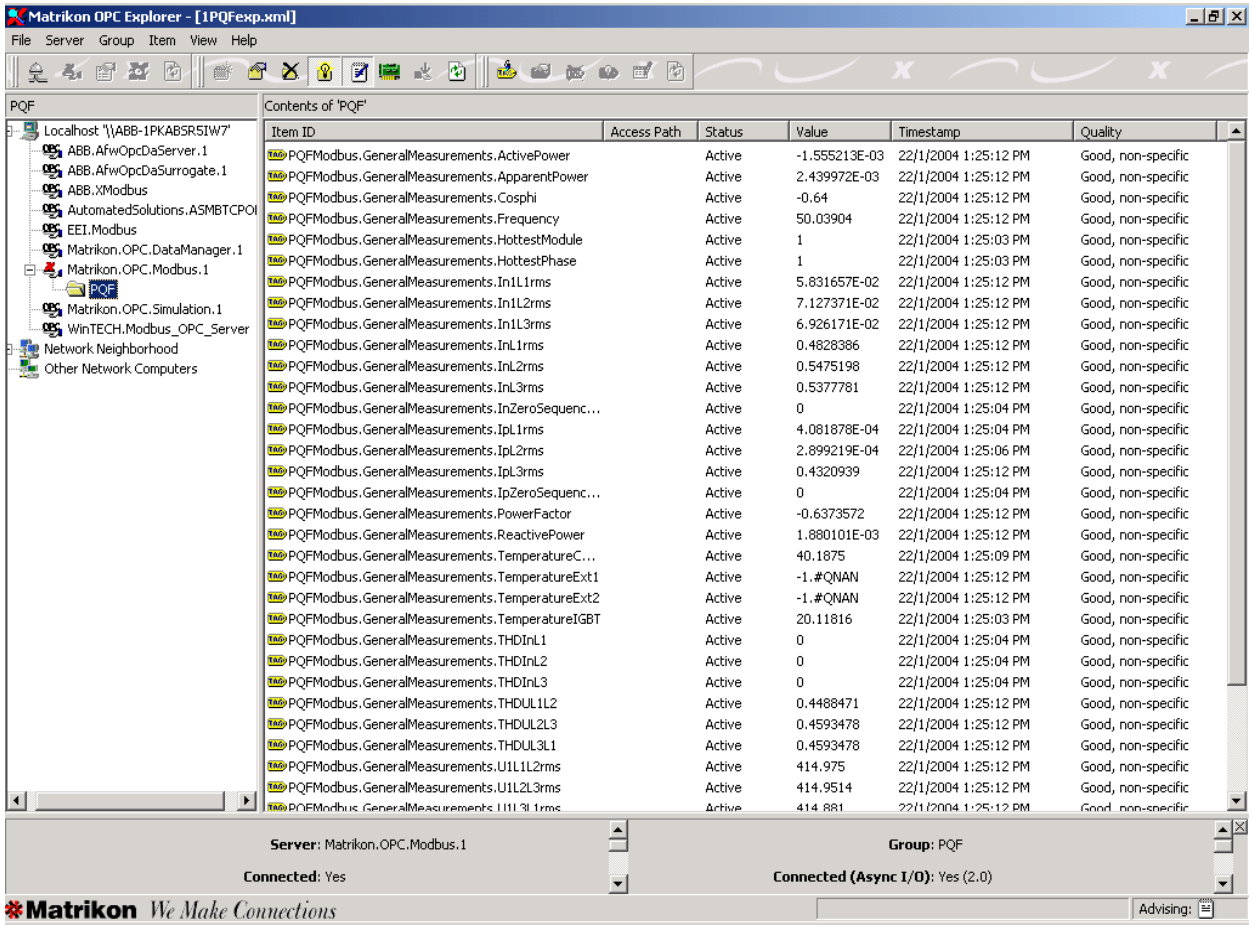
4 OPC explorer configuration

4.1 With the Matrikon OPC explorer, which is an OPC the client, it is possible to view live data and write to properties. Start Matrikon OPC explorer by clicking on the installed icon in Start/Programs.

4.2 ‘File/Open’ the 1PQFexp.xml file, then choose the Matrikon OPC server to be connected to.

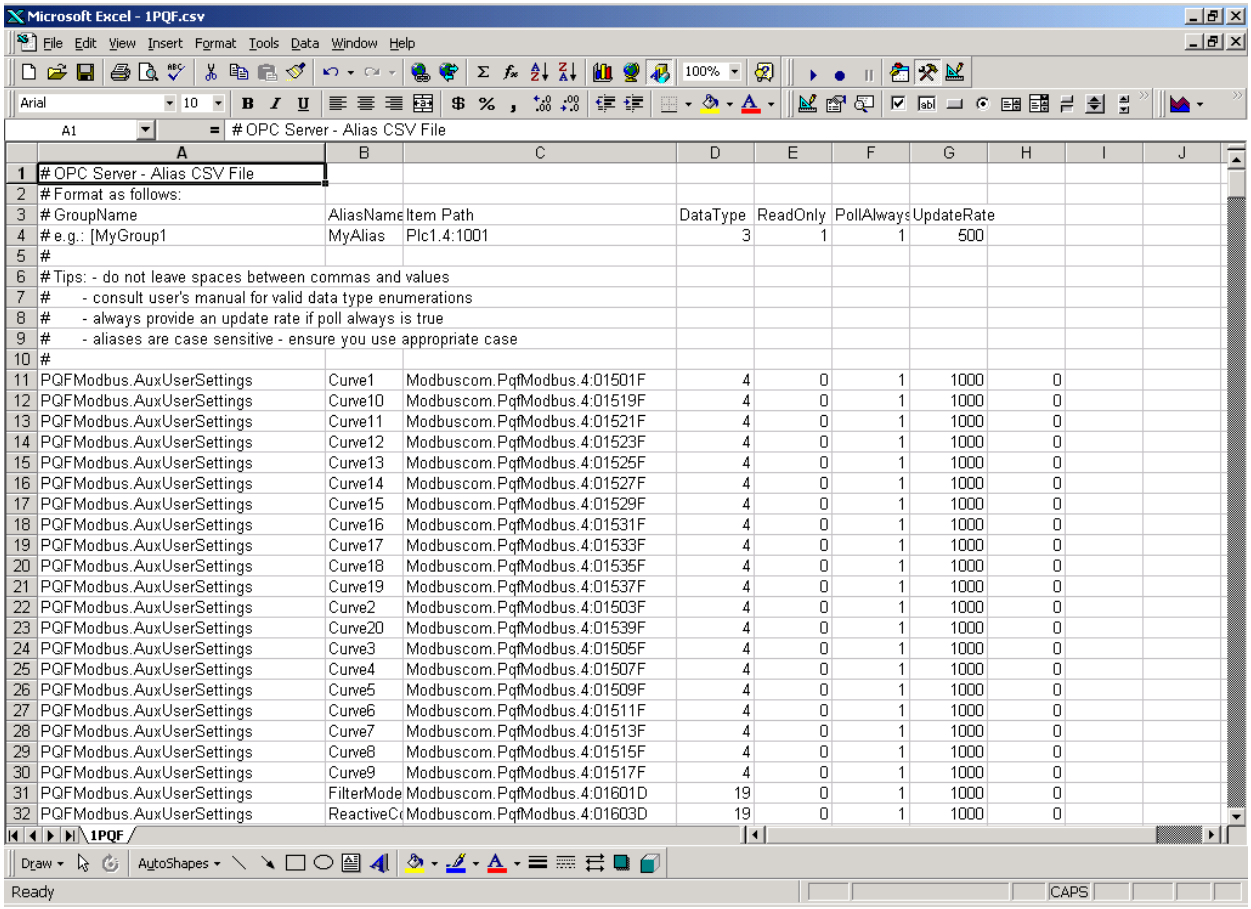


4.3 Configure it, as you want to see live data. Refer to the Matrikon usermanual.pdf to get all information on the Matrikon OPC explorer.



5 OPC server configuration for multiple controllers

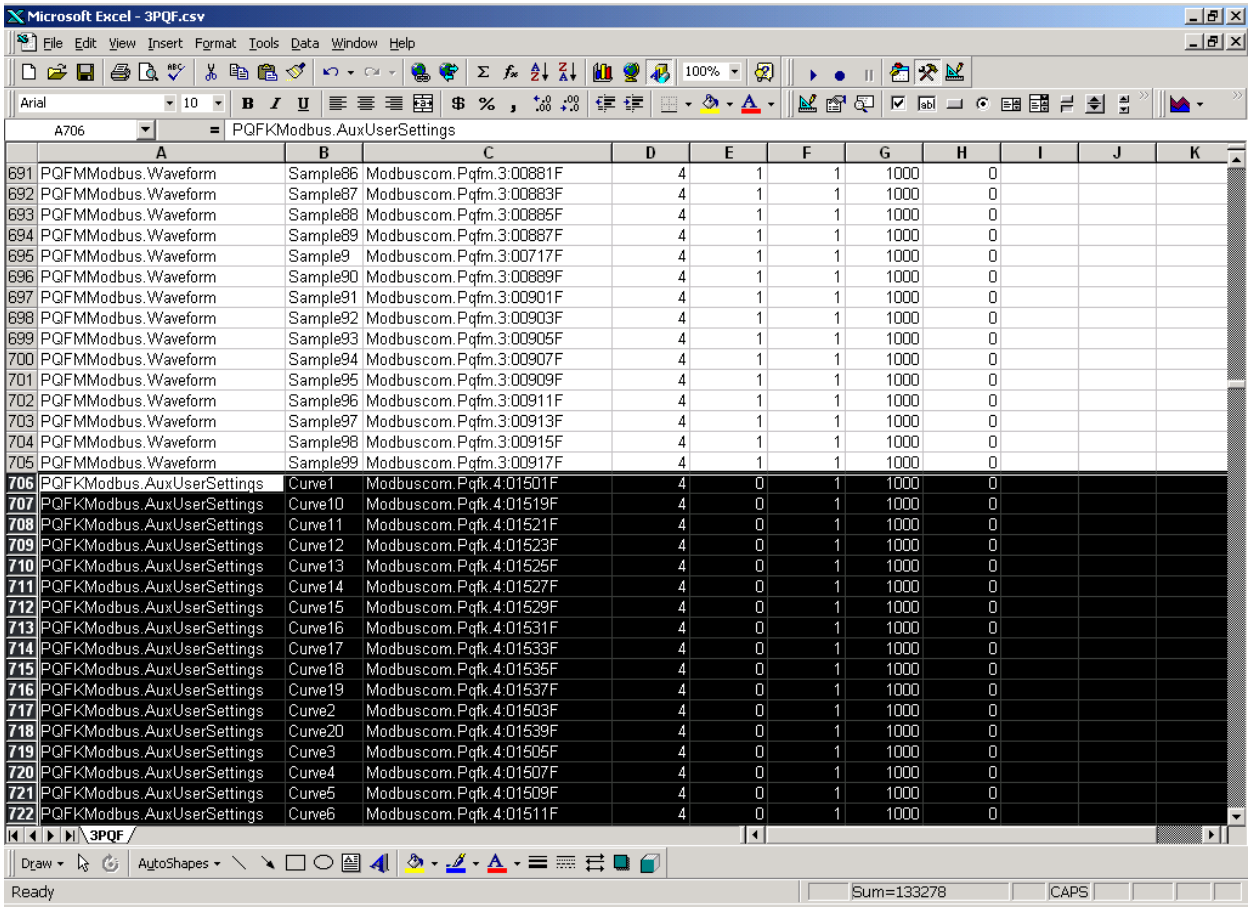
5.1 It is possible to configure your OPC server so that multiple controllers are accessed. The result of this can be found in the 3PQF.xml. Here is the procedure to realise such a file: open the /OPCsupport/1PQF.csv file with Excel.



