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

KepserverEx Client Connectivity Guide

For Intellution's iFIX

KTSM-00017

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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.

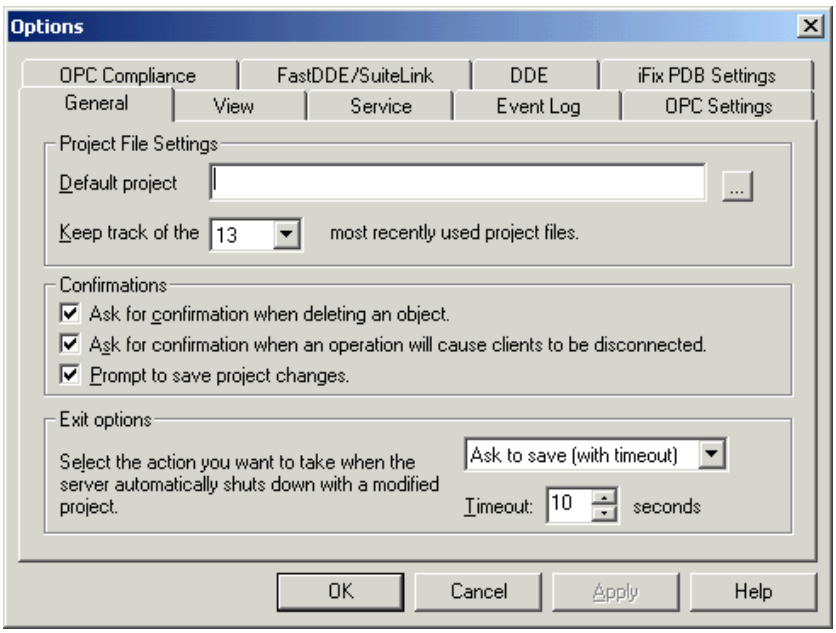
The driver help file should contain all of the information you will need to connect your device to the PC so that the we can talk to it. If you do not connect to the device be sure to check the error messages and look up their meaning in the help file.

Intellution's iFIX as a Client

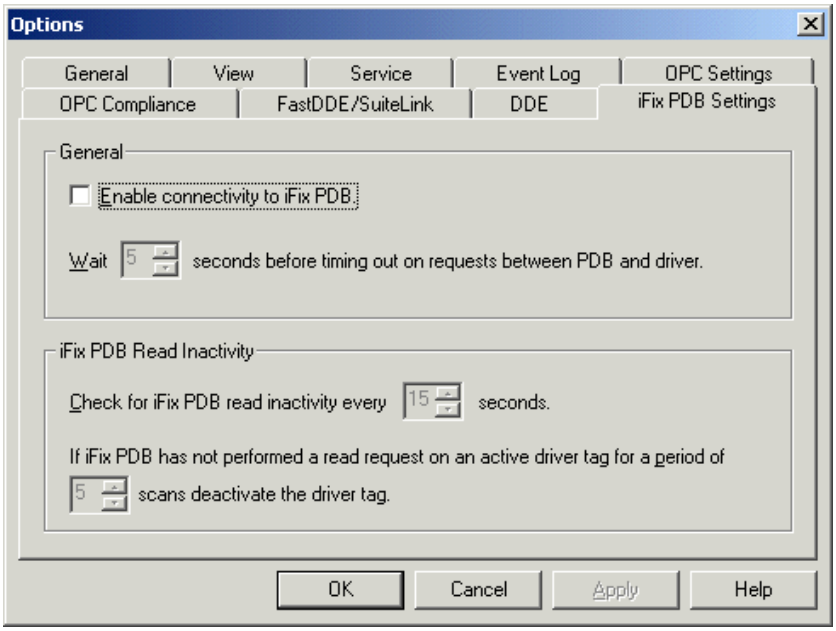
The following steps will show you how to create an IDS connection to the Server from Intellutions iFIX.

