
KEPServerEx Client Connectivity Guide

For ObjectAutomation OAenterprise



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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.

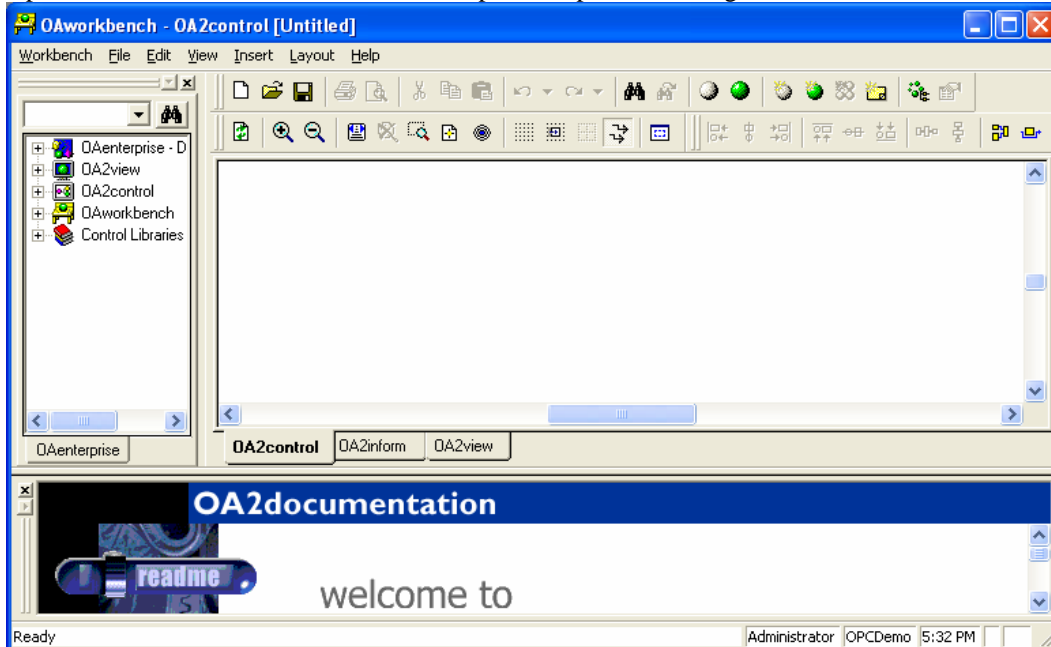
The driver help file should contain all of the information you will need to connect your device to the PC so that you can talk to it via the KEPServerEx. If you do not connect to the device be sure to check the error messages and look up their meaning in the help file.

OAenterprise™ as an OPC Client

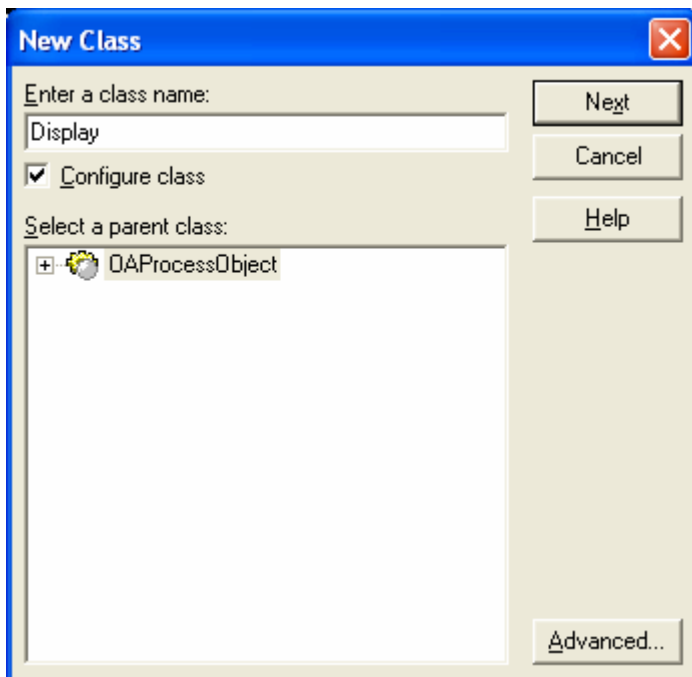
The following steps will show you how to connect to KEPServerEx from OAenterprise 5.1 as an OPC client.

