Manual

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be in motion be in motion

BAUMÜLLER

OPC Server

ProOPC II 2.x

E	5.06002.02

Read the manual before starting any work!

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INTRODUCTION

1.1 What is the OPC Server

An OPC Server is especially designed to enable the communication between any OPC Client (e.g. for visualization) and one or several PLCs.

It allows an OPC Client to read and write the current values from and to your PLC in order to visualize or control the running process of a complex machine.

The OPC Server is mainly working in the background and is usually started automatically by an OPC Client.

An OPC Client is not content of this delivery. The user must provide an OPC Client separately. Baumüller offers no OPC Client in his product portfolio.

You can find an overview of OPC Clients here:
https://opcfoundation.org/products.

The delivery contains an OPC Test Client. With this OPC Test Client you can check the correct functionality of our OPC Server and the connected Baumüller PLCs. It cannot be used with other OPC Servers or other PLCs except those of Baumüller.

Only Baumüller PLCs can be visualized with the Baumüller OPC Server. For other PLCs please contact the according manufacturer. You can also visualize Baumüller drives type **b maXX 4000**.

For reading and writing values the OPC Server evaluates a csv file which is created with the IEC application automatically from the ProProg programming system.

Store ProProg variables in csv project file

NOTE!

Only variables stored in the csv file of a project can be used by an OPC Client to visualize the running control processes.

Therefore you have to set the OPC check box „All global variables“ and/or „Marked variables“ in the resource settings dialog of the programming system ProProg.

Otherwise the variables are not stored in the csv project file:

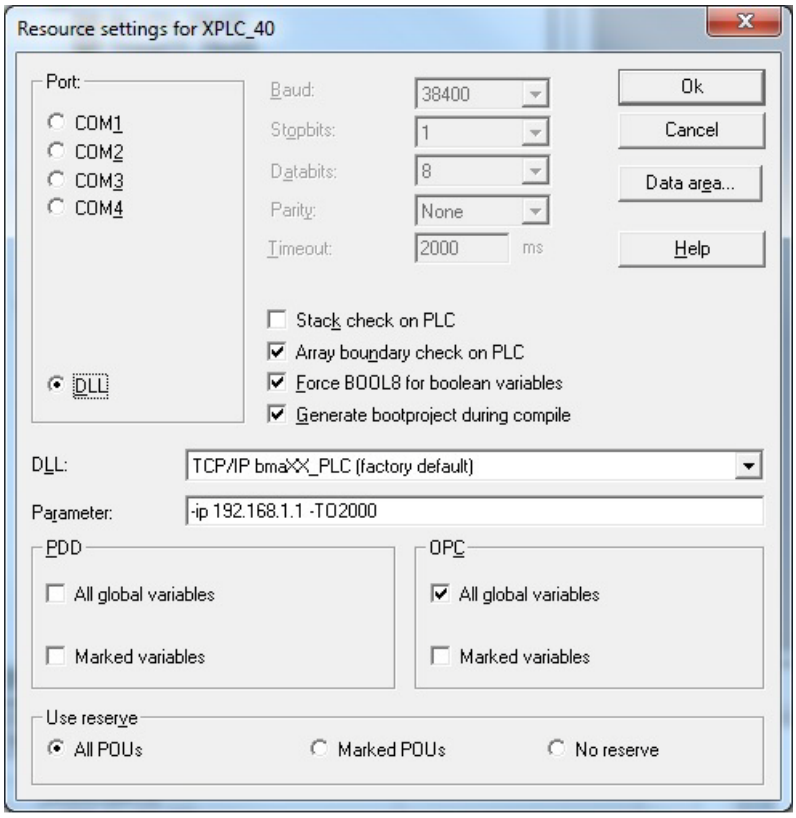

Figure 1: Store ProProg variables in csv project file

1.2 Overview of main features

The ProOPC II OPC Server consists of a component based architecture with new developed software modules.

Supported Features

- **Data Access 2.04**

The ProOPC II OPC Server supports Data Access 2.04.

- **Error and diagnostic messages**

The OPC Test Client displays OPC variables online or marks them as „Bad“ if communication problems occurs or variables cannot be read from the PLC.

The ProOPC II OPC Server supports a simple info menu for logging and statistics.

- **Multi Resource type supporting**

Several different Baumüller devices (OPC Resource types) can be supported simultaneously. The ProOPC II OPC Server can be adapted to support further specific devices and protocols without modification of the OPC kernel by adding a new specific adapt component.

- **Test Client**

The OPC Server is delivered together with a simple Test Client program. With this Test Client you can online watch and write all PLC variables stored in the csv project file. So this Test Client can also be used to check quickly the correct function of the Baumüller OPC Server.

1.2 Overview of main features

2

GETTING STARTED WITH THE OPC SERVER

2.1 System requirements

2.1.1 Hardware requirements

To run the OPC Server on a PC the following hardware requirements must be at least fulfilled:

- Windows PC with Pentium or compatible processor
- 1 GB RAM
- Hard disk with at least 70 MB free memory space

2.1.2 Software requirements

To run the OPC Server, one of the following software requirements must be at least fulfilled:

- Windows® XP
- Windows® 7
- Windows® 8

2.2 Installing the OPC Server

For Installation please execute „**setup.exe**“ on the product CD.

During installation you are asked for the serial number which is printed on the product CD.