	A	B	C	D	E	F	G	H	I	J
1	# OPC Server - Alias CSV File									
2	# Format as follows:									
3	# GroupName	AliasName	Item Path	DataType	ReadOnly	PollAlways	UpdateRate			
4	# e.g.: [MyGroup1	MyAlias	Plc1.4:1001	3	1	1	500			
5	#									
6	# Tips: - do not leave spaces between commas and values									
7	# - consult user's manual for valid data type enumerations									
8	# - always provide an update rate if poll always is true									
9	# - aliases are case sensitive - ensure you use appropriate case									
10	#									
11	PQFModbus.AuxUserSettings	Curve1	Modbuscom.PqfModbus.4:01501F	4	0	1	1000	0		
12	PQFModbus.AuxUserSettings	Curve10	Modbuscom.PqfModbus.4:01519F	4	0	1	1000	0		
13	PQFModbus.AuxUserSettings	Curve11	Modbuscom.PqfModbus.4:01521F	4	0	1	1000	0		
14	PQFModbus.AuxUserSettings	Curve12	Modbuscom.PqfModbus.4:01523F	4	0	1	1000	0		
15	PQFModbus.AuxUserSettings	Curve13	Modbuscom.PqfModbus.4:01525F	4	0	1	1000	0		
16	PQFModbus.AuxUserSettings	Curve14	Modbuscom.PqfModbus.4:01527F	4	0	1	1000	0		
17	PQFModbus.AuxUserSettings	Curve15	Modbuscom.PqfModbus.4:01529F	4	0	1	1000	0		
18	PQFModbus.AuxUserSettings	Curve16	Modbuscom.PqfModbus.4:01531F	4	0	1	1000	0		
19	PQFModbus.AuxUserSettings	Curve17	Modbuscom.PqfModbus.4:01533F	4	0	1	1000	0		
20	PQFModbus.AuxUserSettings	Curve18	Modbuscom.PqfModbus.4:01535F	4	0	1	1000	0		
21	PQFModbus.AuxUserSettings	Curve19	Modbuscom.PqfModbus.4:01537F	4	0	1	1000	0		
22	PQFModbus.AuxUserSettings	Curve2	Modbuscom.PqfModbus.4:01503F	4	0	1	1000	0		
23	PQFModbus.AuxUserSettings	Curve20	Modbuscom.PqfModbus.4:01539F	4	0	1	1000	0		
24	PQFModbus.AuxUserSettings	Curve3	Modbuscom.PqfModbus.4:01505F	4	0	1	1000	0		
25	PQFModbus.AuxUserSettings	Curve4	Modbuscom.PqfModbus.4:01507F	4	0	1	1000	0		
26	PQFModbus.AuxUserSettings	Curve5	Modbuscom.PqfModbus.4:01509F	4	0	1	1000	0		
27	PQFModbus.AuxUserSettings	Curve6	Modbuscom.PqfModbus.4:01511F	4	0	1	1000	0		
28	PQFModbus.AuxUserSettings	Curve7	Modbuscom.PqfModbus.4:01513F	4	0	1	1000	0		
29	PQFModbus.AuxUserSettings	Curve8	Modbuscom.PqfModbus.4:01515F	4	0	1	1000	0		
30	PQFModbus.AuxUserSettings	Curve9	Modbuscom.PqfModbus.4:01517F	4	0	1	1000	0		
31	PQFModbus.AuxUserSettings	FilterMode	Modbuscom.PqfModbus.4:01601D	19	0	1	1000	0		
32	PQFModbus.AuxUserSettings	ReactiveC	Modbuscom.PqfModbus.4:01603D	19	0	1	1000	0		

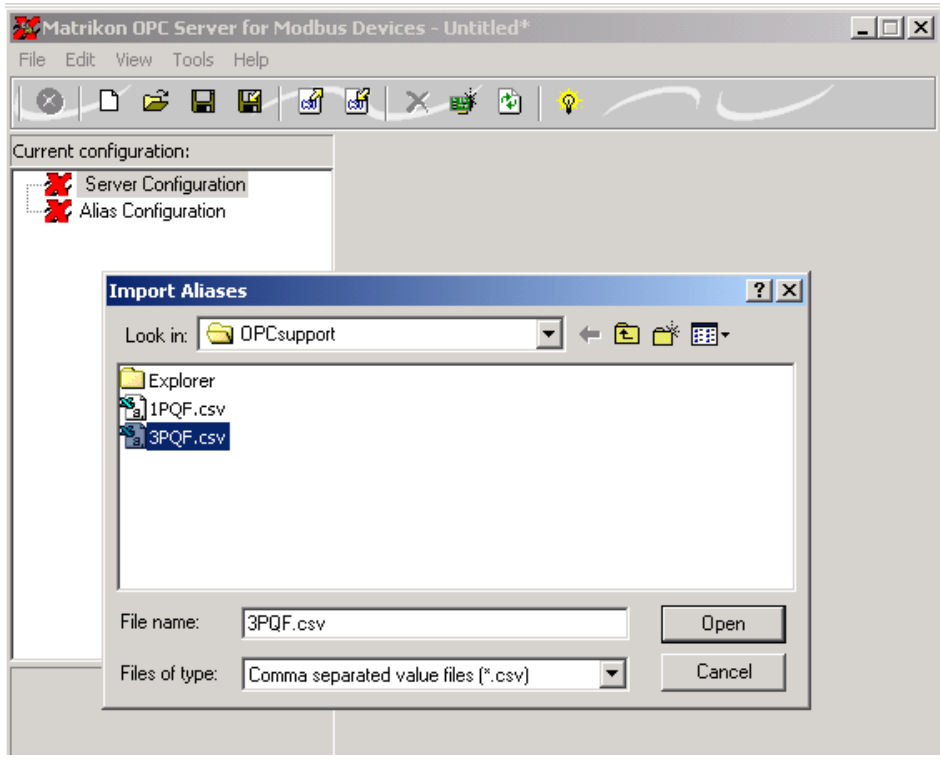
5.2 Copy the aliases you want to access in your new controller unit.

5.3 Paste them at the end of existing aliases and rename the Alias group with another name (for example ‘PQFMModbus’ becomes ‘PQFKModbus’ for example). Do it again if you have a 3rd controller (for example ‘PQFIModbus’ in our example).

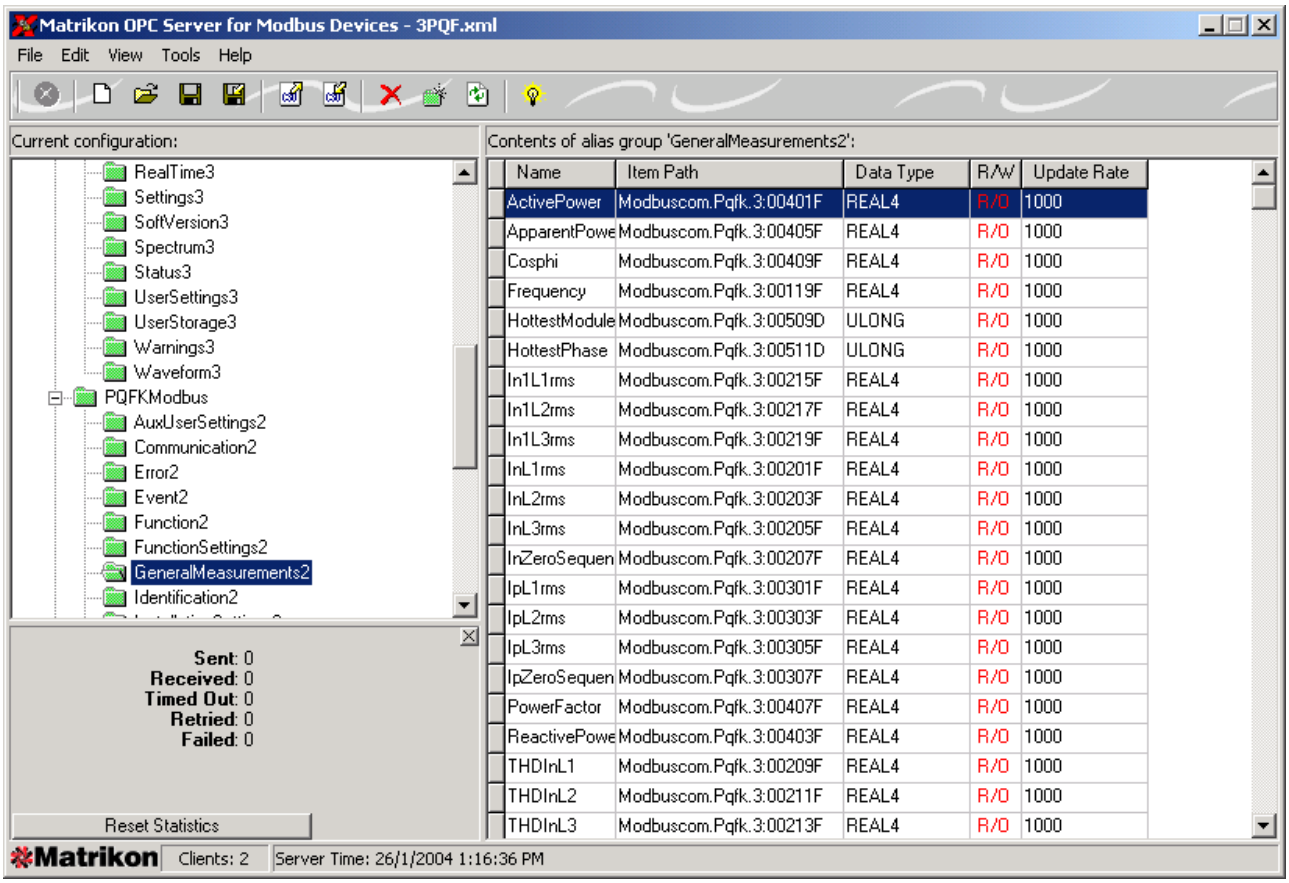


	A	B	C	D	E	F	G	H
691	PQFMModbus.Waveform	Sample86	Modbuscom.Pqfm.3:00881F	4	1	1	1000	0
692	PQFMModbus.Waveform	Sample87	Modbuscom.Pqfm.3:00883F	4	1	1	1000	0
693	PQFMModbus.Waveform	Sample88	Modbuscom.Pqfm.3:00885F	4	1	1	1000	0
694	PQFMModbus.Waveform	Sample89	Modbuscom.Pqfm.3:00887F	4	1	1	1000	0
695	PQFMModbus.Waveform	Sample9	Modbuscom.Pqfm.3:00717F	4	1	1	1000	0
696	PQFMModbus.Waveform	Sample90	Modbuscom.Pqfm.3:00889F	4	1	1	1000	0
697	PQFMModbus.Waveform	Sample91	Modbuscom.Pqfm.3:00901F	4	1	1	1000	0
698	PQFMModbus.Waveform	Sample92	Modbuscom.Pqfm.3:00903F	4	1	1	1000	0
699	PQFMModbus.Waveform	Sample93	Modbuscom.Pqfm.3:00905F	4	1	1	1000	0
700	PQFMModbus.Waveform	Sample94	Modbuscom.Pqfm.3:00907F	4	1	1	1000	0
701	PQFMModbus.Waveform	Sample95	Modbuscom.Pqfm.3:00909F	4	1	1	1000	0
702	PQFMModbus.Waveform	Sample96	Modbuscom.Pqfm.3:00911F	4	1	1	1000	0
703	PQFMModbus.Waveform	Sample97	Modbuscom.Pqfm.3:00913F	4	1	1	1000	0
704	PQFMModbus.Waveform	Sample98	Modbuscom.Pqfm.3:00915F	4	1	1	1000	0
705	PQFMModbus.Waveform	Sample99	Modbuscom.Pqfm.3:00917F	4	1	1	1000	0
706	PQFKModbus.AuxUserSettings	Curve1	Modbuscom.Pqfk.4:01501F	4	0	1	1000	0
707	PQFKModbus.AuxUserSettings	Curve10	Modbuscom.Pqfk.4:01519F	4	0	1	1000	0
708	PQFKModbus.AuxUserSettings	Curve11	Modbuscom.Pqfk.4:01521F	4	0	1	1000	0
709	PQFKModbus.AuxUserSettings	Curve12	Modbuscom.Pqfk.4:01523F	4	0	1	1000	0
710	PQFKModbus.AuxUserSettings	Curve13	Modbuscom.Pqfk.4:01525F	4	0	1	1000	0
711	PQFKModbus.AuxUserSettings	Curve14	Modbuscom.Pqfk.4:01527F	4	0	1	1000	0
712	PQFKModbus.AuxUserSettings	Curve15	Modbuscom.Pqfk.4:01529F	4	0	1	1000	0
713	PQFKModbus.AuxUserSettings	Curve16	Modbuscom.Pqfk.4:01531F	4	0	1	1000	0
714	PQFKModbus.AuxUserSettings	Curve17	Modbuscom.Pqfk.4:01533F	4	0	1	1000	0
715	PQFKModbus.AuxUserSettings	Curve18	Modbuscom.Pqfk.4:01535F	4	0	1	1000	0
716	PQFKModbus.AuxUserSettings	Curve19	Modbuscom.Pqfk.4:01537F	4	0	1	1000	0
717	PQFKModbus.AuxUserSettings	Curve2	Modbuscom.Pqfk.4:01503F	4	0	1	1000	0
718	PQFKModbus.AuxUserSettings	Curve20	Modbuscom.Pqfk.4:01539F	4	0	1	1000	0
719	PQFKModbus.AuxUserSettings	Curve3	Modbuscom.Pqfk.4:01505F	4	0	1	1000	0
720	PQFKModbus.AuxUserSettings	Curve4	Modbuscom.Pqfk.4:01507F	4	0	1	1000	0
721	PQFKModbus.AuxUserSettings	Curve5	Modbuscom.Pqfk.4:01509F	4	0	1	1000	0
722	PQFKModbus.AuxUserSettings	Curve6	Modbuscom.Pqfk.4:01511F	4	0	1	1000	0