Connect to the Server from OAenterprise™

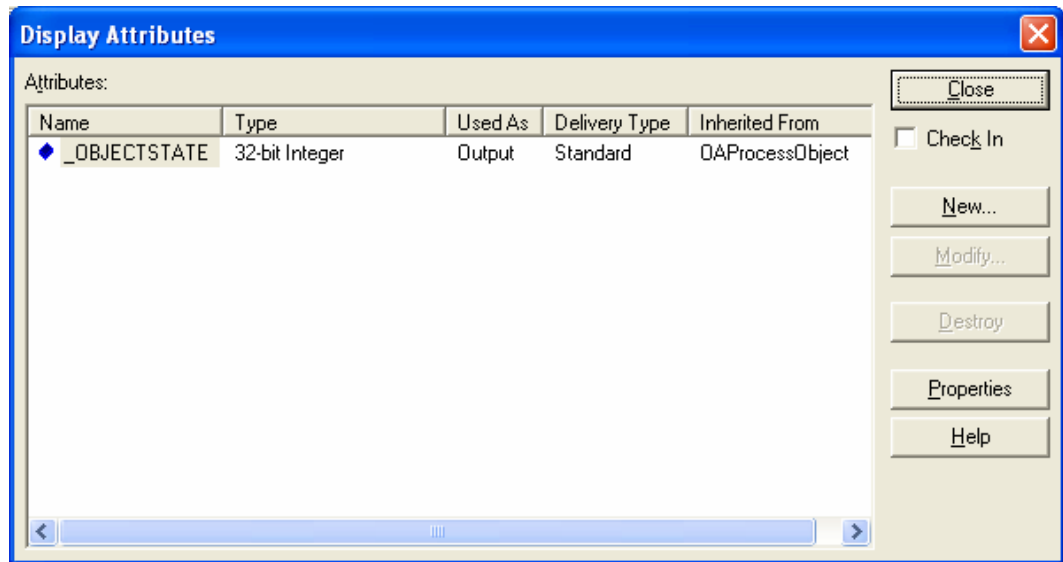
Open OAworkbench and create a new workspace or open an existing one.



In the OAworkbench tree browser expand OAenterprise and right click on Classes, select New Class from the shortcut menu.

