

**Kepware Products for Windows 95™, 98™, 2000™,  
NT™, And XP™**

# **KepserverEx Client Connectivity Guide**

**For Intellution's FIX32**



**KTSM-00005**

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32 Bit KepserverEx Connectivity Guide

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# Introduction to KepserverEx

KepserverEx is a 32 bit windows application that provides a means of bringing data and information from a wide range of industrial devices and systems into client applications on your windows PC. KepserverEx falls under the category of a "Server" application. It is very common to hear the term "client/server application" in use across many software disciplines and business segments. In the industrial market, it has usually come to mean the sharing of manufacturing or production data between a variety of applications ranging from human machine interface software and data historians, to large MES and ERP applications.

Regardless of the business segment served, client/server applications have one thing in common: a standardized method of sharing data. In the industrial segment, many client/server technologies have been developed over the last ten years. Initially, some of these technologies were proprietary. In many cases these proprietary client/server architectures were in wide use but remained unavailable to third party applications. Early in the development of windows, Microsoft provided a generic client/server technology called DDE or Dynamic Data Exchange. DDE did provide a basic architecture that would allow many windows applications from a wide range of vendors to share data, but there was one problem. DDE was not designed for the industrial market. It lacked much of the speed and robustness desired in an industrial setting. However, this did not stop DDE from becoming a dominant client/server architecture, largely due to its availability in most windows applications. In time, variations on Microsoft's DDE were developed by some of the leading vendors in the market. These variations addressed some of the speed and reliability issues of DDE but many people in the industrial segment agreed that a better system needed to be developed.

With the advent of 32 bit Operating Systems, and the use of Ethernet to provide communications between devices, there was a need for quicker and cleaner data transfer between software applications. This is where OPC saw its birth into the industry.

OPC (OLE for Process and Control) servers provide a standardized method of allowing multiple industrial applications to share data in a quick and robust manner. The OPC server provided in this package has been designed to meet the demanding requirements found in the industrial environment.

This OPC server has been designed as a two-part program. The primary component provides all of the OPC and DDE connectivity as well as the user interface functions. The second part is comprised of plug-in communications drivers. This two-part design allows you to add multiple communications options to your SCADA application while utilizing a single OPC server product thus reducing your learning curve as your project grows.

OPC technology reflects the move from closed proprietary solutions to open architectures that provide more cost-effective solutions based on established standards.

## Accessing KepserverEx

A Windows based client application must be used to view data from the KepserverEx application. In this section we will cover the basics of connecting a number of common OPC clients to KepserverEx. While we cannot possibly cover every client application that exists, we believe that after reviewing this document you should be able to deal with most client applications.

The intention of this section is to show connectivity to KepserverEx. It is assumed that you have already either configured your KepserverEx application by selecting the appropriate driver and settings or you have run the Simulator demo (Simdemo.opf) which is included with KepserverEx. For simplicity, the Simdemo project will be used for all examples contained in this section.

Before beginning any of the examples, start the KepserverEx application by selecting it from your Start Menu or from its desktop icon. Once the server is loaded, use the File|Open command to

load the “Simdemo” project. The KepserverEx application is always active once you have opened an existing project or configured at least one channel and device in a new project. After you have selected a project, in this case the Simdemo project, KepserverEx will automatically load this project when an OPC client application invokes KepserverEx’s OPC server component.

Users have always had the ability to create what we refer to as “user defined tags” in their KepserverEx application. Prior to OPC, defined tags gave a DDE application designer the ability to create a label for device data. Assume register 1000 contained the value of parts made, without defined tags a DDE application would have directly accessed register 1000. Using defined tags a label can be created like “PartsMade”. Now the DDE application could access the data via this new label, removing the machine level knowledge from the client application and keeping it at the server level where it belongs. This label, while useful for DDE is a necessity for OPC clients. For OPC clients, defined tags take on a greater role. Like the DDE example, defined tags allow you to create labels for your device data and keep the configuration of those tags in the server. OPC clients have a major advantage over DDE clients. OPC clients can browse the defined tags you create in your KepserverEx application, which allows you to simply point and click on a tag to add it to your OPC client project.

*OPC Tag Browsing allows you to see a list of the defined tags you have created in your KepserverEx application, directly within your OPC client application.*

For more information on defined tags see the “Designing a Project” section of the KepserverEx help file, which can be accessed from the Help/Contents menu selection of the KepserverEx application.