After successful installation you have access to the components „**OPC Configurator**“, **OPC Server**“ and „**OPC Test Client**“:

Figure 2: OPC Server at file manager

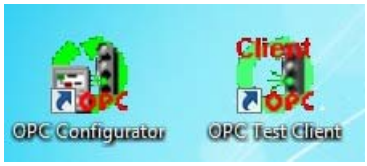

Figure 3: OPC Server link on desktop

NOTE!

In case some problem occurs during the installation process:

- Copy the whole content of the CD to a separate computer folder of your PC.
- Rename the copied file „*setup_withLogFile.bat.txt*“ to „*setup_withLogFile.bat*“.
- Execute the *.bat file with a double click.

⇒ During this second installation the log file „ProOPC_II.log“ will be created in your computer folder. With the log file you can probably find the reason why the installation of the OPC Server went wrong on your computer. For further check you can send the log file to Baumüller.

3

CONFIGURE THE OPC SERVER

First you have to announce all variables of one or more PLCs to the OPC Server to display them on an OPC Client.

This announcement is done by the OPC Configurator. The information about all OPC variables is stored in a csv file which is generated by the compiling process of a ProProg project. The OPC Configurator can read this file in an easy way from the project together with connection info for the PLC target.

Each OPC project can include up to 32 different OPC Resource entries (b maXX PLCs or other Baumüller PLCs). For each resource a configuration file with the extension „*.opc“ and an OPC variable file with the extension „*.csv“ must exist.

The csv file contains the names of the variables and the assignment to the logical address on the PLC. The OPC Client can only handle the OPC namespace (OPC path and variable names). The assignments to the logical address in the csv file are used only from the OPC Server to read and write the values of the PLC. The addresses are not transferred to the OPC Client, only the values.

By changing the ProProg project the address assignments can be changed also. So you have to update the csv file with the OPC Configurator as well, even if no OPC variables in the ProProg project were changed or deleted.

APPLICATION NOTE!

If possible, you should set the OPC variables to fix logical addresses, and not let them be generated dynamically from the system. If you use fix logical addresses and you have to compile your project again for some reason, then no changes are made to the csv file content.

3.1 Automatic configuration with the OPC Configurator

The first time you start the OPC Configurator a configuration example is displayed including 2 different PLC resources:

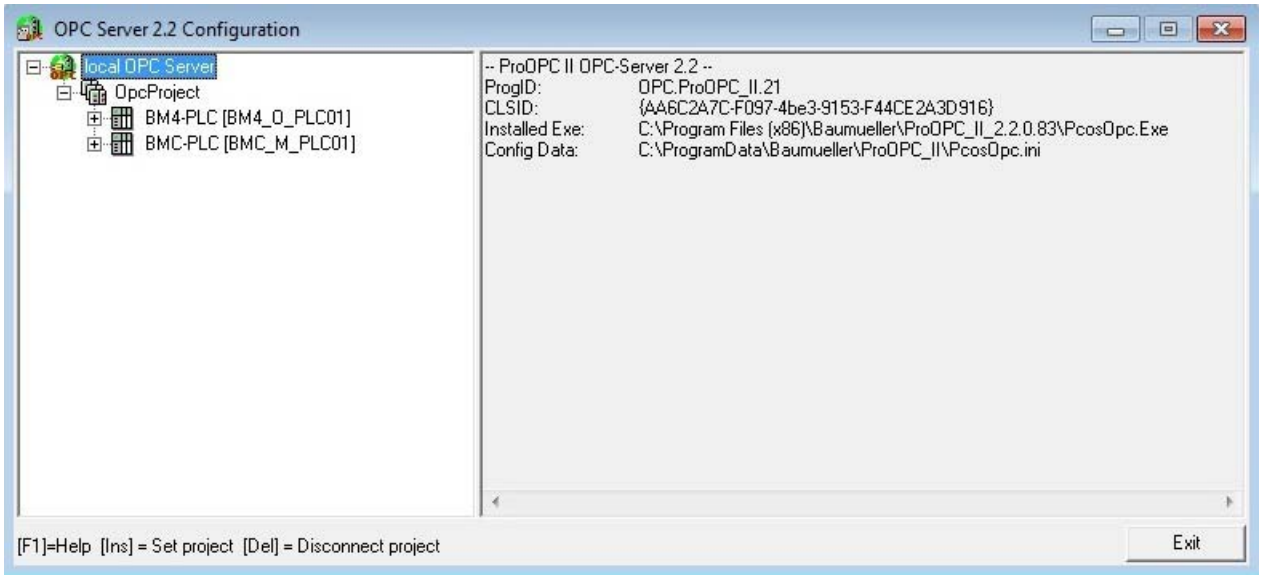

Figure 4: OPC Server configuration

- In case you want to include your own resource from an existing ProProg project please delete the PLC resources of the example with „**Delete PLC resource**“:

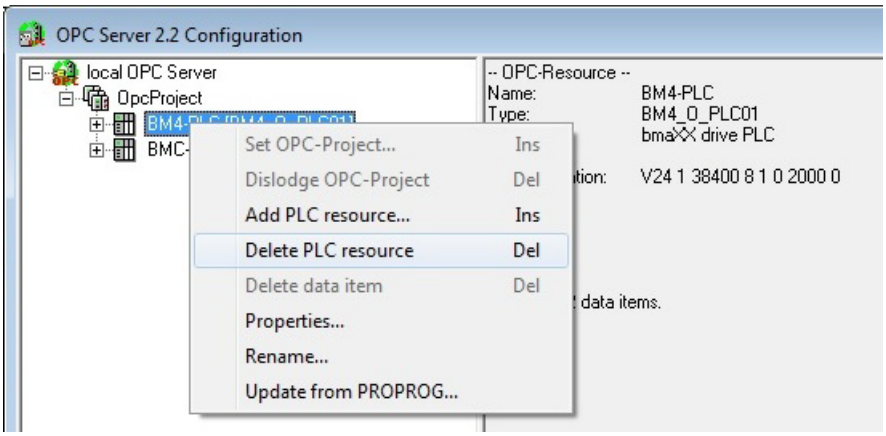

Figure 5: Delete PLC resource

- With „**Add PLC resource**“ you can read in a new PLC resource from your ProProg project:

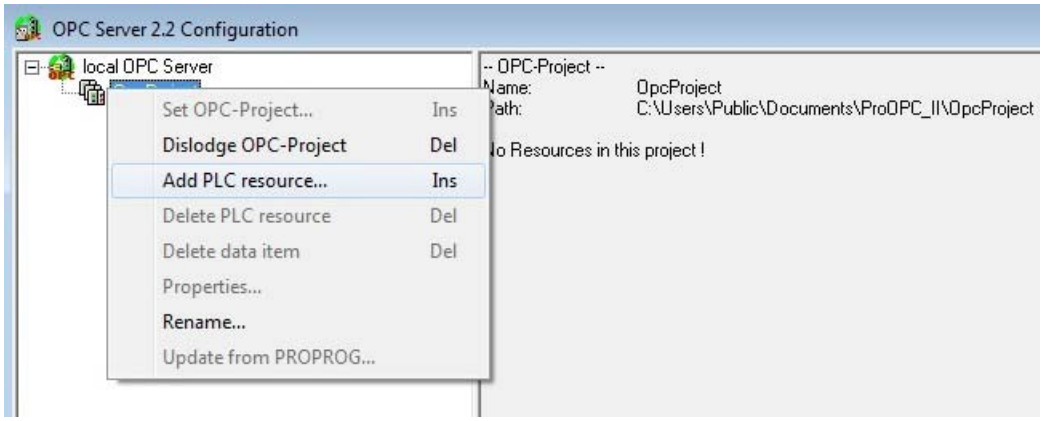

Figure 6: Add PLC resource

- Select your ProProg project for variable visualization (e.g. „**Select_Bitleiste.mwt**“):

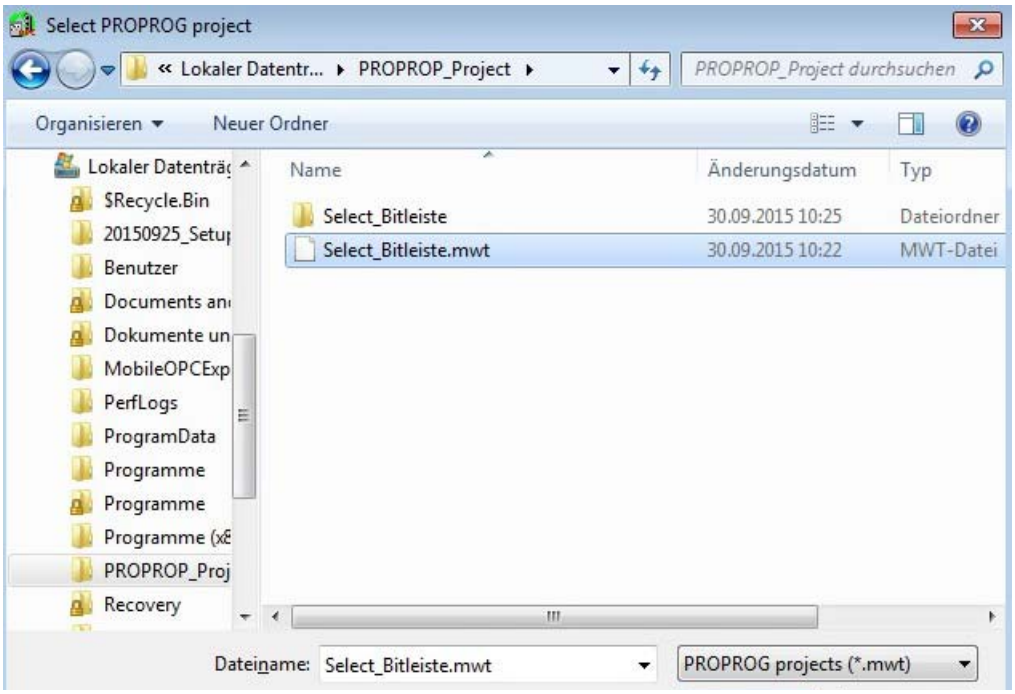

Figure 7: Select project for visualization

- You can change the resource name shown in the OPC Configurator (and therefore the namespace of the OPC Client):