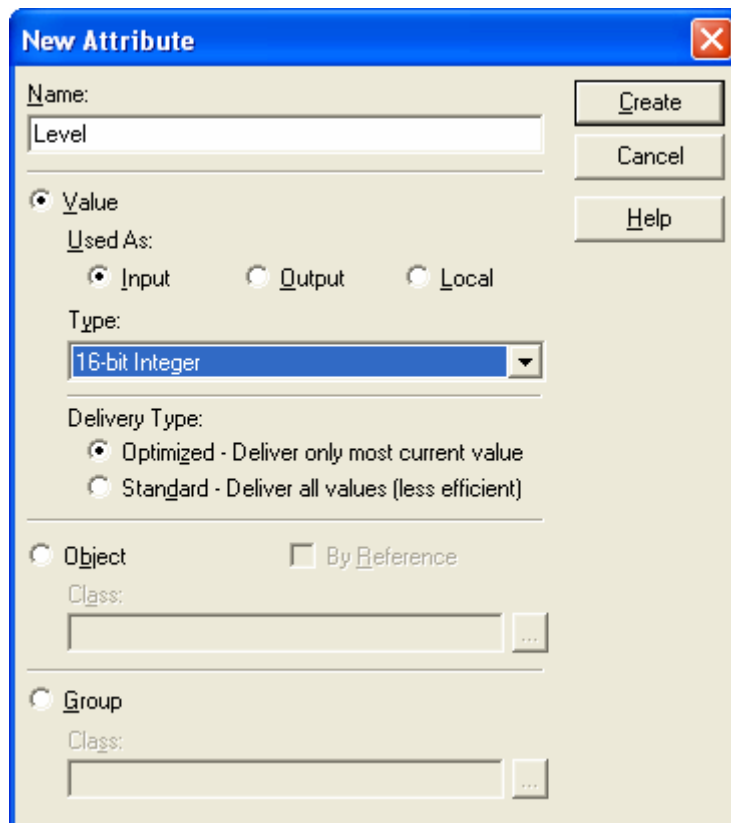


Enter a Class name, make sure Configure class is checked and select the Parent class for your new class. Then click Next.



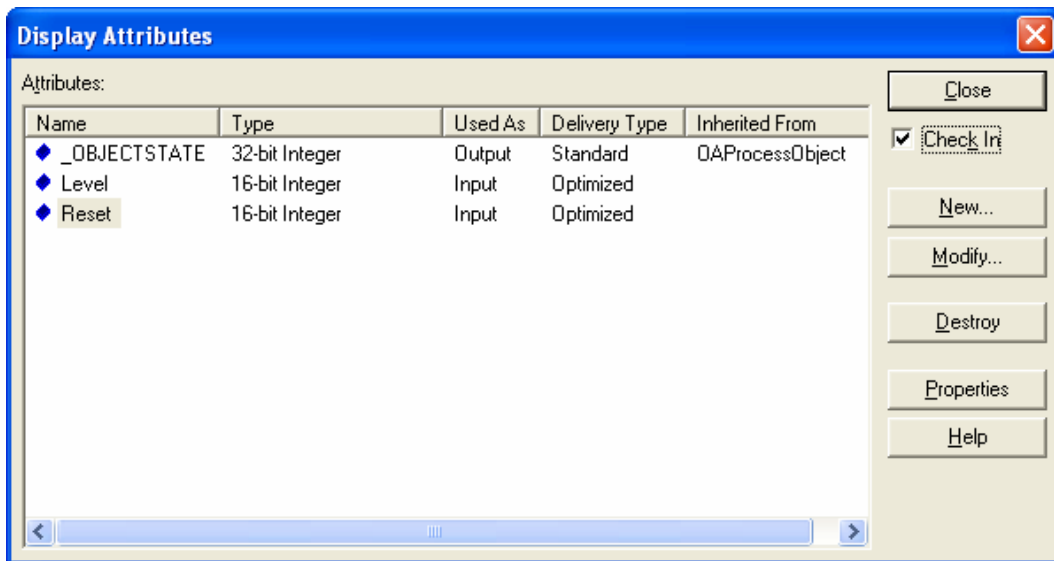
In the Display Attributes window click New... to add a new Attribute for this class.

Enter a Name for the Attribute, select Value and how it will be used. Lastly select a Type for the data and click Create.



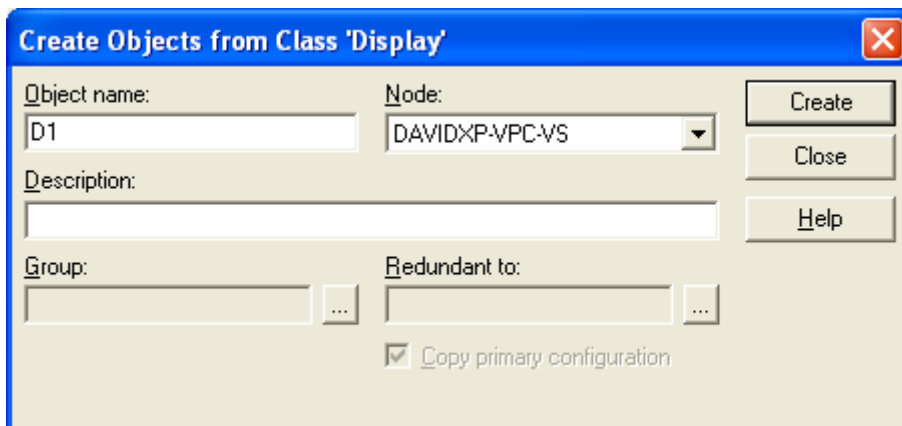
You may want to add an additional attribute to be able to write to the address. We called ours Reset and also configured it as an Input type to allow setting the value from OAWorkbench.