Preparing KepserverEx for an iFIX PDB Connection

1. In your KepserverEx project select Tools|Options… this will bring you to the Server Options dialog box.



2. By default the server will open to the general tab. Select the iFIX PDB Settings tab.



3. In the iFIX PDB Settings tab make sure that Enable connectivity to iFIX PDB is checked.
4. The following is a description of the fields and parameters on the tab.

The iFIX PDB Settings tab contains fields that enable you to adjust the behavior between the processing of the iFIX process database (PDB) tags and the server tags.

The following fields are available in the iFIX PDB Settings tab. It is recommended that you use the default values for each of these fields. Ensure that your settings meet the requirements of the application being used:

The "E**nable connectivity to iFIX PDB**" option allows you to turn support of the iFIX PDB interface On or Off. By default this setting will be disabled. **Important:** If iFIX PDB operation is turned off (disabled), the server will not respond to any request for data by iFIX PDB. If you intend to use the server only as an OPC server, you may want to disable Intellution iFIX PDB operation. By doing so, you can increase the security of your data and improve the overall performance of the server.

Wait xx seconds before timing out on requests between PDB and Driver – The time you set here represents the amount of time the iFIX PDB will wait for a response from an add/remove/read/write request before timing out. If the iFIX PDB times out, it will fail the request on behalf of the server. This timeout can occur if the server is busy processing other requests, or if iFIX PDB has lost communications with the server. In the case of lost communications, the iFIX PDB will automatically re-establish communications with the server so that successive timeouts do not occur.

Valid Range	**Default Value**
5 to 60 seconds	5 seconds

iFIX PDB Read Inactivity – The server maintains a list of active iFIX PDB tags that request data from the server. For each tag in the list, the server obtains data from the process hardware. The server has as an automatic data reduction system. The following two fields enable you to efficiently manage the active data, ensuring that only the necessary data is being updated.

Check for iFIX PDB read inactivity every xx seconds – Determines how often the server checks for inactive data. Based on the value you supply in this field, the server checks any data that the server determines to be inactive and removes that data item from the list.

Valid Range	**Default Value**
10 to 30 seconds	15 seconds

xx scans deactivate the tag – Establishes the condition by which the server may determine if the data is active or inactive. Each PDB tag has a scan time attached to it, as defined in the iFIX PDB. The value in this field is multiplied by that scan time to determine if the tag is no longer being read. If the tag has not been read within the time of this calculated value, that tag is considered to be inactive. When a tag is considered inactive, the server stops attempting to acquire that data from the device, and the data is removed on the next inactive scan.

