

KL3964R Communication Server for SIMATIC S7-CP340

for Microsoft Windows
and InTouch Applications

**User Manual
Ver 1.x Rev 1.5
DR 270 10
DR 270 11**

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KL3964R Communication Server for SIMATIC S7-CP340

Overview

The **KL3964R Communication Server for SIMATIC S7-CP340** (hereafter referred to as the “KL3964R Server” or “KL3964R” or “Server”) is a Microsoft Windows 32-bit application program that acts as a communication protocol server and allows other Windows programs to access data on the Simatic S7 family of Programmable Logical Controllers (PLC). The Server allows the PC to access a Siemens PLC through a CP340 setup using the 3964R protocol. Any Microsoft Windows program that is capable of acting as a **DDE**, **FastDDE**, **SuiteLink** or **OPC Client** may use the KL3964R Server.

There are two different KL3964R Server versions described in this manual:

- Server version (ordering number DR 270 10), supporting SuiteLink, FastDDE and DDE protocols; this version hereafter is referred to as the “**Suite Link & DDE**” version.
- Server version (ordering number DR 270 11), supporting OPC and DDE protocols; this version hereafter is referred to as the “**OPC & DDE**” version;

The separate installation package is supplied for each version of the Server. In both cases, the name of Server executable file is **KL3964R.EXE**. All further information in this manual is same for all versions of the Server, with the exception of few points where communication protocol specific features are explained.

Communication Protocols

Dynamic Data Exchange (DDE) is a communication protocol developed by Microsoft to allow applications in the Windows environment to send/receive data and instructions to/from each other. It implements a client-server relationship between two concurrently running applications. The server application provides the data and accepts requests from any other application interested in its data. Requesting applications are called clients. Some applications such as Wonderware InTouch and Microsoft Excel can simultaneously be both a client and a server.

FastDDE provides a means of packing many proprietary Wonderware DDE messages into a single Microsoft DDE message. This packing improves efficiency and performance by reducing the total number of DDE transactions required between a client and a server. Although Wonderware's FastDDE has extended the usefulness of DDE for the industry, this extension is being pushed to its performance constraints in distributed environments. The KL3964R Server “Suite Link & DDE version” supports the FastDDE Version 3 - an extension to Wonderware's proprietary FastDDE Version 2. This extension supports the transfer of Value Time Quality (VTQ) information. The original DDE and FastDDE Version 2 formats are still supported, providing full backward compatibility with older DDE clients. FastDDE Version 3 works on Windows 9x systems as well as Windows NT systems.

NetDDE extends the standard Windows DDE functionality to include communication over local area networks and through serial ports. Network extensions are available to allow DDE links between applications running on different computers connected via networks or modems. For example, NetDDE supports DDE between applications running on IBM compatible computers connected via LAN or modem and DDE-aware applications running on non-PC based platforms under operating environments such as VMS and UNIX.

SuiteLink uses a TCP/IP based protocol and is designed by Wonderware specifically to meet industrial needs such as data integrity, high-throughput, and easier diagnostics. This protocol standard is only supported on Microsoft Windows NT 4.0 or higher. SuiteLink is not a replacement for DDE, FastDDE, or NetDDE. The protocol used between a client and a server depends on your network connections and configurations. SuiteLink was designed to be the industrial data network distribution standard and provides the following features:

- Value Time Quality (VTQ) places a time stamp and quality indicator on all data values delivered to VTQ-aware clients.
- Extensive diagnostics of the data throughput, server loading, computer resource consumption, and network transport are made accessible through the Microsoft Windows NT operating system Performance Monitor. This feature is critical for the scheme and maintenance of distributed industrial networks.
- Consistent high data volumes can be maintained between applications regardless if the applications are on a single node or distributed over a large node count.
- The network transport protocol is TCP/IP using Microsoft's standard WinSock interface.

OPC (OLE for Process Control) is an open interface standard to provide data from a data source and communicate the data to any client application in a common standard way. The OPC is based on Microsoft OLE, COM and DCOM technologies and enables simple and standardised data interchange between the industrial or office sector and the production sector. From general point of view many aspects of OPC are similar to DDE, but main difference is in the implementation by using Microsoft's COM (Component Object Model) technology. It enables fast exchange with process automation data and OPC open interface allows access to data from OPC Server in same standard way from OPC client applications supplied by different developers.

For more information on the basics of OPC, please refer to the **OPC Specification**. The OPC Data Access Custom Interface Specification is maintained by **OPC Foundation**, the current specification is 2.04 dated September 2000.

The OPC support for KL3964R Server "OPC & DDE" version is implemented based on **FactorySoft OPC Server Development Toolkit** and it conforms to OPC Data Access Custom Interface Specification 2.04. The KL3964R Server "OPC & DDE" version is tested for compliance and is compatible with OPC Foundation OPC Data Access Compliance Test Tool.

The Suite Link, FastDDE (Version 3) and DDE support for KL3964R Server "Suite Link & DDE" version is implemented by **Wonderware I/O Server Toolkit** ver. 7.0 (060).

The FastDDE (Version 2) and DDE support for KL3964R Server “OPC & DDE” version is implemented by **Wonderware I/O Server Toolkit** ver. 5.0 (008).

Accessing Remote Items via the Server

The communication protocol addresses an element of data in a conversation that uses a three-part naming convention that includes the **application name**, **topic name** and **item name**. The following briefly describes each portion of this naming convention:

application name

The name of the Windows program (server) that will be accessing the data element. In the case of data coming from or going to Siemens equipment via this Server, the application portion of the address is **KL3964R**.

topic name

Meaningful names are configured in the Server to identify specific devices. These names are then used as the topic name in all conversations to that device. For example, **S7300**.

Note! You can define multiple topic names for the same device (PLC) to poll different items at different rates.

item name

A specific data element within the specified topic. For the **KL3964R** DDE Server, an item is an individual data bit, byte, word, timer, etc., in the PLC. The term "point" is used interchangeably with the term "item" in this User Manual. For more information on item names, see the **Item Names** section later in this manual.

Getting Started Quickly with the Server

Follow these steps:

1. Install the Server.
2. Modify the PLC program.
3. Configure the CP340 communication processor.
4. Start and configure the Server.
5. Start Client application.

Installing the KL3964R Server

Installing the Server

The KL3964R Server installation package can be supplied:

1. As a self-extracting archive (27010xxx.EXE for "Suite Link & DDE" version or 27011xxx.EXE for "OPC & DDE" version) if downloaded from Klinkmann's web site (the xxx is the current (latest) version of the Server).
2. From installation on CD.
3. On two or three distribution disks (floppies).

To **install** the KL3964R Server from the self-extracting archive, run the 27010xxx.EXE or 27011xxx.EXE and proceed as directed by the KL3964R Server Setup program.

To **install** the KL3964R Server from CD or distribution disks, on MS Windows (NT, 2000, XP or 95 (98)):

1. Insert the CD with Klinkmann Software into CD drive or insert the KL3964R Server Disk1 into a floppy drive A: or B:.
2. Select the **Run** command under the **Start** menu.
3. Run STARTUP.EXE if installing from CD or SETUP.EXE if installing from distribution disks (floppies).
4. If installing from CD: select "Protocol Servers (DDE, SuiteLink, OPC)", find "KL3964R SL and DDE Server" or "KL3964R OPC and DDE Server" and click on "Setup...".
5. Proceed as directed by the KL3964R Server Setup program.

Notes:

1. If installing the KL3964R Server "OPC & DDE" version on Windows 95 then DCOM (Distributed COM) must be installed on Windows 95 before installing the KL3964R Server. The DCOM update can be obtained, for example, from the Microsoft's web site <http://www.microsoft.com/com/dcom95/> or from Microsoft Visual C++ 5.0 and 6.0 CDs. Before starting the KL3964R Server the DCOM must be configured (both on NT and Win9x) for right "Access Permissions" and "Location" (on NT) or "Properties" (on Win 9x). See **Configuring DCOM** section in this manual for DCOM configuration details.
2. All MS Windows (both NT and 9x) applications using Microsoft's shared DLLs (e.g. MFC42.DLL and MSVCRT.DLL) must be closed before installing the KL3964R Server

“OPC & DDE” version. Otherwise there can be problems with KL3964R Server registration as OPC server. If during the KL3964R Server “OPC & DDE” version installation some warning messages about shared DLLs are displayed, then it is quite possible the KL3964R Server registration as OPC server failed. In this case after system reboot the KL3964R Server registration as OPC server can be done by starting the KL3964R Server manually with special command line parameter added: “KL3964RI /Regserver”.