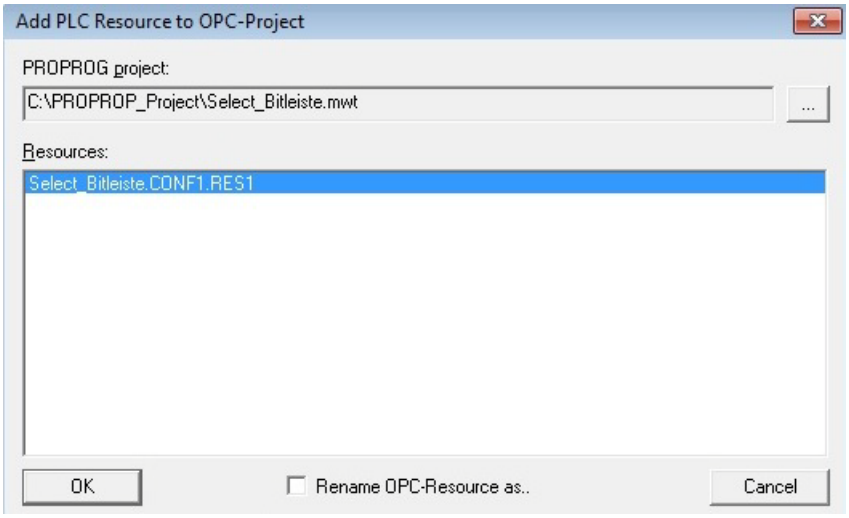

Figure 8: Rename project

The OPC Configurator shows the resource name and the appropriate communication parameters (e.g. used IP address) and the read ProProg project path for necessary variables updates:

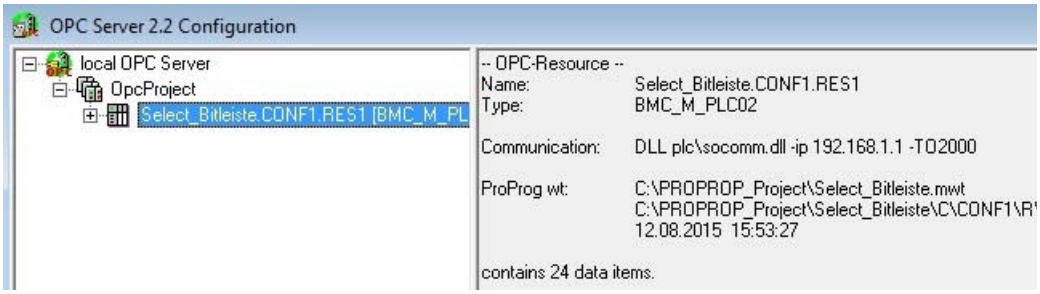

Figure 9: Display project in OPC Configurator

You can check already here the available variables in the csv file by clicking on the „+“ sign in the left OPC tree:

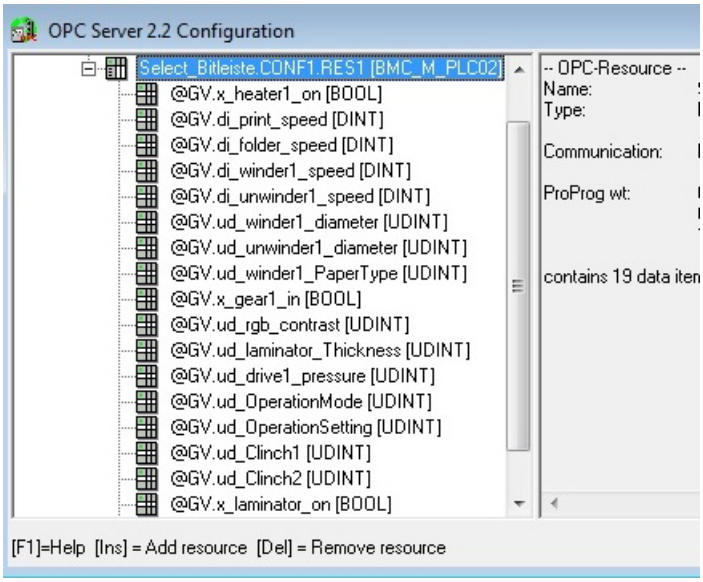

Figure 10: OPC variables in the csv file

- As described in the introduction (see ▹Store ProProg variables in csv project file◃ on page 6) the OPC variables have to be marked within the IEC project and the ProProg project has to be complied before reading it in with the OPC Configurator

- After every ProProg project change you should also update the OPC variables and its address assignments by a new reading of the mwt project
  (select „**Update from ProProg**“ in menu). Changes of communication settings (e. g. IP addresses) can be done via „**Properties**“ from the menu.
  Opening of the menu: Mark the OPC Resource in the tree with a right mouse button click:

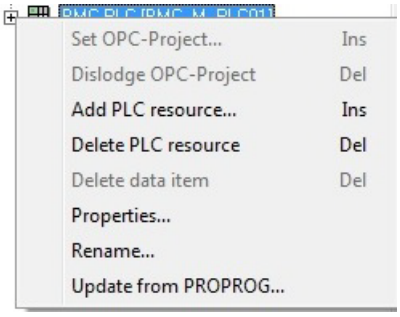

Figure 11: Update mwt project

- An existing resource name can be changed with „**Rename**…“.

3.2 Manual configuration of an OPC Resource

In the following cases you have to configure the resource manually:

- The compiled ProProg project is not available on this computer
- The customer simply don't want to provide the own project
- You need a second PLC resource with the same project to visualize in your OPC client, but with another IP address

The resources can be configured manually in this cases.

Really necessary is only one generated csv file from the compiled project. The OPC variable names and the assignment to the logical addresses are stored in this file.

