IBH S5/S7 OPC Server

Using the Siemens MPI-USB Cable

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Table of Contents

Introduction

There are many ways to connect the IBH S5/S7 OPC Server to S7-300/400 PLCs. The programming software supports the following connections to S7-300/400 PLCs (in addition to connections to S5 PLCs):

Siemens TCP/IP
RS232 – MPI Serial
USB – MPI Serial
IBH NetLink (MPI to Ethernet)
SimaticNet
Sinec H1 (optional INAT driver)

The most common cause of customer issues is connecting using the Siemens USB-MPI cable. It is not as straight forward as other methods of communication.

This guide is designed as a simple how-to for connecting to your S7-300/400 via the Siemens USB-MPI cable. It is not a comprehensive guide to configuring your cable or using the software. Please refer to the respective user's manuals for more in-depth information.

In this guide, we make the following assumptions. First, you have a fully functional PLC that has previously been configured for MPI communications. Second, you have some familiarity with Siemens PLCs and addressing. Finally, you have a fully configured OPC Server project.

The IBH S5/S7 OPC Server is developed by IBH Softec (http://www.ibhsoftec-sps.de) and brought to you by Software Toolbox, Inc. (http://www.softwaretoolbox.com/). If you have not downloaded and evaluated the software you can download the demo version of the software here: http://www.softwaretoolbox.com/quicklink.asp?partnumber=41278401.

Setting Up the Connection

To connect to an S7-300/400 PLC via a Siemens USB-MPI cable you must go through several steps to set the interface. Because of the Siemens drivers, this is different than if you were using the IBH USB-MPI cable which uses a virtual COM port for communications.

Opening the Software

If you have not added a shortcut to your desktop you will open the software by going to the following path as you see in **Figure 1** below:

Start | Programs | IBH softec GmbH | IBH OPC Server | IBH OPC Editor.

Figure 1: Start IBH S5/S7 OPC Server

This will open the interface as shown below in **Figure 2 (next page)**

Create a Project

The OPC Editor will allow you to create a new project or open an existing one. To create a new project, click File | New.

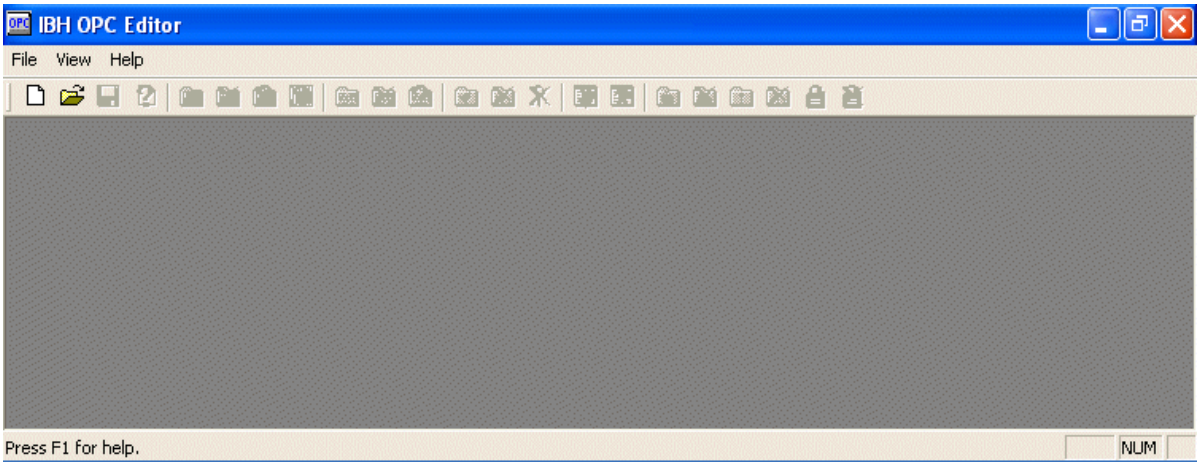

Figure 2: IBH OPC Editor

This opens the OPC editor project tree. Here you see all of the options needed. Configure them as shown below and click on the "Select Connection" button in the SimaticNet section.