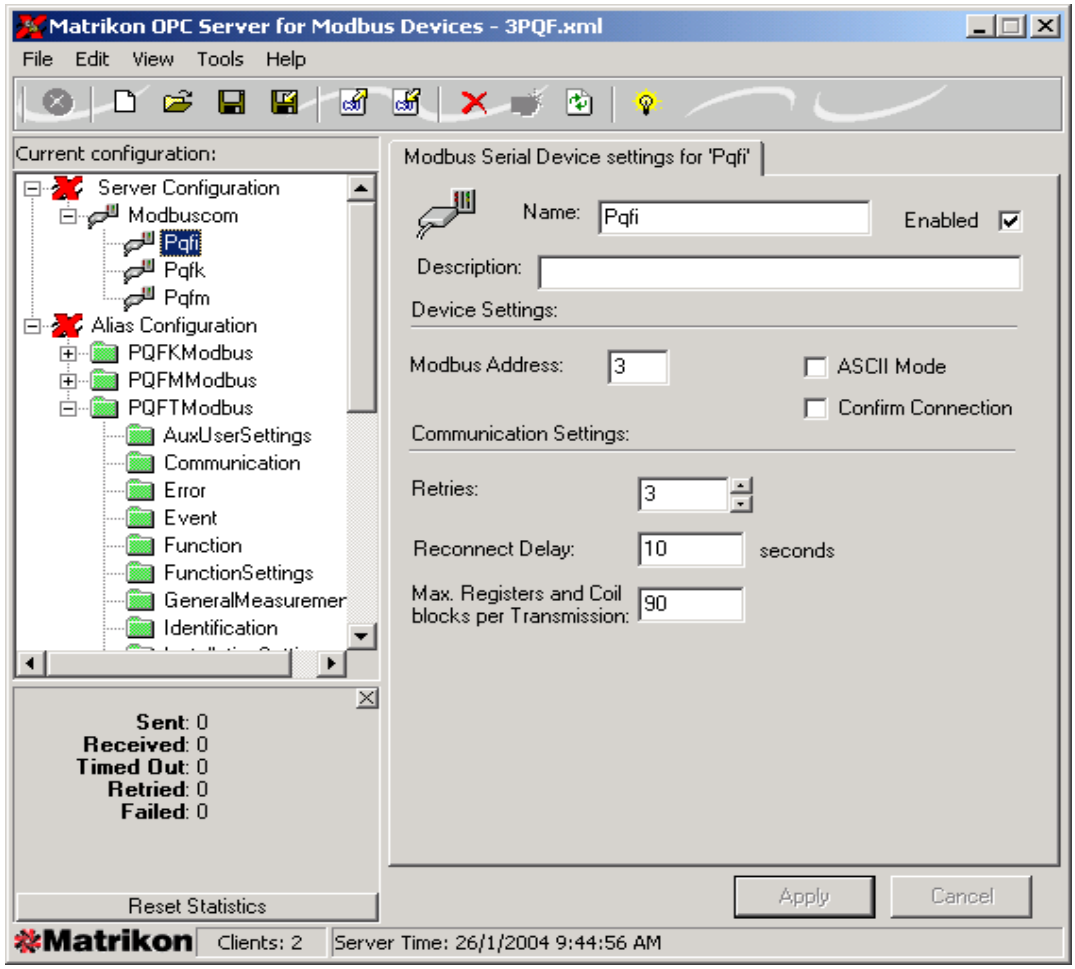
5.4 Save the .CSV file and import it in the Matrikon OPC explorer under File/Import CSV :



5.5 So now you have different alias groups containing each the set of data you imported from the CSV file. Rename each alias so that the names are different for each alias groups (example: GeneralMeasurements1, GeneralMeasurements2…)



5.6 You still have to create the 3 devices, giving them different names.
All created devices should have different Modbus addresses!

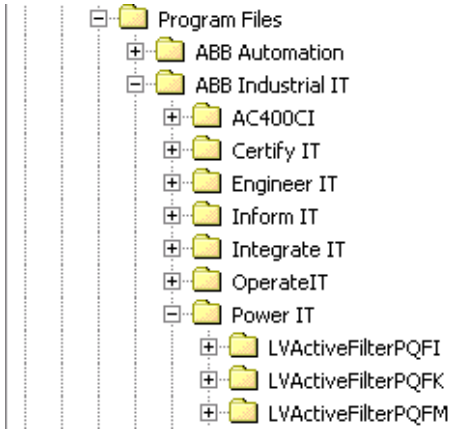


5.7 Then you have to 'File/Save' the file on your hard disk and finally you have to configure the OPC server in 'View/Options' so that the XML file is loaded at start up (see 2.9 and 2.10).

5.8 The example explained above can be found in the 3PQF.XML.

6 Aspect Integrator platform

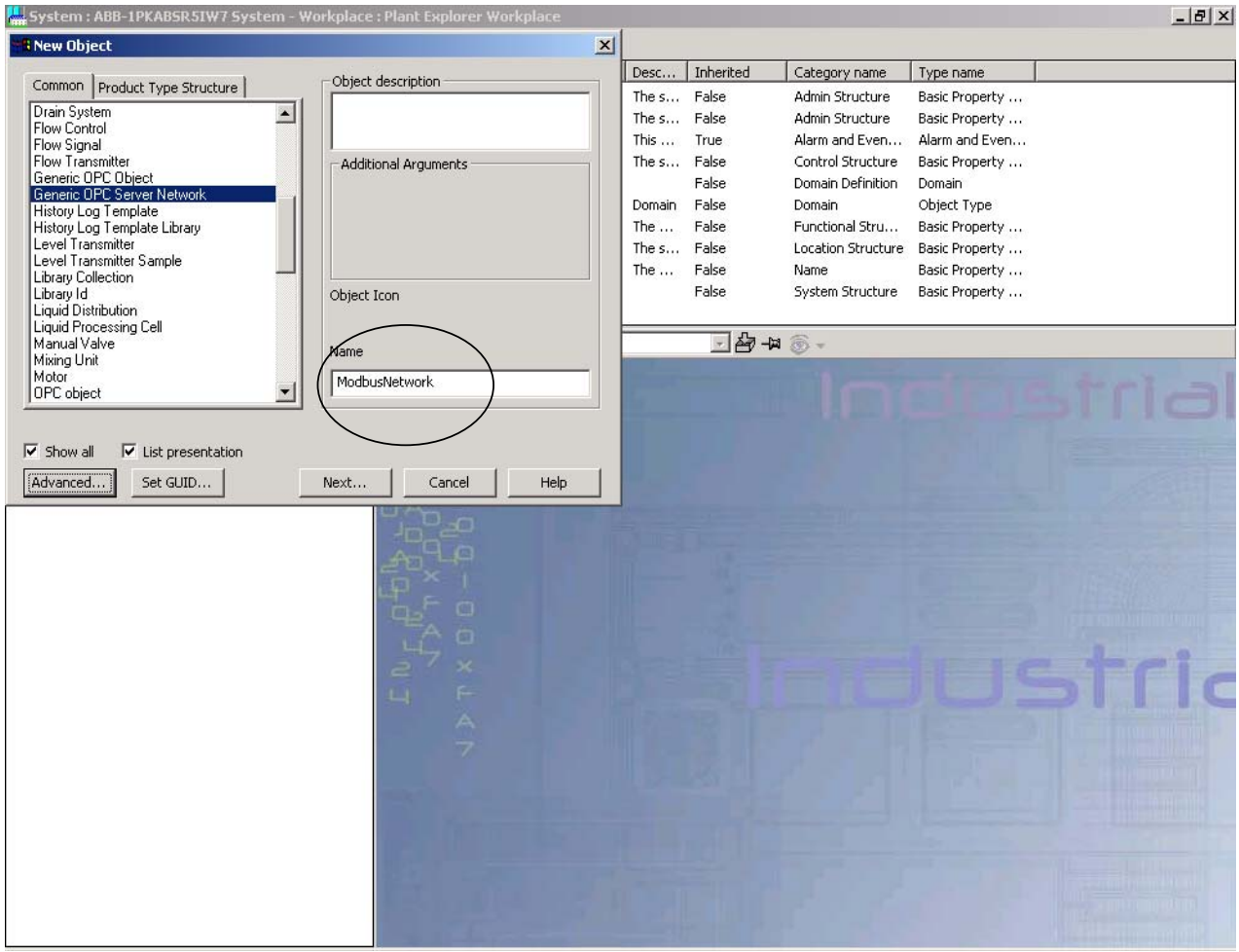
6.1 If it doesn't exist create the 'Power IT' directory. Copy the 'LVActiveFilterPQFx' directories of the CD on your harddisk:



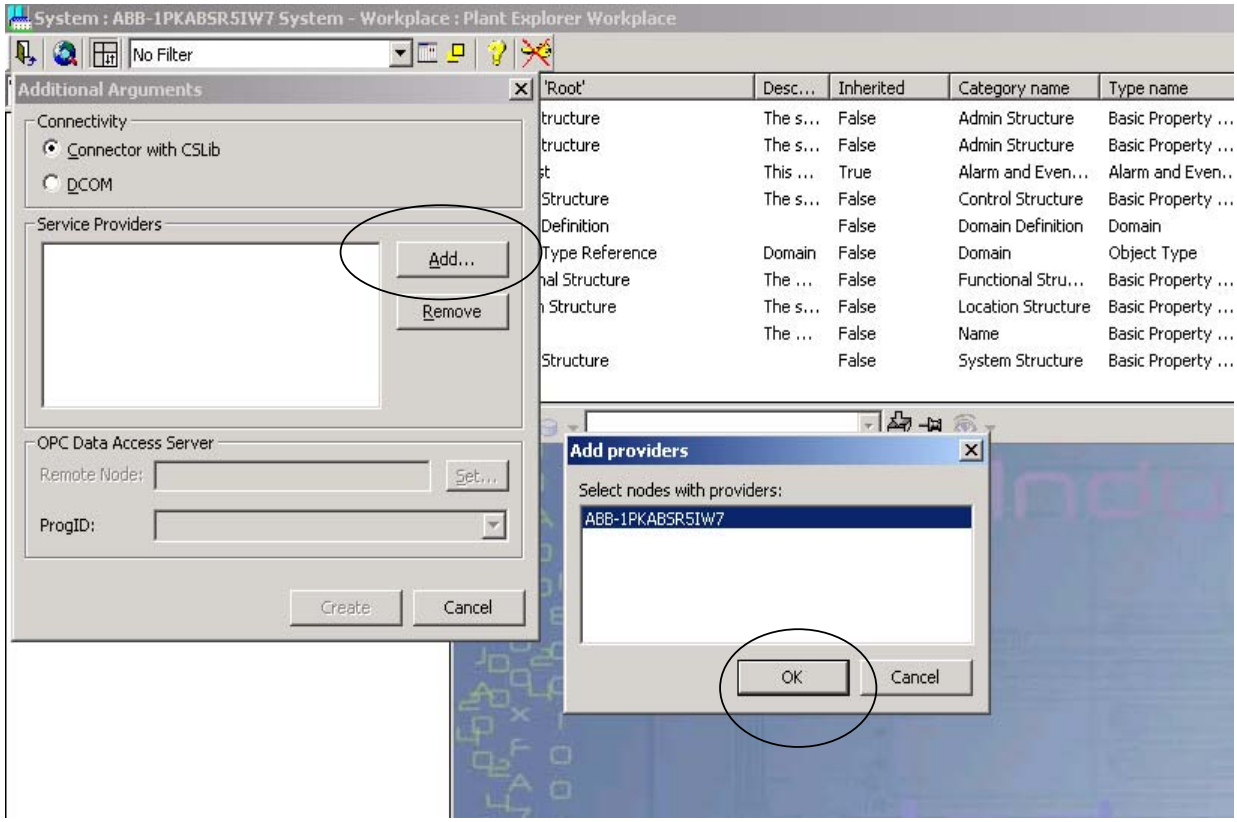
6.2 With the Aspect Integrator Platform you have the advantage of a configurable and programmable OPC client. Start Aspect Integrator Platform

