

USER MANUAL

PIBridge™

VERSION 1.1

OPC Server Bridge

Enables Data Transfer between Two OPC Servers

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PICONTROL SOLUTIONS COMPANY

www.picontrolsolutions.com

info@picontrolsolutions.com

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PiControl Solutions Company (www.picontrolsolutions.com) is an industrial process control software technology development company. It is a wholly owned subsidiary of Artcon, Inc. (www.artcon.com).

Whereas **PiControl** specializes in innovative development of process control software technology, algorithms and products, **Artcon** specializes in turnkey process control consulting, advanced control implementation, plant startup/commissioning, and a complete array of process control services for the industry.

Artcon and PiControl have been providing products and services to the industry since 1992 and have operation worldwide in several countries.

Following is a list of PiControl Software products:

1. **PIBRIDGE™** (OPC to OPC real-time data communication)
2. **PICONECT™** (OPC to Excel real-time data dump)
3. **PILOGGER™** (OPC-based fast data logging for equipment fault diagnostics)
4. **PITOPS™** (Multivariable closed-loop transfer function identifier & PID optimizer)
5. **SIMCET™** (Real-time PID tuning simulator for training, grading and certification)
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7. **TADPOLE™** (Online oscillation detection software with adaptive control)
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9. **PROCBAT™** (Process control computer-based training module)
10. **ACCSI™** (Advanced control instructor training slides)

All our products are very simple to use for any plant operator, control engineer, DCS/PLC technician or researcher.

Use of our products does not require deep academic knowledge of process control theory. User can configure and use our products in just a few minutes.

For more information on all these products, visit the website www.picontrolsolutions.com or send an email to info@picontrolsolutions.com.

PIBridge™ User Manual

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PIBridge™ User Manual

1.0 Introduction

This manual specifies the hardware required to run PIBridge™ software. It also explains software installation procedure and how to start and use PIBridge™.

2.0 Software/Hardware Requirements and Installation

PIBridge™ runs on Windows XP, NT, Vista and other Windows operating systems.

To install PIBridge™, first send an email request to PiControl Solutions Company at info@picontrolsolutions.com. A web-link to download the program installation setup executable file from the PiControl Solutions website will be sent.

To start installation, double-click the PIBridge_Setup.exe file.

To complete installation, follow all the step-by-step installation instructions on the screen.

All PIBridge™ files will be installed to the specified program folder. A program Group "PIBridge" will be created with program icons "PIBridge", "PIBridge Help", "Readme First" and "License Agreement".

3.0 Create PIBridge.INI File for your OPC Servers for the First Time

A configuration text file **PIBridge.INI** must be created first. A sample file named **PIBridge Sample.INI** is provided with the software. The configuration file structure is shown below in Section 4. Use this file as a start and then modify to customize to your needs. Procedure on how to configure the file is described below:

1. Edit **PIBridge.INI** file in a Text Editor and enter appropriate values for Tag List in sections **[OPCInputTags]** and **[OPCOutputTags]**. For both the input and output OPC servers, the *Computer Name* can be left blank and *Server Name* can be left as the default as shown in the file. Save and Close **PIBridge.INI** file.

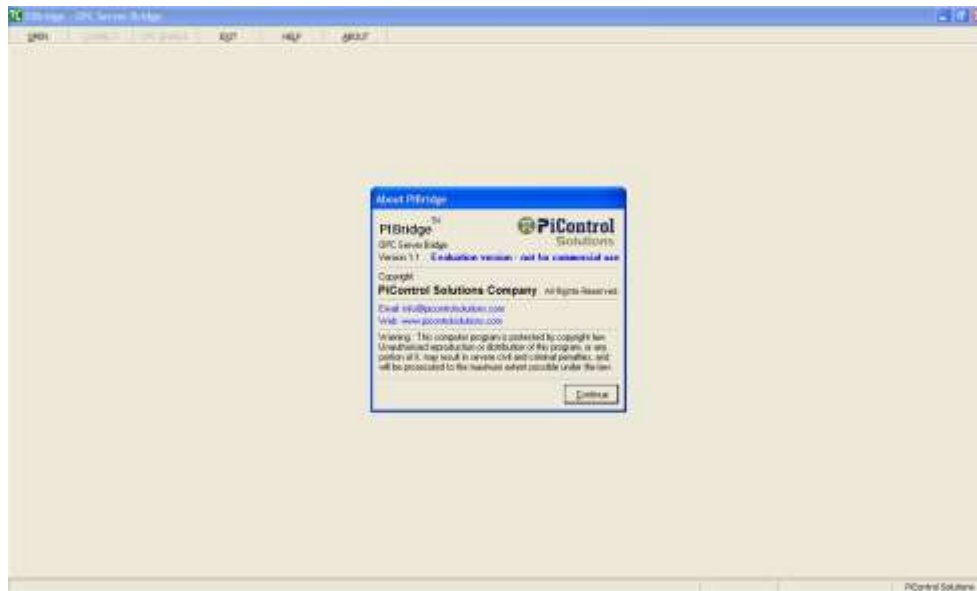
There are four input tagnames in the example provided. They are listed below:

```
1=.IP000 PV
2=.IP000 SP
3=.IP000 OP
4=.IP000 T1
```

