

Unitronics Vision Communication Server

for Microsoft Windows
and InTouch Applications

**User Manual
Ver 3.x Rev 2.6
DR 440 10
DR 440 11**

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Unitronics Vision Communication Server

Overview

The **Unitronics Vision Communication Server** (hereafter referred to as the “Vision Server” or “Vision” or “Server”) is a Microsoft Windows 32-bit application program that acts as a communication protocol server and allows other Windows programs to access to data from UNITRONICS Programmable Logical Controllers (PLCs) using the serial and Ethernet communications, by using Unitronics PCOM and Modicon MODBUS protocol. The Ethernet connection needs Vision PLC with embedded Ethernet module or serial/Ethernet converter or gateway to be used at PLC side to enable conversion from/to serial data and Ethernet packets. The use of Ethernet also is necessary to enable the communication via wireless GPRS (General Packet Radio Service) connection or intra- and internet. The Server supports the following PLC models:

- **VISION 120/130/230/260/280/290BW/530.**
- **VISION 290/350/570/1040/1210 COLOR,**
- **M90/M91/JAZZ,**
- **M200.**

Any Microsoft Windows program that is capable of acting as a **DDE**, **FastDDE**, **SuiteLink** or **OPC Client** may use the VISION Server.

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

- Server version (ordering number DR 440 10), supporting SuiteLink, FastDDE and DDE protocols; this version hereafter is referred to as the “**Suite Link & DDE**” version.
- Server version (ordering number DR 440 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 **VISION.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 VISION 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 2.05a dated June 2002 (3.00 dated March 2003).

The OPC support for VISION Server "OPC & DDE" version is implemented based on **FactorySoft OPC Server Development Toolkit** and it conforms to OPC Data Access Custom Interface Specification 2.05. The VISION 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 VISION Server "Suite Link & DDE" version is implemented by **Wonderware I/O Server Toolkit** ver. 7.2.1.6.

The FastDDE (Version 2) and DDE support for VISION 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 Unitronics M90, M91, JAZZ, M200, VISION 120, VISION 230, VISION 260, VISION 280, VISION 290, VISION 350 and VISION 570 PLC via this Server, the application portion of the address is **VISION**.

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, **UNIT1**. **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 example, when using this Server, items can be individual Memory Integers, Inputs, Outputs 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.

Installing the VISION Server

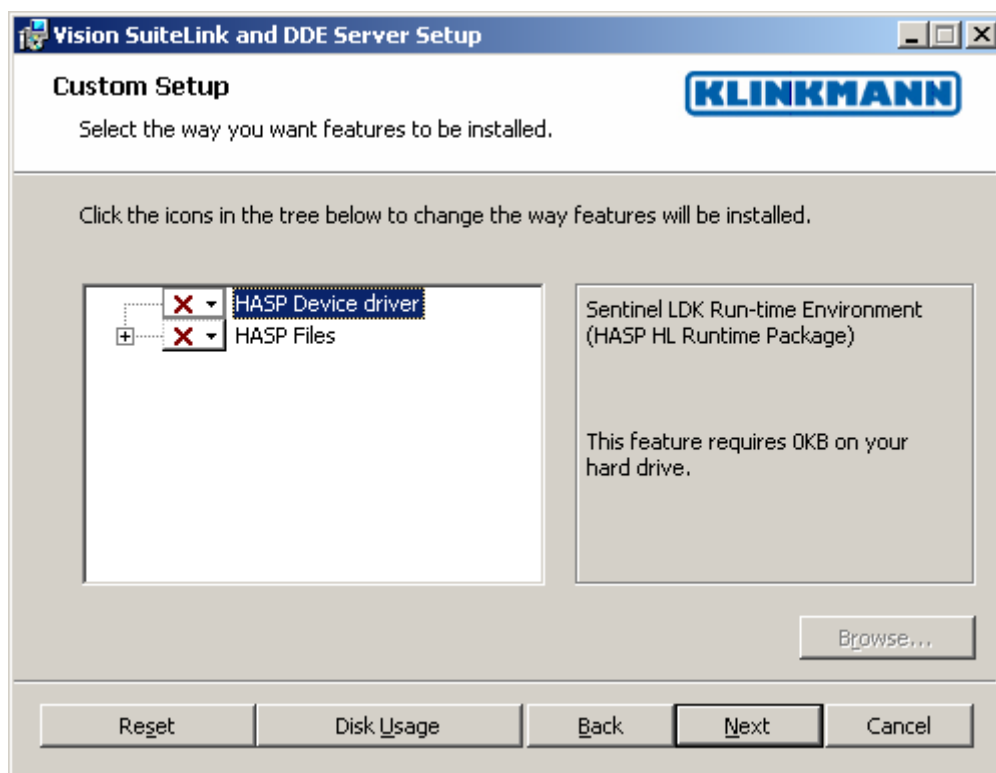
Installing the Server

The VISION Server installation package is supplied as a Microsoft Installer file DR44010_xxx.msi (for “Suite Link & DDE” version) or DR44011_xxx.msi (for “OPC & DDE” version), where xxx is the current (latest) version of VISION Server.

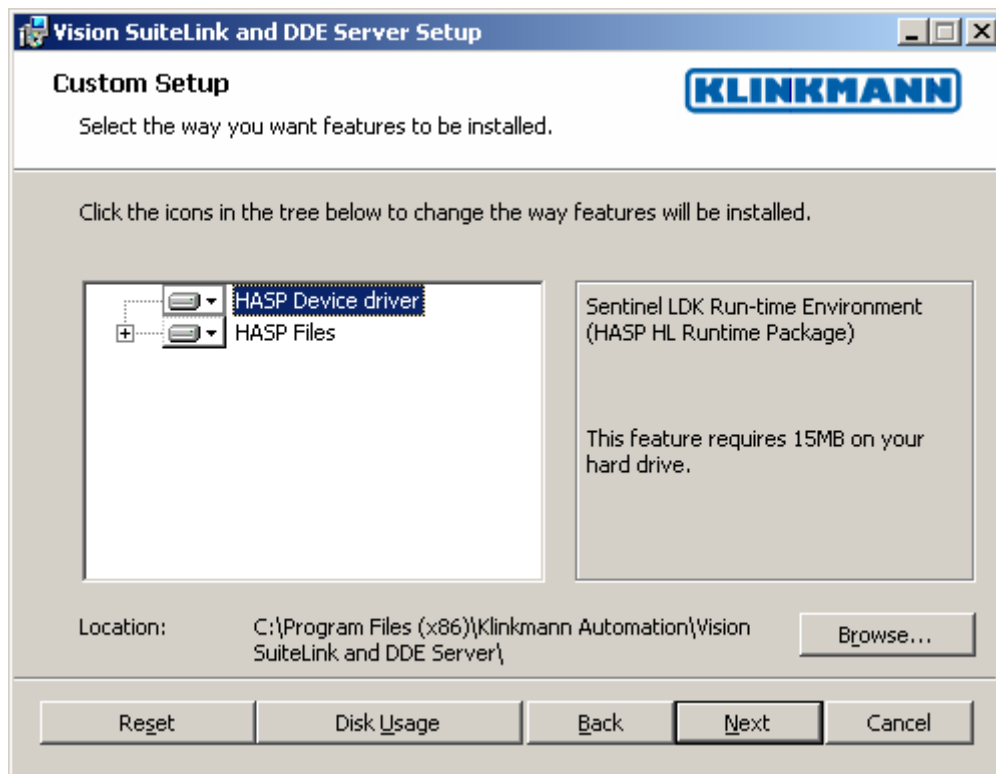
To install the VISION Server, run the DR44010_xxx.msi (for “Suite Link & DDE” version) or DR44011_xxx.msi (for “OPC & DDE” version) and proceed as directed by the VISION Server Setup Wizard. The installation is simple and straightforward, only it is important to select the correct protection (**HASP key** or **software license**) in “Custom Setup” dialog:

The HASP key or software license key is needed for full time running of VISION Server. The **HASP key** is an USB key (dongle) to be installed into PC USB port and needs the SafeNet Sentinel LDK Run-time Environment (HASP HL Runtime Package) to be installed and running – see details in “Licensing by using HASP HL key” section below. The **software license key** is a 16-character alphanumeric “computer-dependent” string, provided after purchasing the VISION Server (for more information, see “Software license key” section below. Without HASP key installed or software license key entered, the VISION Server will run one hour in demo mode. After purchasing the VISION Server, the appropriate HASP key or software license key is provided and no re-installation of VISION Server is needed.