6.3 Start Plant explorer

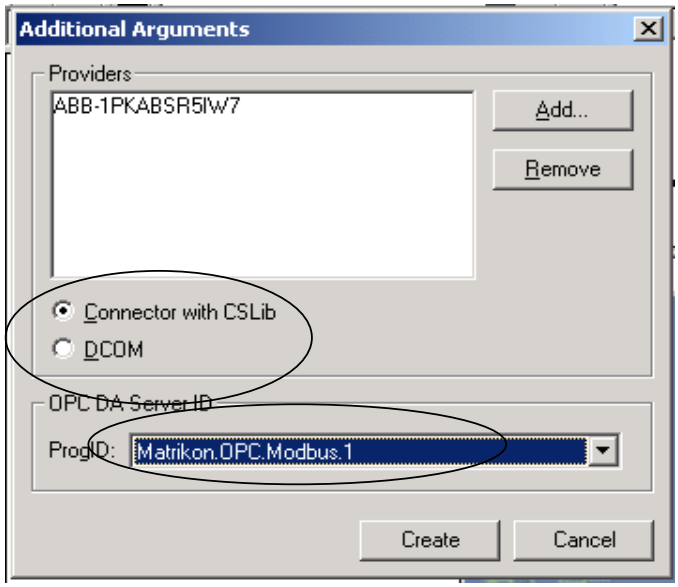
6.4 Go to the control structure and create a new object 'generic OPC server Network' called 'ModbusNetwork'.



6.5 Add provider (your PC user name)

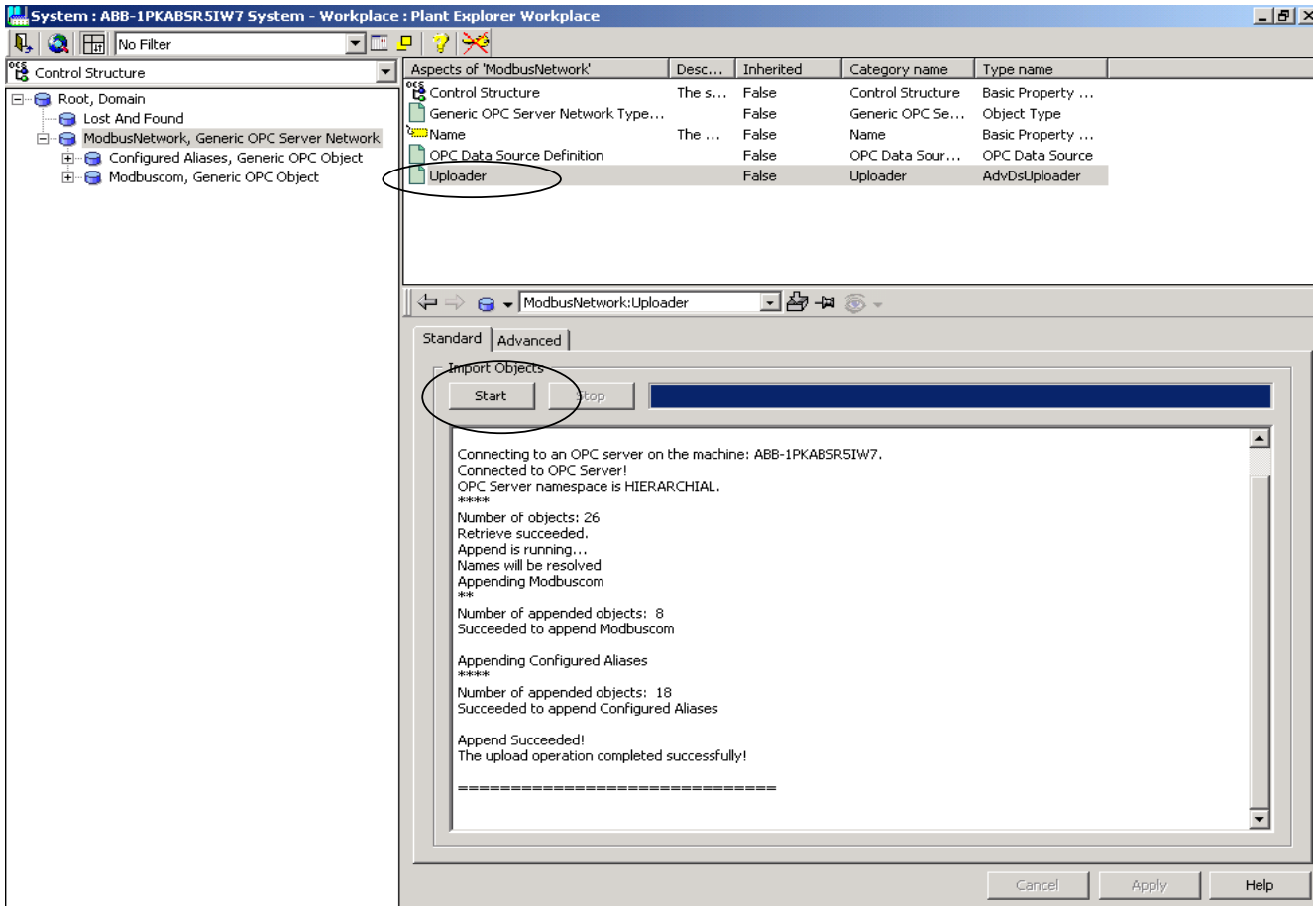


6.6 select OPC DA server ID: connect to the Matrikon OPC Modbus server with CsLib

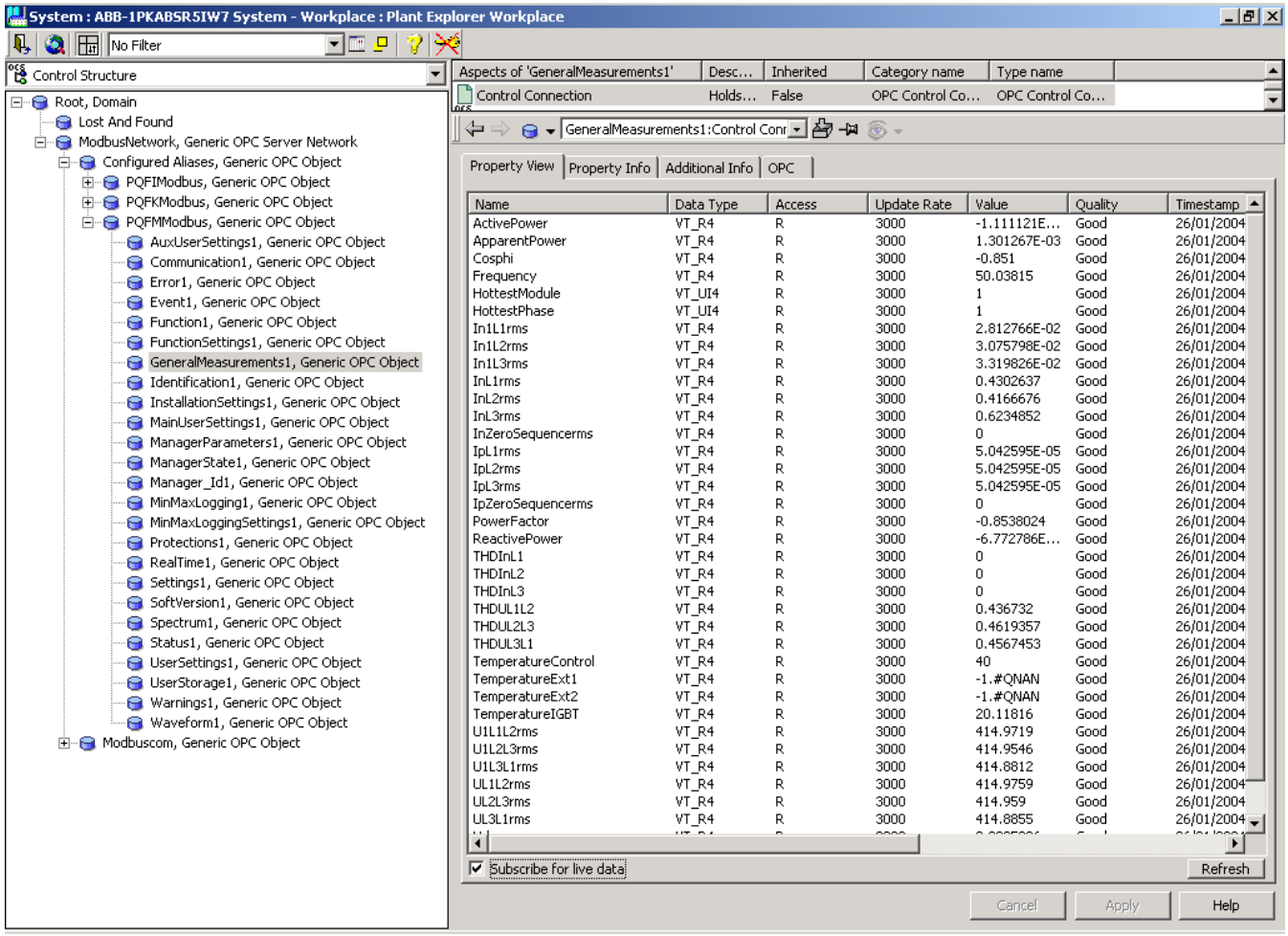


6.7 click on Create

6.8 Click on the ‘Uploader aspect / Start’ to upload objects from the OPC server



6.9 Click on the object, then on the Control Connection aspect and subscribe for live data. You can see updated properties in the property view window.

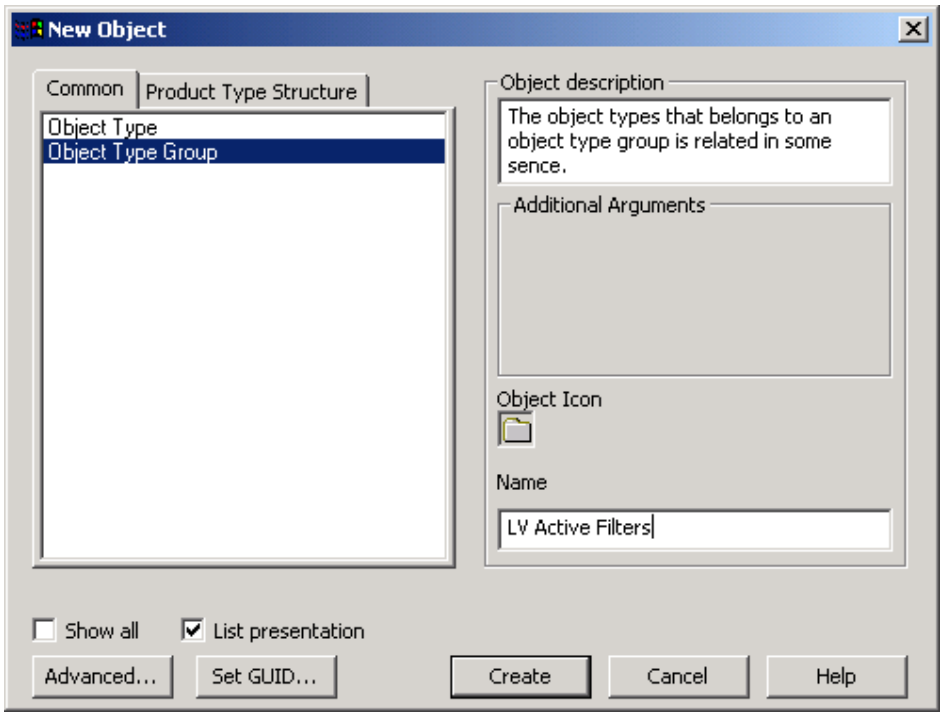


6.10 Go now in the Object Type Structure

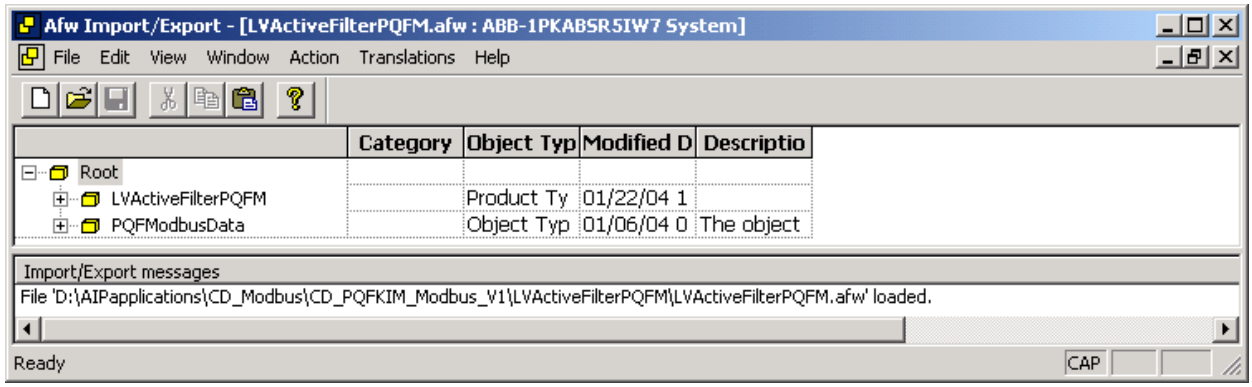
6.11 We will create the Power Technology Products/ LV Active Filters. If these Object Type Groups already exist, go directly to the next step (see point 5.12)