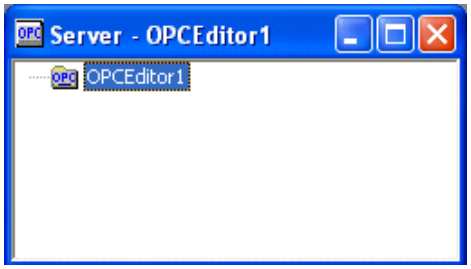

Figure 3: OPC Editor project tree

Right Click on the "OPCEditor1" and you will raise the following menu. Click "Insert New PLC".

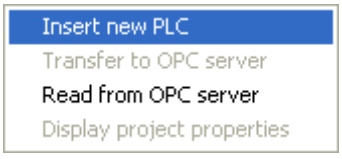

Figure 4: Insert New PLC

This exposes the PLC properties. Here you will give your PLC a meaningful name within the project and define the protocol over which to communicate. In this case we need to us “S7 Simatic Net”. You would use “S7 MPI converter serial/ USB” if you were using the IBH USB MPI cable.

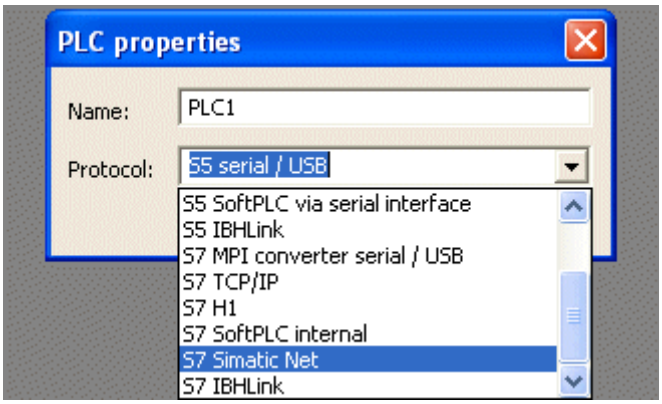

Figure 5: PLC Properties

You will then see the PLC populate the Editor project tree. Right Click on S7 Simatic Net and select Connection Settings. This will open the Simatic Net Settings dialogue as shown in **Figure 7** below.

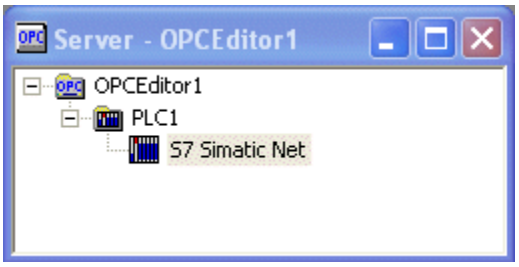

Figure 6: Populated project tree

When the Simatic Net Settings dialogue opens, verify the settings against those of your network and device you are trying to connect. Then click “Set PG/PC Interface”.