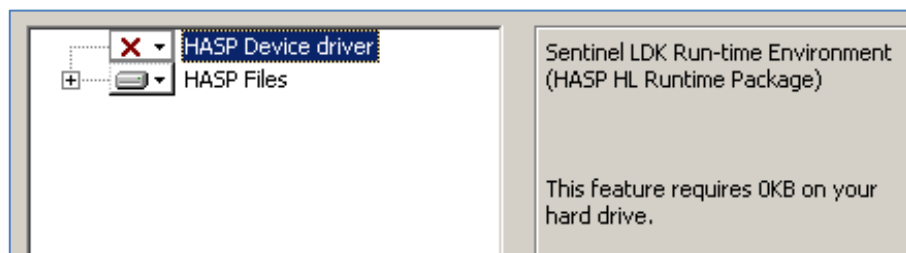
In case “HASP Device driver” and “HASP Files” **are not selected** then HASP USB key will not be supported and only the **software license** will be available (files needed for HASP USB key will not be installed):



In case “HASP Device driver” and “HASP Files” **are selected** then HASP USB key will be supported and both HASP-key and software license will be available (files needed for HASP USB key will be installed):



Note: In case the SafeNet Sentinel LDK Run-time Environment (HASP HL Runtime Package) is already installed on your computer (separately or by some other software) then it can be disabled:



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

- | | |
|-----------------------------------|---|
| VISION.EXE | The VISION Server Program. This is a Microsoft Windows 32-bit application program. |
| VISION.CHM | The VISION Server Help file. |
| VISION.CFG | An example configuration file. |
| hasp_windows_44
42.dll | Dynamic Link Library installed only if “HASP Files” is selected during the installation in “Custom Setup” dialog. |

haspdinst.exe	Sentinel LDK Run-time Environment Installer (HASP HL Runtime Package), copied to VISION Server folder only if “HASP Device driver” is selected during the installation in “Custom Setup” dialog.
LICENSE.RTF	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.
TCPWORK.DLL	Dynamic Link Library necessary for Ethernet communications.

In case the “HASP Device driver” is selected during the installation in “Custom Setup” dialog, the Sentinel LDK Run-time Environment (HASP HL Runtime Package) is installed during the VISION Server installation (and will be uninstalled during the VISION Server uninstallation). The presence of Sentinel LDK Run-time Environment can be checked after the VISION Server installation by looking-up in Control Panel / Administrative Tools Services – the Service “Sentinel Local License Manager” must be started.

Notes:

1. The VISION Server “Suite Link & DDE” version is developed with Wonderware I/O Server Toolkit (ver 7,2,1,6) and needs the **Wonderware FS 2000 Common Components** to be installed on computer where the VISION Server is running. If using Wonderware InTouch 8.0 or newer, install the FS 2000 Common Components **before** installing InTouch (see also Wonderware Tech Notes 404 and 313). The Wonderware FS2000 Common Components are installed automatically when any of Wonderware product (e.g. InTouch or some Wonderware I/O server) is installed.
2. If VISION 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 VISION Server and these infrastructure files must be install prior to executing the VISION Server. **The I/O Server Infrastructure does not support using VISION Server as a Windows Service and remote access to VISION Server (when DDE/SuiteLink Client is not located on same computer as VISION Server).**

To **uninstall** the VISION Server, start Control Panel, select “Uninstall a program” (“Add/Remove Programs” on XP/2003) and select the “VISION SuiteLink and DDE Server” or “VISION OPC and DDE Server” from the list of available software products. Click on “Uninstall” (“Add/Remove...” on XP/2003) and proceed as directed by the Uninstall Wizard.

Licensing by using HASP HL key

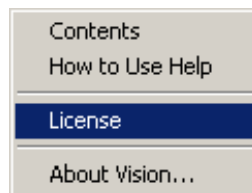
The following should be done to enable the licensing by HASP HL key:

- The “HASP Device driver” and “HASP Files” are selected during the VISION Server installation in “Custom Setup” dialog – that causes correspondingly haspdinst.exe and hasp_windows_4442.dll files are copied to VISION Server folder and Sentinel LDK Run-time Environment (HASP HL Runtime Package) is installed and started, enabling the VISION Server can detect the HASP HL USB dongle;
- insert the received HASP key into USB port, and **wait** until “Installing device driver software” message disappears and “Device driver software installed successfully” message appears;
- start VISION Server and check - if “Software key or HASP HL key not found!” message does not appear then it means everything is done correctly and VISION Server runs in full mode with licensing by HASP HL key enabled.

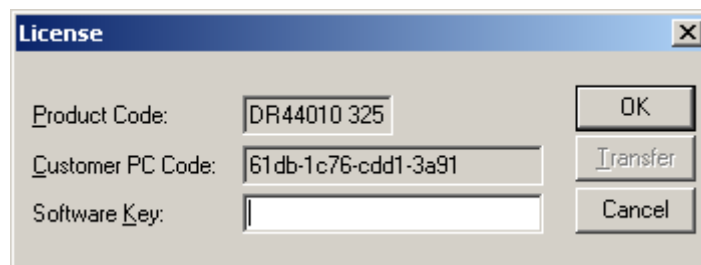
Software license key

VISION Server supports the “computer dependent” **software licensing**. The following steps are required to enable it:

1) Start VISION Server, click on "Help" menu item (also short-cut Alt+H can be used) and pop-up menu with "Help" menu commands will appear:

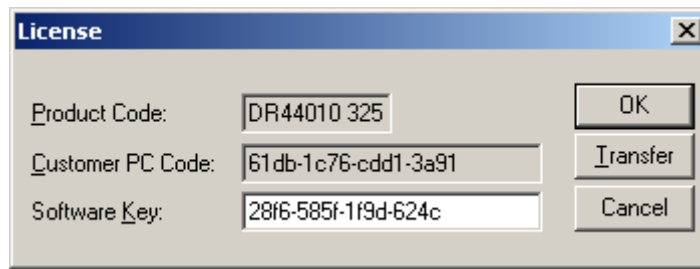


Select “License” and “License” dialog will appear:



2) Here the “Customer PC Code” is “computer-dependent” string generated by VISION Server and it is unique for this computer. Write it down or Copy/Paste to e-mail when ordering the VISION Server.

3) After purchasing the VISION Server, you will get the software license key - 16-character alphanumeric string. Open the “License” dialog again and Copy/Paste it to “Software Key” field:



4) Click OK and restart VISION Server. VISION Server software license now is enabled.

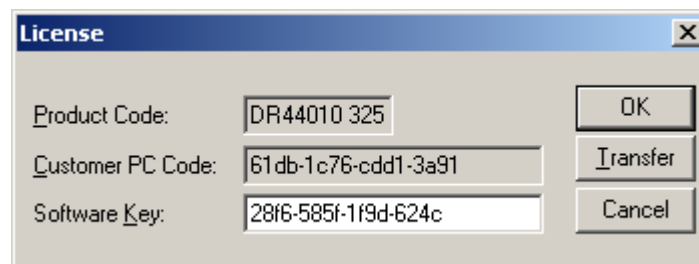
Note – the “Software Key” string is saved to MS Windows system directory (e.g. C:\Windows) WIN.INI file [VISION] section to enable it is automatically detected at VISION Server next start-up.