## Using KepserverEx Drivers

Part of the innovative design of Kepware’s OPC/DDE Server Technology is the separation of the Hardware Protocol Driver from the Server Technology. This separation allows the user to use one or more drivers in the server at the same time. Each driver has its own help file which provides information on devices supported, communications parameters, cabling, addressing, and error messages.

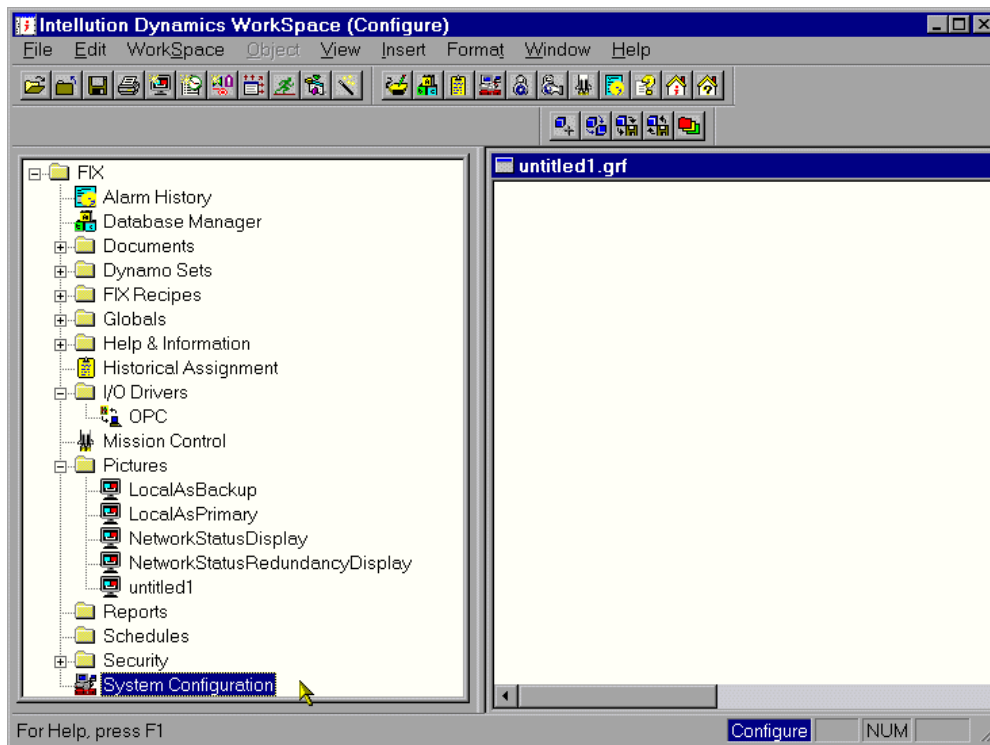
The driver help file should contain all of the information you will need to connect your device to the PC so that we can talk to it. If you do not connect to the device be sure to check the error messages and look up their meaning in the help file.

# Intellution's Fix Dynamics® and OPC PowerTool® as an OPC Client

The following steps will show you how to create an OPC connection to the Server from the OPC PowerTool and Fix Dynamics. Although Dynamics will run on any 32bit operating system, it is very important to note that the OPC PowerTool must be used on a Windows NT based platform.