Once you have added all of the attributes you wish to associate with this class, make sure to check the Check in check box and then click Close to exit the window and check in the class.



Now it is time to create your actual object. Right click on your new class and click Create Object From.

Enter a name for the new object, we used 'D1' and then click Create and Close.



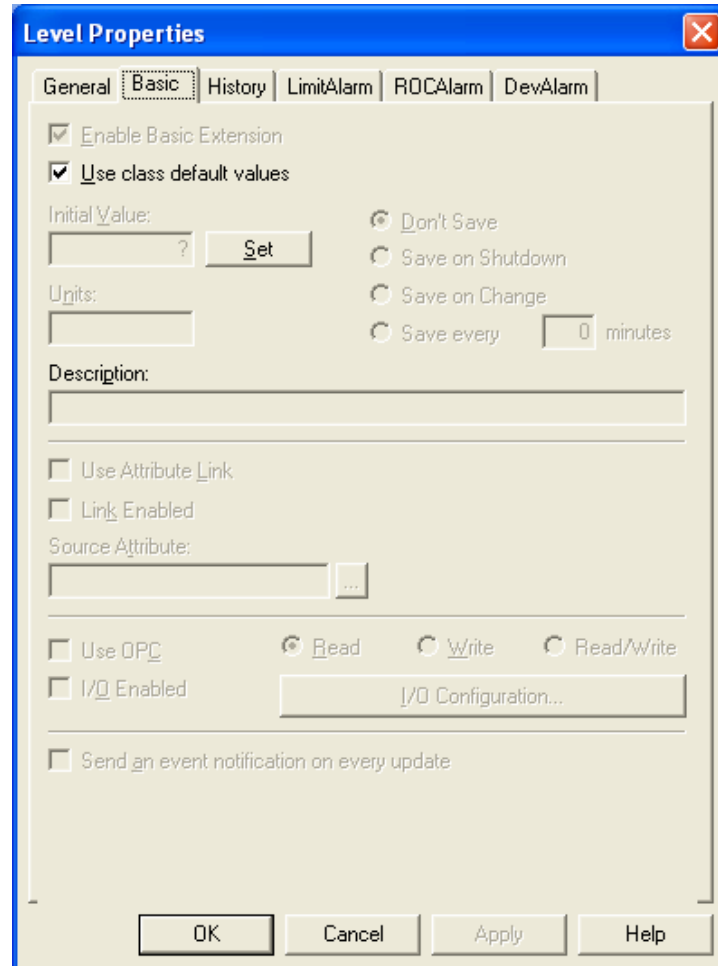
Now that we have created an object it is time to set data specific to it.

In the OAWorkbench tree browser, under OAenterprise and then Objects, expand the object so that the attributes are displayed and right click on the attribute of your choice. Then select Properties. We have selected the Level attribute.

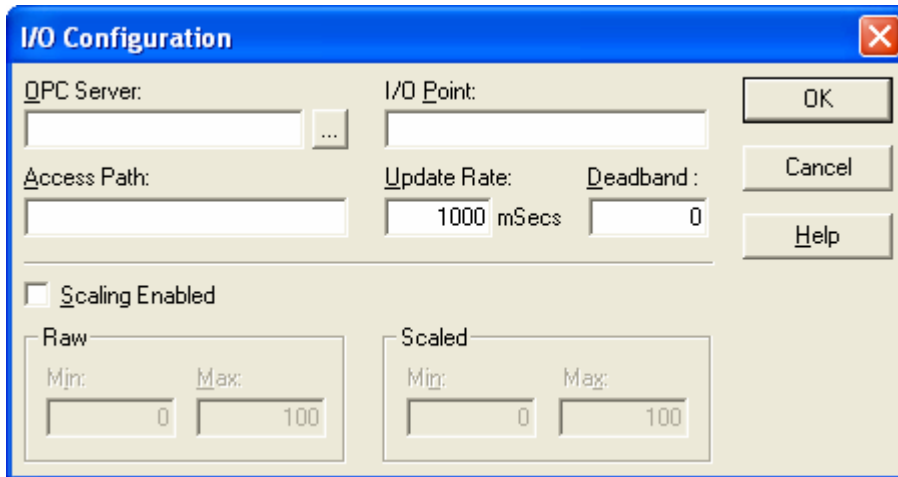
Select the Basic tab in the Level properties dialog.