Transferring the software license to other computer

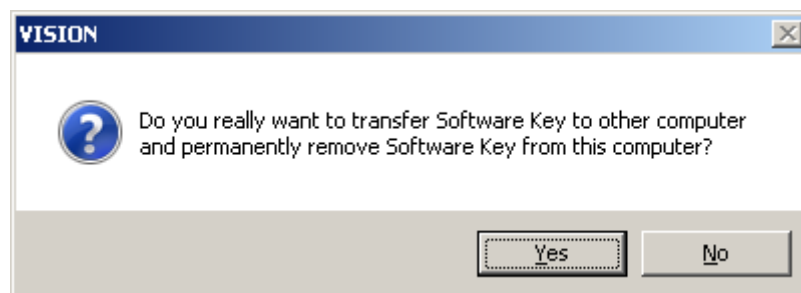
The transfer of Software License Key might be needed in very rare situations when it is necessary to move Klinkmann software to other computer (or operation system change is planned for same computer). Such transfer PERMANENTLY removes the Software License Key, so be very careful when deciding to use this option.

The following steps are required to transfer the Software License Key:

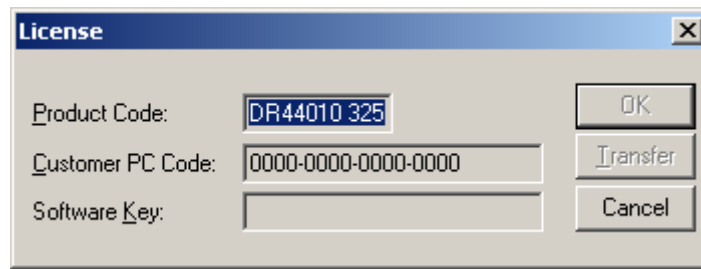
- 1) Start the VISION Server. For VISION Server “Suite Link & DDE” version, the Archestra SMC Log Viewer (or Wonderware Logger) must be started. For VISION Server “OPC & DDE” version, the VISION Internal Logger and “Log to File” should be enabled (see “Troubleshooting menu” and “Internal Logger” sections at the end of this manual). Select Help/License from main menu and click the “Transfer” button on “License” dialog:



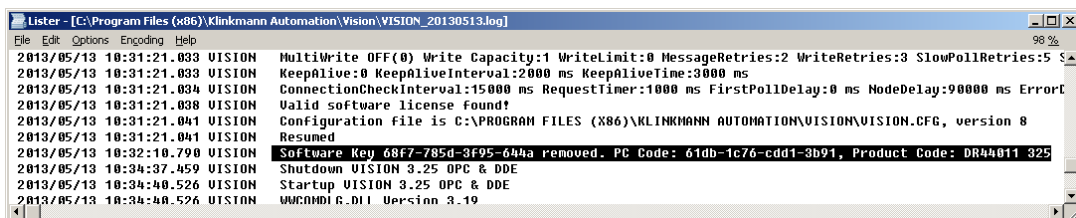
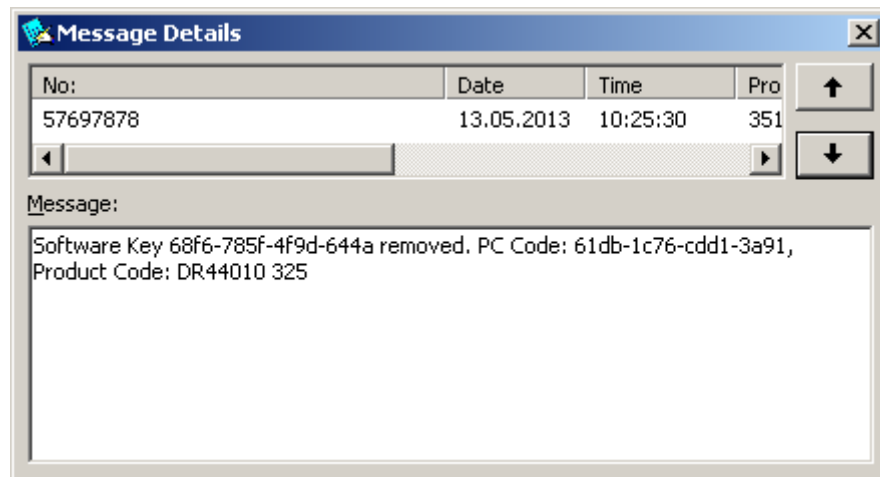
- 2) Confirm the transfer of Software License Key by clicking on Yes button:



The “License” dialog now will contain the empty “Customer PC Code” and “Software Key” fields:



- 3) Take the screenshot from ArchestrA SMC Logger or VISION Internal Log file window containing the “Software License Key removal message”, like below:



or take the string with “Software License Key removal message” directly from ArchestrA SMC Logger or VISION Internal Log file, like following:

**Software Key 68f6-785f-4f9d-644a removed. PC Code: 61db-1c76-cdd1-3a91,
Product Code: DR44010 325**

- 4) Provide the obtained “Software License Key removal message” screenshot or string together with new “Customer PC Code” when applying for new Software License Key without purchasing the new license (in situations when it is necessary to move Klinkmann software to other computer or operation system change is planned).

Note!

Without providing the “Software License Key removal message” screenshot or string, the new Software License Key will not be assigned.

Installing the I/O Server Infrastructure

The I/O Server Infrastructure installation package is supplied as a self-extracting archive (IOServerInfrastructure.exe) and can be downloaded from Klinkmann's web site.

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.

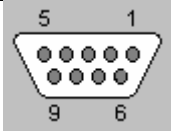

To **uninstall** the I/O Server Infrastructure, start Control Panel, select "Add/Remove Programs" and select the "IO Server Infrastructure" from the list of available software products. Click on "Add/Remove..." and proceed as directed by the UnInstallShield program.

Note: *The I/O Server Infrastructure installation will be rejected if Wonderware FS2000 Common Components are already installed on same computer. The I/O Server Infrastructure does not support using VISION Server as a Windows Service and remote access to VISION Server (when DDE/SuiteLink Client is not located on same computer as VISION Server).*

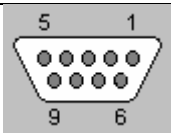
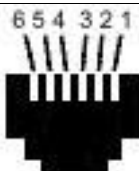
Connection Cable

To connect Unitronics PLC to the computer, it is possible to use Unitronics standard cable or self-made connection cable.

The following wiring diagram can be used to connect computer's RS-232 serial port and M200, M90/M91, Vision 120/230/260/280/290/350/570 PLCs communication interface:

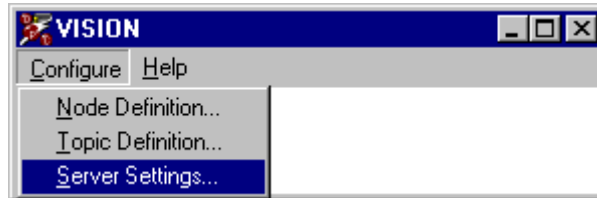
	
PC 9-pin female	4-pin RJ11 male
2 RxD	2
3 TxD	3
5 GND	1

The following wiring diagram can be used to connect computer's RS-232 serial port and JAZZ PLC communication interface:

	
PC 9-pin female	6-pin RJ11 male
2 RxD	3 TxD(out)
3 TxD	4 RxD(in)
4 DTR(out)	6 PWR(in)
5 GND	2 GND
5 GND	5 GND
7 RTS(out)	1 PWR(in)

Configuring the VISION Server

After the VISION Server is initially installed, a small amount of configuration is required. Configuring the Server automatically creates a **VISION.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 **VISION.EXE** is located unless the path where the configuration file will be placed is specified via the */Configure/Server Settings...* command.

