



the smart approach to instrumentation™

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ScanServer User's Guide

p/n **1027-0901** Rev **2.0**

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About ScanServer

ScanServer is a Microsoft Windows (95/98 & NT) application that acts as a DDE Server and/or OPC (OLE for Process Control) to allow other Windows applications to access measurement data from TempScan, MultiScan, NetScan and ChartScan instruments. ScanServer supports all Windows DDE and OPC Client applications, including Wonderware's InTouch, Rockwell Software's RSVIEW, Microsoft's Excel, and Visual Basic.

Features

- Supports RS-232/422, IEEE 488, and Ethernet 10BASE-T (TCP/IP)
- Supports "Advanced DDE" and "Fast DDE" formats, standard XL Table, and CF_TEXT.
- Supports OPC Data Access Standard Release 1.0A.
- Supports strings and numerics in single channel and multichannel arrays.
- Provides DDE monitoring and diagnostic services.
- Supports measurement rates up to ten times a second.
- Supports unlimited modules over any number of communication ports.

System Requirements (Minimum)

- IBM®-compatible 486.
- Windows 95/98, or Windows NT 4.0.
- 8 MB (megabytes) of RAM (12 MB is recommended).
- 2 MB of hard disk space.
- RS232/RS422, IEEE 488, or Ethernet 10BASE-T (TCP/IP)

Specifications

Maximum Nodes Unlimited.

Communication Interface RS232/RS422, IEEE 488, and Ethernet 10BASE-T (TCP/IP)

Poll Rates **Foreground Polls:** User-set from 0.1 to 100 s; default: 1 s.

Background Polls: User-set from 1 s to 1000 s; default: 10 s.

Time-outs: User-set from 2 sec to 10 s; default: 2 s.

Automatic Retries: User-set from 1 to 10; default: 2.

Getting Started



Reference Note: To set up NetScan, TempScan, MultiScan or ChartScan hardware, refer to the setup and installation sections of the corresponding user's manual.



Reference Note: A Net232 Ethernet/RS-232 Converter is required for TempScan, MultiScan and ChartScan Ethernet Applications. The *Net232 User's Guide* (p/n 1037-0901) contains Ethernet-related information pertaining to these data acquisition systems.

Installing ScanServer

The ScanServer disks include the ScanServer program files and a simple DDE Client application useful in testing and troubleshooting DDE communications. Complete the following steps to install ScanServer on the computer hard drive:

Note: The following steps are for installing from disks. If your ScanServer program is on a CD-ROM, simply install the CD-ROM and follow the installation screen prompts.

1. Close all currently running Windows applications.
2. Insert ScanServer disk 1 in your floppy drive.
3. Choose **Start/Run** (or **File/Run** from Program Manager).
4. In the dialog box, type **a:setup.exe** (**b:setup.exe** if installing from the b drive).
5. Choose **OK** and follow the on-screen instructions.
6. ScanServer will install to the directory you specify during installation. The default directory is:

c:\Program Files\ScanServer

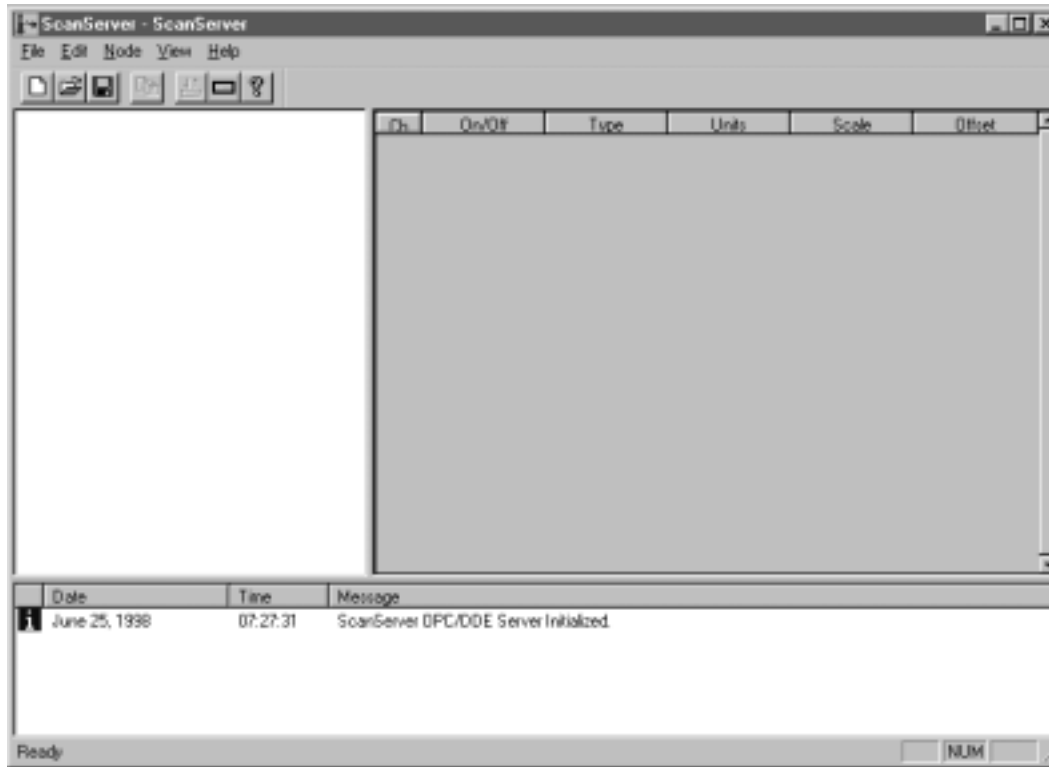
Quick Start

After you have installed ScanServer on your system, you must set up communication with the TempScan, MultiScan, NetScan, or ChartScan instrument(s) attached to your system. To do this, follow the procedures for:

1. Starting ScanServer.
2. Creating a node.
3. Configuring channels.
4. Saving the project.
5. Testing a node using the provided DDE Client.

Starting ScanServer

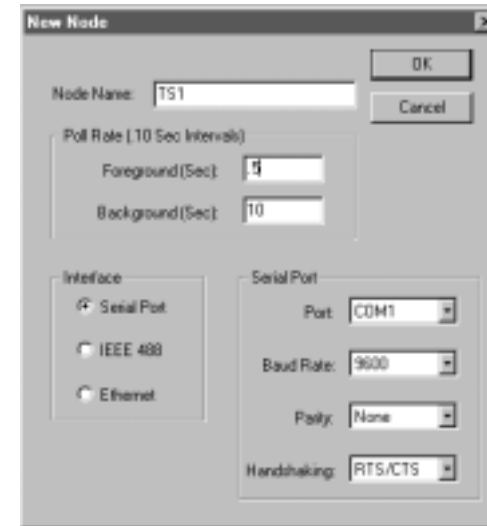
From Windows 95/98 and Windows NT4.0, choose **Start/Programs/ScanServer/ScanServer**. The ScanServer Window will open.



ScanServer Window

Creating a Node

1. From the ScanServer window, choose **Node/New Node**. The New Node dialog opens.



2. In the **Node Name** box, enter an alphanumeric string (e.g., TS1, a TempScan). This string will be used for referencing the instrument in the DDE Connect **Topic** box (discussed on page 10).
3. Set the **Foreground (Sec)** and **Background (Sec)** poll rates in the **Poll Rate** box:
 - Enter a value in the **Foreground (Sec)** box. Valid Foreground Poll Rates are 0.10 second through 10,000 seconds (in 0.10 second increments). The default Foreground Poll Rate is 1 second.
 - Enter a value in the **Background (Sec)** box. Valid Background Poll Rates are 1 second through 10,000 seconds (in 1 second increments). The default Background Poll Rate is 10 seconds).
4. From the **Interface** box; select the appropriate radio button (Serial Port, IEEE 488, or Ethernet).
5. Select the appropriate communications parameters in the Serial Port, IEEE 488, or Ethernet box.
 - For **Serial Port** (RS232/RS422) select the communication port where ScanServer is connected (e.g., COM1). Set the Baud Rate, Parity and Handshaking configuration of the device. Refer to your device user's manual as needed.

- For **IEEE 488**, enter the bus address or IEEE 488 device name assigned to the instrument.
- For **Ethernet**, enter the IP address or name.