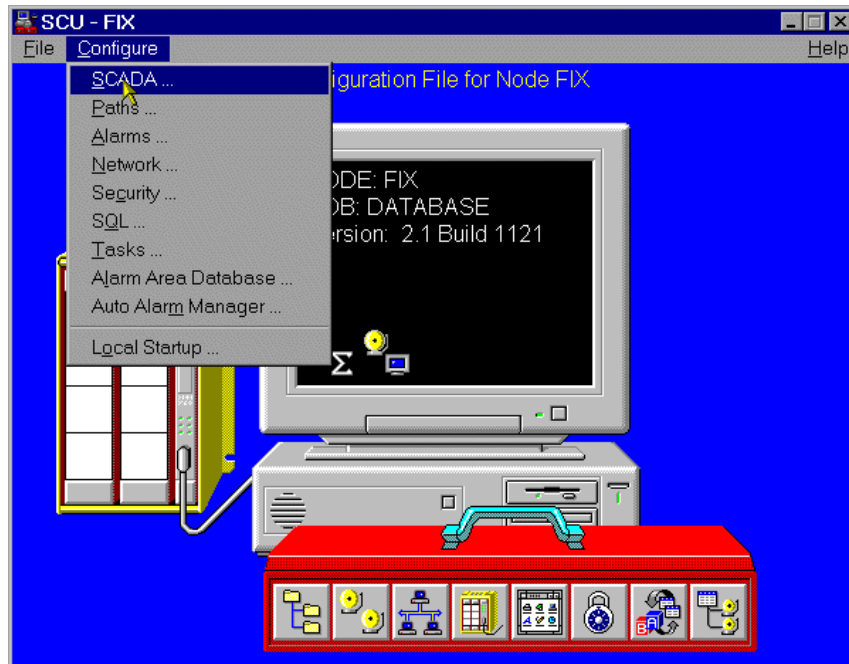
## Connect to the Server from iFix

1. Open your copy of Dynamics to start a new project.

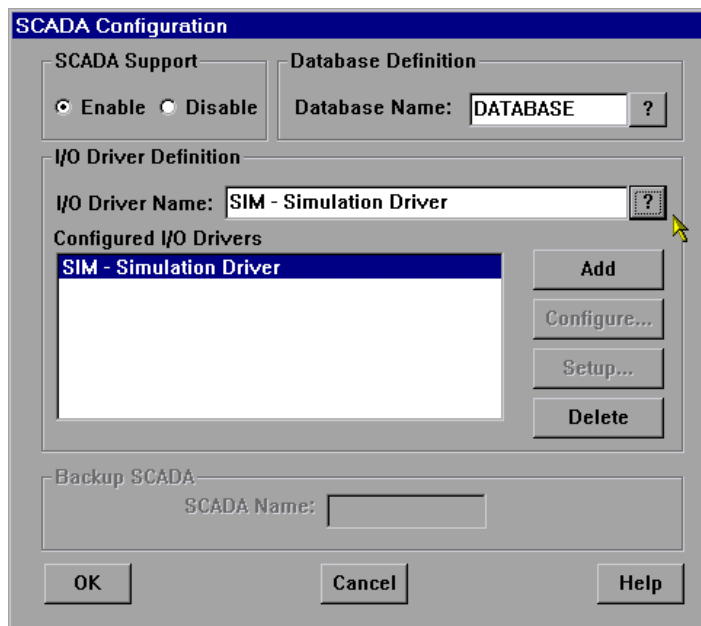


## Configure the SCADA Properties

2. In Fix Dynamics, select System Configuration from the Tree. This will start the System Configuration Utility (SCU).

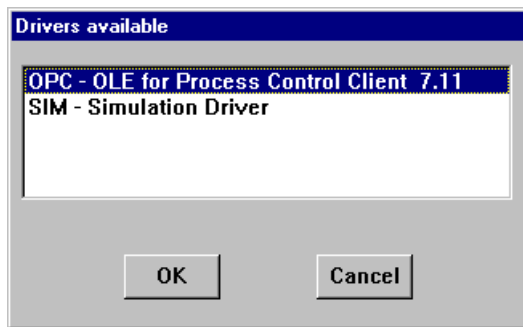


3. In the SCU select Configure|Scada... from the Main Menu.

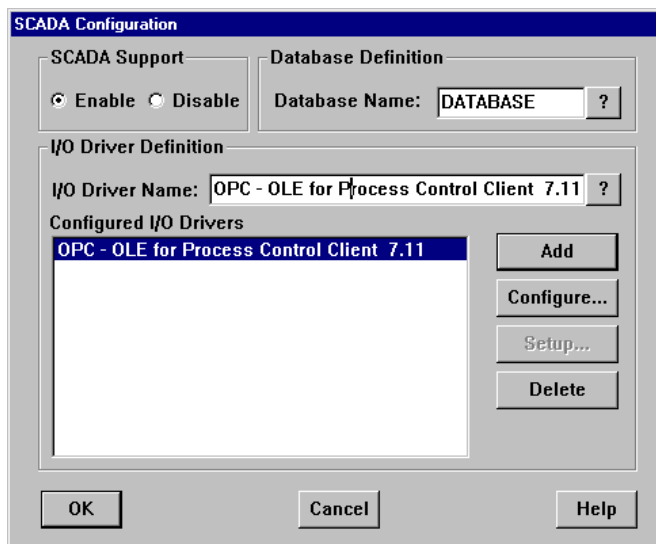


4. In the SCADA Configuration window click on the Enabled radio button. This will activate the Database Definition section and the I/O Driver Definition. For our example we will accept the default Database Definition
5. Click on the I/O Driver Name selection button to see a list of available drivers.
6. Select the OPC Client driver and click OK.