Valid Range	**Default Value**
5 to 99 periods	5 periods

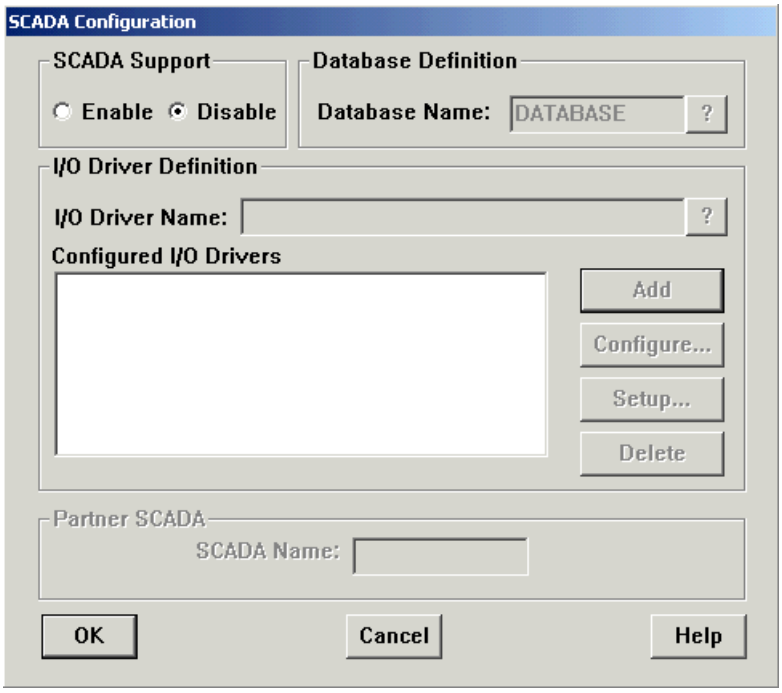
Connect to the Server from iFIX

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

Configure the SCADA Properties

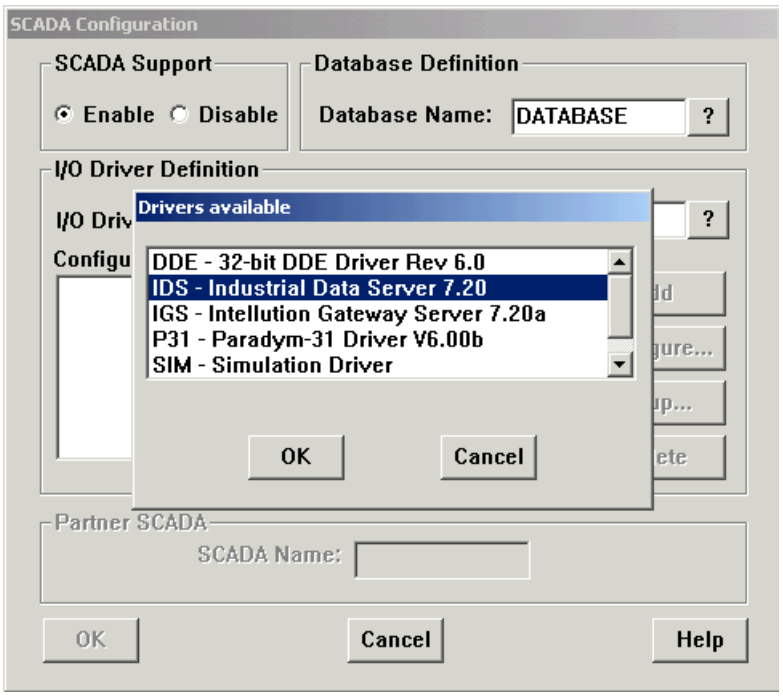
2. In the iFIX workspace, start the System Configuration Utility.

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

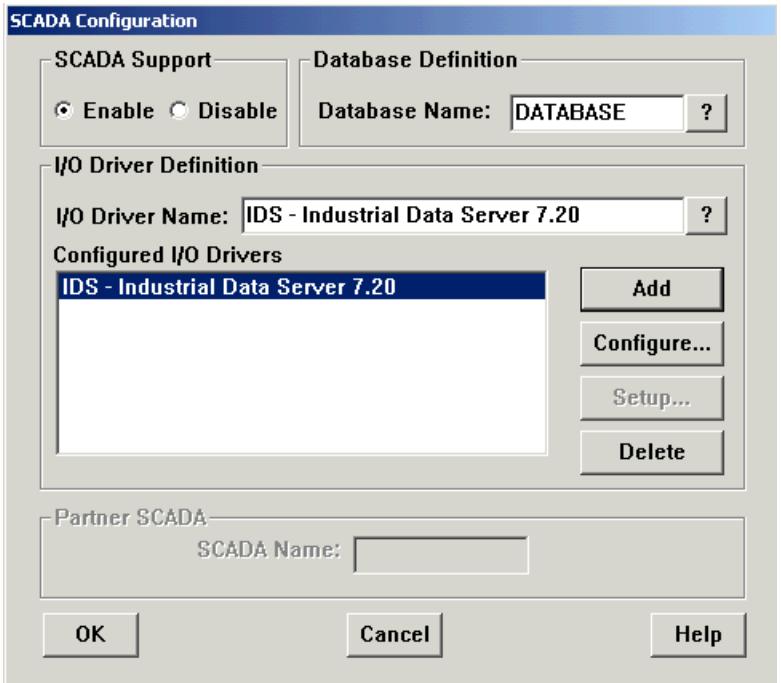


4. In the SCADA Configuration window click on the Enabled Scada Support radio button. This will activate the Database Definition section and the I/O Driver Definition. For our example we will accept the default Database Definition
5. Click on the I/O Driver Name selection button to see a list of available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