When installation is finished, the subdirectory specified as a folder where to install the KL3964R Server files will contain the following files:

KL3964R.EXE	The KL3964R Server Program. This is a Microsoft Windows 32-bit application program.
KL3964R.HLP	The KL3964R Server Help file.
KL3964R.CFG	An example configuration file.
LICENSE.TXT	Klinkmann Automation software license file.
KLSERVER.DLL	Dynamic Link Library necessary for “OPC & DDE”version of the Server.
WWDLG32.DLL	Dynamic Link Library necessary only for “OPC & DDE”version of the Server.
ADDITION.ZIP	Packed file containing Simatic STEP 7 Statement List demo program and InTouch example application.

To **uninstall** the KL3964R Server, start Control Panel, select “Add/Remove Programs” and select the “KL3964R SL and DDE Server” or “KL3964R OPC and DDE Server” from the list of available software products. Click on “Add/Remove...” and proceed as directed by the UnInstallShield program.

Notes:

1. The KL3964R Server “Suite Link & DDE” version is developed with Wonderware I/O Server Toolkit (ver 7.0) and needs the **Wonderware FS2000 Common Components** to be installed on computer where the KL3964R Server is running. The Wonderware FS2000 Common Components are installed automatically when any of Wonderware FS2000 Components (e.g. InTouch or some Wonderware I/O server) is installed.
2. If KL3964R Server “Suite Link & DDE” version will run on PC where Wonderware FS2000 Common Components are not installed then a special **I/O Server Infrastructure installation package** can be obtained from Klinkmann Automation (see **Installing the I/O Server Infrastructure** section below). This I/O Server Infrastructure installation package contains the minimum set of software needed to run the KL3964R Server “Suite Link & DDE” version and these infrastructure files must be install prior to executing the KL3964R Server.
3. The HASP key is needed for full time running of KL3964R Server. The HASP Driver setup is performed during the Server setup. Without HASP Driver installed, the KL3964R Server will run only 1 hour (with all features enabled).

Installing the I/O Server Infrastructure

The I/O Server Infrastructure installation package can be supplied:

1. As a self-extracting archive (IOServerInfrastructure.exe), if downloaded from Klinkmann's web site.
2. On one distribution disk (floppy).

To **install** the I/O Server Infrastructure from the self-extracting archive, run the IOServerInfrastructure.exe and proceed as directed by the I/O Server Infrastructure Setup program.

To **install** the I/O Server Infrastructure from the distribution disk, on MS Windows (NT or 95):

1. Insert the I/O Server Infrastructure disk into a floppy drive A: or B:.
2. Select the **Run** command under the **Start** menu.
3. Type "A:SETUP" or "B:SETUP".
4. Click on **OK**.
5. Proceed as directed by the I/O Server Infrastructure Setup program.

To **uninstall** the I/O Server Infrastructure, start Control Panel, select "Add/Remove Programs" and select the "IO Server Infrastructure" from the list of available software products. Click on "Add/Remove..." and proceed as directed by the UnInstallShield program.

Note: *The I/O Server Infrastructure installation will be rejected if Wonderware FS2000 Common Components are already installed on same computer.*

Modifying Simatic S7 PLC program

To enable the PLC program to communicate with KL3964R DDE Server, modify it as described below.

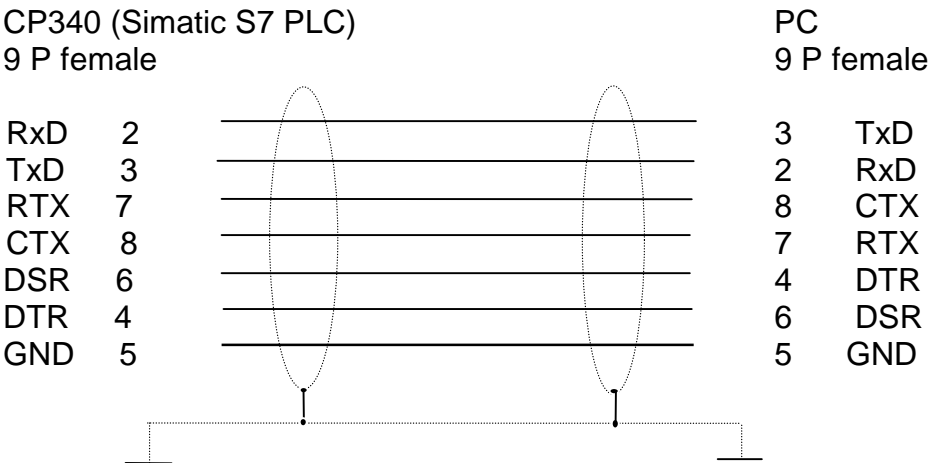
Copy FB2, FB3, FB5, DB2, DB3, DB5 blocks from KL3964R demo program to your PLC program (PLC demo program is stored in the \ADDITION subdirectory).
In your PLC program: include the **Call** instruction in the OB1 block to call the FB5 function block (CALL FB5,DB5).

IMPORTANT! The function block FB5 calls system function SFC 36. This function masks all synchronous errors (see *Error messages* section in this manual).

See the README.TXT (from **ADDITION.ZIP**) for more information.

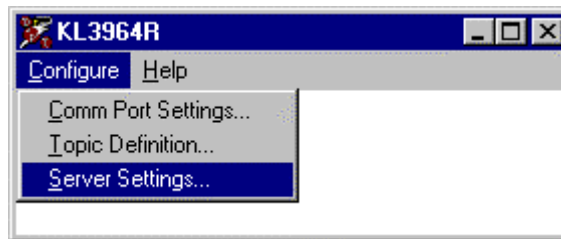
Connection Cable

To connect Simatic S7 PLC to your computer, you can either use the manufactured cable (**LIYCY 7x0,14**), or you can make your own connections cable between the computer RS-232 serial port and CP340 communication processor on the Simatic S7-300 PLC:



Configuring the KL3964R Server

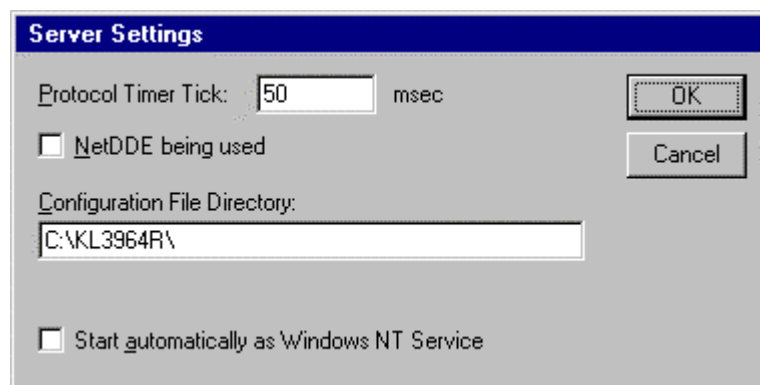
After the KL3964R Server is initially installed, a small amount of configuration is required. Configuring the Server automatically creates a **KL3964R.CFG** file that holds all of the topic definitions entered, as well as the communication port configurations. This file will automatically be placed in the same directory in which **KL3964R.EXE** is located unless the path where the configuration file will be placed is specified via the */Configure/Server Settings...* command.



Server Settings Command

A number of parameters that control the internal operation of the Server can be set. In most cases, the default settings for these parameters provide a good performance and do not require changing. However, they can be changed to fine-tune the Server for a specific environment.