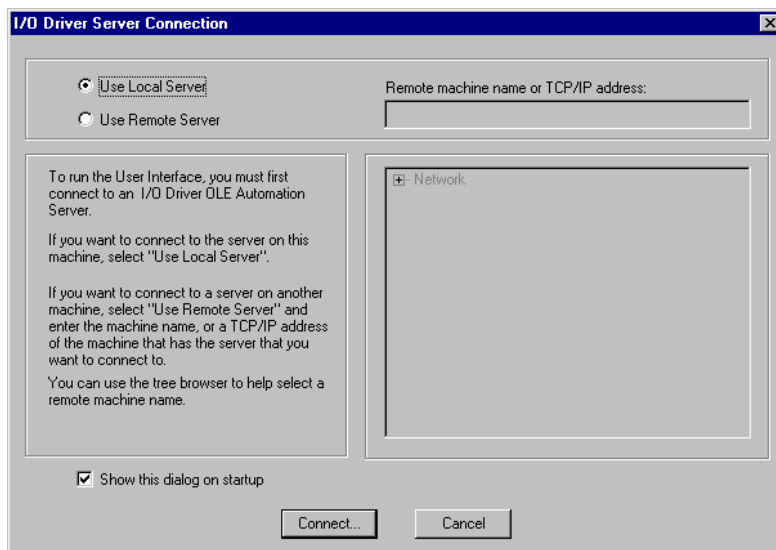


7. Click Add to place the OPC Client driver into the list of configured drivers for this project.

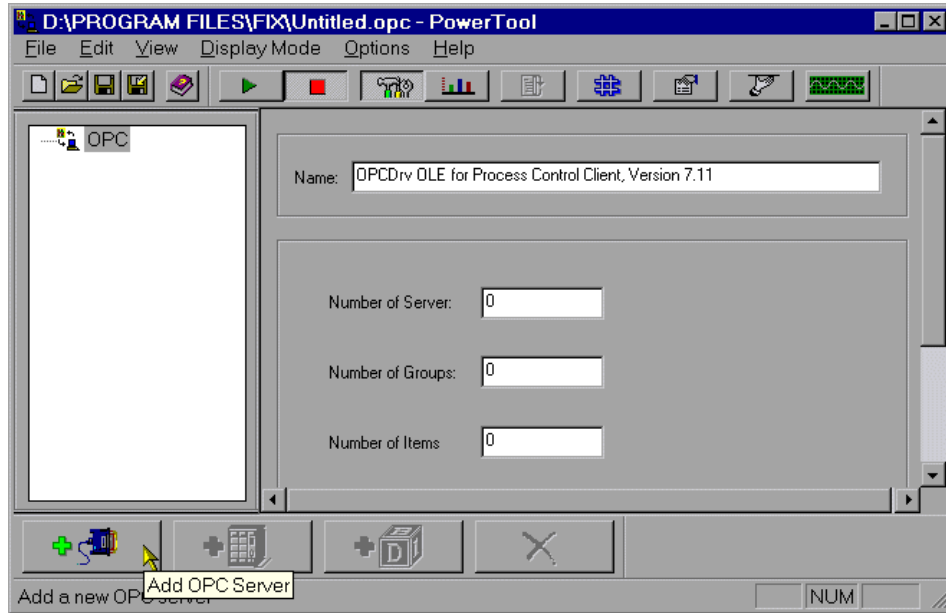


## Enable the Fix OPC Client

8. Highlight the driver in the list and then click on Configure... to set it up.



9. In the I/O Driver Server Connection Window, enable the Use Local Server radio button and click Connect... to connect to the OPC PowerTool.