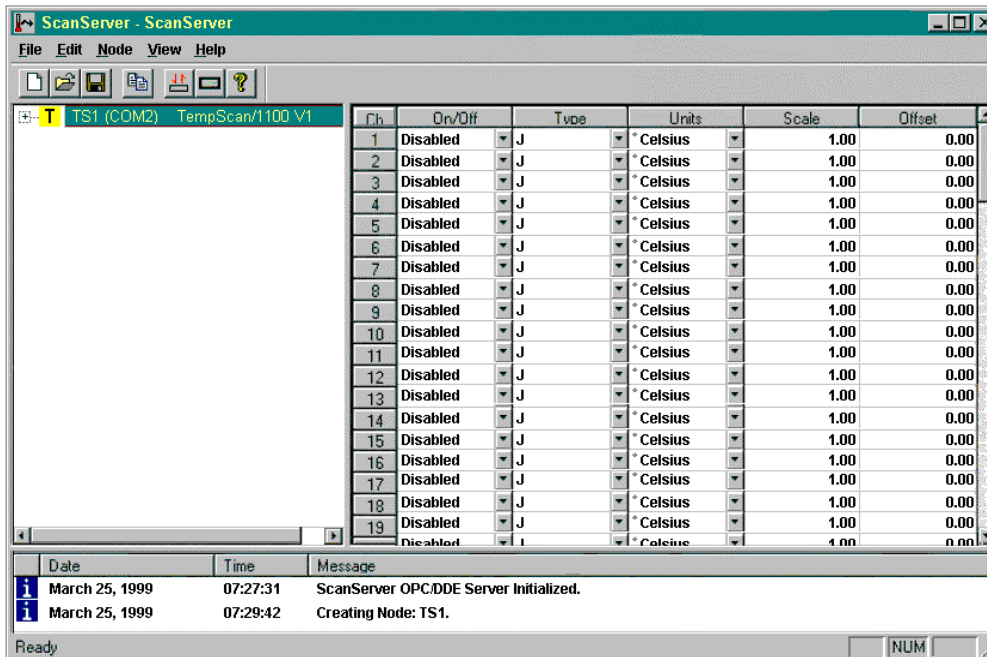
Reference Note: The communications settings must correspond to the instrument's interface configuration. Refer to the appropriate user's manual(s), as needed.



Reference Note: A Net232 Ethernet/RS-232 Converter is required for TempScan, MultiScan and ChartScan **Ethernet Applications**. The *Net232 User's Guide* (p/n 1037-0901) contains Ethernet-related information pertaining to these data acquisition systems.

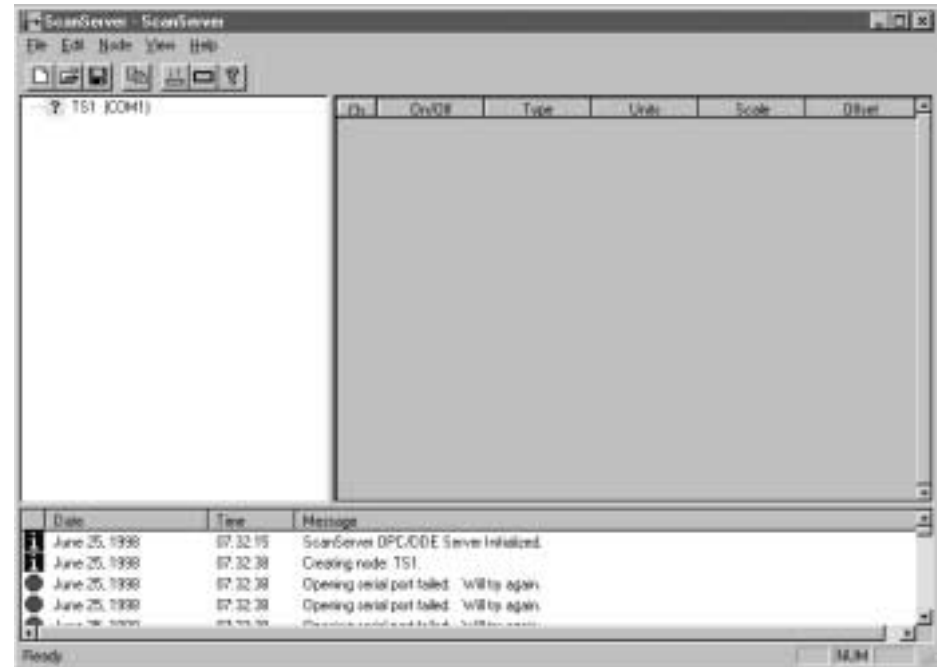
6. Ensure the instrument is connected to the selected communications port and is turned on.
7. Choose **OK**.
ScanServer now attempts to communicate with and identify an instrument using the configuration settings for the New Node.

If communications and identification are successful, a “T” icon and text (indicating the type of instrument found) are displayed in the project window.



In this screen shot, the created node (TS1) is displayed. ScanServer has detected a device at COM2 and identified the device as a TempScan/1100.

If communications or identification is not successful, a question mark (?) icon is displayed; and an error is reported in the *event* window. If this occurs, check that the instrument is powered on and connected to the appropriate communications port.



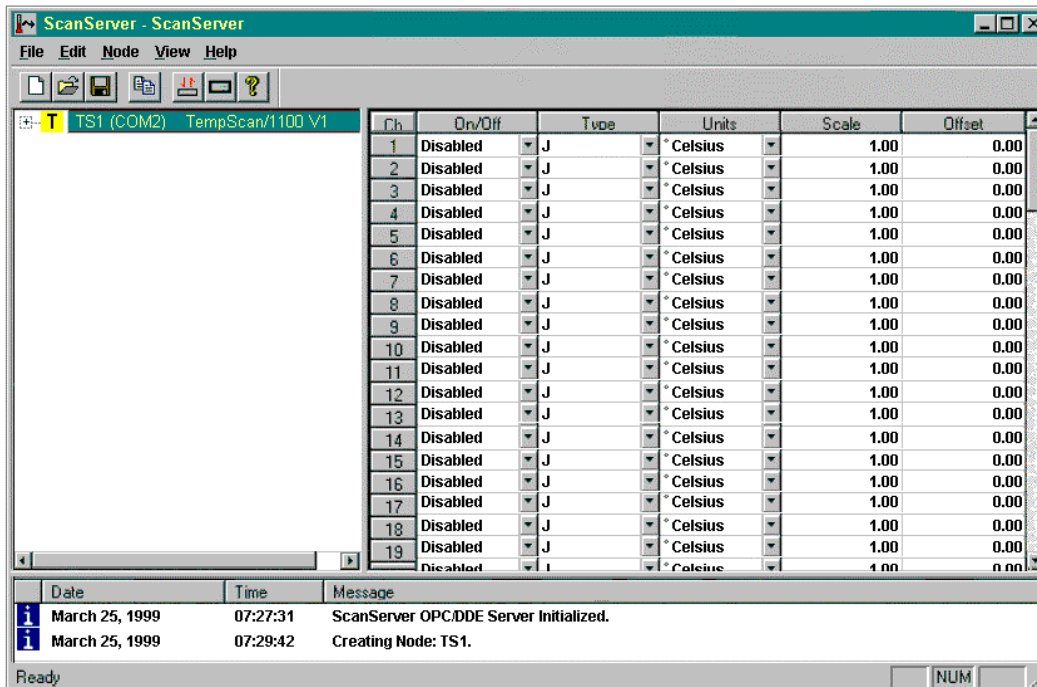
In this screen shot, a new node could not be created.

Configuring Channels

Using the configuration grid on the right side of the ScanServer window, select the appropriate type channel type and enable the channels using the drop-down controls. Configure only a few channels now. More channels may be configured later.

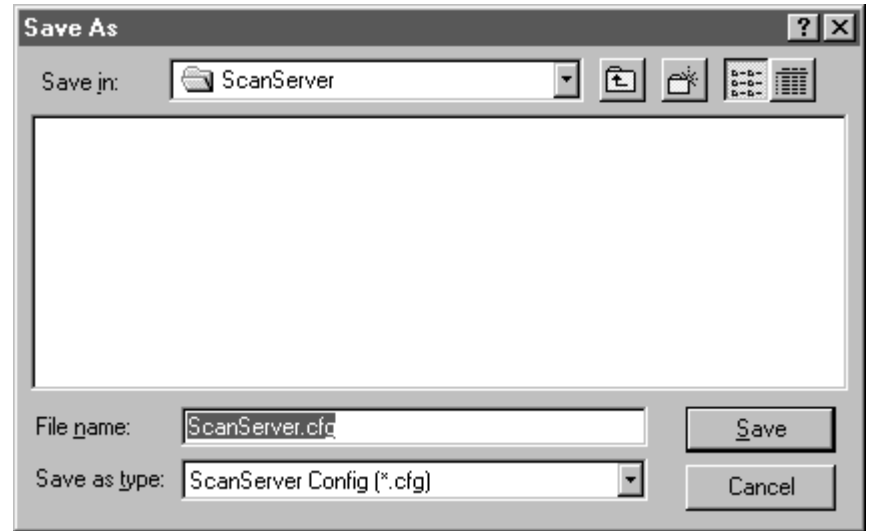
Set the Node Online

From the ScanServer window, choose **Node/Online** to set the node in the online state. The Online menu selection will be checked and the Online/Offline icon in the iconbar will be displayed as depressed.