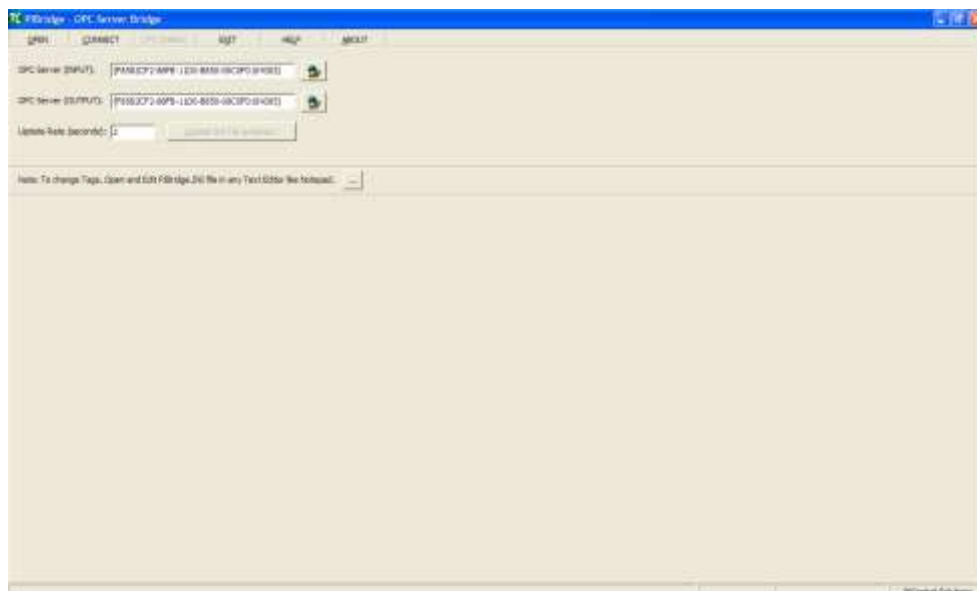
The number of output tags must be the same as the number of input tags. The four output tagnames in the example are listed below:

- 1=.IP000 PV
- 2=.OP000 SP
- 3=.OP000 OP
- 4=.OP000 T1

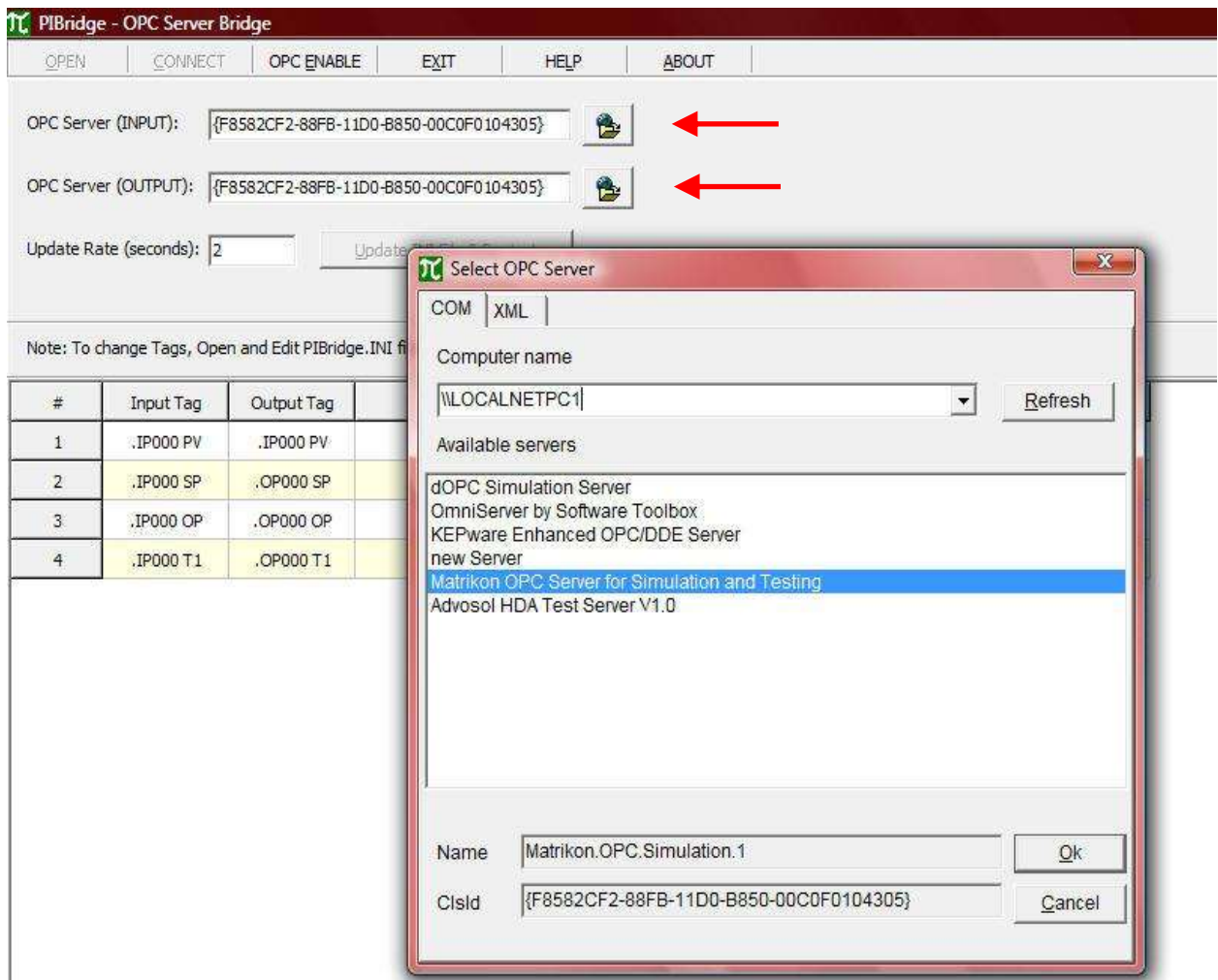
2. Start PIBridge program. You will see the initial PIBridge screen as shown below:



3. Click on **OPEN** to read the **PIBridge.INI** file.



- Click the button next to the **OPC Server (INPUT)** button and select the appropriate computer name and OPC Server. See screen shot below.
- Click the button next to the **OPC Server (OUTPUT)** button and select the appropriate computer name and OPC Server. See screen shot below.



- Enter value for **Update Rate (seconds)** as shown in the above screen shot. Note that if the **Update Rate** specified in PIBridge is less than the update rate of the input tag, then the **Value**, **Quality** and **Time Stamp** seen in PIBridge of that tag will change only at the update rate of that tag.
- Click on **CONNECT** and **OPC ENABLE** buttons to establish OPC Server connection and start data read and write operation. This starts the PIBridge program which starts the data transfer from input server to the output server.

Note that if the Input OPC server name, the Output OPC server name or the **Update Rate** are changed, then **Update INI File & Restart** button starts to flash. Click this button to restart and for the changes to be effective.

8. If you need to stop PiBridge for any reason, then click on the **OPC DISABLE** button. This stops the data transfer process. Click **OPC ENABLE** to resume.

4.0 Details and Structure of the File PiBridge.INI

Contents of PiBridge.INI File are as below. Some Help/Comments are in shown in blue/red color font.