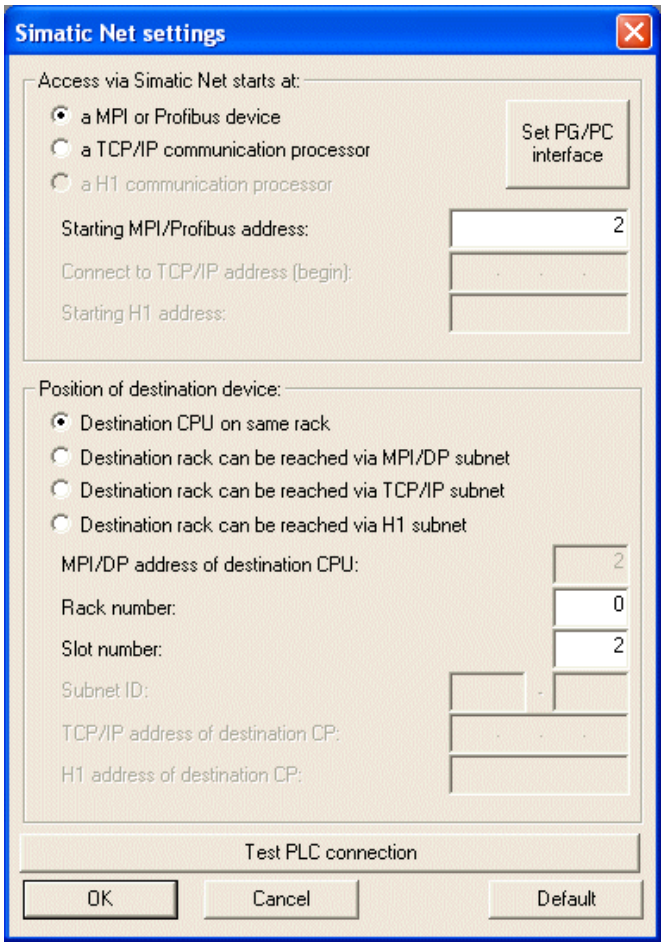

Figure 7: Simatic Net Settings

This will open the PG/PC Interface dialogue below in **Figure 8**.

Configuring the PG/PC Interface

After clicking “Set PG/PC Interface” in the Simatic Net Settings Dialogue, you will see the PG/PC Interface Dialogue. Here you will configure your adapter interface to use USB, rather than a standard COM Port.

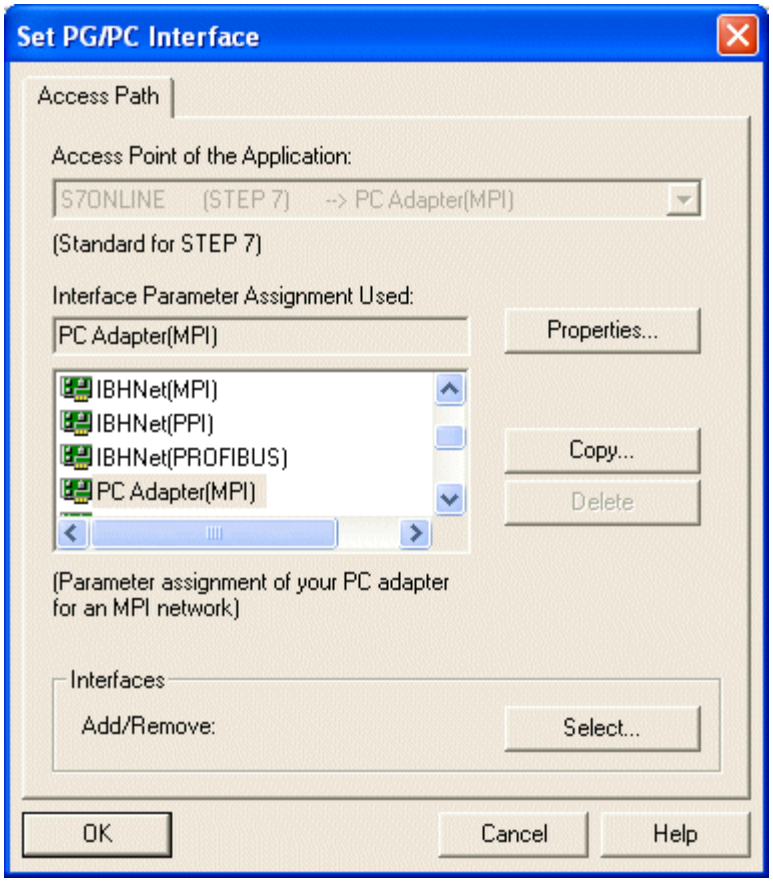

Figure 8: PG/PC Interface

You will highlight the PC Adapter(MPI) to configure the interface for use with the Siemens USB –MPI cable. Simply highlight the adapter and click the “Properties” button. This will expose the Adapter properties dialogue shown below in **Figure 9.**

On the MPI Adapter properties, you will set each of the settings to match the settings of your Siemens USB-MPI cable. Note that the Address field must be unique in the MPI network and refers to the local node address of the PC. Select the Local Connection Tab.