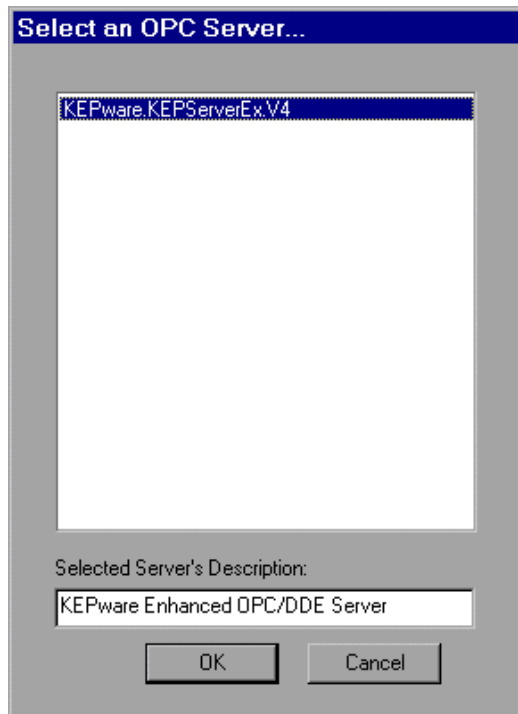


## Add a Server to the OPC PowerTool

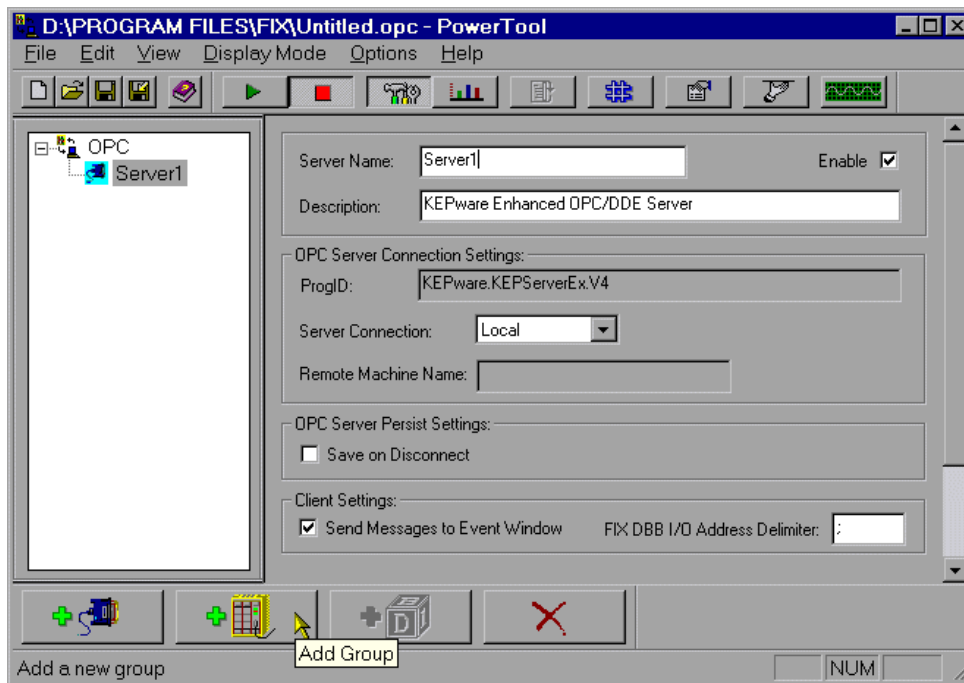
1. In the OPC PowerTool window you will add the Servers that you wish to connect to, Tag Groups related to those servers, and Tags within each Tag Group. To start you will need to add a Server.

### *Browse for Available Servers*

2. Click the Add Server button located in the lower left-hand corner of the OPC PowerTool window, located first from the left.