Right click on ‘Object Types’ folder
Select ‘New Object’
Select ‘Object Type Group’ and enter ‘Power Technology Products’ into the name textbox
Create

Right click on ‘Power Technology Products’
Select ‘New Object’
Select ‘Object Type Group’ and enter ‘LV Active Filters’ into the name textbox
Create



6.12 Right click on 'LV Active Filters' where you want to add your aspect object
Open in the Import/Export tool the
\\ LVActiveFilters \ LVActiveFilterPQFM.afw file



Import the PQFModbusData Object type group.
Import the LVActiveFilterPQFM Object type.

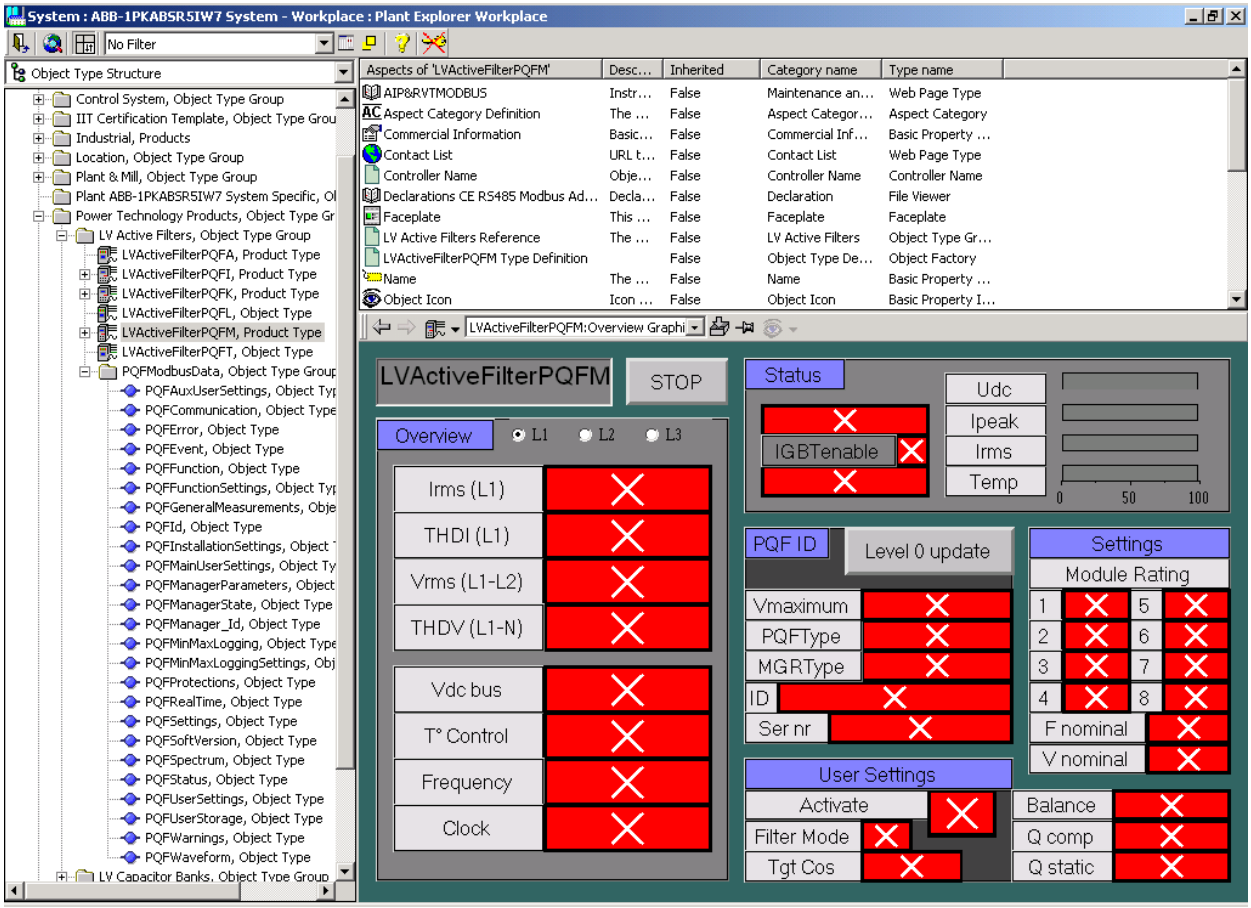
Do again the point 5.12 for the LVActiveFilterPQFK and the LVActiveFilterPQFI Object types.

6.13
Remark: If some aspect categories or object type templates don't exist in your AIP system, import them from the CD from :

- // AIPsupport / Aspect Categories according to 9AKK100809.afw
- // AIPsupport / Template Object Types according to 9AKK100809.afw

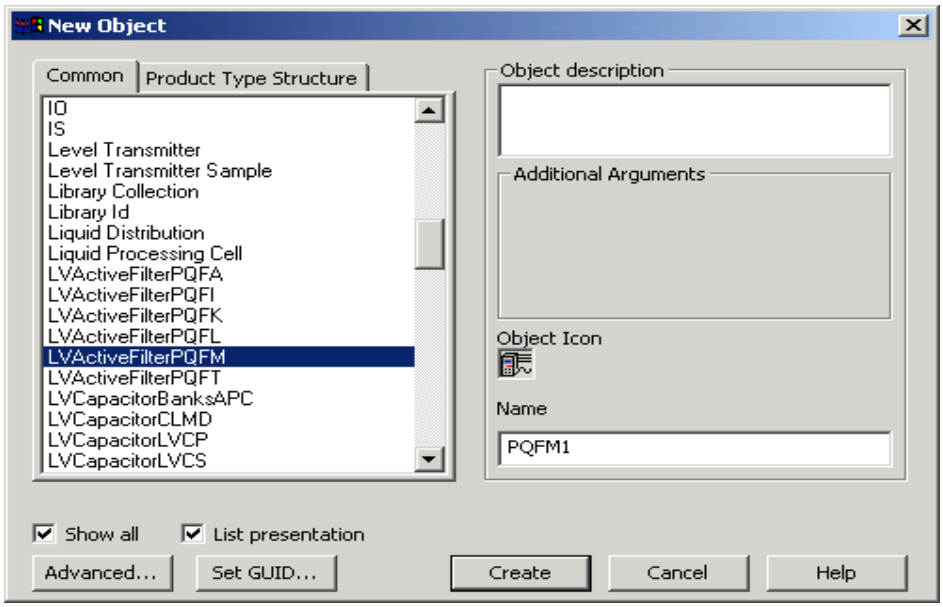
Remark: If you want to import in another 'Object Type Group' create it and import it manually

6.14 You have now LVActiveFilterPQFM , LVActiveFilterPQFK and LVActiveFilterPQFI composite object types where there is functional and location structure references, and object types for each data accessed .
Click on the Overview Graphic Element.
You will see the graphical aspect, which is a template for any LVActiveFilterPQFM , LVActiveFilterPQFK and LVActiveFilterPQFI instantiation.