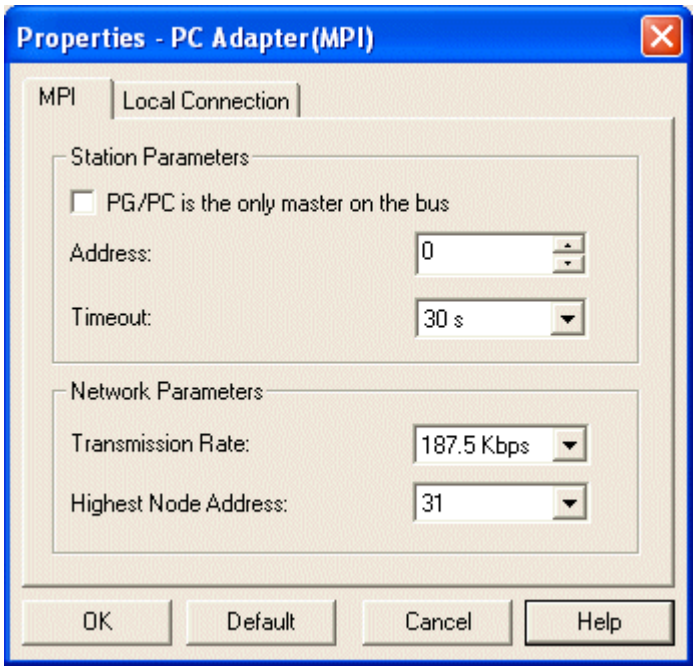

Figure 9: PC Adapter Properties – MPI Settings

The local connection settings allow you to specify that the Adapter is connected to a USB port rather than a standard serial COM Port.

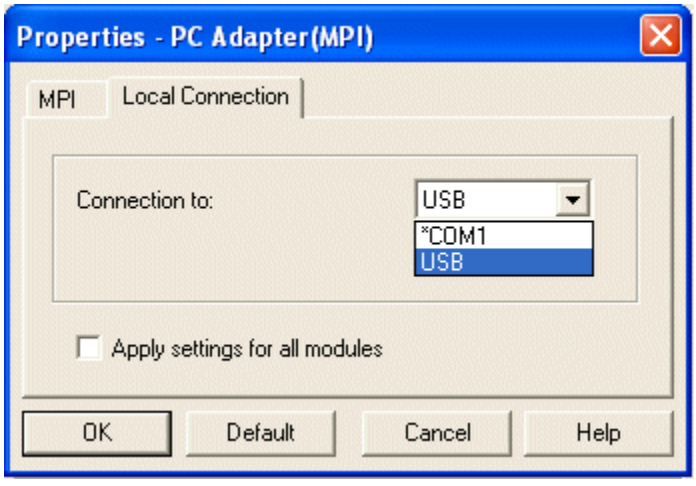

Figure 10: PC Adapter Properties – Local Connection

Creating the OPC Tag Database

To finish our project we will create a tag database using symbolic addressing. Please note that this step is NOT necessary. You may use absolute PLC addresses in your client to connect through the IBH OPC Server.

Assign the PLC Program

First we need to assign the PLC program from which to derive our variables (OPC tags). Right click on PLC 1 as seen in **Figure 6** and select Assign PLC Program (below).

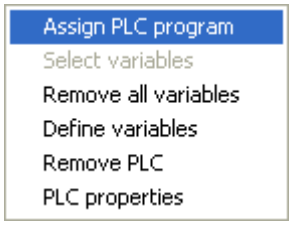

Figure 11: Assign PLC Program

Then you will browse the Select Project tree to your PLC project you want to assign. In our case our project is named TEST.S5P.