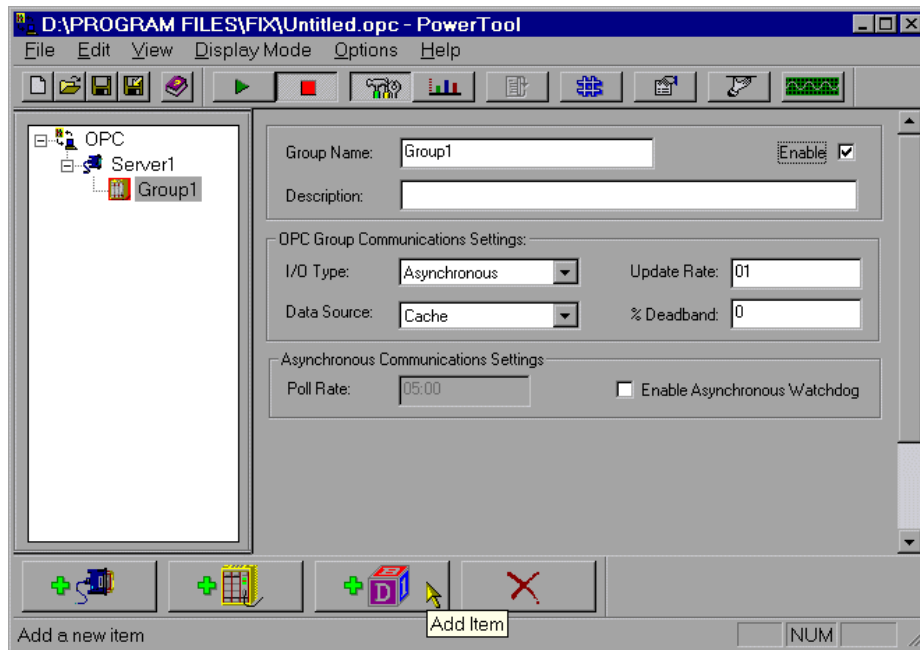
3. Select an OPC Server from the browser window and click OK. In our example we have only one server loaded on our machine.



4. Enter a Server Name and Description to identify the server within Fix Dynamics.
5. Make sure Enable is checked, otherwise you will not be able to communicate with any devices in this server.
6. Leave the Save on Disconnect box unchecked. The KepserverEx does not support this function. Leave the Client Settings at their default.

## Add an OPC Group

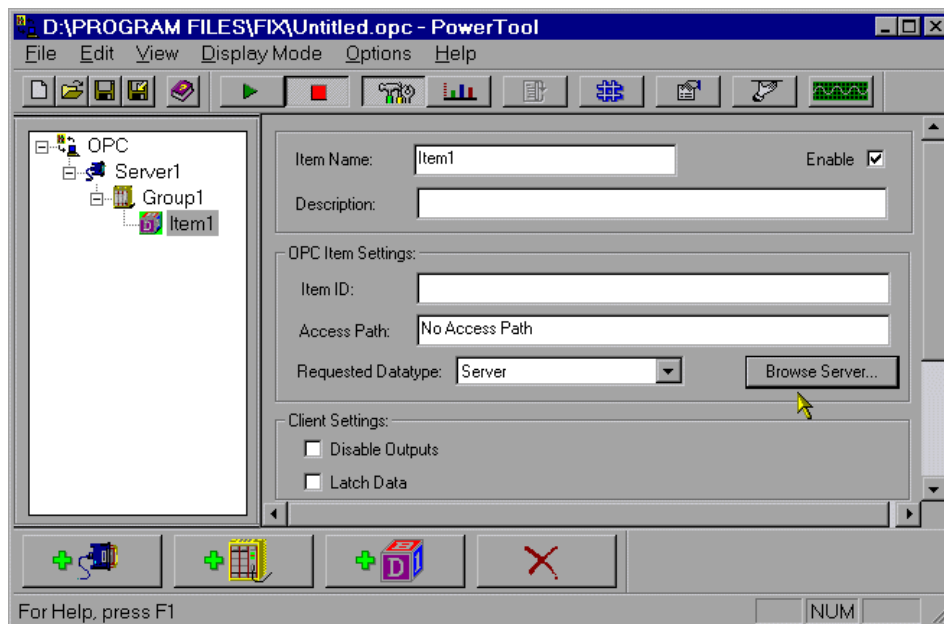
1. Next, click the Add Group button located at the bottom left-hand side of the OPC Power Tools window, second from the left.



2. Enter a Group Name and Description to identify the tag group in Fix Dynamics.
3. Make sure you check the Enable box. Otherwise, you will be unable to communicate with the group or any items attached to it.
4. Select Synchronous or Asynchronous as an I/O Type.
5. Select Cache as a Data Source type. Cache reads are typically faster and recommended.
6. Set the Update Rate, % Deadband, and Poll Rates as your project requires. See the OPC Help file for more information.