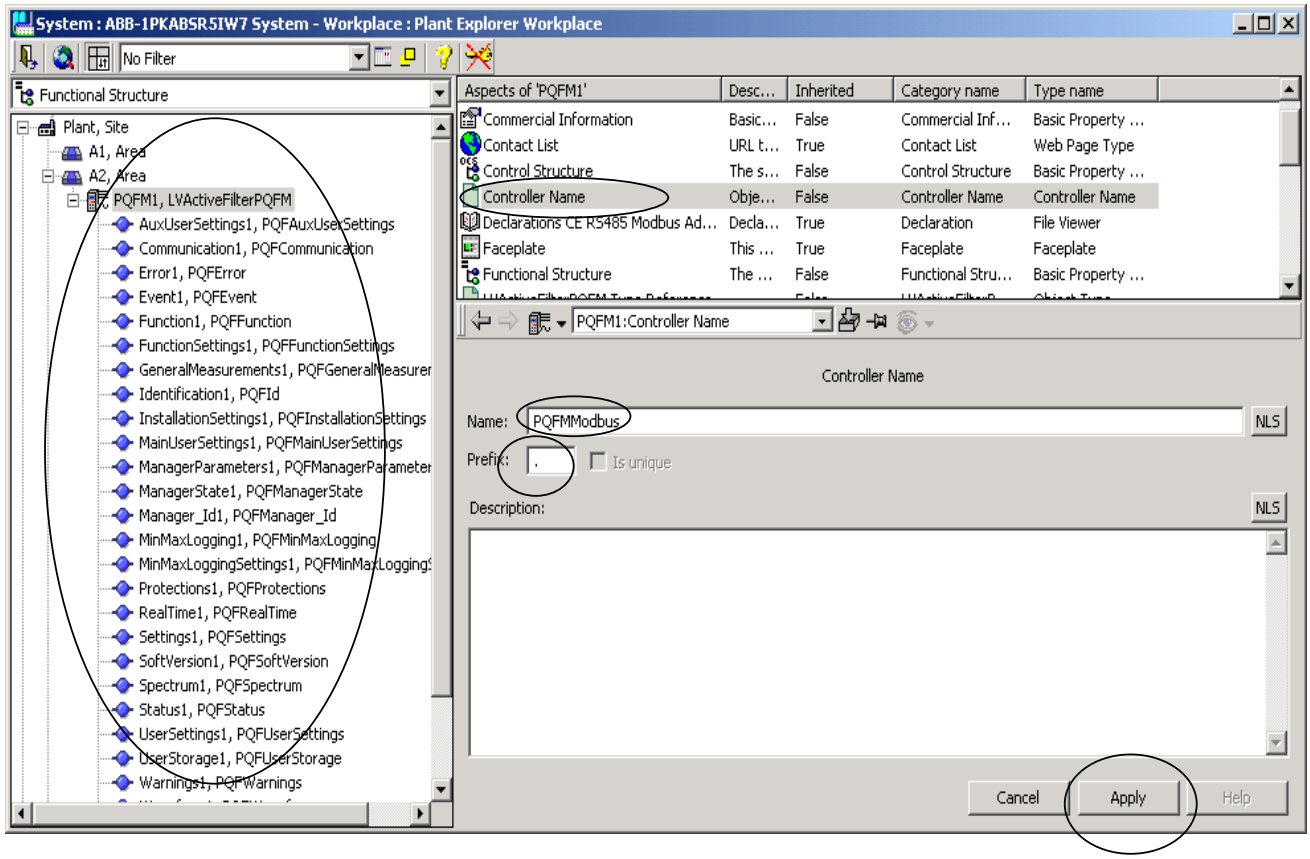


6.15 Go now in the Functional structure

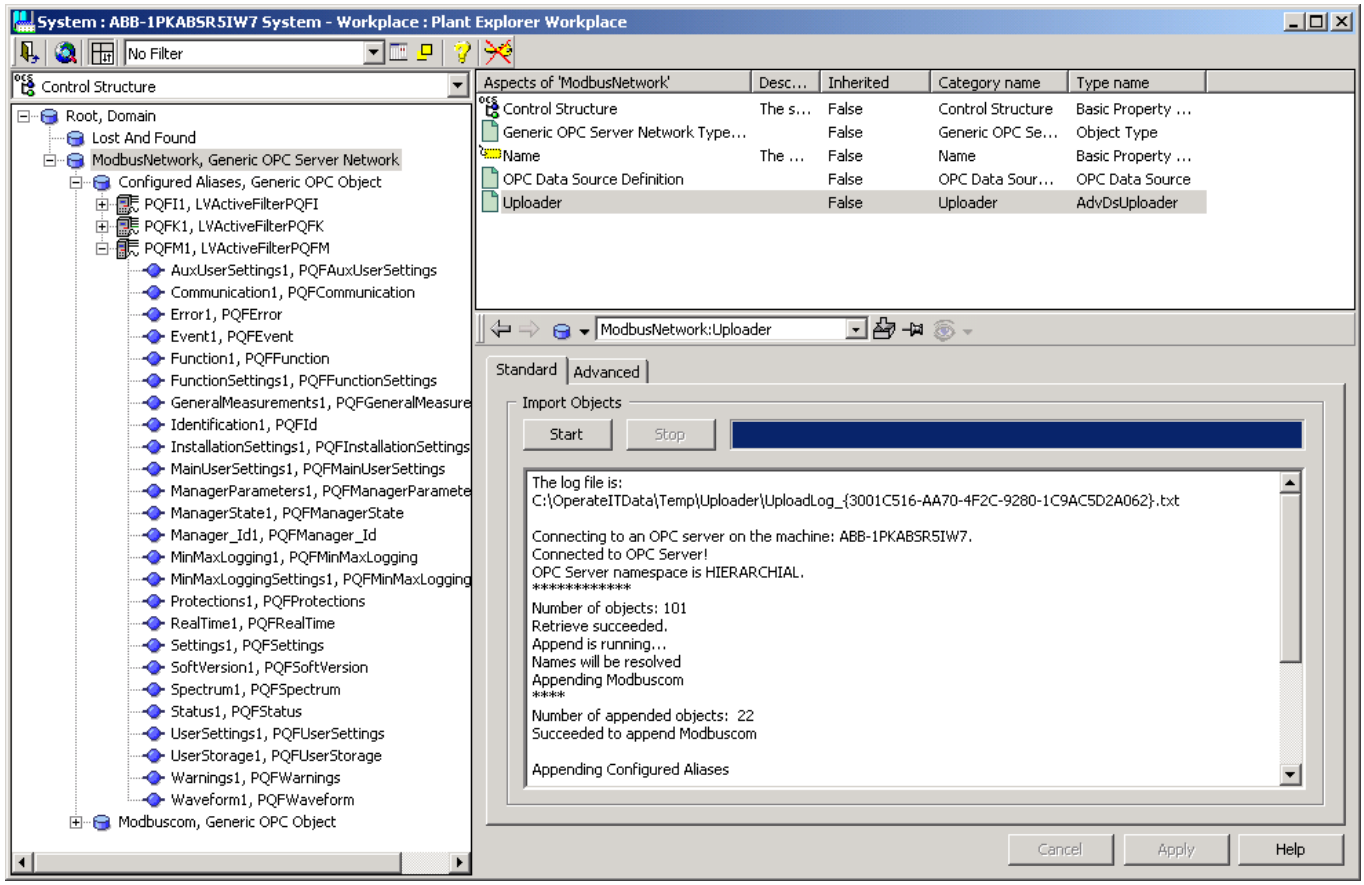
6.16 Create a new Object of type LVActiveFilterPQFM and give it a name.



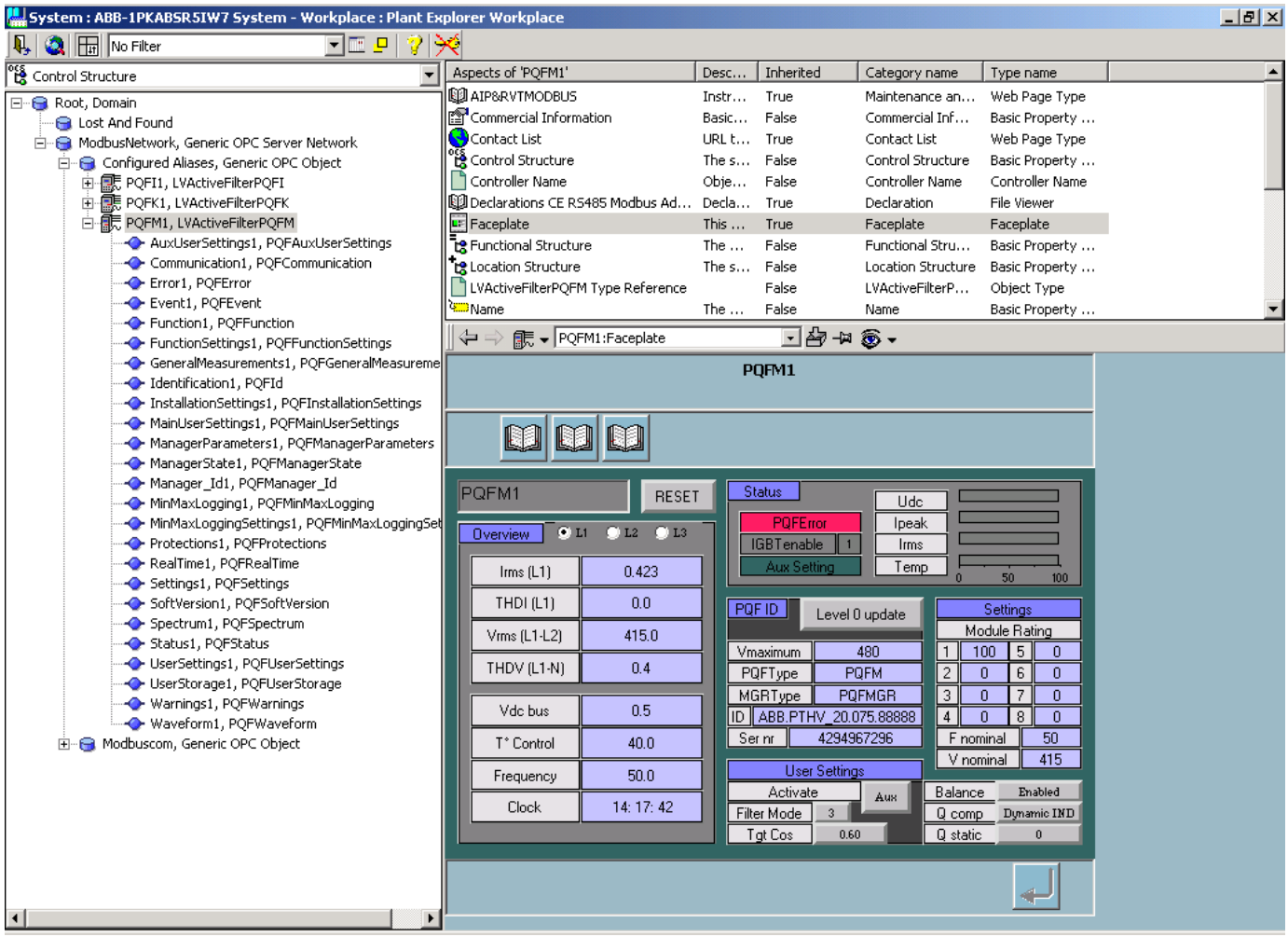
6.17 Click on the ‘Controller Name’ aspect and enter the name reference which is used in the control structure (see point 5.9) . If multiple controllers are used, change the ‘Name’ aspect of each signal object contained by the controller so that it correspond to the name defined in the OPC server (GeneralMeasurements1, GeneralMeasurements2,)



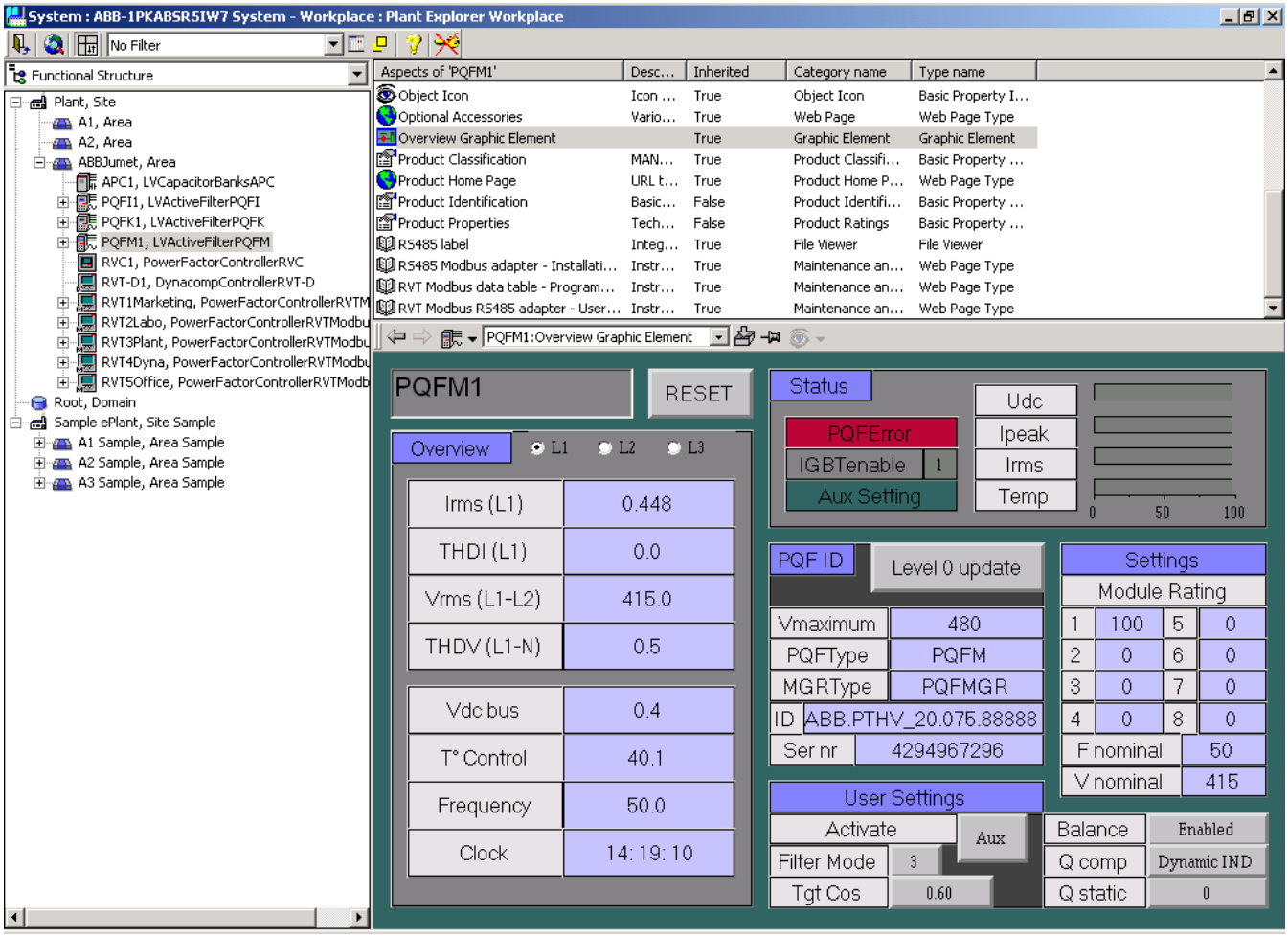
6.18 Go back in the control structure and start ‘Uploader’ once more.
Now the Generic OPC Server Network is linked to the instantiation of the LVActiveFilterPQFx object, which was created in the functional structure.
All data are appended to this object.



6.19 Do the same procedure from point 5.16 until 5.18 for other controllers which where already defined in the OPC server (see chapter 4).
Here is an example with 3 different PQF.