Saving the Project

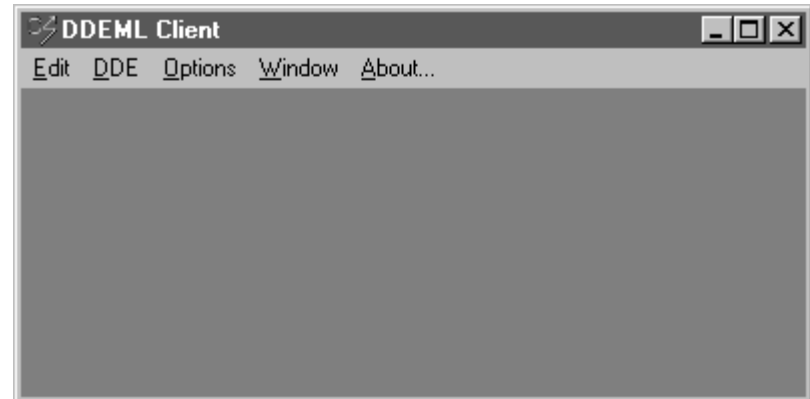
From the ScanServer window, choose **File/Save Project**. A dialog box will open, waiting for a filename to be entered. The default name is ScanServer. Enter a name and click the **Save button**.



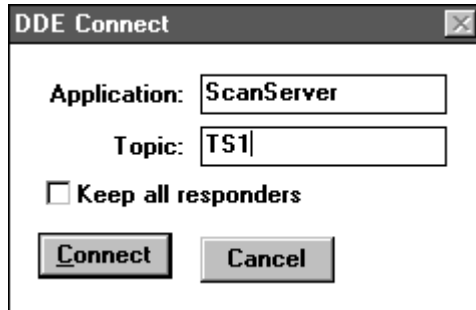
Testing the Node

We will use the DDE client supplied with ScanServer to test the node we have created.

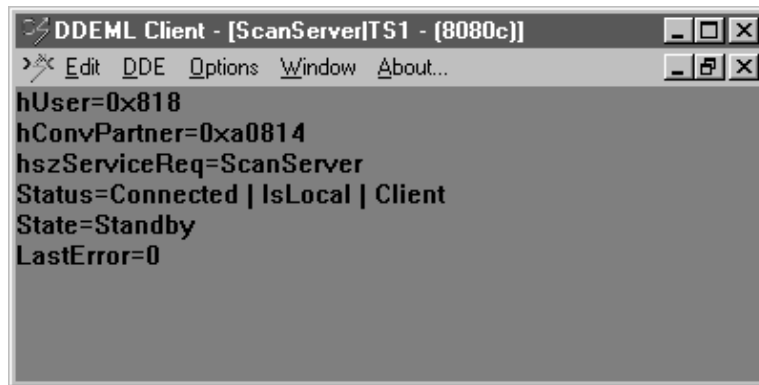
1. From Windows 95, and with ScanServer running, choose **Start/Programs/ScanServer/DDE Client**. The DDE Client Window will open.



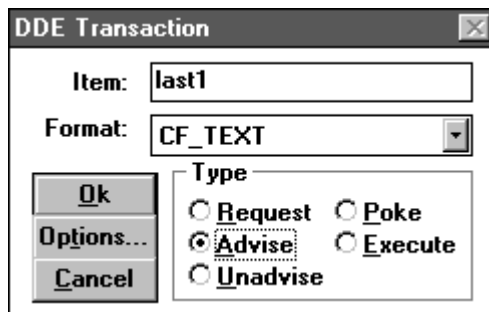
2. Choose DDE/Connect. The DDE Connect dialog will open.



3. Type **ScanServer** in the Application box.
4. In the Topic box, type the name of the node (that you currently have configured in ScanServer).
5. Click on **Connect**. Information about the node will be displayed in the DDE Client Window.

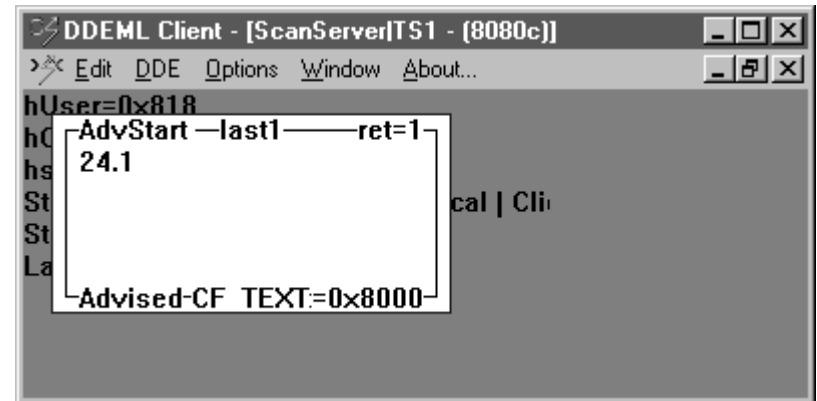


6. Choose DDE/Start Transaction. The DDE Transaction dialog will open.



7. Enter **last1** in the item box to select data from channel 1.

8. Be sure **CF_Text** is displayed in the Format box.
9. Be sure **Advise** is selected in the Type box.
10. Click on **Ok**. A transaction box will appear in the DDE Client window. Data from channel 1 of the attached ScanServer module should be displayed in the box.





Notes

Projects

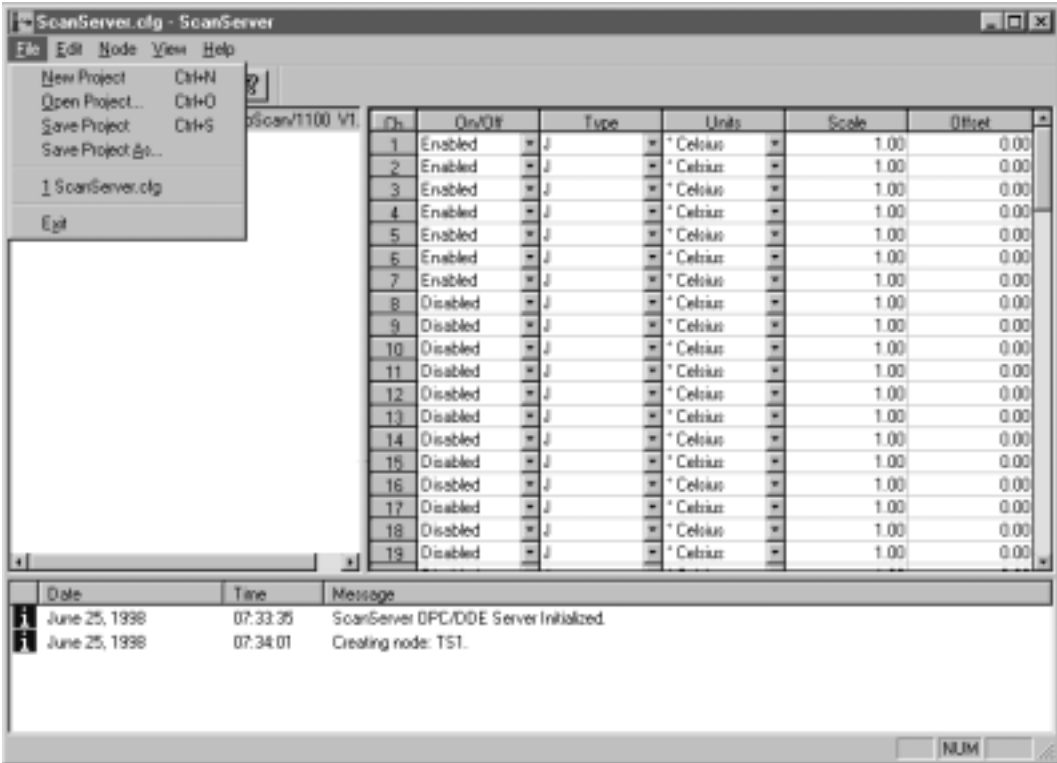
Overview

Projects are mechanisms for saving and recalling a group of configured nodes; projects are stored as .cfg files. Nodes may be added to, deleted from, or modified within a project.