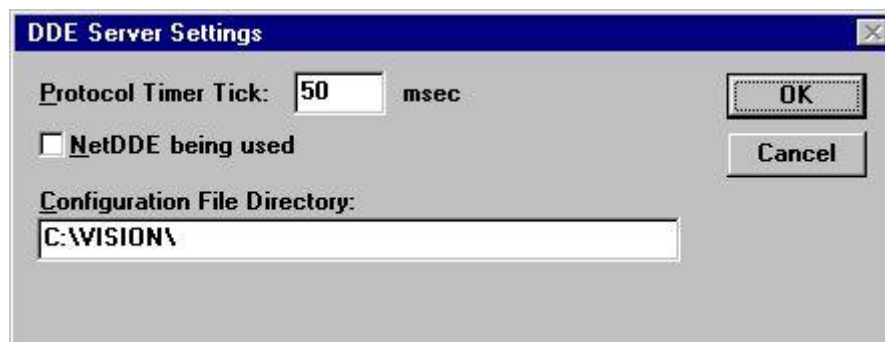


Note!

The **VISION** Communication Server replaces the former **M90** Communication Server. To use the existing M90 configuration with VISION Communication Server, rename existing M90.CFG to VISION.CFG and copy it (overwrite default VISION.CFG) to location where the VISION configuration resides.

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 VISION will save its current configuration file. The VISION 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 **VISION.CFG**.

Note: There is no limit to the number of configuration files created, although each must be in a separate directory. When using the VISION 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 VISION 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 VISION Server "Suite Link & DDE" version. To start the VISION Server "OPC & DDE" version as Windows NT Service, refer to **Running VISION "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 **VISION_IOServer** is selected). If **Allow Service to Interact with Desktop** is not selected then VISION 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**.

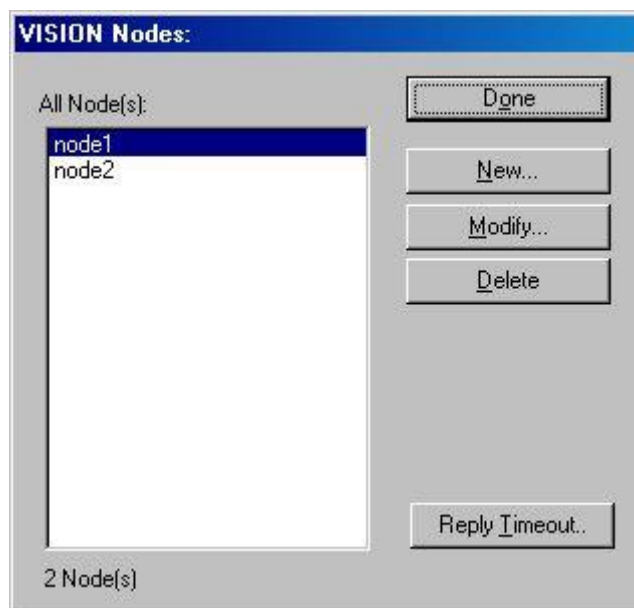
Node Definition Command

This command is used to configure the communication port (serial or Ethernet) that will be used to communicate with Unitronics PLCs.

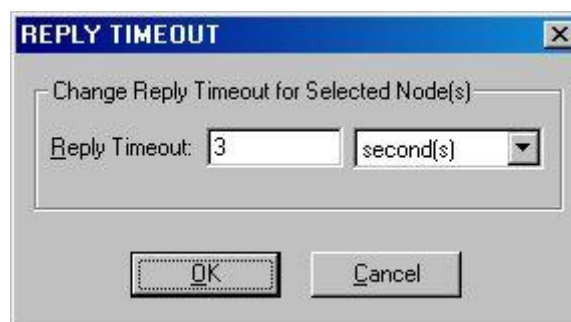
Important!

For networked connections (connections with PLCs used as bridges (to Unitronics CANbus or RS-485) or with PLCs accessed via bridge PLC) there can be several PLCs (topics) associated with same **Node**. For direct (not “bridged”) connections there must be strict correspondence – one PLC (topic) associated with one **Node** (in this case the only exception can be several topics for same PLC – to enable different Update Intervals, see *Topic Definition Command* section later in this manual).

Invoke the `/Configure/Node Definition...` command. The "VISION Nodes" dialog box will appear:



To modify an existing node, select the node name and click on **Modify**. To change the Reply Timeout parameter for one or several nodes at the same time select node(s) and click on **Reply Timeout**. The “Reply Timeout” dialog box will appear:



Set a new Reply Timeout interval and press OK button. It is possible to change Reply Timeout while the Server has active topics.

To define a new node, click on **New**. The "VISION Node Settings" dialog box will appear:

The screenshot shows the "Vision Node Settings" dialog box with the following configuration:

- Node Name:** node1
- Reply Timeout:** 3 second(s)
- Type of Communication:**
 - Ethernet (server mode): Local IP Port: 7788, ID String: CP, Protocol: No protocol, Remote Client IP Address: 0.0.0.0
 - Ethernet (client mode): Remote IP Port: 7788, Remote IP Address: 127.0.0.1, Protocol: No protocol, Retry Delay (sec): 5
 - Serial: Protocol: Serial MODBUS, Com Port: COM1, Data Bits: 8, Baud Rate: 9600, Parity: None, Stop Bits: 1

Enter the **Node Name**.

The **Reply Timeout** field is used to enter the amount of time (in milliseconds, seconds, minutes or hours) the Controller connected to the selected port will be given to reply to commands from the Server.

Note. The default value of 10 seconds should be sufficient for most configurations.

Three following **Types of Communication** (Server and PLC connection modes) can be selected:

Ethernet (server mode)

In this mode the Server waits for TCP or UDP connection from remote client (VISION PLC). The first information message from the client should be the specified ID String. Once the string is received, the Server starts to poll the PLC.

Local IP Port field is used to enter TCP or UDP port number in which the Server is waiting (listens) for connection from PLC side. All nodes can use the same port number or different port numbers for different nodes can be used.

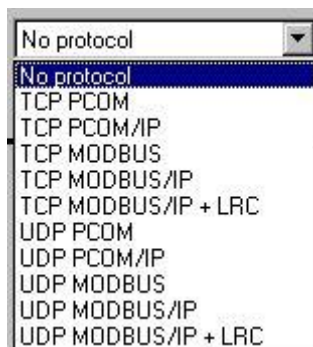
ID String field is used to define the string, which PLC can send as the first data message to the Server and which the latter uses to identify the PLC connecting. This string can contain up to 35 ASCII characters. If necessary, ID String can be ended with **<CR>** (Carriage Return, 0D in hex) - in this case Server expects to receive all ASCII characters specified before <CR> and then 0D in hex as a last byte of ID String. Recommended practice is to include the PLC Unit Number here, for example, if PLC Unit Number is 1 then ID String value can be **#01** or **#01<CR>**.

In case of TCP connection ID String message can be omitted (the field left free) – in this case Server will accept any connection. If ID strings are not used, different nodes should use different ports.

Notes:

- 1) If **ID String** field is not empty, the communication between VISION Server and PLC will not start without receiving the **ID String**.
- 2) The **ID String** can be sent from PLC serial port or from GPRS-modem embedded application (in case GPRS-modem has such a feature).

Protocol combobox is used to select the communication protocol. It is possible to select one of the following protocols:



TCP PCOM – Unitronics PCOM ASCII serial protocol (encapsulated) over TCP/IP Ethernet. The TCP messages contain pure serial PCOM commands. The protocol implies that at PLC side the TCP/serial conversion is performed (e.g. by GPRS-modem

embedded application) and serial commands/responses are transferred to/from UNITRONICS PLC serial port. The protocol is dedicated for PLC+modem use.