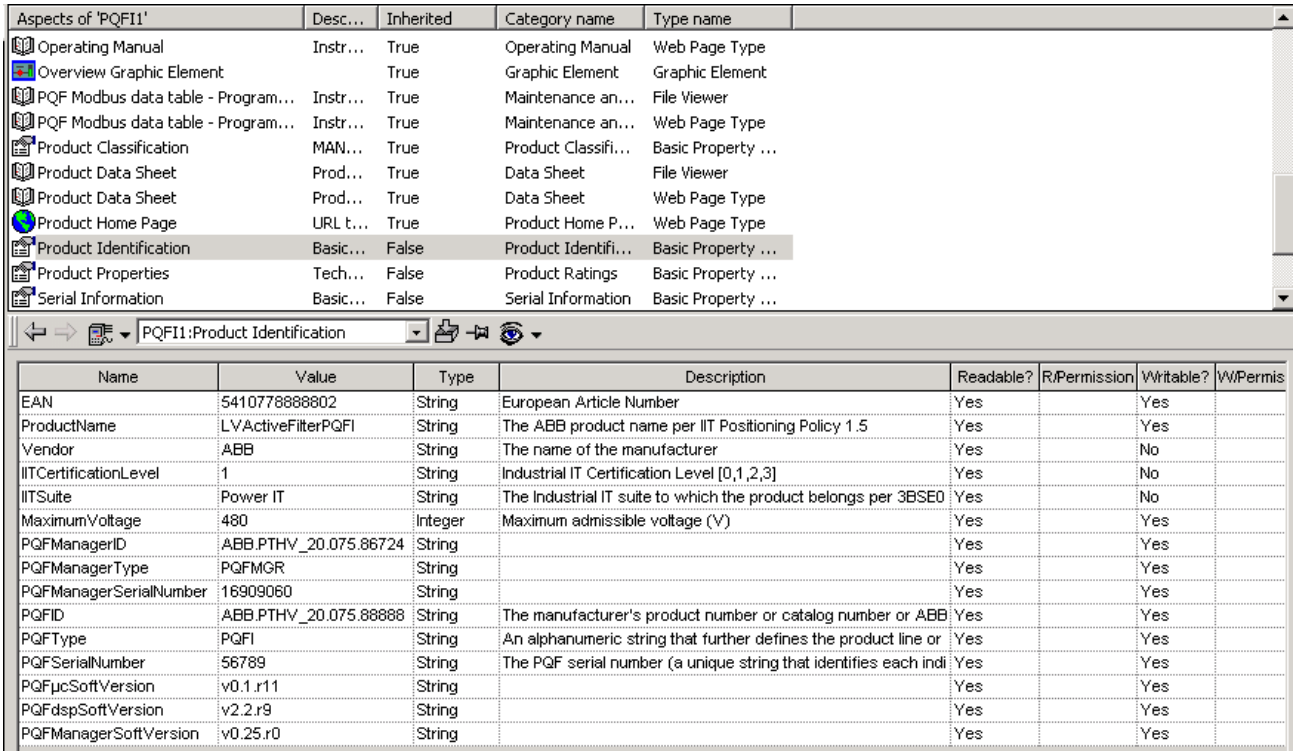


6.20 Go back in the functional structure and click on the Overview graphic element.



6.21 Click on the ‘Level 0 update’ to update some information available from the LVActiveFilterPQFx into the Product Identification and Product Properties aspects.

6.22 Click on the Product Identification aspect to see the ID information of the filter

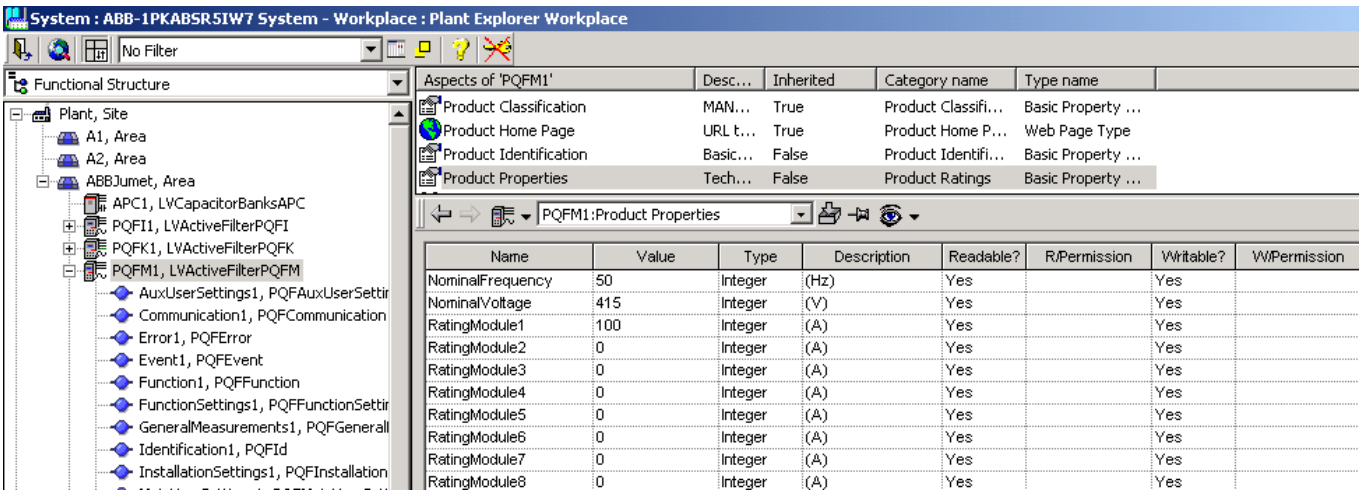


Aspects of 'PQFI1'	Desc...	Inherited	Category name	Type name
Operating Manual	Instr...	True	Operating Manual	Web Page Type
Overview Graphic Element		True	Graphic Element	Graphic Element
PQF Modbus data table - Program...	Instr...	True	Maintenance an...	File Viewer
PQF Modbus data table - Program...	Instr...	True	Maintenance an...	Web Page Type
Product Classification	MAN...	True	Product Classifi...	Basic Property ...
Product Data Sheet	Prod...	True	Data Sheet	File Viewer
Product Data Sheet	Prod...	True	Data Sheet	Web Page Type
Product Home Page	URL t...	True	Product Home P...	Web Page Type
Product Identification	Basic...	False	Product Identifi...	Basic Property ...
Product Properties	Tech...	False	Product Ratings	Basic Property ...
Serial Information	Basic...	False	Serial Information	Basic Property ...

PQFI1:Product Identification

Name	Value	Type	Description	Readable?	R/Permission	Writable?	W/Permis
EAN	5410778888802	String	European Article Number	Yes		Yes	
ProductName	LVActiveFilterPQFI	String	The ABB product name per IIT Positioning Policy 1.5	Yes		Yes	
Vendor	ABB	String	The name of the manufacturer	Yes		No	
IITCertificationLevel	1	String	Industrial IT Certification Level [0,1,2,3]	Yes		No	
IITSuite	Power IT	String	The Industrial IT suite to which the product belongs per 3BSE0	Yes		No	
MaximumVoltage	480	Integer	Maximum admissible voltage (V)	Yes		Yes	
PQFManagerID	ABB.PTHV_20.075.86724	String		Yes		Yes	
PQFManagerType	PQFMGR	String		Yes		Yes	
PQFManagerSerialNumber	16909060	String		Yes		Yes	
PQFID	ABB.PTHV_20.075.88888	String	The manufacturer's product number or catalog number or ABB	Yes		Yes	
PQFType	PQFI	String	An alphanumeric string that further defines the product line or	Yes		Yes	
PQFSerialNumber	56789	String	The PQF serial number (a unique string that identifies each indi	Yes		Yes	
PQFµcSoftVersion	v0.1.r11	String		Yes		Yes	
PQFdspSoftVersion	v2.2.r9	String		Yes		Yes	
PQFManagerSoftVersion	v0.25.r0	String		Yes		Yes	

6.23 Click on the Product Properties aspect to see the installation settings of the filter

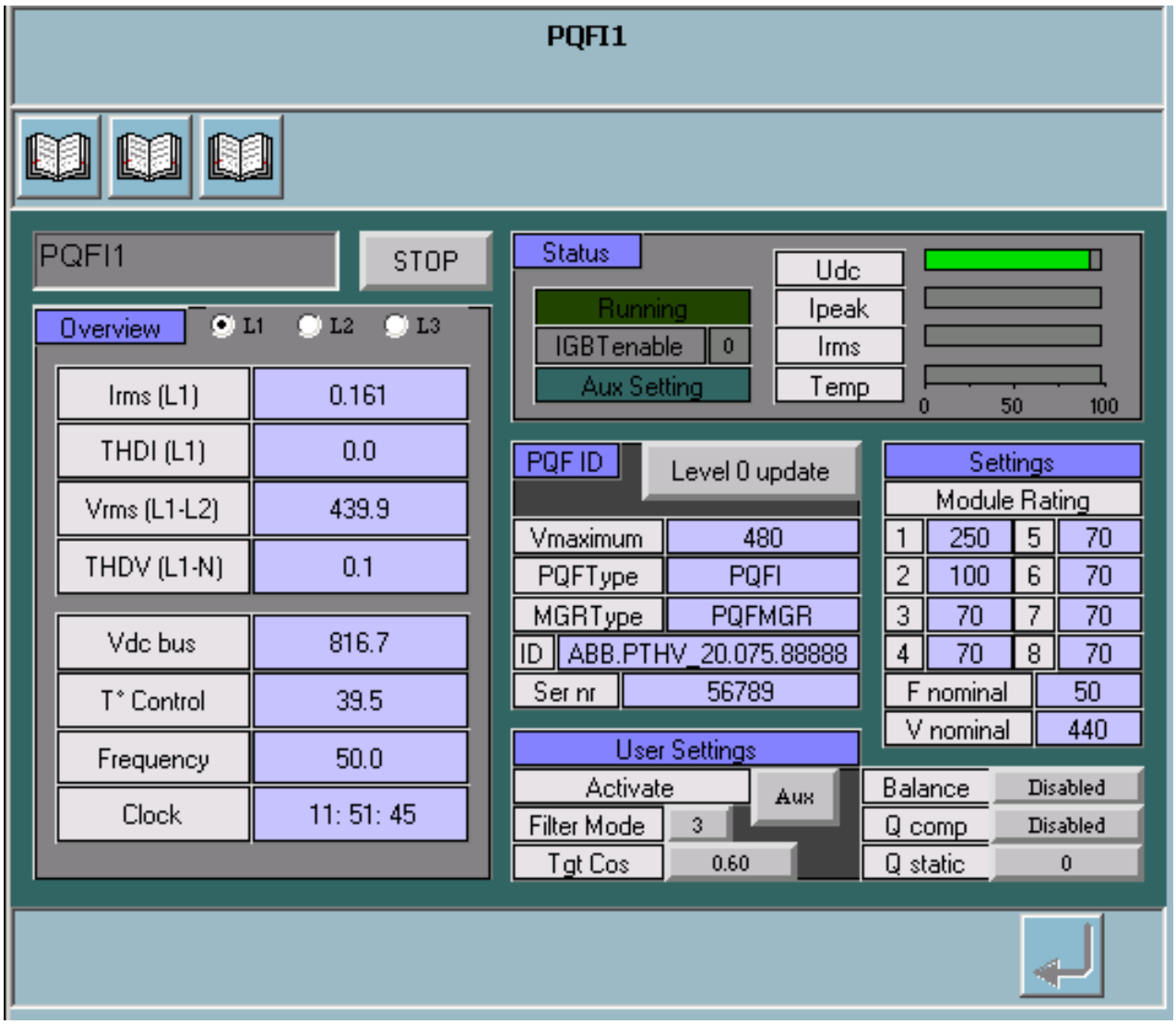


Aspects of 'PQFM1'	Desc...	Inherited	Category name	Type name
Product Classification	MAN...	True	Product Classifi...	Basic Property ...
Product Home Page	URL t...	True	Product Home P...	Web Page Type
Product Identification	Basic...	False	Product Identifi...	Basic Property ...
Product Properties	Tech...	False	Product Ratings	Basic Property ...