To change the Server's internal parameters, invoke the */Configure/Server Settings...* command. The "Server Settings" dialog box will appear:



The following describes each field in this dialog box:

Protocol Timer Tick

This field is used to change the frequency at which the Server checks for work to do. At this frequency, the Server tries to send one data request to PLC and receive one reply from PLC. If the send/response cycle is too long then more than one activation of Server is necessary to process it. If computer is very busy or some other MS Windows application is taking over the computer then the Server is activated rarely than setting in the **Protocol Timer Tick**.

Note: The default value is 50 milliseconds. The minimum value is 10 milliseconds.

NetDDE being used

Select this option if you are networking using NetDDE.

Configuration File Directory

This field is used to specify the path (disk drive and directory) in which KL3964R will save its current configuration file. The KL3964R Server will use this path to load the configuration file the next time it is started.

Note: Only the "path" may be modified with this field. The configuration file is always named **KL3964R.CFG**.

Note: There is no limit to the number of configuration files created, although each must be in a separate directory. When using the KL3964R Server with **InTouch**, it is good practice to place the configuration file in the application directory.

Start automatically as Windows NT Service

Enabling this option will cause the KL3964R Server "Suite Link & DDE" version to start as a Windows NT service.

Windows NT offers the capability of running applications even when a user is not logged on to the system. This is valuable when systems must operate in an unattended mode. Enabling this option and rebooting the system will cause the Server to run as a Windows NT service. However, to view configuration information or to reconfigure the Server, the user must log on to the system. Any Server related problems that may arise such as missing adapter cards, licensing failures or device drivers not loading will not be visible to the user until a log on is performed. Disabling this option and rebooting the system will cause the Server to run as a Windows NT application program once again.

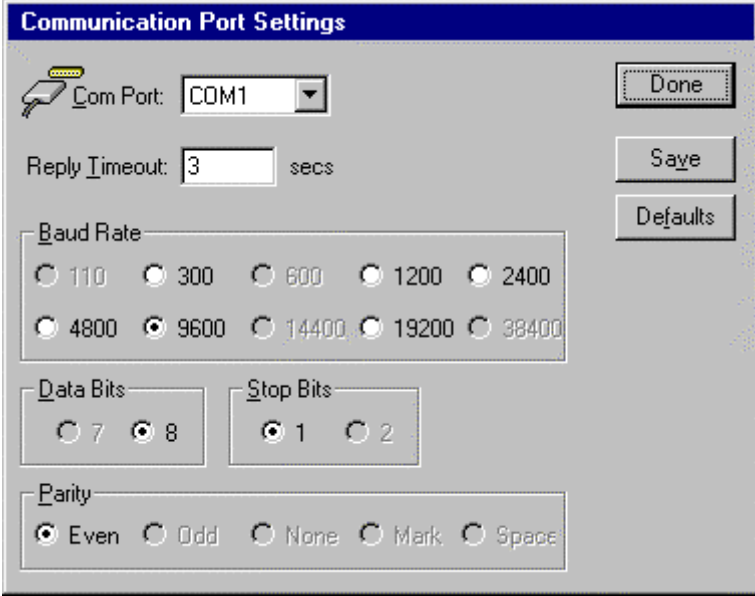
Notes:

1. The **Start automatically as Windows NT Service** feature can be activated only with KL3964R Server "Suite Link & DDE" version. To start the KL3964R Server "OPC & DDE" version as Windows NT Service, refer to **Running KL3964R "OPC & DDE" version as Windows NT Service** section of this manual.
2. The Service Startup configuration can be changed by MS Windows NT **Control Panel/Services** configuration dialogs. The **Allow Service to Interact with Desktop** checkbox in "Service" dialog box must be checked (the "Service" dialog box can be invoked by pressing the "Startup" button on "Services" dialog box when Service **KL3964R_IOServer** is selected). If **Allow Service to Interact with Desktop** is not selected then KL3964R Server full functionality is not ensured (e.g. the Server configuration can not be changed, no message boxes will be displayed, etc.).

Once all entries have been made, click on **OK**.

Com Port Settings Command

This command is used to configure the communication port that will be used to communicate with SIMATIC S7-CP340 PLC. Invoke the */Configure/Com Port Settings...* command. The "Communication Port Settings" dialog box will appear.

The image shows a "Communication Port Settings" dialog box. It has a title bar with the same text. Inside, there's a "Com Port:" label next to a dropdown menu showing "COM1". To the right of this is a "Done" button. Below the port selection is a "Reply Timeout:" label followed by a text box containing "3" and the unit "secs". To the right of this is a "Save" button. Below the timeout is a "Baud Rate" section with two rows of radio buttons. The first row has 110, 300, 600, 1200, and 2400. The second row has 4800, 9600 (which is selected), 14400, 19200, and 38400. Below the baud rate is a "Data Bits" section with radio buttons for 7 and 8 (8 is selected). To the right of this is a "Stop Bits" section with radio buttons for 1 (selected) and 2. Below these is a "Parity" section with radio buttons for Even (selected), Odd, None, Mark, and Space. To the right of the baud rate, data bits, and parity sections is a "Defaults" button.

Select the **Com Port** and examine the characteristics of the selected Port. To select a necessary Com Port, click on the combo box button and make your choice from the list box.

The **Reply Timeout** field is used to enter the amount of time (in seconds) the Simatic S7 PLC using the selected communication port will be given to reply to commands from the Server.

Note: The default value of 3 seconds is sufficient for most configurations. If BaudRate slower than 2400 is selected, this timeout should be increased.

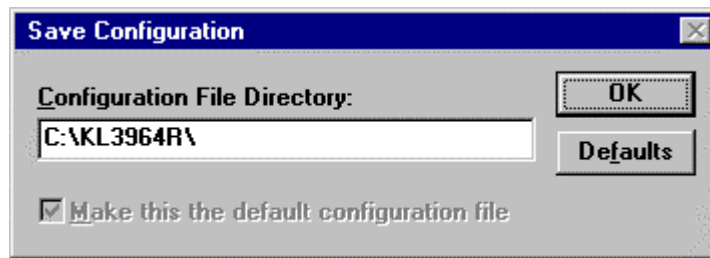
Check communication **BaudRate** that matches the hardware settings (*the default value - 9600*).

The following other communication parameters are used: *8 Data Bits, 1 Stop Bit, Even Parity*. These parameters can not be changed.

Once all entries have been made, select **Done** to process the configuration for the communication port. To reset the default values, click on **Defaults**.

Saving KL3964R Configuration File

If the configuration file does not currently exist, or a new configuration path has been specified, the Server will display the "Save Configuration" dialog box:



This dialog box displays the path where the Server is going to save the current configuration file. The path may be changed if necessary. Also, the path can optionally be recorded in the **WIN.INI** file by selecting the "**Make this the default configuration file**" option. Doing so it will allow the KL3964R Server to find the configuration file automatically each time it is started.

Configuration File Location

When the KL3964R Server starts up, it first attempts to locate its configuration file by first checking the **WIN.INI** file for a path that was previously specified. If the path is not present in the **WIN.INI** file, the Server will assume that the current working directory is to be used.

To start the Server from an application directory configuration file other than the default configuration file a special switch (**/d:**) is used. For example, invoke the **Start/Run** command and enter the following:

KL3964R/d:c:\directoryname

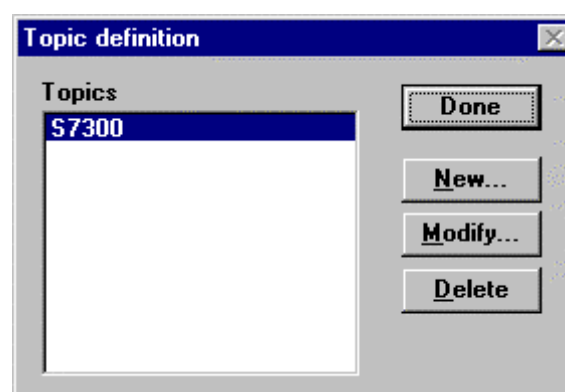
Note: There is no limit to the number of configuration files that may be created, although each must be in a separate directory.