This file is named „*sr.csv*“ and can be found in the resource subdirectory of the origin ProProg project (if for example the project is „Select_Bitleiste“, you can find „*sr.csv*“ at the subdirectory location „Select_Bitleiste\C\CONF1\R\RES1“).

This „*sr.csv*“ file has to be copied manually to the OPC project directory of the OPC server and according to an existing resource renamed to „*<resource>.csv*“.

- The OPC project directory path, where you can find the csv and opc files, depends on the installation and is shown in the right part of the OPC Configurator if „**OpcProject**“ is selected:

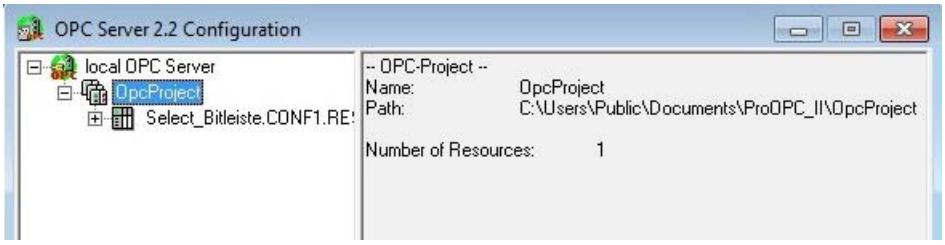

Figure 12: Display OPC path

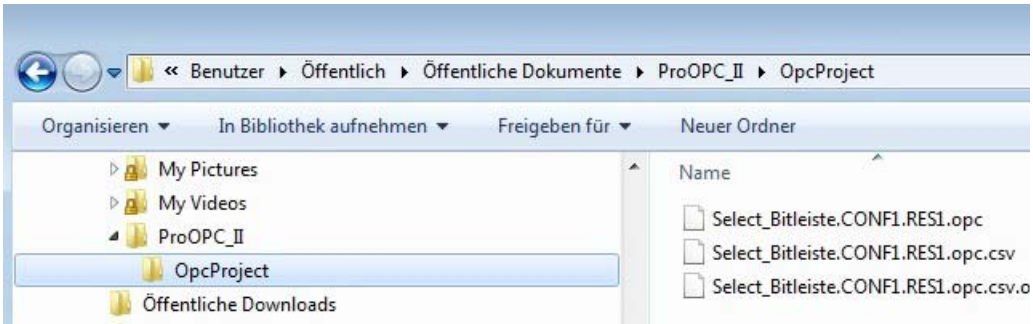

Figure 13: Search OPC path in file manager

For every <resource>.opc file including the communication information must be a <resource>.csv file available with OPC variables for the OPC Server and OPC Client.

- After copying the original ProProg project file „*sr.csv*“ to the directory „C:\Users\Public\Documents\ProOPC_II\OpcProject“ you can rename the file to any OPC Resource name you need for your specific application
  (e.g. to „*Select_Bitleiste_manuell.CONF1.RES1.opc.csv*“).

- You also need an opc file with the communication info (e.g. IP address of your target). Copy an existing one and rename it to „Select_Bitleiste_manuell.CONF1.RES1.opc“. Then edit this opc file with a text editor. (Please delete the path to a ProProg project in the copied file, if there is one!).

- You should open the OPC Configurator once again, so it can include the new OPC info to its internal OPC structure.
  It is also necessary, if the csv file has be changed manually:

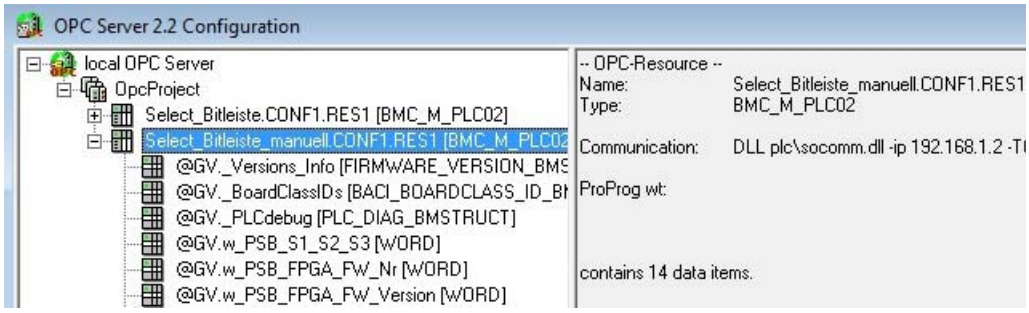

Figure 14: Open OPC Configurator for update

Now you can change the communication settings normally with the OPC Configurator (right mouse button / “Properties…“).

3.3 Automatic variables configuration of PCC-03

For PCC-03 the method for updating variables is improved:

With the embedded PLCs like the PLC02 you have to update the OPC configuration every time you make changes to your mwt project or you have to change the variable list manually. With the PCC-03 this is not necessary any more.

The PCC-03 is equipped with a PDD interface and a complete file system.

If you choose in ProProg „send with OPC data“ in the „download“ menu of the online ProProg resource, the „sr.csv" file will be also automatically downloaded to the PLC and stored in the file system.