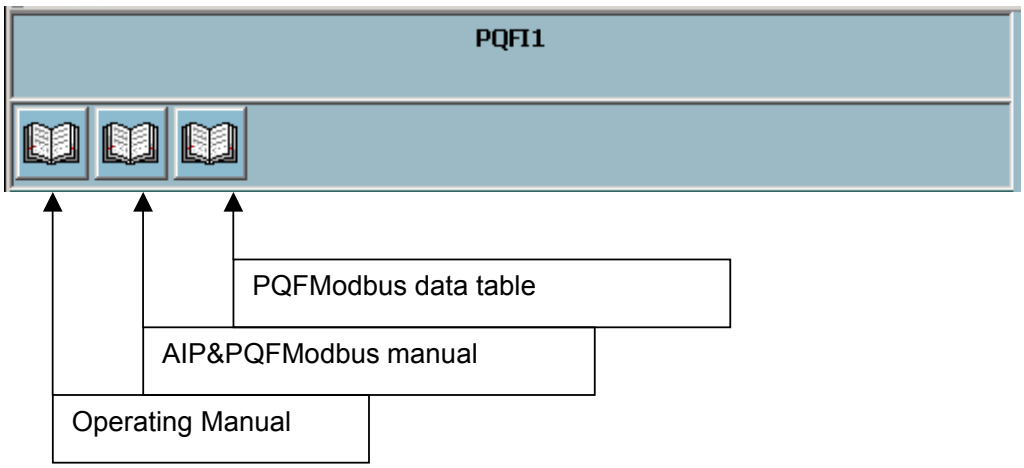
PQFM1:Product Properties

Name	Value	Type	Description	Readable?	R/Permission	Writable?	W/Permission
NominalFrequency	50	Integer	(Hz)	Yes		Yes	
NominalVoltage	415	Integer	(V)	Yes		Yes	
RatingModule1	100	Integer	(A)	Yes		Yes	
RatingModule2	0	Integer	(A)	Yes		Yes	
RatingModule3	0	Integer	(A)	Yes		Yes	
RatingModule4	0	Integer	(A)	Yes		Yes	
RatingModule5	0	Integer	(A)	Yes		Yes	
RatingModule6	0	Integer	(A)	Yes		Yes	
RatingModule7	0	Integer	(A)	Yes		Yes	
RatingModule8	0	Integer	(A)	Yes		Yes	

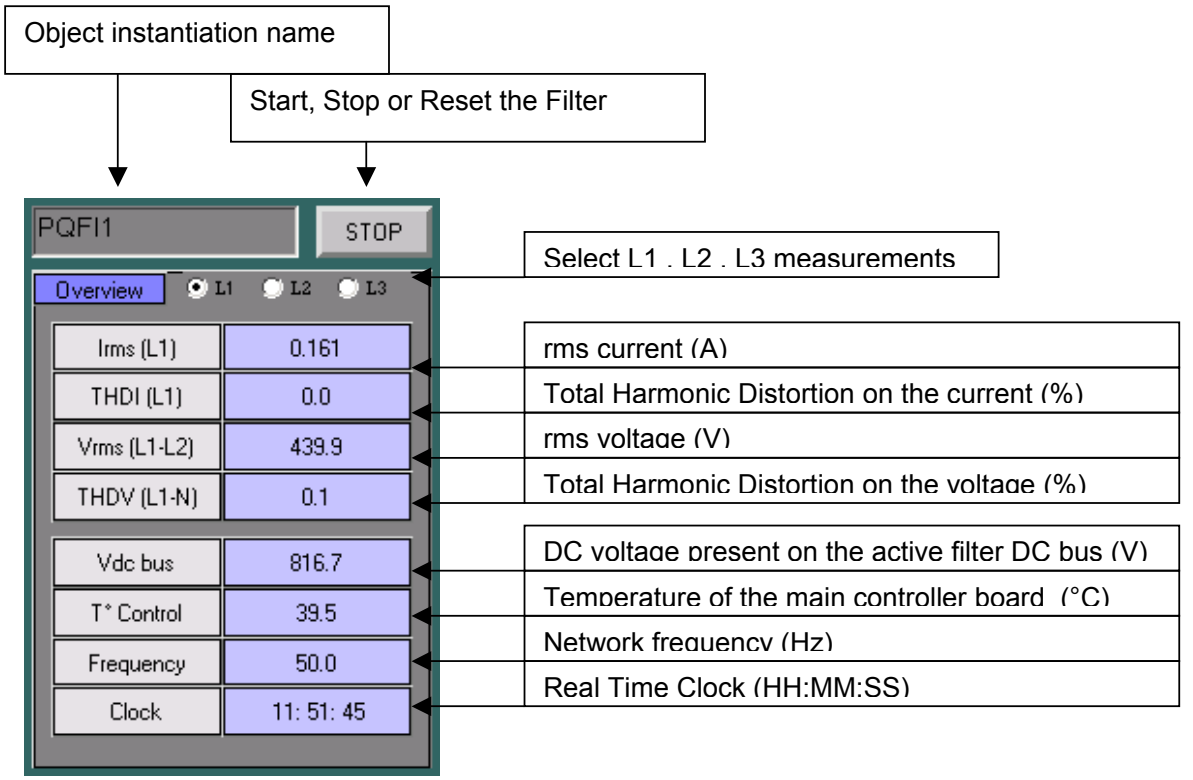
6.24 Here after is a help guide of the filter faceplate based on the overview graphic element aspect .

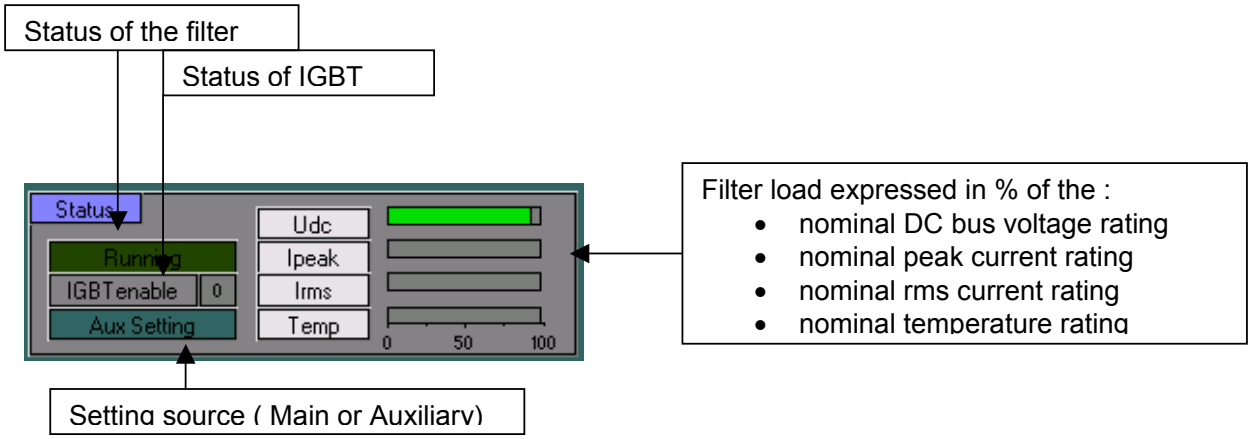


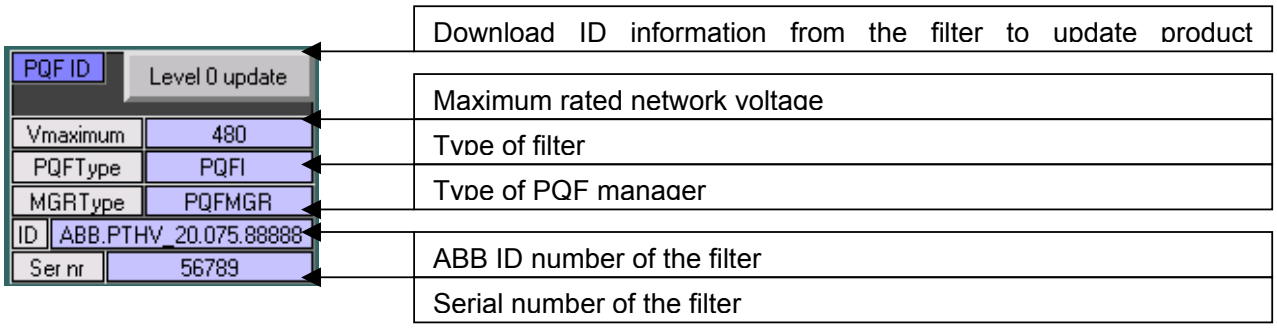
6.25 By clicking on the following buttons you access the various operating manuals of the filter .

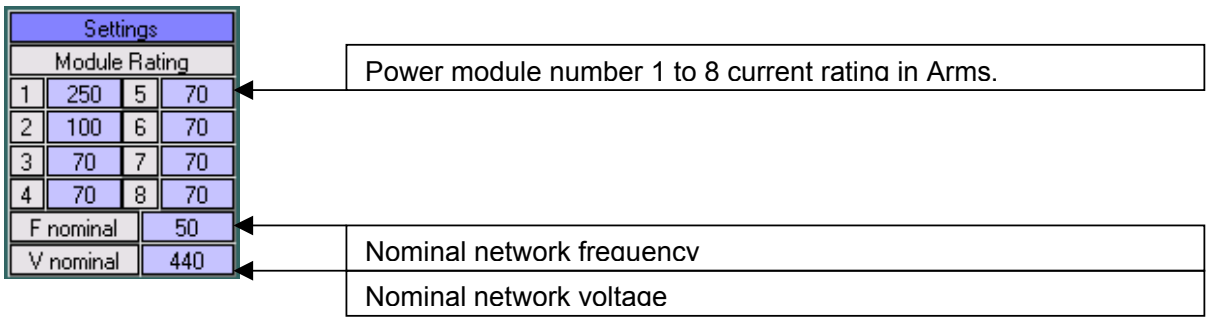


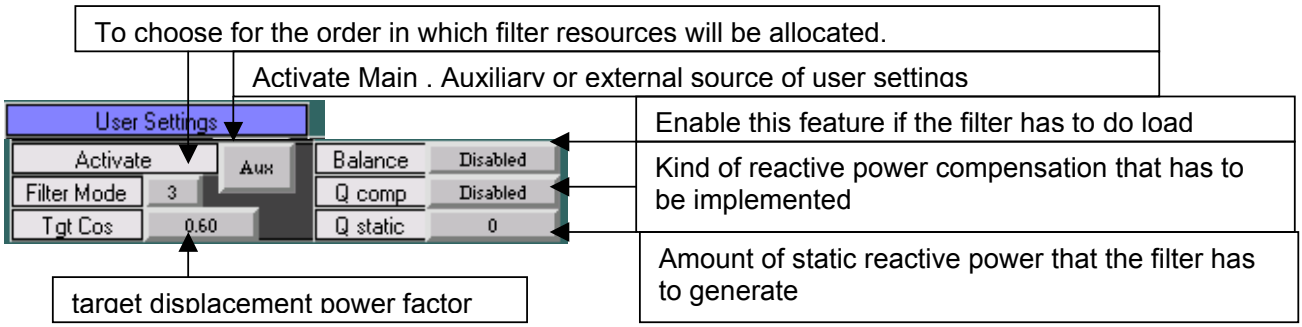
6.26 Find hereafter explanations on the various buttons , input fields , or indication fields.
You can easily find detailed information in the operating manual of the active filter and in the PQFModbus data table .











7 Uninstall

7.1 To remove all aspect object references in the AIP :

- In the Control Structure :
  - If you want to remove the filter connection only , delete the Configured Aliases , then the Modbuscom Generic OPC Objects
  - If you want to delete the Generic Network you created , simply delete the Generic OPC Server Network
- In the Location Structure :
  - Delete the filter (object instantiation) you created
- In the Functional Structure :
  - Delete the filter (object instantiation) you created
- In the Object Type Structure :
  - If no other filter instantiation uses this object type , delete the filter (object type) you imported from the AFW file
  - If no other filter instantiation uses the communication and needs any data references , delete the PQFModbusData (Object Type Group) you imported from the AFW file

7.2 To uninstall the Matrikon OPC server :

- go into the ‘Start/Settings/Control Panel’ and click on ‘Add/Remove Programs’
- Click on ‘Matrikon OPC server for Modbus’ and Remove it

7.3 To uninstall the Aspect Integrator Platform :

- go into the ‘Start/Settings/Control Panel’ and click on ‘Add/Remove Programs’
- Click on ‘Aspect Integrator Platform’ and Remove it

8 References

- PQF Installation, operation and maintenance instructions:
  - PQFI: 2GCS211012A0070
  - PQFM: 2GCS212013A0070
  - PQFK: 2GCS213013A0070
  - PQFS: 2GCS217011A0070
- PQF Modbus data table Programmer's manual (2GCS214012A0070)
- Modicon Modbus Protocol Reference Guide (PI–MBUS–300 Rev. J).

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This product has been certified by ABB Group as Industrial^{IT} Enabled^{TM}. All product information is supplied in interactive electronic format, based on ABB Aspect Object^{TM} technology.
Plug and Produce^{TM} installation and integration with other Industrial^{IT} certified products is available through the ABB Aspect Integrator^{TM} Platform.

2GCS215012A0070 2005-12-22