The IDS driver version you see sill probably be newer then the one displayed in this example. It will still work with KepserverEx.



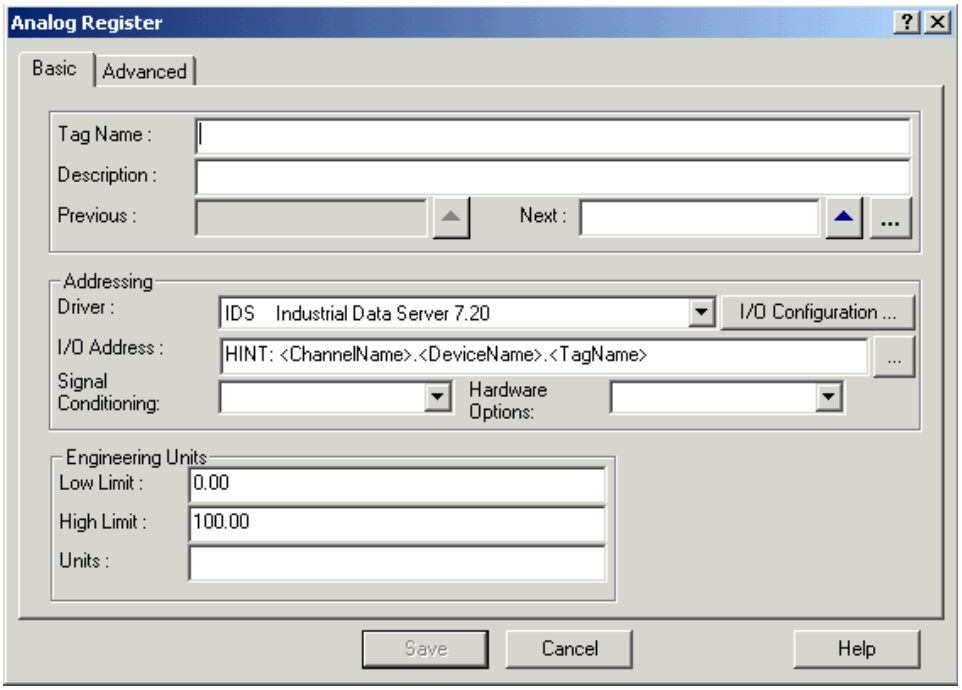
7. Click Add to place the OPC Client driver into the list of configured drivers for this project.