- Provided that the global configuration settings „AllowOfflineConfiguration“ of the OPC Server is changed from „**ON**“ to „**OFF**“ (see init-file „*PcosOpc.ini*“ in the subdirectory of „\bm_app“ of the OPC installation directory):

```
[Config]
AllowOfflineConfiguration=OFF
```

The ProOPC II 2.2 OPC Server compares its csv data automatically with the one stored in the PCC-03, if the ProProg project of the PCC-03 has changed so the OPC variables have other assignments to the logical addresses. New OPC variables and deleted OPC variables are recognized also.

Therefore it is not necessary anymore to re-import the project in the OPC Server every time the project was changed.

The OPC Client can access the changed variables immediately after a new project was downloaded to the PCC-03.

But you cannot use the PCC-03 with another embedded PLC simultaneously, because you changed the global settings for the offline configuration to „OFF“.

APPLICATION NOTE!

If the PCC-03 and one or more embedded PLCs should be visualized simultaneously with the OPC Server, you cannot change the offline default base setting to „AllowOfflineConfiguration=ON“. In this case you have to update every project change with the OPC Configurator.

4

OPERATE THE OPC SERVER

4.1 Start OPC Server via OPC Client

There are two methods to start the OPC Server:

- Start the OPC Client and select the right OPC Server with the server connect menu. The OPC Server is started automatically while connecting.
- Click to windows start menu and select in the program group „OPC Server“.

Normally the automatic start of the OPC Server with the OPC Client is used. We want to show you the single steps with our OPC Test Client.

With the Test Client you can check the correct settings in the OPC Configurator by browsing through the items and display the values of each OPC variable.
The OPC Test Client is not a full OPC Client: You can use the OPC Test Client only in conjunction with our own OPC Server and our PLCs.

- First please check the configuration of the OPC Server and be sure that the computer, where the OPC Server is running, is physically connected to the PLC target.
- Then power up the PLC.
- Now start the OPC Test Client and connect with our OPC Server:

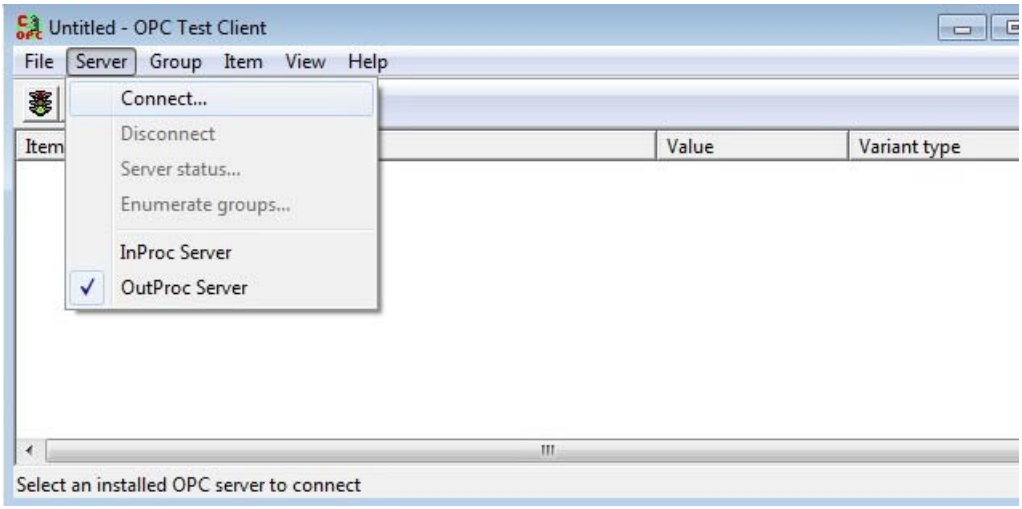

Figure 15: Connect OPC Test Client with OPC Server

⇒ The OPC Server is started automatically. In the headline of the OPC Test Clients the successfully connection with our OPC Server is displayed as „**OPC.ProOPC_II**“:

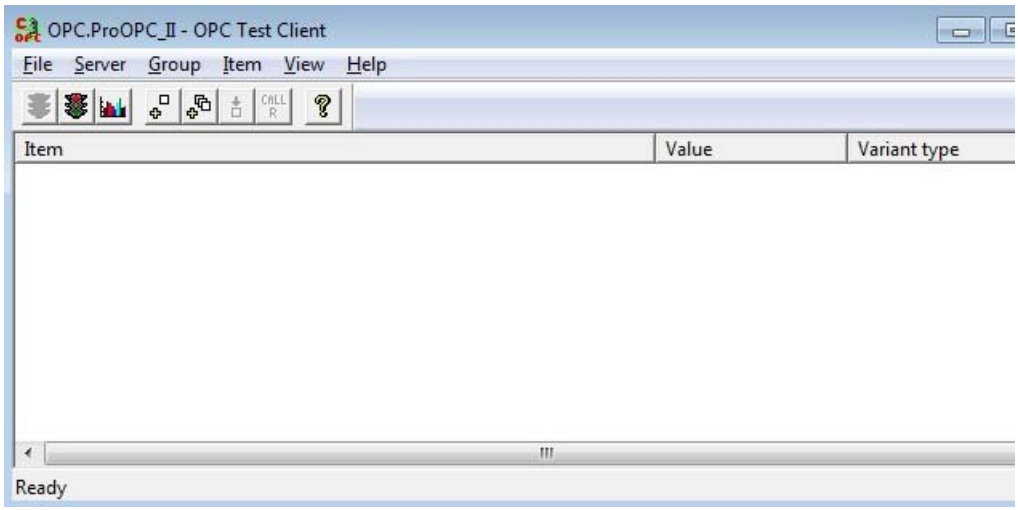

Figure 16: Successful connection of OPC Test Client and OPC Server

The started OPC Server is also displayed as little „OPC icon“ on the right bottom corner of the screen in the windows task menu:

Figure 17: OPC icon

- If you click with the right mouse button on the little „OPC icon“, you can select „**Logging**“ and „**Statistics**“ to check the connection state of the OPC Server to the PLCs.