Topic Definition Command

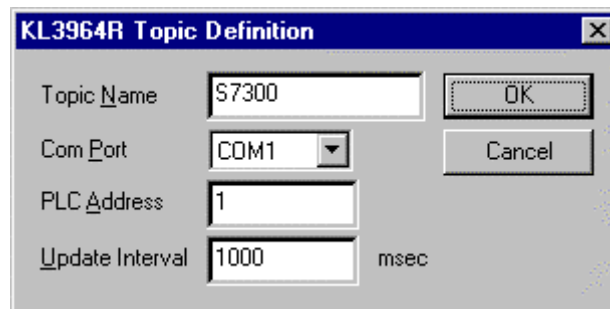
The user provides each connected Siemens PLC with an arbitrary name that is used as the Topic Name for all references to this PLC.

The following steps are taken to define the Topic attached to the PLC:

1. Invoke the Configure/Topic Definition... The "Topic definition" dialog box will appear:



2. To modify an existing topic, select the topic name and click on **Modify**. To define a new topic, click on **New**. The "KL3964R Topic Definition" dialog box will appear:

The image shows a Windows-style dialog box titled "KL3964R Topic Definition". It contains four input fields: "Topic Name" with the text "S7300", "Com Port" with a dropdown menu showing "COM1", "PLC Address" with the text "1", and "Update Interval" with the text "1000" and a unit label "msec" to its right. There are two buttons on the right side: "OK" and "Cancel".

3. Enter the **Topic Name**.

Note: If using *InTouch* the same Topic Name is to be entered in the "Add Access Name" dialog box described in the *Using the KL3964R Server with InTouch* section.

4. Click on the **Com Port** button to associate a topic with the communication port.
Note: Additional topics may be associated with the same communication port later.
5. The **PLC Address** entry is reserved for RS422/485 and is *not relevant* for RS232 communication. (Default value is 1.)
6. Set the **Update Interval** field to indicate the frequency the items/points on this topic will be read (polled). Default value is 1000 milliseconds.

When all entries have been made, click on **OK** to process the configuration for this topic.

Select **Done** in "Topic definition" dialog box when configuration for all Topics has been performed.

Item Names

The KL3964R DDE Server supports item/point names that are consistent with the point naming used by Siemens PLCs. The tables below list the item/point names supported by the KL3964R DDE Server:

Data Blocks

Data Format	Items	Suffix	DDE Tag Type	Range
Bit	<i>DBm.DBXb.i</i>		Discrete	0 or 1
Byte	<i>DBm.DBBb</i>	KF	Integer Integer	0 to 255 -128 to 127
Word	<i>DBm.DBWn</i>	KF BCD KT S5T	Integer Integer Integer Message Message	0 to 65535 -32768 to 32767 -999 to 999 0.0 to 999.3 0 ms to 2 h 46 m 30 s
Double Word	<i>DBm.DBDbk</i>	BCD KG	Integer Integer Real	-2147483648 to 2147483647 -99999999 to 99999999 Floating point
String	<i>DBm.DBSb.z</i>		Message	1 to 255

Note: All data blocks are **Read/Write** ($m=1$ to 65535, $b=0$ to 65535, $l=0$ to 7, $n=0$ to 65534, $k=0$ to 65532, z = length of character string, $z \leq 65535$).
Also is used abbreviated items names without (.DB); e.g. DB12W24BCD.

Flags

Data Format	Items	Suffix	DDE Tag Type	Range
Bit	<i>Fb.i or Mb.i</i>		Discrete	0 or 1
Byte	<i>FBb Or MBb</i>	KF	Integer Integer	0 to 255 -128 to 127
Word	<i>Fwn Or Mwn</i>	KF BCD KT S5T	Integer Integer Integer Message Message	0 to 65535 -32768 to 32767 -999 to 999 0.0 to 999.3 0 ms to 2 h 46 m 30 s
Double Word	<i>FDk Or MDk</i>	BCD KG	Integer Integer Real	-2147483648 to 2147483647 -99999999 to 99999999 Floating point

Note: All flags are **Read Only** ($b=0$ to 255, $i=0$ to 7, $n = 0$ to 254, $k = 0$ to 252).

Inputs

Data Format	Items	Suffix	DDE Tag Type	Range
Bit	<i>lb.i or Eb.i</i>		Discrete	0 or 1
Byte	<i>lBb or EBb</i>	KF	Integer Integer	0 to 255 -128 to 127
Word	<i>lwn or Ewn</i>	KF BCD KT S5T	Integer Integer Integer Message Message	0 to 65535 -32768 to 32767 -999 to 999 0.0 to 999.3 0 ms to 2 h 46 m 30 s
Double Word	<i>IDk or EDk</i>	BCD KG	Integer Integer Real	-2147483648 to 2147483647 -9999999 to 9999999 Floating point

Note: All inputs are **Read Only** ($b=0$ to 65535, $i=0$ to 7, $n=0$ to 65534, $k=0$ to 65532).

Outputs

Data Format	Items	Suffix	DDE Tag Type	Range
Bit	<i>Qb.i or Ab.i</i>		Discrete	0 or 1
Byte	<i>QBb or ABb</i>	KF	Integer Integer	0 to 255 -128 to 127
Word	<i>Qwn or Awn</i>	KF BCD KT S5T	Integer Integer Integer Message Message	0 to 65535 -32768 to 32767 -999 to 999 0.0 to 999.3 0 ms to 2 h 46 m 30 s
Double Word	<i>QDk or ADk</i>	BCD KG	Integer Integer Real	-2147483648 to 2147483647 -9999999 to 9999999 Floating point

Note: All outputs are **Read Only** ($b=0$ to 65535, $i=0$ to 7, $n=0$ to 65534, $k=0$ to 65532).

Counters

Data Format	Items	Suffix	DDE Tag Type	Range
Word	<i>Cn</i>		Integer	0 to 999

Note: All counters are **Read Only** ($n=0$ to 255).

Timers

Data Format	Items	Suffix	DDE Tag Type	Range
Word	T_n	BCD KT S5T	Integer Message Message	0 to 3999 0.0 to 999.3 0 ms to 2 h 46 m 30 s

Note: All timers are **Read Only** ($n=0$ to 255).

Item/Point Naming Examples

The following examples show the correct format for item/point names:

DB10.DBX20.2 or **DB10.DX20.2** or **DB10.X20.2** or **DB10X20.2**

data block 10
bit 2 of data byte 20

DB12.DBB1234 or **DB12.DB1234** or **DB12.B1234** or **DB12B1234**

data block 12
data byte 1234
value in the controller is binary and has a range of 0 to 255

DB20.DBW101KF or **DB20.DW101KF** or **DB20.W101KF** or **DB20W101KF**

data block 20
data word 101
value in the controller is binary and has a range of -32768 to 32767

DB10.DBW14BCD or **DB10.DW14BCD** or **DB10.W14BCD** or **DB10W14BCD**

data block 10
data word 14
value in the controller is in BCD format and has a range of -999 to 999

DB20.DBW28KT or **DB20.DW28KT** or **DB20.W28KT** or **DB20W28KT**

data block 20
data word 28
value in the controller is in timer BCD format and has a range of 0 to 3999

DB20.DBW28S5T or **DB20.DW28S5T** or **DB20.W28S5T** or **DB20W28S5T**

data block 20
data word 28
value in the controller is in timer BCD format and has a range of 0 to 3999

DB10.DBS28.115 or **DB10.DS28.115** or **DB10.S28.115** or **DB10S28.115**

data block 10
value in the controller is character string containing 115 bytes and starting at data byte 28

F100.4 or **M100.4**

bit 4 of flag byte 100

FD17KG or MD17KG

flag double word 17

value in the controller is binary floating point

I4.0 or E4.0

bit 0 of input byte 4

QW12KC or AW12KC

output word 12

value in the controller is in binary format and has a range of 0 to 999

C10BCD

counter word 10

value in the controller is in counter BCD format and has a range of 0 to 999

T1S5T

timer word 1

value in the controller is in timer BCD format and has a range of 0 to 3999.