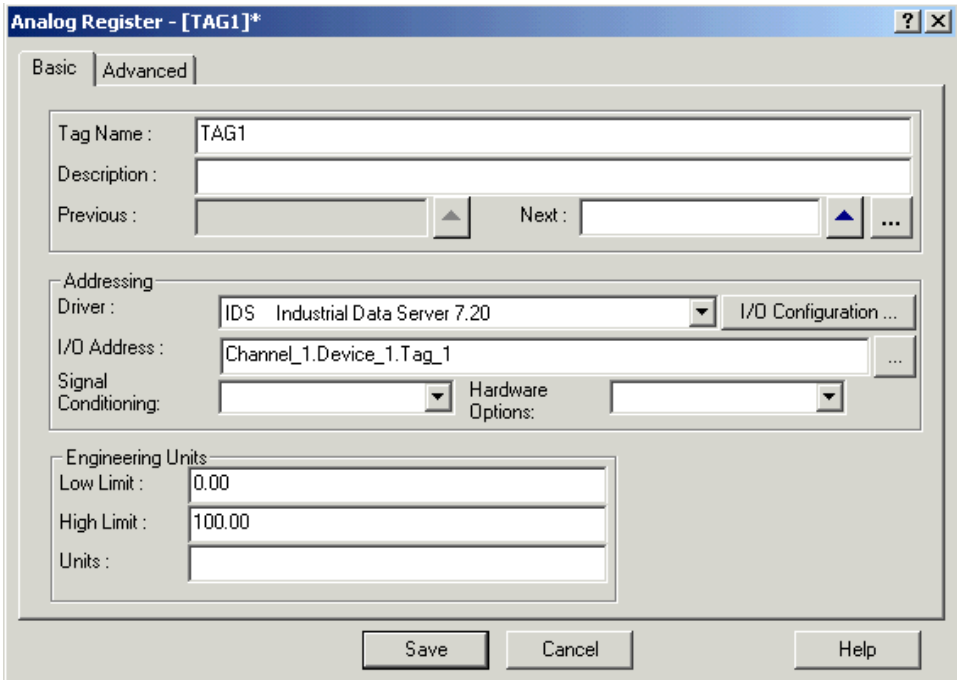
Add Tags to iFIX

Now we need to add tags to iFIX to get the data from the server.

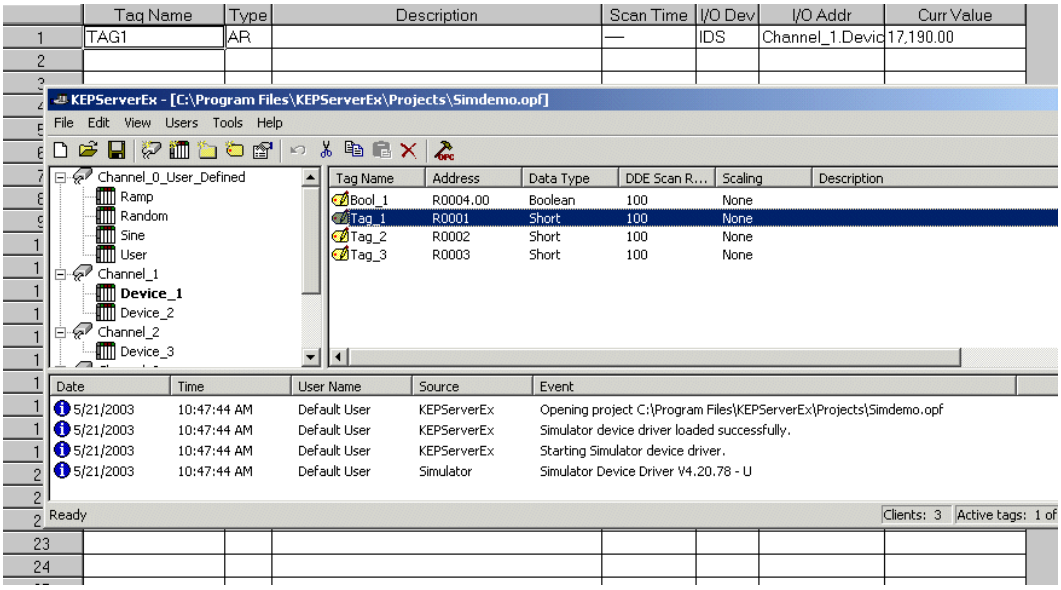
8. Launch the iFIX Database Manager.
9. Choose New Block and ensure that IDS is the driver that is selected.



10. Enter a name for the tag.
11. Next you will enter an I/O address that corresponds to the item you want in the server. The format is <Channel Name>.<Device Name>.<Tag Name or Device Address>. We entered “Channel_1.Device_1.Tag_1”.



Here you see the highlighted tag in the server which references the I/O address of the tag in iFIX.



Now that you have created a tag in iFIX you can use it in a display and see the data.

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.

– end of document –