Note: Only one project may be opened at a given time.

File Menu

Project options are available from the **F**ile menu.



From the **F**ile menu,

- Choose **N**ew Project... to open a new project window.
- Choose **O**pen Project... to open a previously saved project.
- Choose **S**ave Project to save changes to the open project since the last save.
- Choose **S**ave Project **A**s... to save the open project with a new name.
- Choose a project name from the list of recently open projects to open that project.
- Choose **E**xit to close the ScanServer application.

Starting a New Project

From the ScanServer window, choose **F**ile/**N**ew Project. A fresh window is displayed without any nodes.

Saving a Project

You may save an open project by choosing **F**ile/**S**ave Project from the ScanServer file menu. Saving a project makes the current project the default project when ScanServer is next started.

You can save an open project with a different name by choosing **F**ile/**S**ave Project **A**s... from the ScanServer window. The Save As dialog opens and allows you to name the project and save it in a folder of your choice.

Saving a project with a different name allows you to create a new project with similar node configurations. After renaming a project, nodes and channel configurations within it can be modified and saved as needed.

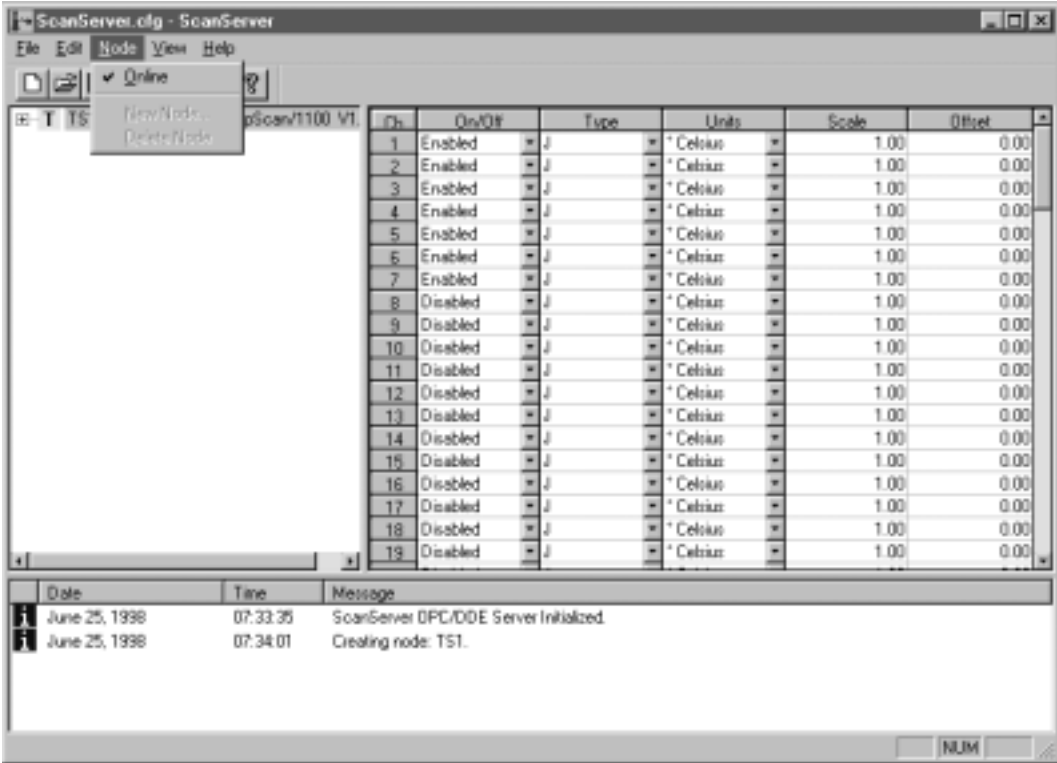
Nodes

Overview

A ScanServer Node defines a NetScan, TempScan, MultiScan, or ChartScan instrument—including its name, communication protocol, and foreground/background poll rates.

Node Menu

Node options are available from the Node menu.



From the **N**ode menu:

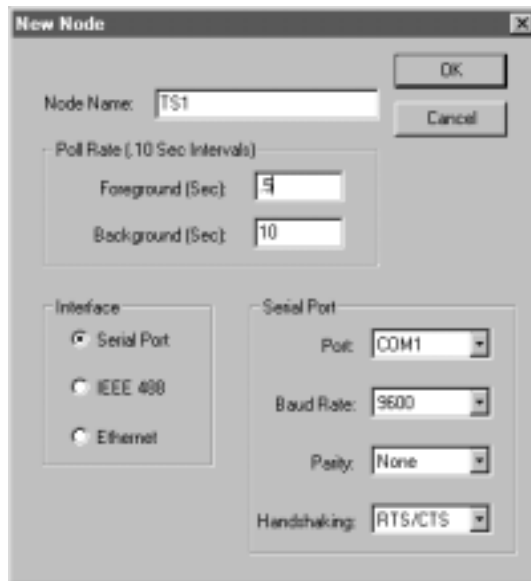
- Choose **O**nline to toggle all configured nodes between the online and offline states.

Note: ScanServer requires the nodes to be offline before allowing configuration of nodes or channels.

- Choose **N**ew Node... to open the New Node dialog from which you can enter information for a new node.
- Choose **E**dit Node... to open the Edit Node dialog from which you can change information for the selected node.
- Choose **D**elete Node... to delete the selected node from the open project.

Creating a Node

1. From the ScanServer window, choose **N**ode/**N**ew Node. The New Node dialog opens.



2. In the **Node Name** box, enter an alphanumeric string (e.g., TS1, a TempScan). This string will be used for referencing the instrument in the DDE Connect **Topic** box (discussed on page 33).

3. Set the **Foreground (Sec)** and **Background (Sec)** poll rates in the **Poll Rate** box:
 - Enter a value in the **Foreground (Sec)** box. Valid foreground poll rates are 0.10 second through 10,000 seconds (in 0.10 second increments). The default Foreground Poll Rate is 1 second.
 - Enter a value in the **Background (Sec)** box. Valid Background Poll Rates are 1 second through 10,000 seconds (in 1 second increments). The default Background Poll Rate is 10 seconds).
4. From the **Interface** box; select the appropriate radio button (Serial Port, IEEE 488, or Ethernet).
5. Select the appropriate communications parameters in the Serial Port, IEEE 488, or Ethernet box.
 - For **Serial Port** (RS232/RS422) select the communication port where ScanServer is connected (e.g., COM1). Set the Baud Rate, Parity and Handshaking configuration of the device. Refer to your device user’s manual as needed.
 - For **IEEE 488**, enter the bus address or IEEE 488 device name assigned to the instrument.
 - For **Ethernet**, enter the IP address or name.



Reference Note: The communications settings must correspond to the instrument's interface configuration. Refer to the appropriate user’s manual(s), as needed.



Reference Note: A Net232 Ethernet/RS-232 Converter is required for TempScan, MultiScan and ChartScan **Ethernet Applications**. The *Net232 User’s Guide* (p/n 1037-0901) contains Ethernet-related information pertaining to these data acquisition systems.

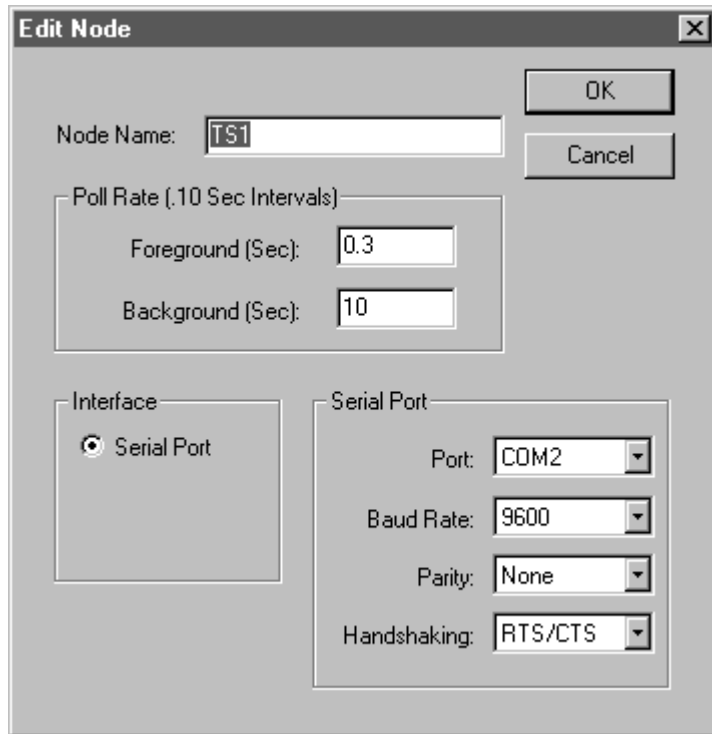
6. Ensure the instrument is connected to the selected communications port and is turned on.
7. Choose **OK**.
ScanServer now attempts to communicate with and identify an instrument using the configuration settings for the New Node.