## Add an OPC Item/Tag

1. Next, click the Add Item button located at the bottom left-hand side of the OPC Power Tools window, third from the left.

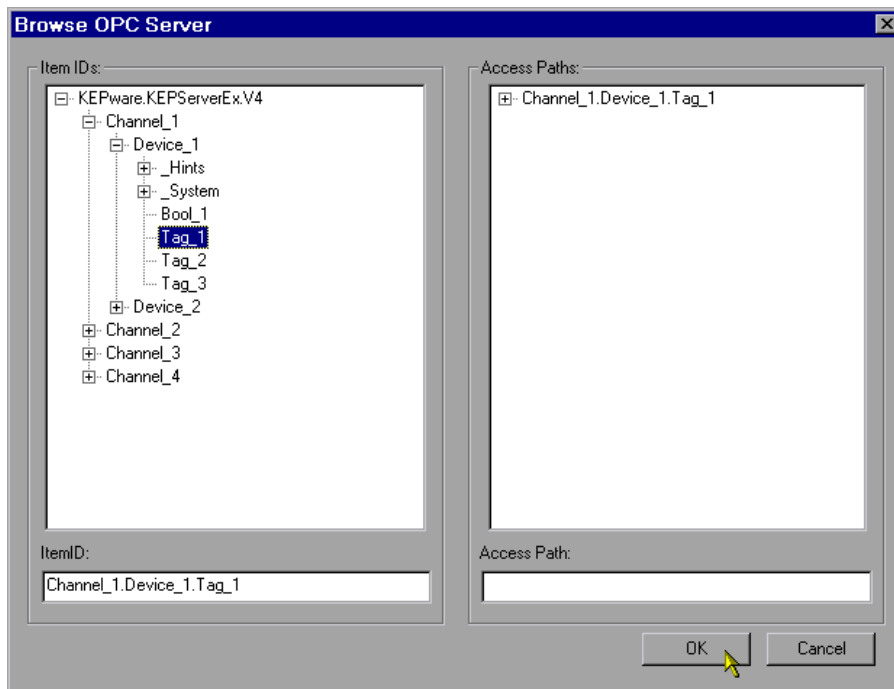


2. Enter an Item Name and Description to identify the tag group, in Fix Dynamics.

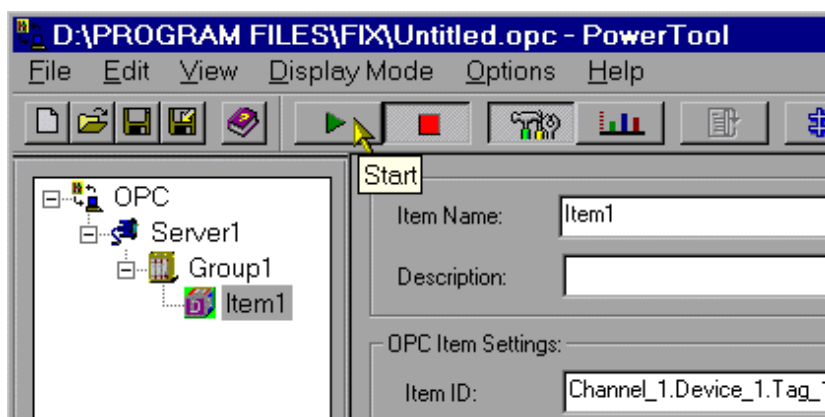
3. Make sure you check the Enable box. Otherwise, you will be unable to communicate with the item.

### ***Browse for Available Tags***

4. Click on the Browser Server button to select an Item Id or User Defined tag.



5. Select an ItemID from the server tree list and click OK.
6. You will notice that the Access Path was left blank. If you did not add tags to the server then you can add them dynamically from here as well, the proper format is "<Channel>.<Topic>.<Item>". Remember in KepserverEx the <Topic> is the device name and <Item> is the defined or dynamic tag.
7. Click Save to save the server setup you have just created.



8. Once you have saved you can click Start and then click Statistics to be able to verify your connection to the server.



## Using Kepware's OPC Quick Client

Kepware provides an OPC client application for testing purposes with each installation of KEPServerEX. For more information on Kepware's **OPC Quick Client**, please see the OPC Quick Client help file.