Monitoring and Controlling Communication with a PLC

For each topic, there are following additional items offered by KL3964R Server to monitor and control the communication with PLC.

STATUS

For each topic, there is a built-in discrete item that indicates the state of communication with PLC. The discrete item (**STATUS**) is set to **0** when communication fails and set to **1** when communication is successful. The **STATUS** value is set to 0 after 3 consecutive unsuccessful retries to communicate with this PLC.

From **InTouch** the state of communication may be read by defining an I/O Discrete tagname and associating it with the topic configured for the PLC and using **STATUS** as the item name.

From **Excel**, the status of the communication may be read by entering the following formula in a cell:

=KL3964R|topic!STATUS

where **topic** is the name of topic (e.g. plc01) configured for PLC.

UPDATEINTERVAL

The **UPDATEINTERVAL** item is an Integer type Read/Write item used to access the currently set Update Interval (see *Topic Definition Command* section). It indicates the current requested update interval (in milliseconds). The value of this item can be read through DDE, Suite Link or OPC. Client can poke new values to this item. The range of valid values is from 10 to 2147483647 milliseconds. The value of zero indicates that no

items on this topic are updated. The write commands are still executed (new values written to PLC) if **UPDATEINTERVAL** value is 0 (zero).

Note: By poking a value of zero to the **UPDATEINTERVAL** item, a client can stop all update activities on the corresponding topic without having to deactivate the items.

MAXINTERVAL

The **MAXINTERVAL** item is an Integer type Read Only item used to access the measured maximum update interval (in milliseconds) of all items for the corresponding topic for the last completed poll cycle. The range of valid values is from 0 to 2147483647 milliseconds.

The **UPDATEINTERVAL** and **MAXINTERVAL** items can be used to tune the performance of communication.

ITEMCOUNT

The **ITEMCOUNT** item is an Integer type Read Only item used to access the number of active items in the corresponding topic. The range of valid values is from 0 to 2147483647.

ERRORCOUNT

The **ERRORCOUNT** item is an Integer type Read Only item used to access the number of active items with errors in the corresponding topic. The range of valid values is from 0 to 2147483647.

ERRORITEMS

The **ERRORITEMS** item is an Integer type Read/Write Only (unique for each topic) used to access the total number of items with invalid item names (these items are rejected by Server). The **ERRORITEMS** value can be reset by writing 0 to this item. The range of valid values is from 0 to 2147483647.

WRITECOUNT

The **WRITECOUNT** item is an Integer type Read Only item used to access the number of write commands (messages) waiting for execution. The range of valid values is from 0 to 2147483647.

For example, in following way the **WRITECOUNT** item can be used to avoid the increasing of memory occupied by not executed write commands:

- activate the hot link with **WRITECOUNT** item and start to monitor it;
- activate new write command (by poking new value) only if value of **WRITECOUNT** becomes equal to 0, e.g. all previous write commands are executed and memory occupied by them is freed.

SUSPEND

Special Read/Write Discrete Item **SUSPEND** may be used to control the communication with a separate topic. If application changes **SUSPEND** value from 0 to 1 then communication with topic is suspended. If **SUSPEND** value is changed back to 0 then communication with this topic is resumed.

Note: If topic is suspended by setting **SUSPEND** value to 1, then Server rejects all new write values to this topic, i.e. no new write messages are created after **SUSPEND** value has changed from 0 to 1.

Using the KL3964R Server with Suite Link and DDE Clients

The “**Suite Link & DDE**” version of KL3964R Server is accessible from Suite Link clients (e.g. InTouch) and DDE clients (e.g. Excel). The “**OPC & DDE**” version of KL3964R Server is accessible from DDE clients.

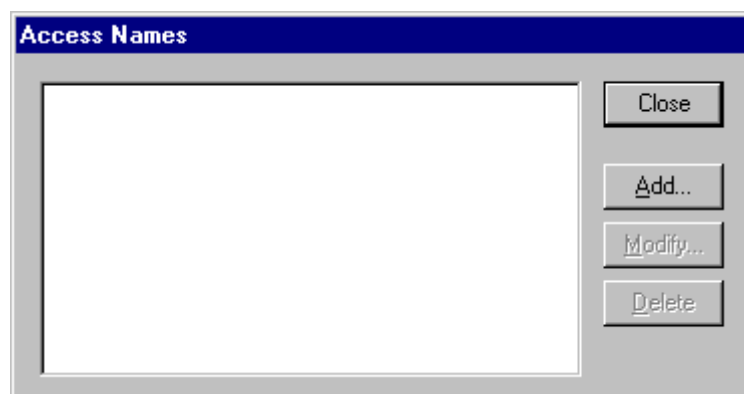
Using the KL3964R Server with InTouch

To access to operands on KL3964R PLCs from **InTouch**, the Access Names and Tag names should be defined in **WindowMaker**.

Defining the Access Names

InTouch uses **Access Names** to reference real-time I/O data. Each Access Name equates to an I/O address, which can contain a **Node**, **Application**, and **Topic**. In a distributed application, I/O references can be set up as global addresses to a network I/O Server or local addresses to a local I/O Server.

To define the Access Names in WindowMaker node invoke the */Special/Access Names...* command. The "Access Names" dialog box will appear:



Click on **Add....** The "Add Access Name" Dialog Box will appear:

Note: If **Add** is selected, this dialog box will be blank when it initially appears. Data has been entered here to illustrate the entries that are made.

The following fields are required entries when entering an Access Name Definition:

Access Name

In the Access Name box type the name you want InTouch to use to this Access Name. (For simplicity, use the same name that you will use for the **Topic Name** here.)

Node Name

If the data resides in a network I/O Server, in the Node Name box, type the remote node's name.

Application Name

In the Application Name box, type the actual program name for the I/O Server program from which the data values will be acquired. In case the values are coming from the KL3964R Server the "KL3964R" is used. Do not enter the .exe extension portion of the program name.

Topic Name

Enter the name defined for the topic in the KL3964R Server to identify the topic the KL3964R Server will be accessing.

The Topic Name is an application-specific sub-group of data elements. In the case of data coming from a KL3964R Server program, the topic name is the exact same name configured for the topic in the KL3964R Server.

Note: This will usually be the same as the "Access Name", although, if desired, they may be different. However, it must be the same name used when the topics were configured in section **Configuring the KL3964R Server**.

Which protocol to use

Select the protocol (DDE or Suite Link) that you are using.

When to advise server

Select **Advise all items** if you want the Server program to poll for all data whether or not it is in visible windows, alarmed, logged, trended or used in a script. Selecting this option will impact performance, therefore its use is not recommended.

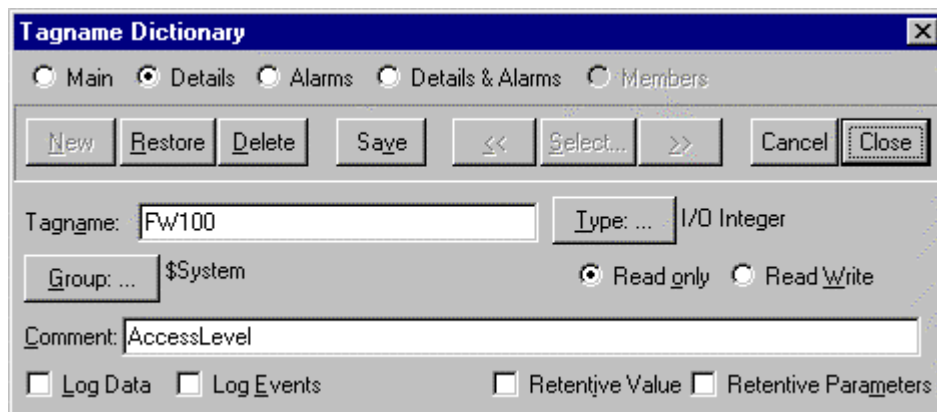
Select **Advise only active items** if you want the Server program to poll only points in visible windows and points that are alarmed, logged, trended or used in any script.

Click **OK** to accept the new Access Name and close the "Add Access Name" dialog box. The "Access Names" dialog box will reappear displaying the new Access Name selected in the list.