If communications and identification are successful, a “**T**” icon and text (indicating the type of instrument found) are displayed in the project window. This is indicated in the figure on page 6.

If communications or identification is not successful, a question mark icon (?) is displayed and an error is reported in the *event* window. This is indicated in the figure on page 7.

Editing a Node

To modify an existing node, first select it with a mouse click then choose the **N**ode/**E**dit Node menu selection. The Edit Node dialog opens and allows changes to be made.



The screenshot shows the 'Edit Node' dialog box. The 'Node Name' field contains 'TS1'. The 'Poll Rate (.10 Sec Intervals)' section has 'Foreground (Sec): 0.3' and 'Background (Sec): 10'. The 'Interface' section has a radio button selected for 'Serial Port'. The 'Serial Port' section has 'Port: COM2', 'Baud Rate: 9600', 'Parity: None', and 'Handshaking: RTS/CTS'. There are 'OK' and 'Cancel' buttons at the top right.

Deleting a Node

Note: The following method deletes the mode immediately. There is no warning.

To delete a node:

1. Select the node to be deleted.
2. Choose the **N**ode/**D**elete Node menu selection (from the ScanServer window).

The selected node is deleted.

Items

Item Types

ScanServer supports both strings and numeric data types for returning data.

Numeric items, indicated by a # preceding the item name, return a float or integer value for the data item retrieved. For example,

#last1 returns: 23.752 to the client in a 4-byte floating-point variable, if 23.752 degrees is read on channel 1.

String items, indicated by a \$ preceding the item name, return data in formatted ASCII strings. For example,

\$last1 returns: 23.752 to the client as above but now in a 7-byte ASCII string.

Note: Items not preceded with a # or \$, default to numeric items.

Array data items return 2 or more String or Numeric data items. Channels may be indicated with commas separating them, with an inclusive dash between them, or with both. For example:

last1,3 returns two numeric data items, 23.752 and 24.567, assuming 23.752 degrees is read on channel 1 and 24.567 is read on channel 3.

Another example:

\$last1-3 returns three string data items, 23.752, 24.111 and 24.567.

In addition,

#last1-3,5 returns four numeric data items: 23.752, 24.111, 24.567 and 25.333

Item Names

Item	Valid Formats	Poll Rate	Description
Lastx	Numeric/String/Array	Foreground	Returns last stored data from channel(s) x. x = 1 - 992
Outputx	Numeric/String	Foreground	As a request: Returns the bit value the specified digital output bit, x, is currently set to. As a poke: Sets the bit value of digital output bit x. x = 1 - 32
Input	Numeric/String	Foreground	Returns the value of the 8 bit input port.
Inputx	Numeric/String	Foreground	Returns the bit value of the specified digital input bit x. x = 1 - 8
Time	Numeric/String	Foreground	As a request: Returns the current time from the device. As a poke: Sets the device's time; poke value syntax: hh:mm:ss .
Date	Numeric/String	Background	As a request: Returns the current date from the device. As a poke: Sets the device's date; poke value syntax: mm/dd/yyyy .
Status	String	Background	Returns the device's error status. This string is empty if no error exists.
Version	String	Background	Returns the device Firmware version string

Note: Output, Input, Time, Date, and Version commands are not channel-dependent.

Copy DDE Link

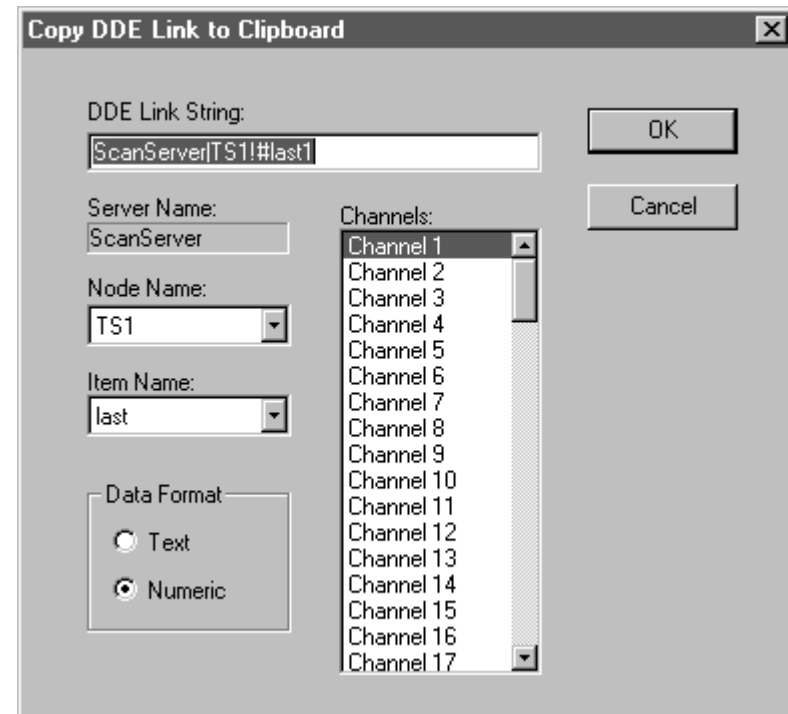
Overview

The DDE link copy feature allows you to copy information needed to create a DDE Link to the Windows clipboard. A DDE client that supports paste link can then use this information to start a DDE conversation. This feature simplifies many of the syntax problems encountered in DDE Client applications.

Copying a DDE Link

The Copy DDE Link dialog is accessed from the Edit Menu.

1. From the ScanServer window, choose **Edit/Copy DDE Link...**
The Copy DDE Link to Clipboard dialog box opens.

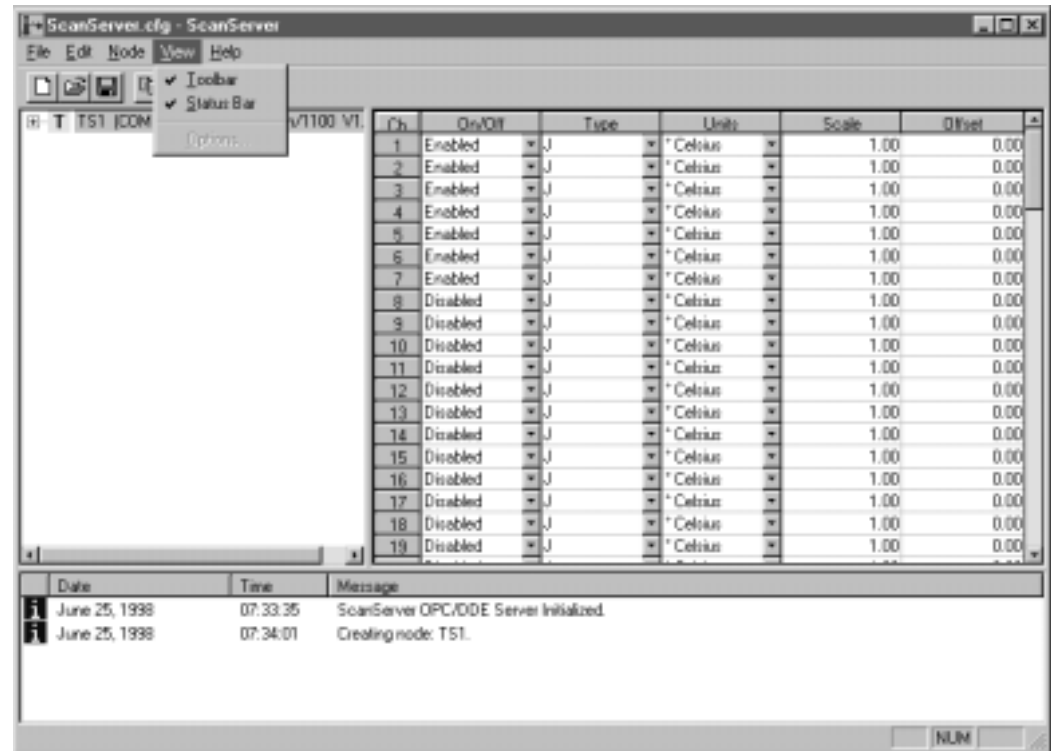


2. Enter a DDE command in the DDE Link String box, either by typing it in manually or by selecting appropriate options from the other boxes in the dialog:
 - The **Server** name is ScanServer and cannot be modified.
 - Choose a node from the pull-down list of available nodes in the **Node Name** box.
 - Choose an item from the pull-down list of available items in the **Item Name** box.
 - For channel specific commands, select the channel(s) for the command.
 - ◇ Channels are selected/deselected by clicking on them.
 - ◇ Consecutive channels are selected by selecting one channel, then pressing **SHIFT** and the first or last channel in the sequence.
 - ◇ An unordered sequence of channels is selected by pressing **CTRL** and clicking on each channel in the sequence.
 - If applicable, select either Text or Numeric as the **Data Format** for the command.
3. Choose **OK** to copy the displayed **DDE Link String** to the clipboard.