TCP PCOM/IP – Unitronics PCOM/IP (PCOM over Ethernet) ASCII protocol over TCP/IP Ethernet. This protocol is used if Vision PLC is a node inside Ethernet LAN. The Ethernet port of Vision PLC is connected. The message header structure is proprietary Unitronics.

TCP MODBUS – Modicon Modbus RTU serial protocol (encapsulated) over TCP/IP Ethernet. The TCP messages contain pure Modbus serial commands. The protocol implies that at PLC side the TCP/serial conversion is performed (e.g. by GPRS-modem embedded application) and serial commands/responses are transferred to/from UNITRONICS PLC serial port. The protocol is dedicated for PLC+modem use. The PLC OS should support Modbus serial interface and corresponding Modbus FBs should be added in the PLC program.

TCP MODBUS/IP – Standard Modicon Modbus/IP RTU protocol over TCP/IP Ethernet. It can be used to access PLC over Ethernet. This protocol is used if Vision PLC is a node inside Ethernet LAN. Supported only for Vision PLCs with Ethernet enabled. The PLC OS should support Modbus Ethernet interface and corresponding Modbus IP FBs should be added in the PLC program

TCP MODBUS/IP+LRC – The same as previous TCP MODBUS/IP protocol with exception that RTU messages are supplied with LRC checksums. The protocol is meant to cooperate with programmable wireless modem (e.g. Siemens TC65T/Java terminal) connected to UNITRONICS PLC serial port in case the Modbus checksum is not calculated inside modem embedded application - in order to increase modem's performance, checksums are calculated by Vision Server. The modem embedded application removes Modbus/IP protocol header from message before sending it to PLC and adds the same Modbus/IP protocol header to the reply message before sending it back to the Vision Server.

UDP PCOM – Unitronics PCOM ASCII serial protocol (encapsulated) over UDP Ethernet. The same as TCP PCOM protocol with exception that UDP is used instead of TCP. The UDP messages contain pure serial PCOM commands. Can be used with modems supporting UDP.

UDP PCOM/IP – Unitronics PCOM/IP (PCOM over Ethernet) protocol over UDP Ethernet. The same as TCP PCOM/IP protocol with exception that UDP is used instead of TCP. Supported only for Vision PLCs with Ethernet enabled. The message header structure is the same as with TCP PCOM/IP protocol. The corresponding Vision PLC socket should be switched to UDP.

UDP MODBUS – Modicon Modbus RTU serial protocol (encapsulated) over UDP Ethernet. The same as TCP MODBUS protocol with exception that UDP is used instead of TCP. The PLC OS should support Modbus serial interface.

UDP MODBUS/IP – Standard Modicon Modbus/IP RTU protocol over UDP Ethernet. The same as TCP MODBUS/IP protocol with exception that UDP is used instead of TCP. The corresponding Vision PLC socket should be switched to UDP.

UDP MODBUS/IP+LRC – The same as TCP MODBUS/IP+LRC protocol with exception that UDP is used instead of TCP. The protocol is meant to cooperate with programmable wireless modem (e.g. Siemens TC65T/Java terminal) connected to UNITRONICS PLC serial port in case the Modbus checksum is not calculated inside modem embedded application.

Note: if UDP is used and messages in protocol do not contain transaction ID, that can be a reason for some kind of mismatches in case of slow or loaded GPRS communication.

Remote Client IP Address field is used to specify the IP address of client (PLC), only from where the connection will be accepted. Not always this IP address is known – for example, in GPRS public network the IP address for client (GPRS-modem+PLC) is assigned by GPRS Access Point dynamically and it is different at each connection, so for such cases the ID String should be used to identify the PLC. If **Remote Client IP Address** is empty then connection will be accepted from any IP address.

Note!

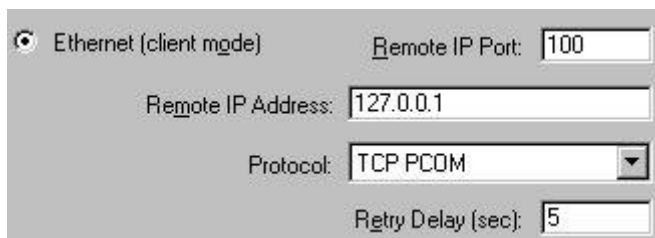
If both **ID String** and **Remote Client IP Address** fields are empty then VISION Server will not wait for **ID String** and accepts any new connection on **IP Port**. In this case each Node should have unique **IP Port** number, otherwise any new connection on same **IP Port** will destroy the previous connection.

The following table illustrates possible **ID String** and **Remote Client IP Address** variations and recommended implementations:

ID String	Remote Client IP Address	Recommended implementation
-	-	Point-to-point wired or GPRS connection. Each Node has unique IP Port number.
-	+	Wired or GPRS (corporate network) connection where each PLC (or “bridge” PLC) has a fixed IP address. Several Nodes can have same IP Port number.
+	-	GPRS connection (public network) where each PLC (or “bridge” PLC) has not a fixed IP address. Several Nodes can have same IP Port number.
+	+	GPRS connection (corporate network) where each PLC (or “bridge” PLC) has a fixed IP address. Using ID String can improve the reliability of system. Several Nodes can have same IP Port number.

Ethernet (client mode)

This mode can be used when target PLC IP address is known and accessible - the VISION Server acts as TCP or UDP client. In this case the VISION Server is initiating TCP or UDP connection to UNITRONICS PLC waiting for connection (acting as server):



The screenshot shows a configuration window for 'Ethernet (client mode)'. It contains the following fields:

- Remote IP Port:** A text box containing the value '100'.
- Remote IP Address:** A text box containing the value '127.0.0.1'.
- Protocol:** A dropdown menu with 'TCP PCOM' selected.
- Retry Delay (sec):** A text box containing the value '5'.

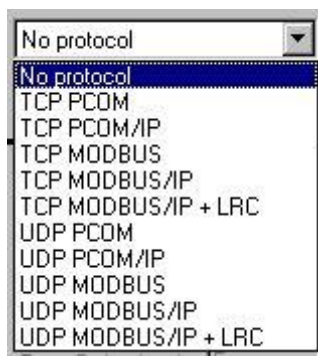
Remote IP Port

This field is used to enter the PLC side TCP or UDP port number used for communication.

Remote IP Address

This field is used to enter the PLC side IP Address.

Protocol combobox is used to select communication protocol. The protocols are the same as using the server mode:



The screenshot shows a dropdown menu for selecting a communication protocol. The menu is open, showing the following options:

- No protocol
- No protocol
- TCP PCOM
- TCP PCOM/IP
- TCP MODBUS
- TCP MODBUS/IP
- TCP MODBUS/IP + LRC
- UDP PCOM
- UDP PCOM/IP
- UDP MODBUS
- UDP MODBUS/IP
- UDP MODBUS/IP + LRC

See **Ethernet (server mode)** section above for explanation of protocols supported.

Retry Delay (sec) field is used to enter the delay in seconds between connection attempts.

Serial

In this mode the VISION Server is using PC COM port for direct connection to PLC:

Protocol combobox allows to select one of the following protocols:

Serial PCOM – Unitronics PCOM ASCII serial protocol.

Serial MODBUS – Modicon Modbus RTU serial protocol.

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

Once the parameter values have been entered, click **OK** button to process the configuration for the node or press **Cancel** to reject the entered parameters.

Saving VISION 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 VISION Server to find the configuration file automatically each time it is started.