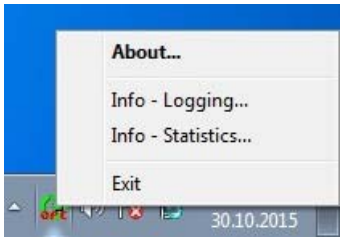

Figure 18: Display the connection state of the OPC Server

- You can add all available OPC variables to the OPC Test Client window with „**Group/ Add all items**“ (or specific ones with „**Add items**“):

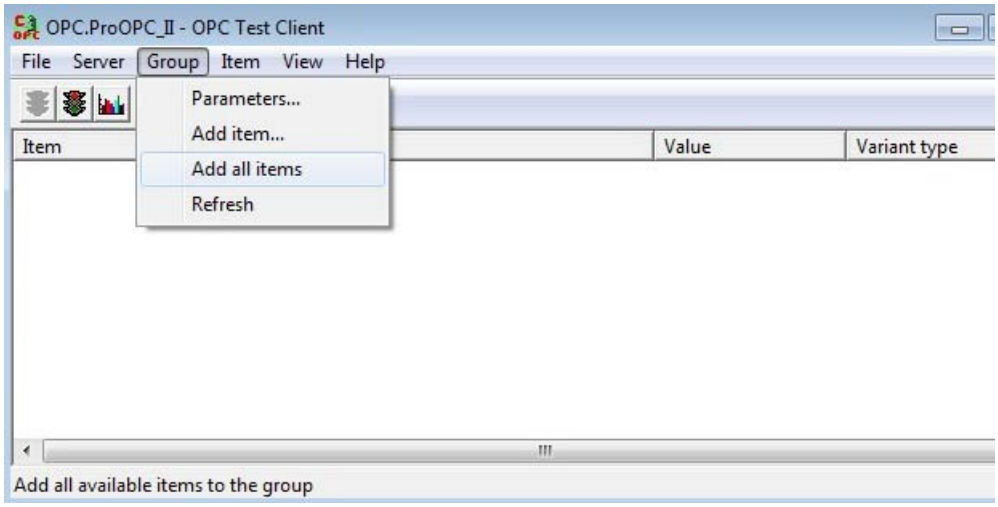

Figure 19: Add variables to the OPC Test Client

When everything works fine you can see all selected variables online in the OPC Test Client:

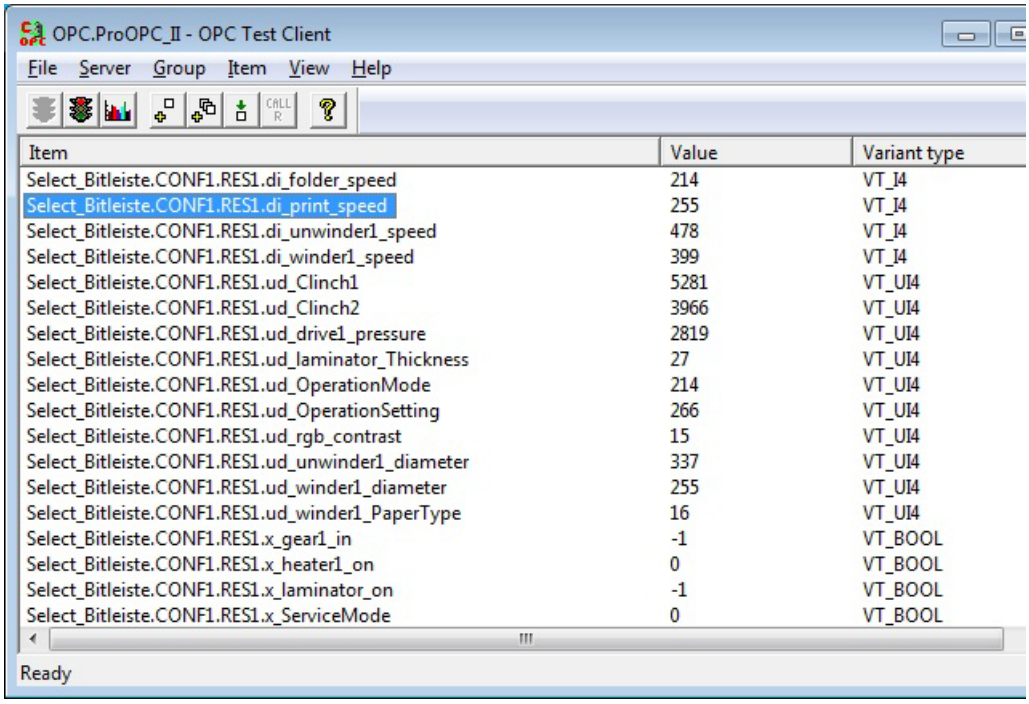

Figure 20: Successful display of the selected variables in the OPC Test client

- You also can mark a variable in the window and overwrite it in menu **„Item\Write value“**.