Options

View Menu

From the View menu, you can select whether to display the Toolbar and the Status Bar.



From the **V**iew menu,

- Select/deselect **T**oolbar.
 - ◇ When checked, the Toolbar is displayed under the Menu bar in the ScanServer window.
 - ◇ When not checked, the Toolbar is not displayed.
- Select/deselect **S**tatus Bar.
 - ◇ When checked, the Status Bar is displayed at the bottom of the ScanServer window.
 - ◇ When not checked, the Status Bar is not displayed.

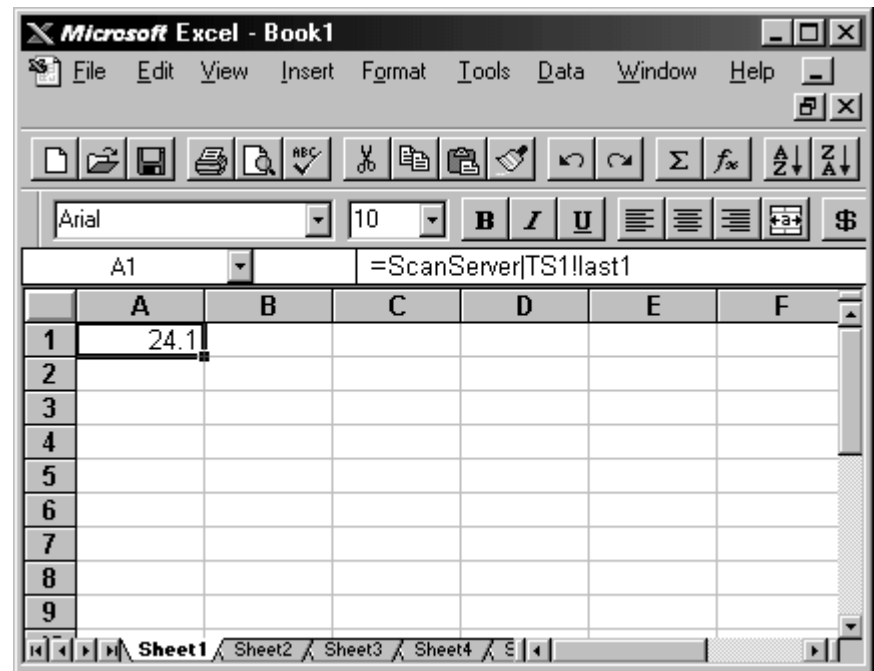


Notes

Using Microsoft Excel with ScanServer

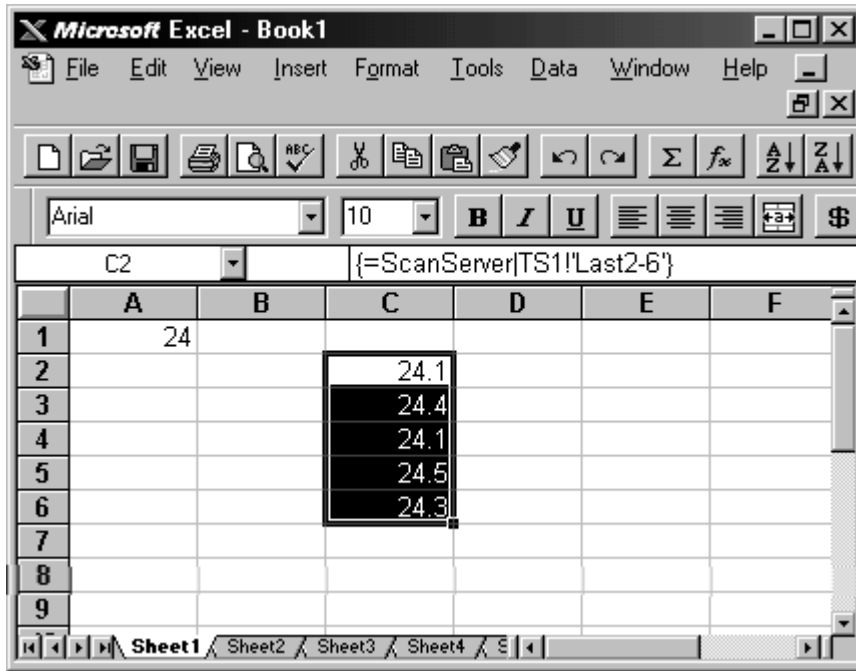
Procedures

1. Start Microsoft Excel.
Note: In Excel, DDE information must be entered in the following format:
=application|topicname|item
2. Enter the following in any empty cell:
=ScanServer|ts1|last1
where **ts1** is the node name you entered when you created the node.
3. Press **ENTER**. Data from channel 1 should be displayed as an alphanumeric string in the cell.



4. Now create an array by selecting six adjacent cells in any column.
Note: In Excel, arrays of DDE information must be entered by selecting the same number of cells as channels to be read, entering **=application|topicname|'item'**, and then pressing **CTRL-SHIFT_ENTER** to execute the command.
5. Type the following :
=ScanServer|ts1|'last1-4'

6. Press **CTRL-SHIFT-ENTER**. Numeric data from channels one through six should be displayed in the selected cells.



Tips

In Excel, DDE information must be entered in the following format:
=application|topicname!'item'

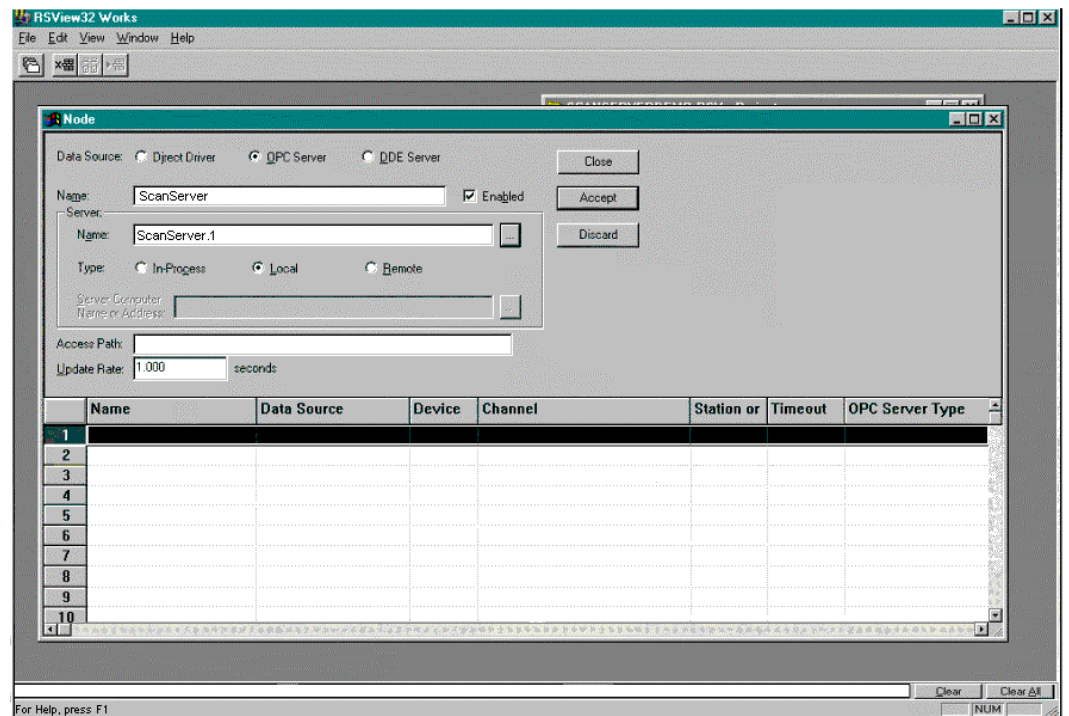
Press **CTRL-SHIFT-ENTER** to execute an array command.

The ScanServer Copy DDE Link command simplifies formatting DDE commands in Excel. We strongly recommend that you use this feature when working with Excel.