Click **Close** to close the "Access Names" dialog box.

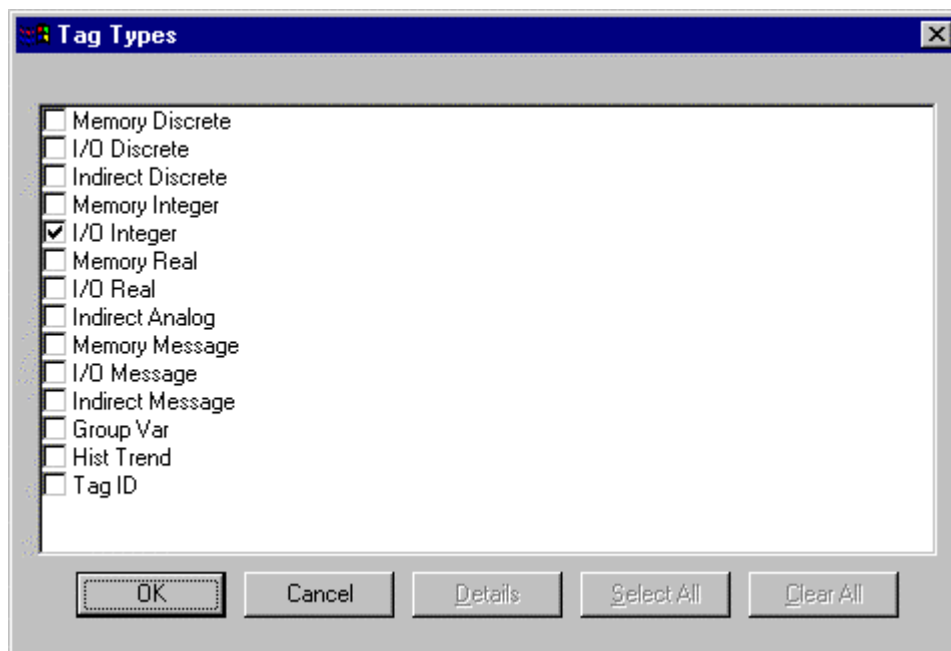
Defining the Tag names

To define the Tag names associated with the new "Access Name", invoke the */Special/Tagname Dictionary...* command (in **WindowMaker**). The "Tagname Dictionary" dialog box will appear:



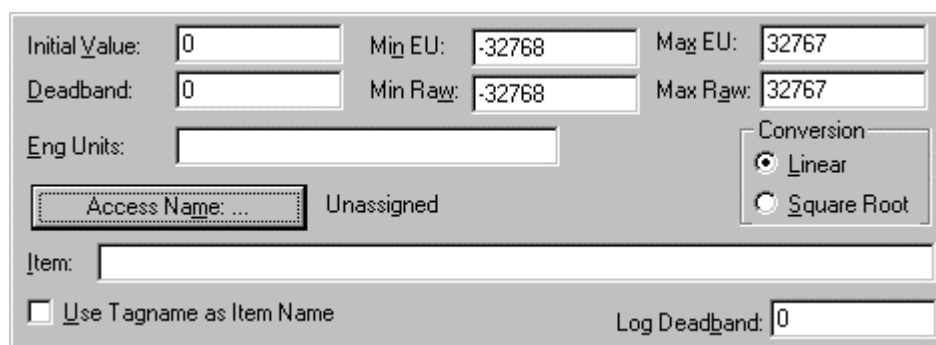
Click on **New** and enter the **Tagname**. (The tagname defined here is the name **InTouch** will use. The KL3964R Server does not see this name.)

Select the tag type by clicking on the **Type:...** button. The "Tag Types" dialog box will appear:

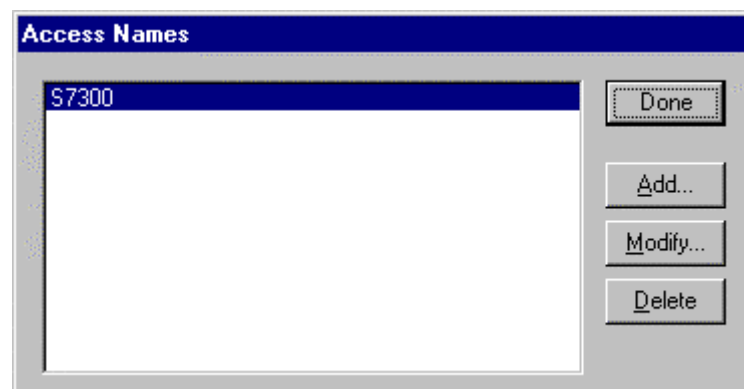


To access KL3964R items, the type must be **I/O Discrete**, **I/O Integer** or **I/O Message**. Select the Tag type.

The "Details" dialog box for the tag name will appear:



Select the Access name for KL3964R Server by clicking on the **Access Name:...** button. The "Access Names" dialog box will appear:



Select the appropriate Access Name and click on **Close**. (If the Access Name has not been defined as previously described, click on **Add** and define the Access Name now.)

The "Details" dialog box will appear displaying the selected Access Name:

For integers fill in the **Min EU**, **Max EU**, **Min Raw** and **Max Raw** fields. These fields control the range of values that will be accepted from the Server and how the values are scaled. If no scaling is desired, **Min EU** should be equal to **Min Raw** and **Max EU** equal to **Max Raw**.

Enter the KL3964R item name to be associated with this tagname in the **Item** field in the "Details" box:

(Refer to the **Item Names** section below for complete details.)

Where applicable, the **Use Tagname as Item Name** option may be selected to automatically enter the tag name in this field. **Note:** The tag name can only be used if it follows the conventions listed in the **Item Names** section.

Once all entries have been made, click on the **Save** button (in the top dialog box) to accept the new tag name. To define additional tagnames click on the **New** button. To return to the **WindowMaker** main screen, select **Close**.

Monitoring the Status of Communication with InTouch

InTouch supports built-in topic names called **DDEStatus** and **IOStatus** that are used to monitor the status of communications between the Server and InTouch. For more

information on the built-in topic names DDEStatus and IOStatus, see your online "InTouch User's Guide".

The status of communication between the Server and InTouch can be read into **Excel** by entering the following DDE reference formula in a cell on a spreadsheet (in following examples **S7300** is the Topic Name configured for KL3964R Server):

=view|DDEStatus!S7300

or

=view|IOStatus!S7300

Notes on Using Microsoft Excel

Data from the KL3964R topic (PLC) may be accessed from Excel spreadsheets. To do so, enter a formula like the following into a cell on the spreadsheet.

= KL3964R|topic!item

Sometimes, Excel requires the **topic** and/or **item** to be surrounded by apostrophes.

In the formula, **topic** must be replaced with one of the valid topic names defined during the Server configuration process. Replace **item** with one of the valid item names described in the **Item Names** section.

Reading Values into Excel Spreadsheets

Values may be read directly into Excel spreadsheets by entering a DDE formatted formula into a cell, as shown in the following examples:

=KL3964R|'S7300'!'FW100'

=KL3964R |'S7300'!'QB12'

=KL3964R |'PLC1'!'EW14'

Note: Refer to the Microsoft Excel manual for complete details on entering Remote Reference formulas for cells.

Writing Values to KL3964R Points

Values may be written to the Server from Microsoft Excel by creating an Excel macro that uses the **POKE** command. The proper command is entered in Excel as follows:

```
channel=INITIATE("KL3964R ","topicname")  
=POKE(channel,"itemname", Data_Reference)  
=TERMINATE (channel)  
=RETURN()
```

The following describes each of the above **POKE** macro statements:

channel=INITIATE("KL3964R ","topicname")

Opens a channel to a specific topic name (defined in the Server) in an application with name KL3964R (the executable name less the .EXE) and assigns the number of that opened channel to **channel**.

Note: By using the **channel=INITIATE** statement the word **channel** must be used in the **=POKE** statement instead of the actual cell reference. The "**applicationname**" and "**topicname**" portions of the formula must be enclosed in quotation marks.