These steps (selection and connection with our OPC Server „OPC.ProOPC_II“, selection of OPC variables with „**Add items**“, displaying online variables from our PLCs) should now work also with your own OPC Client.

But if the result looks like this:

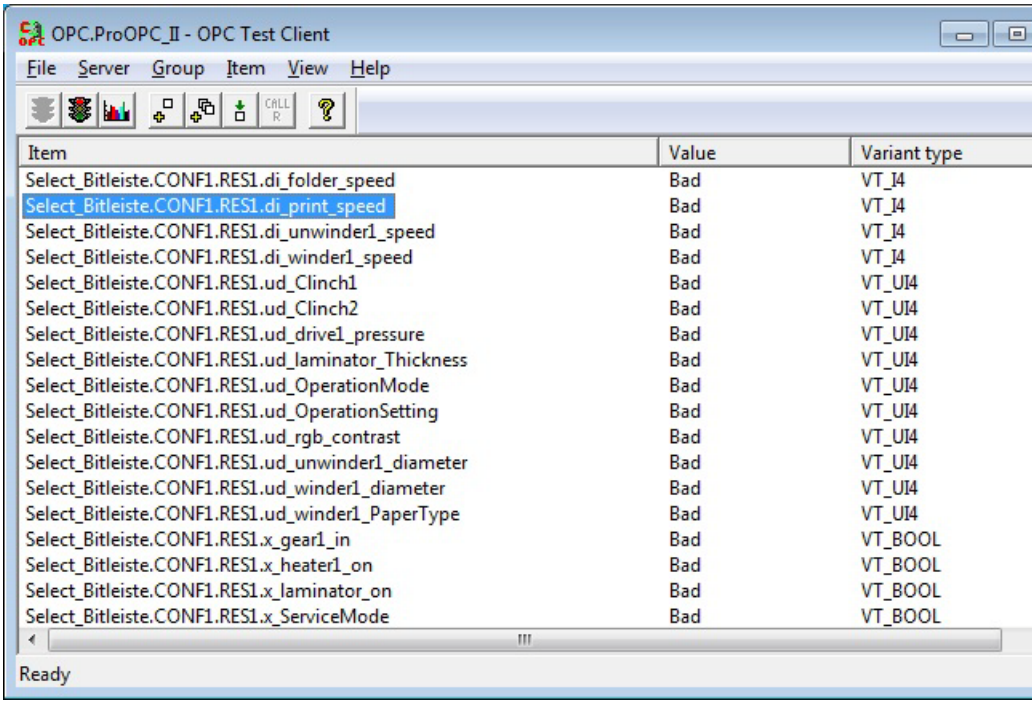

Figure 21: Not successful display of the selected variables in the OPC Test client

You should check the whole configuration once again:

- Have you set the correct communication settings (e.g. IP Address, see ▹Figure 9◃ on page 14)?
- Can you make a ping to the PLC target with its IP address (open the cmd shell in the „execute as“-window (see windows start button), then use the cmd command „ping 192.168.1.1“)?
- Is the plugged Ethernet cable connected to the correct PLC?
- Is the Ethernet address of the Ethernet controller unit connected with the PLC correctly set?
- Is the IP number and the IP mask of your computer suitable to the ones of the Ethernet controller unit (Ethernet configuration)?
- Is the correct IEC project loaded to the PLC?
- Is the PLC state „RUN“?
- Is the communication OK - if you configure a serial connection to the PLC (RS232 connection)?

4.2 Use existing OPC Client projects

The Omega OPC Server 1.1x sets the item namespace like this:

- ProProg Project name,
- ProProg Configuration name,
- ProProg Resource name
- ProProg Item name.

The whole Omega OPC Server 1.1x access path (OPC Client namespace) for the global variable „GlobalItemName“ is for example:

„Projekt.Konfiguration.Ressoure.GlobalItemName“

With the ProOPC II 2.2 OPC Server (or higher version) the variable namespace (access path) is defined by the file name of the *.OPC Resource file. Therefore the file name can be chosen by the user. If for example the resource file is named to „RessourceX.opc“ then the complete OPC Client namespace is:

„RessourceX.GlobalItemName“

Compatibility with existing Client Projects build with Omega OPC Server 1.1x:

With the ProOPC II 2.2 OPC Server the user can determine an individual access path for each resource through the corresponding resource name. Therefore it is possible to set the same namespace for each resource as it was used by ProProg in conjunction with the previous Omega OPC Server 1.1x.

- The user marks in the OPC Configurator the resource name he created (e.g. by import of an existing ProProg project).
- Then the user opens the OPC Resource menu (right mouse button click) and renames the resource name to the origin access path „Projekt.Konfiguration.Ressoure“.

In this way the OPC Client namespace „Projekt.Konfiguration.Ressoure.GlobalItem-Name“, which already used with Omega OPC Server 1.1x, can be kept furthermore, and no changes has to be made for your already existing Client projects.

4.3 Information for the OPC Client developer

The ProgID of the „Custom Interface“ is:

OPC.ProOPC_II.21

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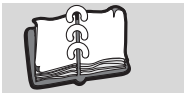

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Overview of Revisions

Version	Status	Changes
5.06002.02	11-Nov-2015	Creation, new layout

Notes:

be in motion

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