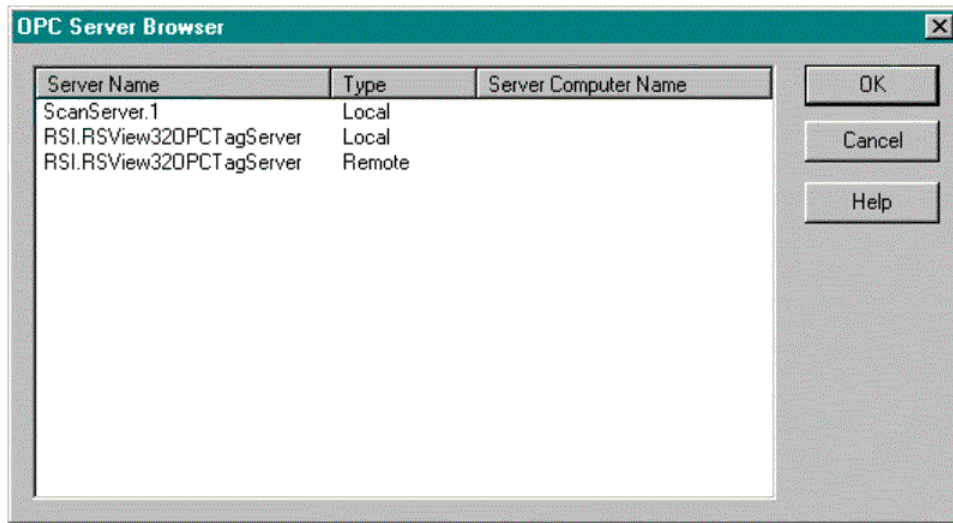
Using RSVIEW32 6.0 with ScanServer and OPC

Procedures

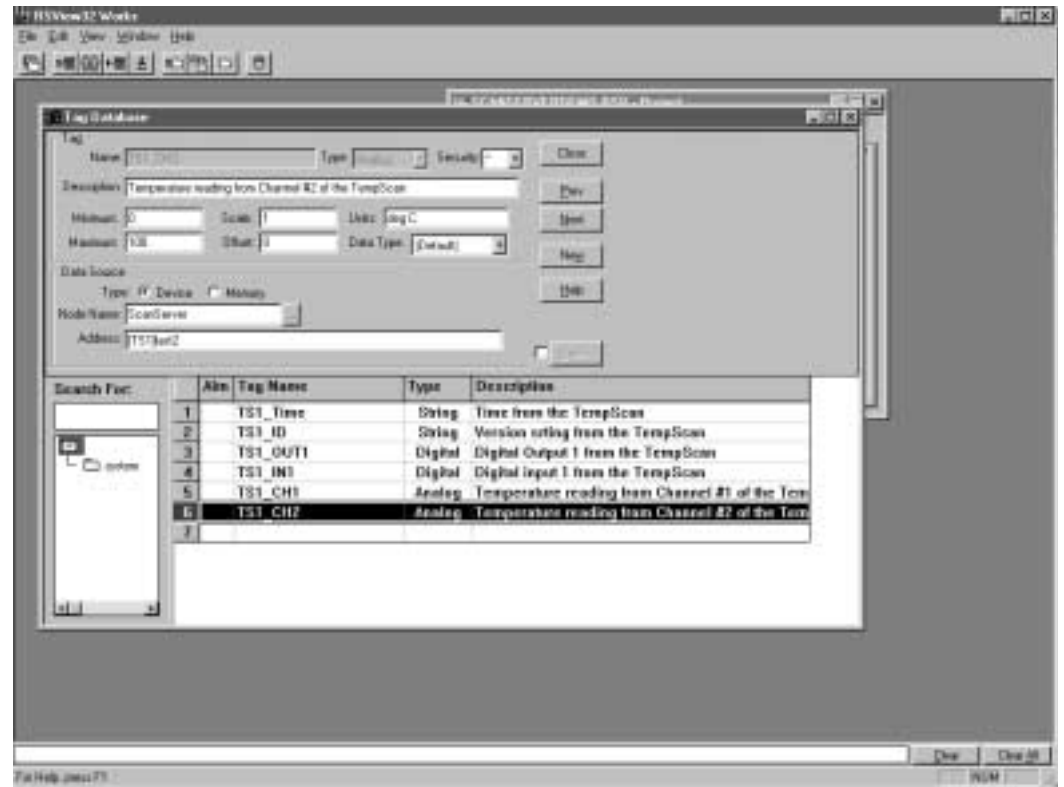
1. Start RSVIEW32 Works.
2. From an open project, create a Node using the *System Node editor*, to access the ScanServer device.



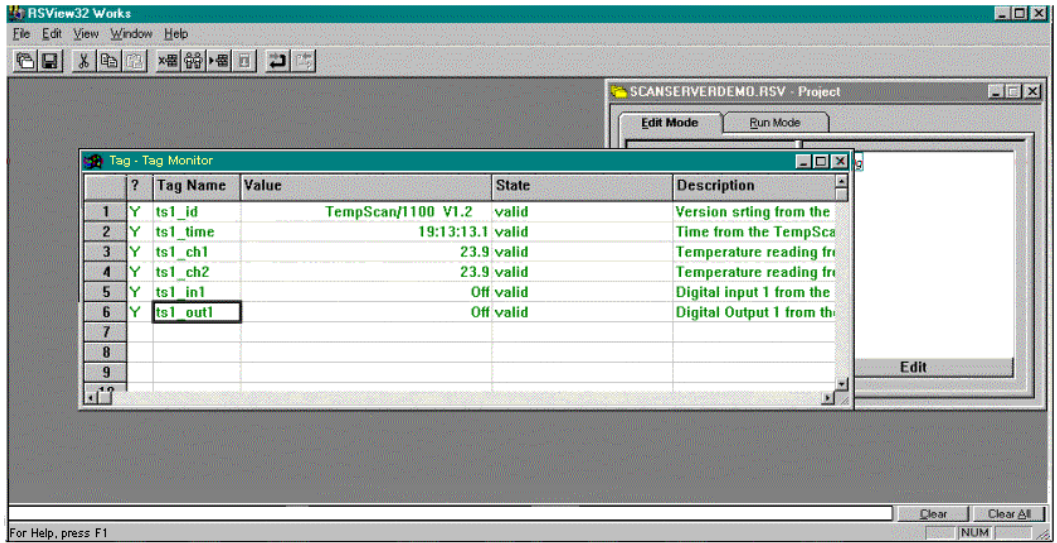
The OPC browser may be used from within the RSView32 Node Editor to easily select ScanServer from a list of the installed OPC servers.



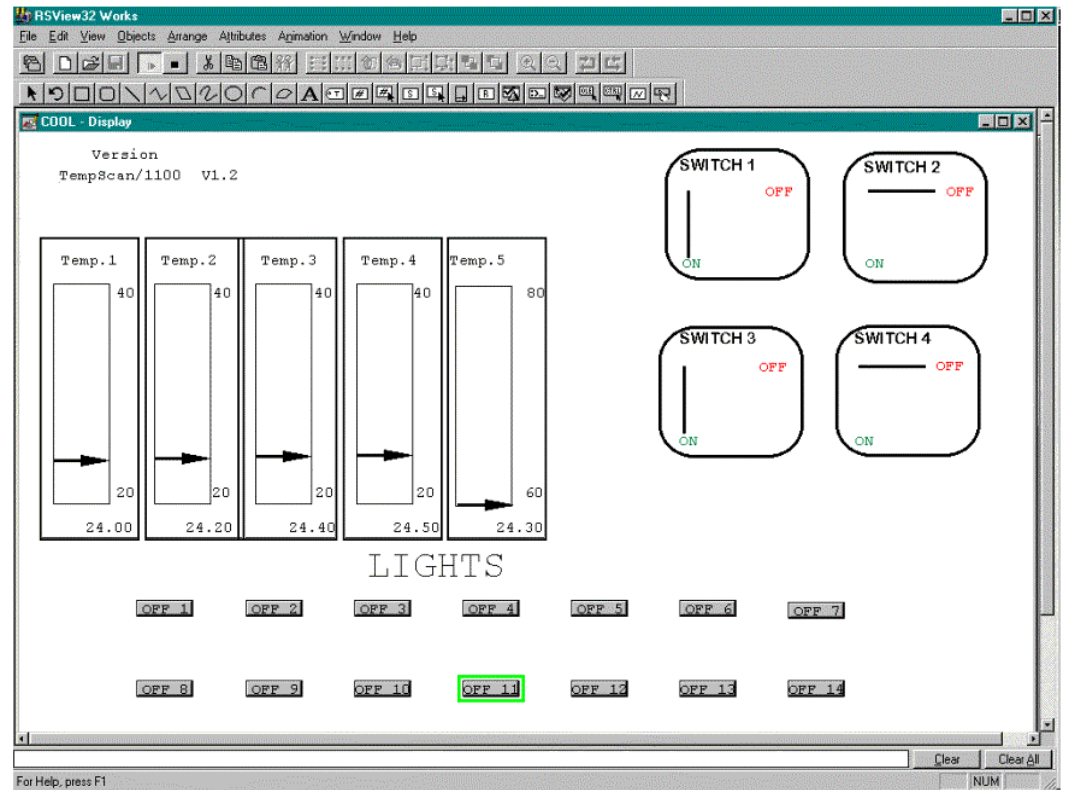
3. Create tags to access ScanServer data via the RSVIEW32 System Tag Database Editor. The tag address uses the ScanServer node name enclosed in square brackets followed by the item name.