Configuration File Location

When the VISION 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:

VISION/d:c:\directoryname

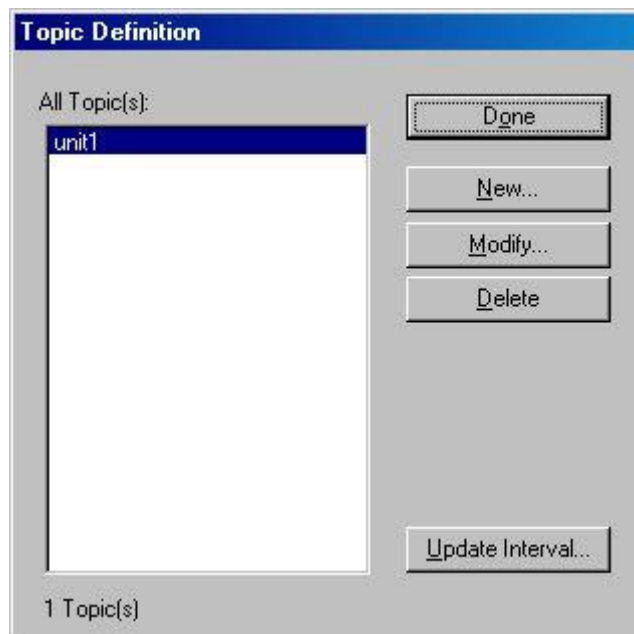
Note: There is no limit to the number of configuration files that may be created, although each must be in a separate directory.

Topic Definition Command

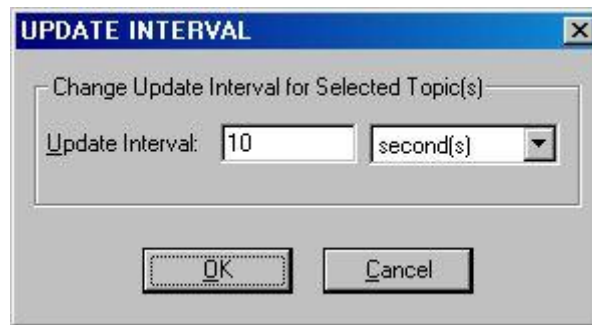
The user provides each connected Unitronics PLC with an arbitrary name that is used as the Topic Name for all references to this PLC.

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

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

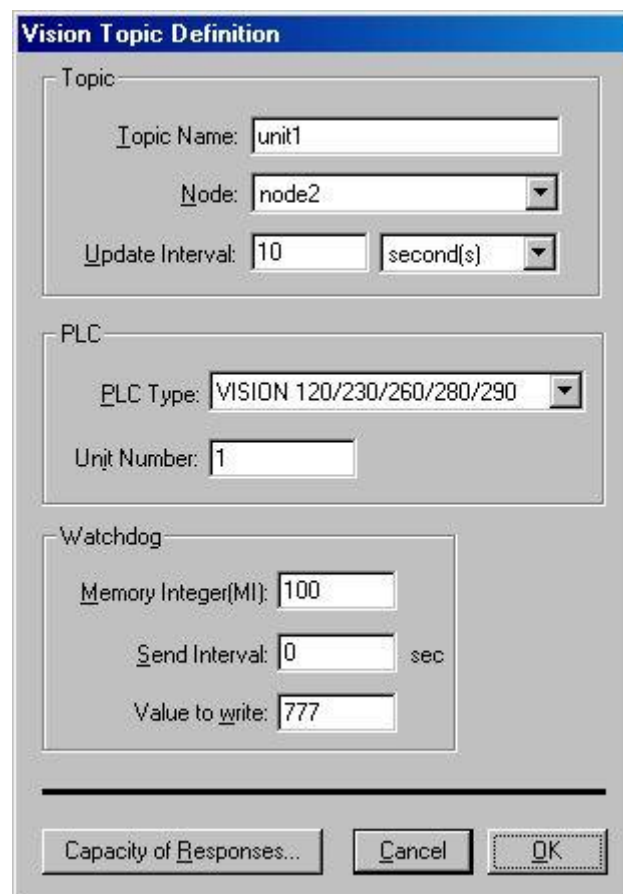


To modify an existing topic, select the topic name and click on **Modify**. To change the Update Interval parameter for one or some topics at the same time select topic(s) and click on **Update Interval**. The "Update Interval" dialog box will appear:



Set the correct Update Interval and press OK button. It is possible to change Update Interval while the Server has active topics. Changes take effect (poll messages will be resent) after OK button is pressed.

To define a new topic, click on **New**. The "Vision Topic Definition" dialog box will appear:



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 VISION Server with InTouch** section.

The **Node** button is used to associate a topic with corresponding node, defined in "VISION Node Settings" dialog.

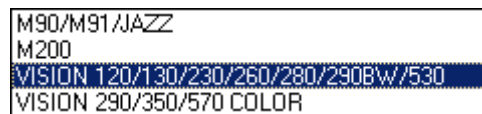
Note: Additional topics may be associated with the same node later.

Important!

For networked connections (connections with PLCs used as bridges (to Unitronics CANbus or RS-485) or with PLCs accessed via bridge PLC) there can be several PLCs (topics) associated with same **Node**. For direct (not “bridged”) connections there must be strict correspondence – one PLC (topic) associated with one **Node** (in this case the only exception can be several topics for same PLC – to enable different Update Intervals, see *Topic Definition Command* section later in this manual).

The **Update Interval** field is used to indicate how often the items/points on this topic will be read (polled). If Update Interval value is 0 then only write and watchdog (if configured) commands will be sent to the PLC, i.e. no polling of data will be performed. Default value is 1000 milliseconds.

The **PLC Type** is used to choose the model of Unitronics PLC connected. The available groups of models are “VISION 120/130/230/260/280/290Black&White/530” (default setting), “VISION 290/350/570” color models, “M90/M91/JAZZ” and “M200”:



The **Unit Number** field is used to indicate the network number of PLC unit (“Unit ID”) currently configured. With default value (0) the Server can communicate to Unitronics PLC directly connected to COM port regardless of its network number.

Important: Beware of using value 0 as unit number in CANBUS network!

Watchdog

In some cases PLC program needs to check if communication between PLC and VISION Server is still alive. For this purpose the special **Watchdog** feature can be used. With Watchdog activated, the Server periodically writes some predefined value (e.g.21) into some predefined address (watchdog address) in PLC’s memory (e.g. into M1000). At same time the PLC program must periodically check the value in this memory address. If value is equal to watchdog’s predefined value, then PLC’s program considers communication status as good and resets the value of watchdog address to different (non-predefined) value, e.g. to 0 – that allows for program to check the communication state next time. If value differs from predefined, then PLC’s program can consider communication status as bad.

Note: Because of time synchronizing problems between PLC and PC, it is recommended to consider the communication status as bad only after few consecutive watchdog value mismatch cases, not immediately after the first mismatch.

To activate the Watchdog processing - set the Watchdog **Send Interval** to non-zero value. Value entered in this field indicates the frequency the Server will send the watchdog command to corresponding PLC. This value must be equal or bit less as time interval the PLC program checks the value in watchdog address. Enter **Memory Integer** field to indicate address in the PLCs memory that is used as watchdog address. **Memory Integer** must be valid item/point name (see Item Names section.) Enter integer from 0 to 65535 into **Value to Write** field to set the Watchdog predefined value.

The same value PLC program expects to see in watchdog address.

Capacity of Responses

It is possible to set the **Capacity of Responses** by clicking on “Capacity of Responses button...”. The following “Maximum Capacity of Responses” dialog box will appear:

The dialog box titled "Maximum Capacity of Response" contains the following settings:

Category	Parameter	Value
Memory	int	125
	bit	255
	long	62
	double	62
	float	24
System	int	125
	bit	255
	long	62
	double	62
I/O	input	255
	output	255
Counters	current	24
	preset	24
	scan bit	24
Timers	current	62
	preset	62
	scan bit	128
X operands	X Bit	255
	X Int	255
	X Long	64
	X Double	64

These values should be changed to make the communication optimal or in case of bad communications. **It is possible to determine the maximum of response capacity for poll requests.** Different limits can be specified for response capacity of PLC memory address areas. The value in the dialog box specifies how many consecutive values can be received by one poll request message. The VISION Server virtually divides polled memory area of controller and this value specifies the length of each memory chunk. For each memory chunk the Server creates one poll message.