=POKE(channel,"itemname", Data_Reference)

POKEs the value contained in the **Data_Reference** to the specified item name (actual location in the Siemens equipment) via the **channel** number returned by the previously executed **INITIATE** function. **Data_Reference** is the row/column ID of the cell containing the data value. For "**itemname**", use some of the valid item names described in the **Item Names** section.

=TERMINATE(channel)

Closes the channel at the end of the macro. Some applications have a limited number of channels. Therefore they should be closed when finished. **Channel** is the channel number returned by the previously executed **INITIATE** function.

=RETURN()

Marks the end of the macro.

The following is an example of Excel macro used to poke value from cell B2 to topic **S7300** item **MW100**:

```
PokeMacro -Ctrl a
=INITIATE("KL3964R ","S7300")
=POKE(A2,"MW100",B2)
=ON.TIME(NOW()+0.01,"TerminateDDEChannel")
=RETURN()
```

```
TerminateDDEChannel
=TERMINATE(A2)
=RETURN()
```

Note: Refer to the Microsoft Excel manual for complete details on entering Remote Reference formulas for cells

Using the KL3964R Server with OPC Clients

The “**OPC & DDE**” version of KL3964R Server is accessible from OPC Clients.

There are following general steps needed to access an OPC item from KL3964R Server:

1. Run OPC Client application and select the “KL3964R OPC and DDE Server” from the list of available OPC Servers. If KL3964R Server currently is not running, it will start automatically.
2. Create a new group (or topic if Wonderware OPCLink application is used).
3. If OPC Client supports the validating of items, validate the item before adding it.
4. Add the item. Depending on OPC Client it can be done in several different ways, for example:
 - a) By entering separately the access path to topic name (valid topic name configured in KL3964R Topic definition) and separately the item name.
 - b) By entering the full path to item name in the format **TopicName.ItemName** where **TopicName** is the valid topic name configured in KL3964R Topic definition.
 - c) By browsing the server address space.

By default the KL3964R Server is installed and used as a local OPC Server - both OPC Server and OPC Client reside on same computer. The KL3964R Server can run also as a remote OPC Server – in this case OPC Server and OPC Client are located on separate computers. Accessing the remote OPC Server is same as for local OPC Server, but some DCOM (Distributed COM) configuration is required before accessing the remote OPC Server. The DCOM configuration must be done both on OPC Server and OPC Client computers.

Configuring DCOM

To access KL3964R Server as a remote OPC Server, it is necessary to install KL3964R Server on both (OPC Server and OPC Client) computers. Also the DCOM must be configured on both computers.

After Server installation the System Administrator must configure DCOM by **Dcomcnfg.exe** (or Dcomcnfg32.exe for Win9x) system tool. This utility is located in the Windows system directory – e.g. in \WinNT\system32\ or \Win9x\system\.

Below is a simple example how to configure DCOM on NT Workstations for OPC Server computer (computer name *JohnB*) and on OPC Client computer (computer name *SteveL*).

Action	Remote OPC Server Computer name – <i>JohnB</i>	OPC Client Computer name – <i>SteveL</i>
Install the OPC Server.	✓	✓
Run Dcomcnfg.exe	✓	✓
Invoke Default Properties and set Default Authentication Level to (<i>None</i>), Default Impersonation Level to <i>Impersonate</i> .	✓	✓
Select OPC Server from Applications list and click on the Properties... button. Click on the Location tab, uncheck Run application on this computer , check Run application on the following computer and browse the remote computer <i>JohnB</i> .		✓
Edit Security settings: 1) set the following custom access permissions : NETWORK, SYSTEM, <i>SteveL</i> ; 2) set the following custom launch permissions : INTERACTIVE, SYSTEM, NETWORK, <i>SteveL</i> ; 3) be sure the Default Configuration Permissions contain SYSTEM.	✓	
Click on the Identity tab and select The interactive user .	✓	

Before starting a remote OPC Server, be sure the OPC Server computer and OPC Client computer can access each other on the network. The “Remote Procedure Call” Service should be started on OPC Server computer.

Now remote OPC Server is accessible for OPC Client on computer *SteveL*. To allow the access to more OPC Clients, configure DCOM on each OPC Client computer.

The following table contains most frequent errors when configuring DCOM.

Error message	Possible reason
DCOM not installed	DCOM has not been installed
Server execution failed	1) OPC Server can not be started 2) Identity for OPC server not properly configured 3) OPC Server is not located on a local hard disk 4) OPC Server path in registry is too long or uses LFN (Long File Names) 5) DCOMCNFG Location is not set to Run on this computer .
Class not registered	OPC Server has not been registered
RPC server is unavailable	1) Remote Procedure Call service is not running on the OPC Server computer 2) Invalid computer name for remote OPC Server 3) Make sure TCP/IP is installed properly
Interface not supported	1) Permission not granted to OPC Client 2) Guest account disabled
Access is denied	1) DCOM security not configured properly 2) OPC Server application not located on local hard disk 3) SYSTEM account in DCOMCNFG must have Access , Launch and Configure privileges
Error 80070776	Network error - TCP/IP has not been configured properly
Catastrophic failure	1) Trying to access an object before it is created 2) Unhandled exception is occurs on the OPC Server
Not enough storage	SYSTEM account in DCOMCNFG must have Access , Launch and Configure privileges

Running KL3964R “OPC & DDE” version as Windows NT Service

To install KL3964R Server “OPC & DDE” version to run as **Windows NT Service**, the KL3964R Server must be started with command line parameter `"/Service"`:

KL3964R /Service

After this the “KL3964R OPC & DDE Server” NT Service will be installed with Startup type “Manual”. The Service Startup configuration can be changed by MS Windows NT *Control Panel/Services* configuration dialog boxes. The **Allow Service to Interact with Desktop** checkbox in “Service” dialog box must be checked (the “Service” dialog box can be invoked by pressing the “Startup” button on “Services” dialog box when Service **KL3964R OPC & DDE Server** is selected). If **Allow Service to Interact with Desktop** is not selected then KL3964R Server full functionality is not ensured (e.g. the Server configuration can not be changed, no message boxes will be displayed, etc.).

To use KL3964R Server “OPC & DDE” version as Windows NT Service you may need to configure DCOM. For details of configuring DCOM refer to *Configuring DCOM* section of this manual. If “KL3964R OPC & DDE Server” NT Service will be accessed only from

local OPC clients (i.e. KL3964R Server will not be used as a remote OPC Server), then **custom access** and **launch permissions** "NETWORK" are not needed.

To uninstall "KL3964R OPC & DDE Server" NT Service, at first the Service must be stopped by *Control Panel/Services/Stop* and then KL3964R Server must be started manually with command line parameter `"/DelService"`:

KL3964R /DelService

After this the KL3964R Server "OPC & DDE" version will be still registered and accessible to OPC clients.

Using KL3964R with OPCLink Server

The Wonderware OPCLink I/O Server (hereafter referred to as "OPCLink") is a Microsoft Windows application program that acts as a communication protocol converter and allows other Windows application programs access to data from local or remote OPC servers. OPCLink connects to OPC servers, converts client commands to OPC protocol and transfers data back to clients using DDE, FastDDE, or Suite Link protocols.

Please refer to ***Wonderware OPCLink Server and OPC Browser User's Guide*** for details how to install, start and use the OPCLink Server. The following information in this section covers only the most important points about using "OPC & DDE" version of KL3964R Server with OPCLink Server.

OPCLink Topic Definition

The **Topic Definition** option from OPC Link Configure menu is used to create, modify, or delete OPCLink topic definitions. If OPC Link will communicate with KL3964R Server then there must exist one or more topics defined for KL3964R Server. There are following important fields on the "OPCLink Topic Definition" dialog box:

Topic Name

Enter a unique name (e.g. **Controller1**) for the PLC in this field. If using InTouch then same Topic Name is to be entered in the "Add Access Name" dialog box when defining the Access Names for OPCLink Server in InTouch WindowMaker.

OPC Server Name

Select the name of the OPC server (**KL3964R.OPC_Server**) that will be used by this topic. The list box shows the registered OPC servers in the system.