4. Test the tags using the RSView32 System Tag Monitor.



5. Create a graphic that uses the tags.



Tips

RSView32 can use both the DDE and OPC services of ScanServer, however the OPC services are preferred because of better performance and future compatibility.

To allow RSView32 to automatically start ScanServer, its location must be added to the "Path" environment variable.



Using DDE Client with ScanServer

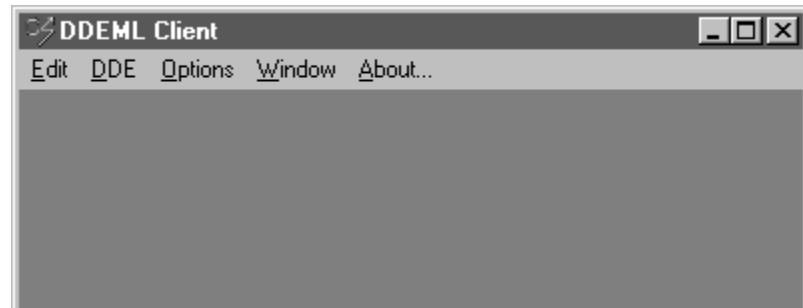
Introduction

The DDE Client application is provided as a quick and convenient way of verifying that ScanServer software is configured properly; and that the data acquisition devices are connected correctly to your system.

Note: DDE Client is for configuration verification only. It is not a data collection or data analysis application.

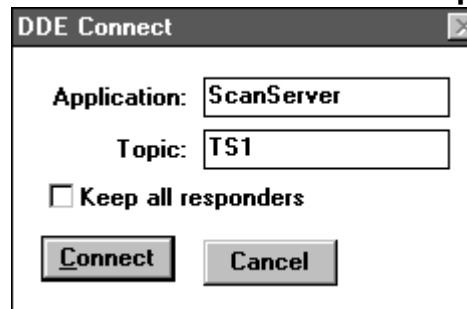
Procedures

Start DDE Client



Start the DDE client application from the "Start" menu.

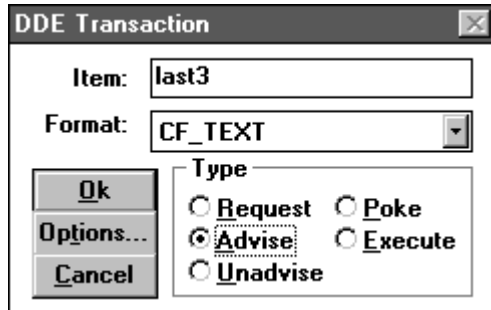
Connect to ScanServer and a Topic



Connect the DDE client to the ScanServer via the Connect item in the DDE menu.

Note: The ScanServer "Node" name is used for the DDE "Topic" name.

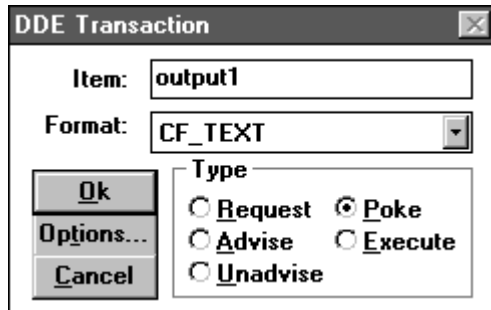
Start a Transaction



DDE transactions are started via the Start Transaction item in the DDE menu. Several types of transactions are supported. The “Advise” type is commonly used to establish a “Hot Link” with the ScanServer. Alternately the “Request” type may be used to establish a “Warn Link” with the server.

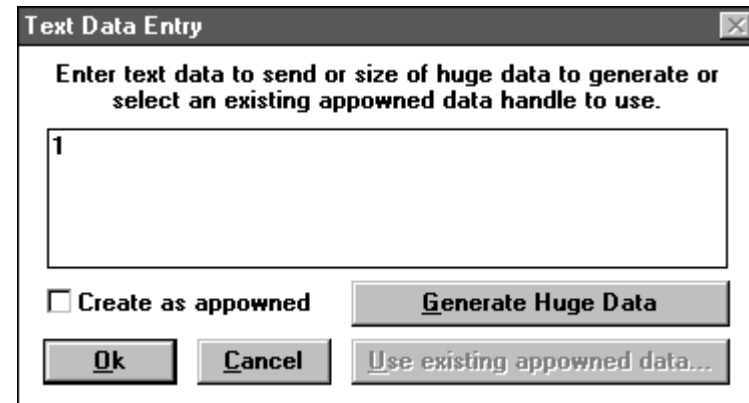
Note: ScanServer does not support Execute type transactions.

Poke a Value

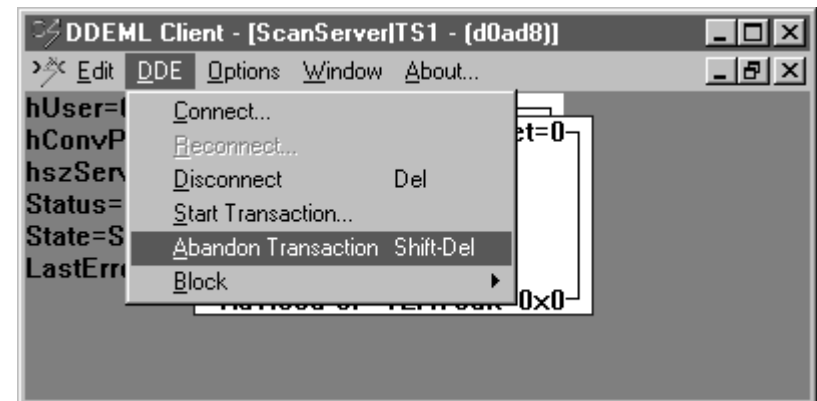


The DDE client supports sending data to the ScanServer via the Poke type transaction. Using this type of transaction, a user may set an output bit on an instrument.

When a Poke transaction is selected, the DDE client then asks for the data to be sent to the selected item, in this case a “1” is sent to output bit 1.



Abandon a transaction



Abandon transaction is used to terminate a previously established “Advise” or “Hot Link” transaction.



Notes

Glossary

AdvanceDDE	Rockwell Software's highly optimized DDE format; capable of transferring multiple data items efficiently in a single DDE message.
Advise	A DDE service that receives the specified data item from the module continually as it changes.
Background Poll Rate	The rate at which ScanServer queries the module for static data (e.g., unit ID).
CF_Text	A standard DDE format for transferring data between a DDE Server and a DDE Client; designed to transfer a single ASCII text string in a DDE message.
Communication Protocol	Mechanism or network that ScanServer uses to communicate with the ScanServer instruments (RS232/RS422 or RS485).
DDE Client	A Windows application that requests services from a DDE Server.
DDE Server	A Windows application that provides data services to a DDE Client.
DDE	Dynamic Data Exchange; Microsoft's standard inter-process communication protocol; a mechanism for transferring data between applications.
FastDDE	WonderWare's highly optimized DDE format; capable of transferring multiple data items efficiently in a single DDE message.
Foreground Poll Rate	The rate at which ScanServer queries the module for constantly changing data (e.g., meas1).
Item	Defines the specific data sent to or received from a DDE topic through the DDE Server (e.g., time or meas1)
Poke	A DDE service that sends data to the module through the DDE Server.
Project	A mechanism for saving and recalling a group of configured nodes; stored as a .cfg file.
Request	A DDE service that receives the specified data item from the module through the DDE Server.
Node	Defines a ScanServer instrument, including its name, communication protocol, and foreground and background poll rates.
XL_Table	An optimized DDE format for transferring multiple cells of data between a DDE Server and Microsoft's Excel in a single DDE message.



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