Example:

Value 25 for MEMORY INTEGERS means that maximum capacity of response is 25 values of MEMORY INTEGERS. Values from item MI0 to MI24 (including) can be requested in one message. If the value for item MI25 is requested, the next message will be generated by VISION Server.

When all entries in “Maximum Capacity of Responses” dialog box have been made, click on **OK** to return to the “VISION Topic Definition” dialog.

When all entries in “VISION Topic Definition” dialog box 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

It is possible to communicate with following types of UNITRONICS PLCs:

- VISION 120/130/230/260/280/290Black&WhiteW/530,
- VISION 290Color/350/570/1040/1210,
- M90/M91/JAZZ,
- M200.

VISION 120/130/230/260/280/290BW/530

The VISION Server can access the following types of Unitronics VISION series “**black&white**” PLCs memory areas: MEMORY INT, MEMORY BIT, MEMORY FLOAT, MEMORY LONG, MEMORY DOUBLE WORD, INPUT, OUTPUT, SYSTEM INT, SYSTEM BIT, SYSTEM LONG, SYSTEM DOUBLE WORD, TIMER CURRENT VALUE, TIMER PRESET VALUE, TIMER SCAN BIT, COUNTER CURRENT VALUE, COUNTER PRESET VALUE, COUNTER SCAN BIT, REAL TIME CLOCK, UNIT ID and PLC STATUS. The supported item/point types are Discrete, Integer, Real and String. For item/point naming it is recommended to use the consecutive addresses (for example, MI16, MI17, MI18, etc.) - that can considerably increase the performance of VISION Server.

The table below lists the item/point names supported by VISION Server for VISION 120/130/230/260/280/290Black&White/530 PLCs:

Notes:

1. Also lower case letters **mi**, **mb**, **inp**, **out**, **si**, **sb**, etc. can be used as item name first characters.
2. All addresses are decimal.
3. For Discrete INP and OUT items the last digit (**b**) represents the bit position inside the byte. The bit position can be from 0 to 7.
4. For MI and ML string items the length of string **p** is the number of 16-bit integers (MI) or 32-bit integers (ML) in the string; correspondingly the number of characters in the string is **p * 4** for MI and **p * 8** for ML.
5. Inputs (INPnn), Timer Current Values (TCn), Timer Preset Values (TPn), Timer Scan Bits (TSn), Counter Current Values (CCn), Counter Preset Values (CPn), Counter Scan Bits (CSn) are Read Only. System Bits (SBn), System Integers (SIn), System Longs (SLn) and System Doubles (SDn) are Read/Write or Read Only depending on how they are use in the PLC. Set Key (SK), PLC Status (PS) and Real Time Clock (RTC) items are Write-Only.
6. CLOCK item value has the following format:
HH:mm:ss ddd DD/MM/YY, where

HH – hour (0...23);

mm – minutes (0...59);

ss – seconds (0...59);

ddd – week day (Mon, Tue, Wed, Thu, Fri, Sat, Sun);

DD – day of month (1...31);

MM – month (1...12);

YY – 2 last digits of year.

7. RTC and CLOCK items don't act like general items. RTC is write-only item that provide the control of read-write CLOCK item. The following RTC values are valuable:

- 0 – neutral position;
- 1 – VISION server reads the PLC clock and extracts value into the CLOCK item (CLOCK item must be activated);
- 2 – server writes CLOCK item content to PLC;
- 3 – server writes PC time to PLC (synchronize PC and PLC clocks);

8. The following PLC Status (PS) item values are valuable:

- 0 – neutral position,
- 1 – 'Run',
- 2 – 'Stop',
- 3 – 'Memory init and Reset',
- 4 – 'Reset',
- 5 – 'Switch to BootStrap'.

Item/Point Naming Examples

The following examples show **valid** item names:

MB0 MB109 mb1104	Memory Bits 0, 109 and 1104
MI0 MI9 MI615	Memory Integer 0, 9 and 615
MI10S12	String starting from MI10 and containing 48 characters (12 16-bit integers)
INP0 INP31 INP543	Inputs
OUT0 OUT543	Outputs
SB2 si10	System Bit 2 and System Integer 10
TS2	Scan Bit of Timer 2
TP2	Preset Value of Timer 2
TC5	Current Value of Timer 2
SK sk	Set Key
PS ps	PLC Status
RTC rtc	Real Time Clock control item
ID id	Unit ID
CLOCK	Real Time Clock display item

The following examples show **invalid** item names:

MI MB inp8,1 out08	Too few digits for Address or Bit position
MI602400	Address is out of range
MN22 m001	Invalid item type

VISION 290/350/570/1040/1210

The VISION Server can access the following types of Unitronics VISION series "color" PLCs memory areas: MEMORY INT, MEMORY BIT, MEMORY FLOAT, MEMORY LONG, MEMORY DOUBLE WORD, INPUT, OUTPUT, SYSTEM INT, SYSTEM BIT, SYSTEM LONG, SYSTEM DOUBLE WORD, TIMER CURRENT VALUE, TIMER PRESET VALUE, TIMER SCAN BIT, COUNTER CURRENT VALUE, COUNTER PRESET VALUE, COUNTER SCAN BIT, FAST BITS, FAST INTEGER, FAST LONG, FAST DOUBLE, REAL TIME CLOCK, UNIT ID and PLC STATUS. The supported

item/point types are Discrete, Integer, Real and String. For item/point naming it is recommended to use the consecutive addresses (for example, MI16, MI17, MI18, etc.) - that can considerably increase the performance of VISION Server.

The table below lists the item/point names supported by VISION Server for VISION 290/350/570/1040/1210 PLCs:

Item name	Description	Tag Type	Modbus	Value Range	Range
MBn	Bit	Discrete	Yes	0,1	n=0 to 8191
MI n	Integer (16bit)	Integer	Yes	-32768...32767	n=0 to 4095
MI nSp	Integer (16bit) string	String	Yes		n=0 to 8191, p = 1 to 63
MLn	Integer (32bit)	Integer	Yes	-2147483648... 2147483647	n = 0 to 511
MLnSp	Integer (32bit) string	String	Yes		n = 0 to 511, p = 1 to 31
MDn	Unsigned Integer (32bit)	Integer	Yes	0... 4294967295	n = 0 to 255
MFn	Float point including sign(32bit)	Real	Yes	-3.402823466 E+38 ...3.402823466 E+38	n = 0 to 63
INPn	Bit	Discrete	Yes	0,1	n = 0 to 543
OUTn	Bit	Discrete	Yes	0,1	n = 0 to 543
SBn	Bit	Discrete	Yes	0,1	n = 0 to 511
SI n	Integer (16bit)	Integer	Yes	-32768...32767	n = 0 to 511
SLn	Integer (32bit)	Integer	Yes	-2147483648... 2147483647	n = 0 to 55
SDn	Unsigned Integer (32bit)	Integer	Yes	0... 4294967295	n = 0 to 63
TCn	Unsigned Integer (32bit)	Integer	No	0... 4294967295	n = 0 to 383
TPn	Unsigned Integer (32bit)	Integer	No	0... 4294967295	n = 0 to 383
TSn	Bit	Discrete	No	0,1	n = 0 to 383
CCn	Unsigned Integer (32bit)	Integer	No	0... 4294967295	n = 0 to 31
CPn	Unsigned Integer (32bit)	Integer	No	0... 4294967295	n = 0 to 31