Uncheck Use class default values and check Use OPC.

Next check Read or Write depending upon what the attribute is intended to do, then click the I/O Configuration button.



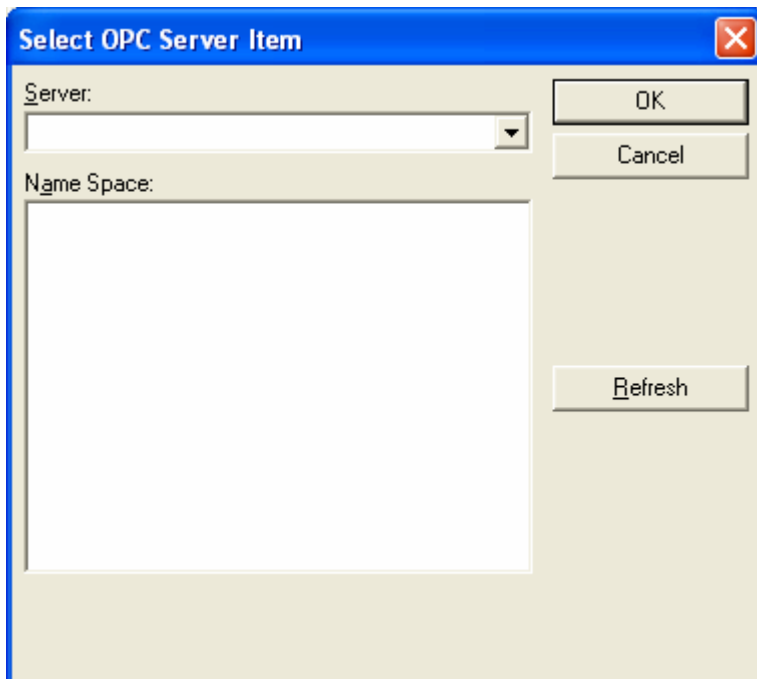
On the I/O Configuration dialog click the OPC Server browse button to select the server and I/O point for your attribute.



The I/O Configuration dialog box contains the following fields and controls:

- OPC Server:** A text box with a browse button (...).
- I/O Point:** A text box.
- Access Path:** A text box.
- Update Rate:** A text box containing "1000" with "mSecs" below it.
- Deadband:** A text box containing "0".
- Buttons:** OK, Cancel, and Help.
- Scaling Enabled:** A checkbox.
- Raw:** A section with "Min:" (0) and "Max:" (100) spinners.
- Scaled:** A section with "Min:" (0) and "Max:" (100) spinners.

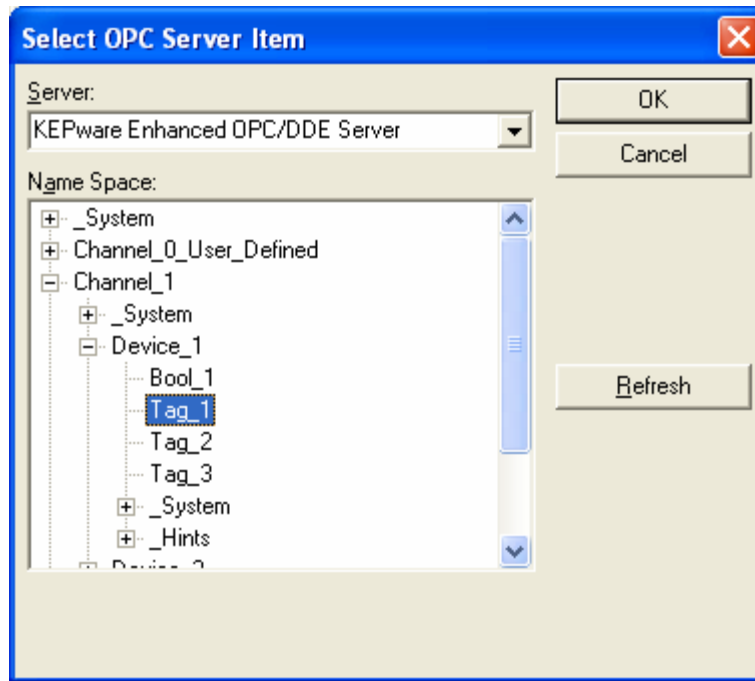
Select KEPCware Enhanced OPC/DDE Server from the Server drop down list.