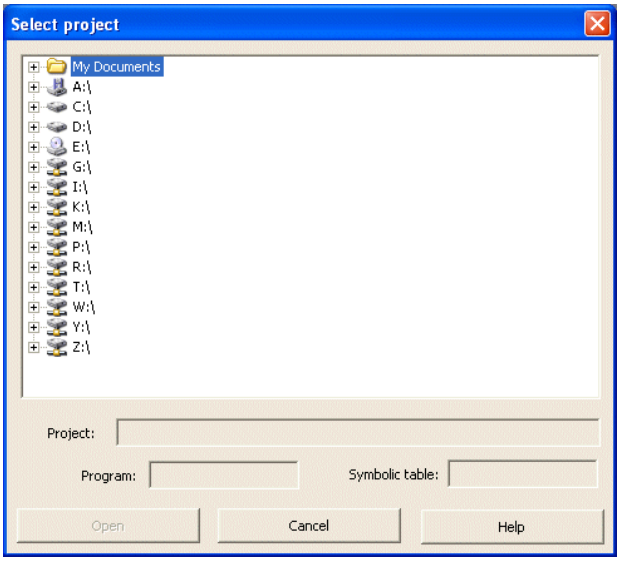

Figure 12: Select Project

Select Variables

Next, we need to select the variables to monitor. Right click on PLC 1 as seen in **Figure 6** and select Select Variables. You can see this in **Figure 11**. However, in this image, Select Variables is not active because we had not assigned the PLC program. When you click on Select Variables it opens the variables table as seen below in Figure 13

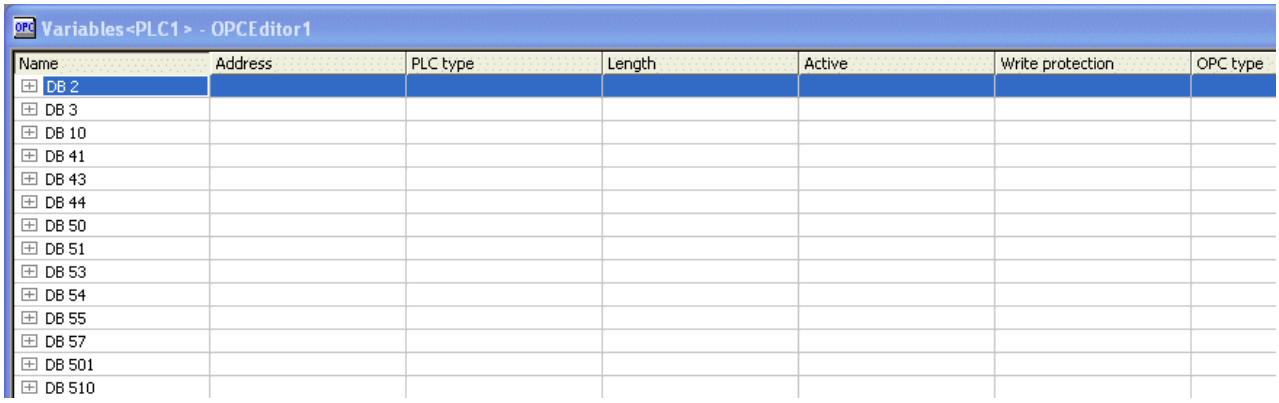

Figure 13: Variables Table

You can expand any of the Data Blocks to expose the addresses available. You can also mark it active here.

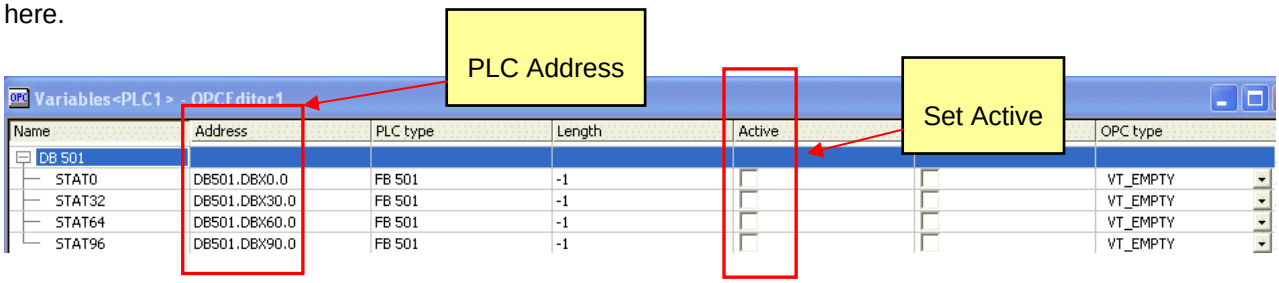

Figure 14: Expanded Variable

You can also select all available variables by right clicking anywhere in the Variables table and selecting "Select All Variables". We will select only a limited number of variables for this exercise.

When you have selected all needed variables in, click the X to close and save your changes. This will show the variables selected in the editor tree.