OPC Path

Enter the name of the OPC path (e.g. **S7300.**) used by this topic. This OPC path is the first part of a full OPC item name string common to all items that will be used in this topic. The available OPC paths for KL3964R Server can be obtained by clicking on "Browse" button (this allows to view the KL3964R Server's exposed address space).

Update Interval

Enter the frequency (in milliseconds) that the server will acquire data for the items/points associated with this topic. If 0 (zero) is entered here, OPCLink will not gather data from KL3964R Server.

Browse

Clicking on this button initiates the browsing through exposed address space of KL3964R Server. The starting addresses of each available data area and names of pre-defined (additional) items will appear on "Browse OPC items:" window in alphabetical order.

Accessing KL3964R Items via the OPCLink Server

The communication protocol addresses an element of data in a conversation that uses a three-part naming convention that includes the **application name**, **topic name** and **item name**. The following briefly describes each portion of this naming convention:

application name

The name of the Windows program (server) that will be accessing the data element. In the case of data coming from or going to KL3964R Server "OPC & DDE" version, the application portion of the address is **OPCLINK**.

topic name

Meaningful names are configured to identify specific devices (PLCs). These names are then used as the topic name in all conversations to that device (PLC). This must be same name as **Topic Name** entered in the "OPCLink Topic Definition" dialog box, for example, **Controller1**.

Note! You can define multiple topic names for the same PLC to poll different points at different rates.

item name

A specific data element within the specified topic. The OPCLink Server item syntax follows the following rules. The item names must start with:

- d – discrete value
- i – integer value
- m – message (string)

The item name added to the OPC path of the topic (without the heading type letter) must give a fully qualified OPC item name for the KL3964R Server. Some examples of possible item names acceptable by OPCLink Server/ KL3964R Server connection:

iMW0 integer Flag Word, address 0

dM100.4 discrete Bit number 4 of Flag Byte address 100

Error messages

The messages about errors detected by the Server are displayed on the WWLogger screen and saved to log file.

Error: PLC doesn't respond

This error may be caused by incompatibility between PC communication port and CP340 communication processor parameter settings, damaged cable or if PLC is not in "RUN" state.

Error1: Request data out of shared data block<data block number>.**(Message's start Addr <start address> , end Addr<end address>).**

This error message is always displayed if data block exists, but is too short. If data block does not exist then "data block not loaded" error is masked with SFC 36 "MSK_FLT" call (see S7 PLC demo program's FB5 function block), otherwise PLC will stop with error. If "data block not loaded" error is masked then PLC will continue to work.

The rest of error messages are self-explanatory and does not require commentary.

Troubleshooting

If you experience communication problems, while using the KL3964R Server, then try the following suggestions.

Minimise your project to a size, at which problem still occurs:

- In InTouch application delete topics related to other Servers, gradually delete topics and/or items related to the KL3964R.
- In PLC program - delete blocks leaving only blocks responsible for PLC-PC communication.

If the reason of problem is still not determined then ask the Server provider for support supplying him with Wonderware Logger file (*.aeh). Obtain Wonderware Logger file as described below:

- Start Wonderware Logger.
- Start KL3964R DDE Server. In Server's system menu check options **Show Errors, Show Send, Show Receive, Verbose**.
- Start an application (e.g. InTouch application).
- In Server's system menu select the **Dump** command.
- Wait, until error occurs.
- Close InTouch application and Server.

Supply the Server provider with Server's configuration file (KL3964R.CFG) and, if possible, with an application, PLC programs and configuration parameters of CP340 communication processor.

WIN.INI entries

The first time you run the KL3964R Server configuration, most of the items in the following list will automatically appear in the WIN.INI file, located in the MS Windows system directory (e.g. C:\WINNT). It is an ASCII file and can be altered manually if you wish with any text editor, e.g., MS Windows Notepad (*do not use a program that formats text, such as MS Word or Write unless the file is saved as a DOS text*). The following is a typical entry for the KL3964R Server:


```
[KL3964R]
WinIconic=0
WinFullScreen=0
WinTop=112
WinLeft=0
WinWidth=200
WinHeight=168
ProtocolTimer=10
ConfigurationFile=C:\KL3964R\
ShowSend=0
ShowReceive=0
ShowErrors=1
```

There are following additional WIN.INI entries available for KL3964R Server:

SlowPollRetries and SlowPollInterval

The **SlowPollRetries** entry is used to enter the number of consecutive error retries for one topic (PLC). If after **SlowPollRetries** there is still no successful response from PLC, then this topic is changed to *slow poll mode*. The WIN.INI file **SlowPollInterval** entry is used to enter the slow poll mode update interval (in seconds).

The default values (they are used if WIN.INI file does not contain these entries) are **SlowPollRetries** equal to 5 and **SlowPollInterval** equal to 60 seconds.

For example, the following entries can be used to specify that slow poll mode 2 minutes will start after 3 consecutive unsuccessful retries:

```
SlowPollRetries =3
SlowPollInterval=120
```

Entering into slow poll mode is reported to WWLogger and (or) to KL3964R Internal Logger by following string:

"Entering slow poll mode on topic <TOPICNAME>, port <PORTNAME>."

If all topics for some port are in slow poll mode then after 5 full slow poll cycles (all topics are at least 5 times polled) this port is closed and reopened again.

Leaving the slow poll mode is reported to WWLogger and (or) to KL3964R Internal Logger by following string:

"Leaving slow poll mode on topic <TOPICNAME>, port <PORTNAME>."

ShowRejectedWrites

The **ShowRejectedWrites** entry is used to enable the logging of rejected write messages. This option can be useful when communication with a separate topic (PLC) is suspended by SUSPEND item (see *Item Names* section) and the Server rejects each write to this topic (PLC). If **ShowRejectedWrites=1** then information about each rejected write value is reported to WWLogger and (or) to KL3964R Internal Logger. If

ShowRejectedWrites=0 (default) then Server rejects each write to suspended topic(s) without logging any information.

Troubleshooting menu

The following debugging choices are appended to the Server's System Menu (the menu that appears when you click on the Server icon in the upper left hand corner of the Server's window):

- Suspend Protocol/Resume Protocol** - these choices permit you to turn protocol processing on and off, what means that you can suspend access to PLC(s).
- Show Send** - if checked then all outgoing user data logged in hexadecimal format.
- Show Receive** - if checked then all incoming user data logged in hexadecimal format.
- Show Errors** - if checked then all information about errors logged.
- Show Logger** - if checked then KL3964R Internal Logger is activated and all debug information is going to KL3964R Internal Logger. The KL3964R Internal Logger file is named in the format:
KL3964R_YYYYMMDD.LOGn
 where **YYYY** is a year, **MM** is a month, **DD** is a day and **n** is a order number of consecutive KL3964R Internal Logger file, starting from 1 (the KL3964R Internal Logger file maximum size is 16 MB; if there is more information logged then next consecutive file is created, e.g. there can be consecutive files KL3964R_19990413.LOG1, KL3964R_19990413.LOG2, etc.).
- Dump** - all information about ports, topics, messages and data items logged. This can be use to find out how many messages are actually sent to the PLC(s).
- Dump Screen** - if checked then information about active messages are displayed on the KL3964R main window. This also can be used to find out how many messages are actually sent to the PLC(s).

All debug information (except **Dump Screen**) is displayed through the Wonderware Logger or (and) KL3964R Internal Logger if **Show Logger** is checked, which must be active for these commands to work.

Note: If you check **Show Send** and/or **Show Receive** debug output grows very fast and it is possible that computer can become very slow.

KLINKMANN AUTOMATION
KL3964R Communication Server
Revision History

Jul 97	Rev 1.0	First Release
Oct 97	Rev 1.1	Manual file name changed. Minor changes
Oct 97	Rev 1.2	Minor changes in chapter <i>Files on the KL3964R Distribution Disks</i>
Oct 2000	Rev 1.3	OPC support added.
Feb 2001	Rev 1.4	OPC compliance information added.
Mar 2002	Rev 1.5	Installation from CD information added.