[Header]	Do not modify this line
ID=PiBridge Config File	Do not modify this line
[OPC Input Server]	Do not modify this line
ComputerName=\\LANCOMP1	Local/Network computer name
ServerName={F8582CF2-88FB-11D0-B850-00C0F0104305}	Input OPC Server
[OPC Output Server]	Do not modify this line
ComputerName=\\LANCOMP2	Local/Network computer name
ServerName={B0622DA3-45BG-34S0-T570-12D0C5316346}	Output OPC Server
[UpdateRate]	Do not modify this line
seconds=2	Scan rate of reading and writing values
[ErrorLog]	Do not modify this line
SaveErrorLog=Yes	Yes to save errors to error log file.
Hours=1	Time period (hours) to save error log file
[OPCInputTags]	Do not modify this line
1=.IP000 PV	Input tag #1
2=.IP000 SP	Input tag #2
3=.IP000 OP	Input tag #3
4=.IP000 T1	Input tag #4
[OPCOutputTags]	Do not modify this line
1=.OP000 PV	Ouput tag #1
2=.OP000 SP	Ouput tag #2
3=.OP000 OP	Ouput tag #3
4=.OP000 T1	Ouput tag #4

5.0 Restarting PIBridge program with a configured PIBridge.INI File

Once you have a configured PIBridge.INI file as described in Section 3 above, then follow the steps below to start (rerun PIBridge) if it has been stopped for any reason:

1. Start PIBridge program.
2. Click on **OPEN** to read the PIBridge.INI file.
3. Click on **CONNECT** to establish OPC Server connection.
4. Click on **OPC ENABLE** to start the data read and write process.
5. If you need to halt the data read/write operation, then click on **OPC DISABLE**.

6.0 Error Log Files

The PIBridge program provides extensive error logging functionality to alert the user in case the program encounters any form of tag value read errors or tag write errors. The **Write Status** column on the screen shows the error status.

If inside the **PIBridge.INI** file under the section **[ErrorLog]**, if **SaveErrorLog=Yes** then Error Log Files will be generated at specified **Hours** interval. So if **Hours=1** in the file then the error data will be written to the error log file once every hour. A new log file is created every day. Error files are saved in **Error Log** subfolder.

The Error Log File Name Format is as shown below:
PiBridgeErrorLogFile_mm-dd-yy.csv

Sample error messages inside the Error Log File are below:

.IP000 PV: The Items AccessRights do not allow the operation. Error occurred at:
12/14/2008 1:09:55 PM
.IP000 CTS: BAD Value. (badConfigurationError) Write Skipped at:
12/14/2008 1:17:11 PM
.IP000 OP: BAD Value. (badOutOfService) Write Skipped at: 12/14/2008 1:20:55 PM

7.0 How to test with an OPC simulation server

PIBridge provides the capability to test easily with any standard OPC simulation server. This section describes a procedure for testing with a simulation server. This procedure and testing may be followed first to gain better understanding and ease of use with PIBridge and also for training purposes.

1. Start the OPC simulation server
2. In any simulation server, create Tags you have specified in PIBridge.INI file. This will generate the simulation test tags required. Output tags must have write permission so that the values can be written to these tags. Do not shut down this simulation server program.
3. Start PIBridge program.
4. Click on **OPEN** to read the PIBridge.INI file.
5. Click on the button next to **OPC Server (INPUT)** and select the appropriate computer and the OPC simulation server.
6. Click on the button next to **OPC Server (OUTPUT)** and select the appropriate computer and the OPC simulation server.
7. Click on the **Update INI File and Restart** button to establish OPC Server connection and start data read and write operation.
8. To stop PIBridge, click on the **OPC DISABLE** button. This halts the read/write operation.

Once the PIBridge.INI file has been configured and results in a successful program run, then for all subsequent program restart, refer to the procedure in Section 5 above.

Note that if the PIBridge.INI file is configured to use with a live OPC server at the plant, then to test again with OPC simulation server, follow steps from Section 7 above.

8.0 OPC Core Components Redistributable Software and DCOM Configuration

Note that you may need to download and install "**OPC Core Components Redistributable**" software from the following link:

<http://opcfoundation.org/DownloadFile.aspx?CM=3&RI=385&CN=KEY&CI=286&CU=9>

Also, for the OPC connectivity to successfully take place, proper DCOM configuration is required. For more information on DCOM, the following link may be useful:

<http://www.opcsupport.com/ics/support/default.asp?deptID=4590>.

9.0 Technical Help and Support

For technical help on PIBridge, please contact us via email at info@picontrolsolutions.com.