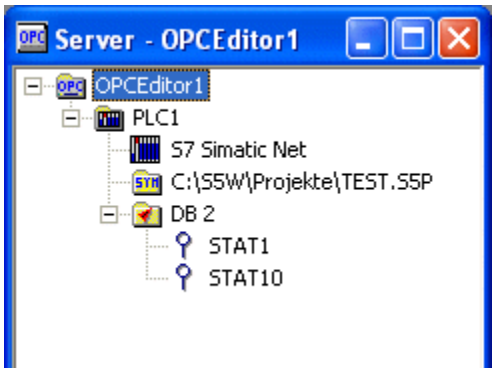

Figure 15: Variable Selection in Editor tree

Transfer Project to OPC Server

The last step of the setup is to transfer the updated project to the OPC Server.

Figure 16: Transfer to OPC Server

You will be prompted to select the OPC Server as shown below in **Figure 17**. If the OPC Server is on another PC, you will need to specify the hostname or IP address in the box below. Click Transfer to Server.

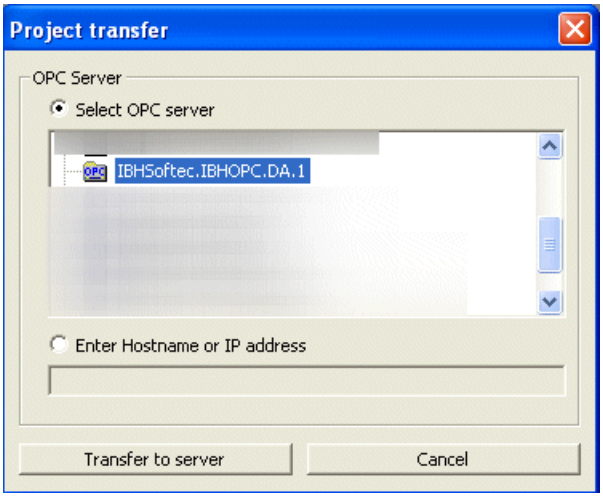

Figure 17: Select OPC Server

If successful, you will receive a confirmation dialogue as shown below.

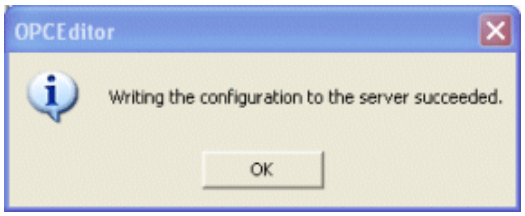

Figure 18: Transfer Success Confirmation

Verifying Connection Settings

After setting your connection, you should test by trying to connect to the device. You can connect any OPC Client to the OPC Server to verify that you have a connection to the PLC. In this example, we will use a free OPC test client to verify the connection to the PLC. As you can see, the data returns a value along with a good quality code to the OPC Client. This allows us to confidently say that we have now successfully connected to the PLC.

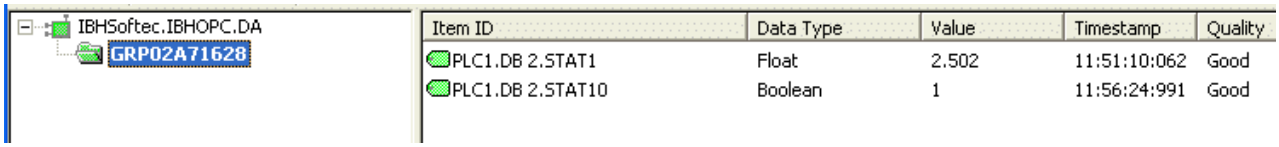

Figure 19: OPC Client connection

Summary

This document has been provided to assist the end-user in the basic configuration of a connection to an S7-300/400 PLC from the IBH S5/S7 OPC Server using a Siemens USB-MPI cable. From this guide, we hope that you have gained an understanding of how the IBH software interacts with the Siemens USB-MPI communication cable. While the document is not an exhaustive reference or User's Guide for the IBH OPC Server or your Siemens cable , it has been designed to give a quick answer to a common issue. If you have further questions or need assistance our experienced staff is more than happy to help. We can be contacted by the methods outlined below.

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