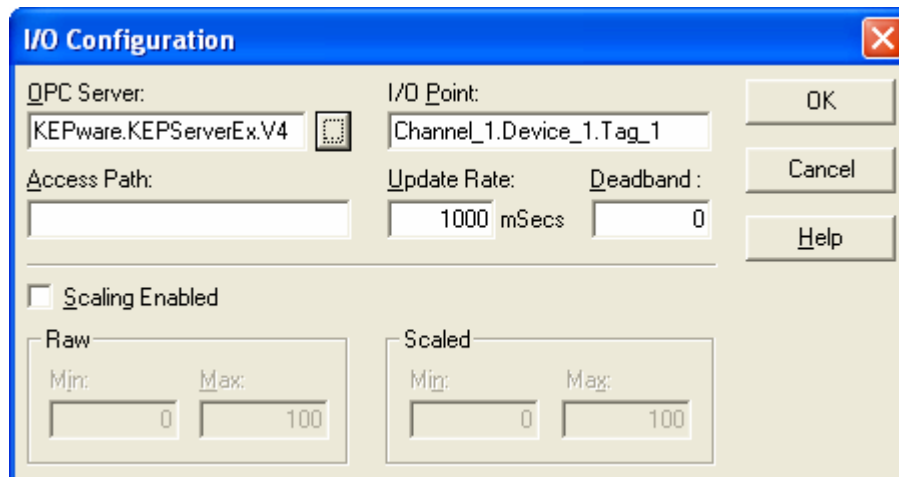
The Select OPC Server Item dialog box contains the following fields and controls:

- Server:** A dropdown menu.
- Name Space:** A large empty text area.
- Buttons:** OK, Cancel, and Refresh.

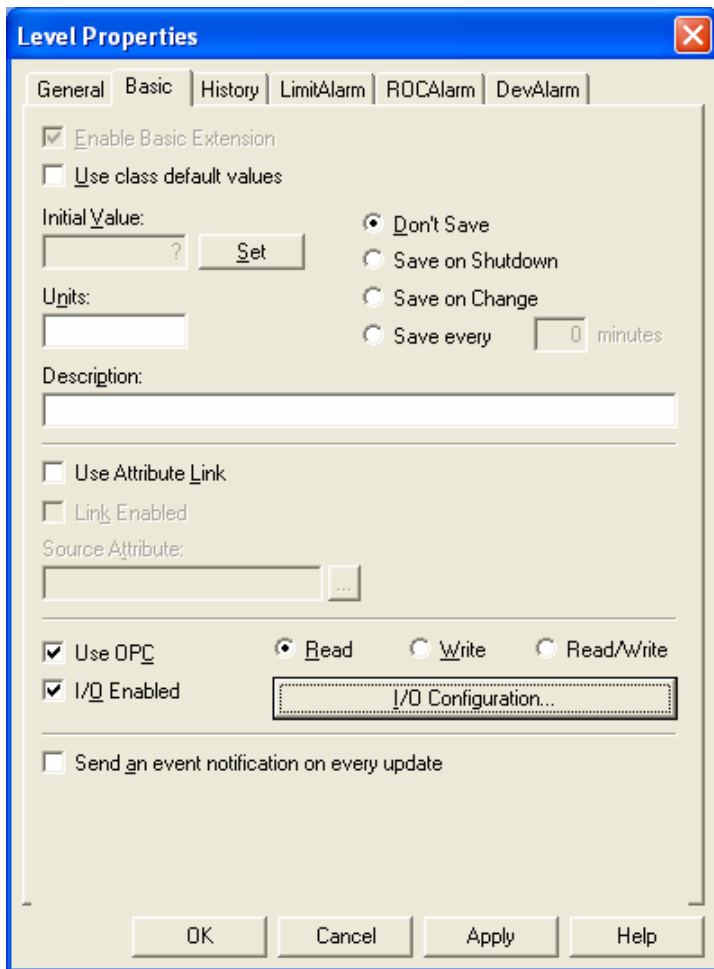
From the tree list expand the access path that contains the I/O point that you are looking for. Select the point and click OK.



Click OK in the I/O Configuration dialog.

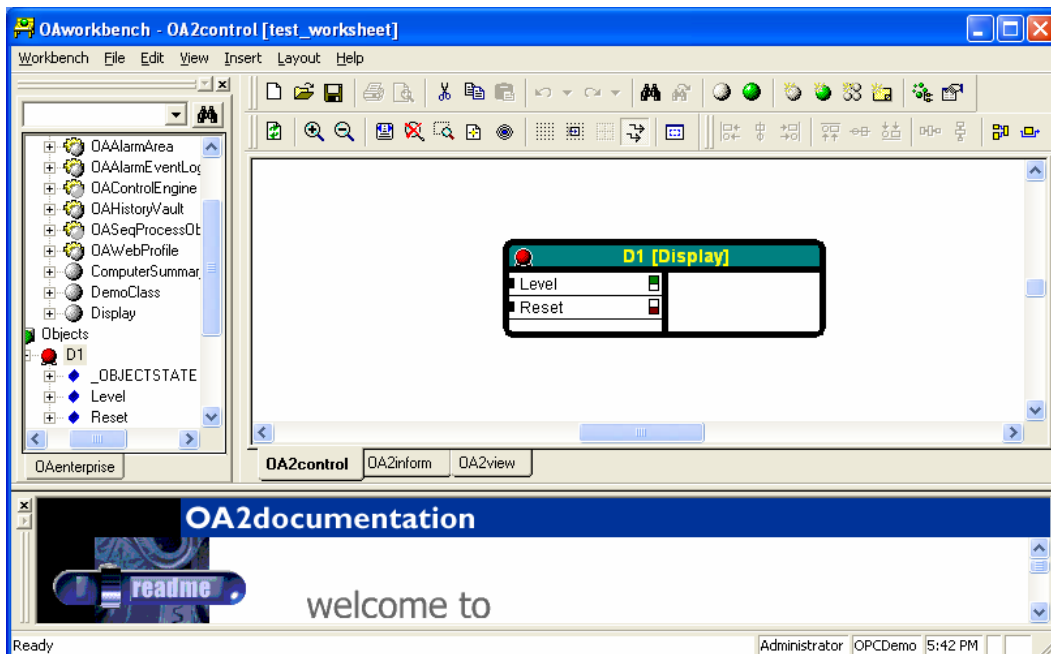


Click OK in the Level Properties dialog.



Repeat the last steps for any other attributes.

In the browser, under Objects, find the object and drag it to the work area.



Right click on the object header and select Watch On to prepare to dynamically display OPC data.

Right click on the object header and select Start and Set Online and start the object, establish OPC connections and then start running.

Right click on the attribute configured for write I/O and select Value.

The Value dialog will appear and allow you to specify data to be written to the OPC item for that attribute.

Name:	Reset	Close
Source:	Unspecified	Help
Time:	1/10/2006 17:44:10.711	
Quality:	Bad	
Value:		Set
Current Value	New Value	<input type="checkbox"/> Force
0		

Enter a new value and click on Set to write it to the OPC server. Click on Close when you are finished performing writes.