CSn	Bit	Discrete	No	0,1	n = 0 to 31
PS	Unsigned Integer (16bit)	Integer	No	1, 2, 3, 4, 5	
SK	Unsigned Integer (16bit)	Integer	No	0...255	
ID	Unsigned Integer (16bit)	Integer	No	0...255	
RTC	Unsigned Integer (16bit)	Integer	No	1, 2, 3	
CLOCK	String	String	No		
XBn	Bit	Discrete	Yes	0,1	n=0 to 1023
XIn	Integer (16bit)	Integer	Yes	-32768...32767	n = 0 to 511
XLn	Integer (32bit)	Integer	Yes	-2147483648... 2147483647	n = 0 to 255
XDn	Unsigned Integer (32bit)	Integer	Yes	0... 4294967295	n = 0 to 63

Notes:

1. Also lower case letters **mi**, **mb**, **inp**, **out**, **si**, **sb**, etc. can be used as item name first characters.
2. All addresses are decimal.
3. For Discrete INP and OUT items the last digit (**b**) represents the bit position inside the byte. The bit position can be from 0 to 7.
4. For MI and ML string items the length of string **p** is the number of 16-bit integers (MI) or 32-bit integers (ML) in the string; correspondingly the number of characters in the string is **p * 4** for MI and **p * 8** for ML.
5. Inputs (INPnn), Timer Current Values (TCn), Timer Preset Values (TPn), Timer Scan Bits (TSn), Counter Current Values (CCn), Counter Preset Values (CPn), Counter Scan Bits (CSn) are Read Only. System Bits (SBn), System Integers (SIn), System Longs (SLn) and System Doubles (SDn) are Read/Write or Read Only depending on how they are use in the PLC. Set Key (SK), PLC Status (PS) and Real Time Clock (RTC) items are Write-Only.
6. CLOCK item value has the following format:
HH:mm:ss ddd DD/MM/YY, where

HH – hour (0...23);

mm – minutes (0...59);

ss – seconds (0...59);

ddd – week day (Mon, Tue, Wed, Thu, Fri, Sat, Sun);

DD – day of month (1...31);

MM – month (1...12);

YY – 2 last digits of year.

7. RTC and CLOCK items don't act like general items. RTC is write-only item that provide the control of read-write CLOCK item. The following RTC values are valuable:

0 – neutral position;

1 – VISION server reads the PLC clock and extracts value into the CLOCK item (CLOCK item must be activated);

2 – server writes CLOCK item content to PLC;

3 - server writes PC time to PLC (synchronize PC and PLC clocks);

8. The following PLC Status (PS) item values are valuable:

0 – neutral position,

1 – 'Run',

2 – 'Stop',

3 – 'Memory init and Reset',

4 – 'Reset',

5 – 'Switch to BootStrap'.

Item/Point Naming Examples

The following examples show **valid** item names:

MB0 MB109 mb1104

Memory Bits 0, 109 and 1104

MI0 MI9 MI615

Memory Integer 0, 9 and 615

ML5S6

String starting from ML5 and containing 48 characters (6 32-bit integers)

INP0 INP31 INP543

Inputs

OUT0 OUT543

Outputs

SB2 si10

System Bit 2 and System Integer 10

TS2

Scan Bit of Timer 2

TP2

Preset Value of Timer 2

TC5

Current Value of Timer 2

SK sk

Set Key

PS ps

PLC Status

RTC rtc

Real Time Clock control item

ID id

Unit ID

CLOCK

Real Time Clock display item

The following examples show **invalid** item names:

MI MB inp8,1 out08

Too few digits for Address or Bit position

MI602400

Address is out of range

MN22 m001

Invalid item type

M90/M91/JAZZ

The VISION Server can access the following types of Unitronics M90/M91/JAZZ PLC memory areas: MEMORY INT, MEMORY BIT, INPUT, OUTPUT, SYSTEM INT, SYSTEM BIT, TIMER CURRENT VALUE, TIMER PRESET VALUE, TIMER SCAN BIT, REAL TIME CLOCK, UNIT ID and PLC STATUS. The supported item/point types are Discrete, Integer and String. For item/point naming it is recommended to use the consecutive addresses (for example, MI16, MI17, MI18, etc.) - that can considerably increase the performance of VISION Server.

The table below lists the item/point names supported by VISION Server for M90/M91/JAZZ PLCs:

Item name	Description	Tag Type	Modbus	Value Range	Range
MBn	Bit	Discrete	Yes	0,1	n = 0 to 255
Min	Integer (16bit)	Integer	Yes	-32768...32767	n = 0 to 255
MInSp	Integer (16bit) string	String	Yes		n = 0 to 255, p = 1 to 63
INPnn,b	Bit	Discrete	Yes	0,1	n = 00 to 159 b = 0 to 7
OUTnn,b	Bit	Discrete	Yes	0,1	n = 00 to 159 b = 0 to 7
Sin	Integer (16bit)	Integer	Yes	-32768...32767	n = 0 to 255
SBn	Bit	Discrete	Yes	0,1	n = 0 to 255
TCn	Unsigned Integer (16bit)	Integer	No	0...65535	n = 0 to 63
TPn	Unsigned Integer (16bit)	Integer	No	0...65535	n = 0 to 63
TSn	Bit	Discrete	No	0,1	n = 0 to 63
PS	Unsigned Integer (16bit)	Integer	No	1, 2, 3, 4, 5	
SK	Unsigned Integer (16bit)	Integer	No	0...255	
ID	Unsigned Integer (16bit)	Integer	No	0...255	
RTC	Unsigned Integer (16bit)	Integer	No	1, 2, 3	
CLOCK	String	String	No		

Notes:

1. Modbus is supported only for M91 and JAZZ PLCs.
2. Also lower case letters **mi**, **mb**, **inp**, **out**, **si**, **sb**, etc. can be used as item name first characters.
3. All addresses are decimal.
4. For Discrete INP and OUT items the last digit (**b**) represents the bit position inside the byte. The bit position can be from 0 to 7.
5. For **MI string items** the length of string **p** is the number of 16-bit integers in the string; correspondingly the number of characters in the string is **p * 4**.
6. Inputs (INPnn,b), Timer Current Values (TCn), Timer Preset Values (TPn), Timer Scan Bits (TSn) are Read Only. System Bits (SBn) and System Integers (SIn) are Read/Write or Read Only depending on how they are used in the PLC. Set Key (SK), PLC Status (PS) and Real Time Clock (RTC) items are Write-Only.
7. The CLOCK item has the following format:

HH:mm:ss ddd DD/MM/YY, where

HH – hours (0...23);

mm – minutes (0...59);

ss – seconds (0...59);

ddd – week day (Mon, Tue, Wed, Thu, Fri, Sat, Sun);

DD – day of month (1...31);

MM – month (1...12);

YY – 2 last digits of year.

8. RTC and CLOCK items don't act like general items. RTC is write-only item that provide the control of Read/Write CLOCK item. The following RTC values are valuable:

0 – neutral position;

1 – VISION server reads the PLC clock and extracts value into the CLOCK item (CLOCK item must be activated);

2 – server writes CLOCK item content to PLC;

3 - server writes PC time to PLC (synchronize PC and PLC clocks);

9. The following PLC Status (PS) item values are valuable:

0 – neutral position,

1 – 'Run',

2 – 'Stop',

3 – 'Memory init and Reset',

4 – 'Reset',

5 – 'Switch to BootStrap'.

Item/Point Naming Examples

The following examples show **valid** item names:

MB0 MB109 mb1104

Memory Bits 0, 109 and 1104

MI0 MI9 MI615

Memory Integer 0, 9 and 615

MI10S12

String starting from MI10 and containing 48 characters (12 16-bit integers)

INP00,0 INP03,1 INP21,7

Inputs

OUT00,0 OUT10,3 OUT63,7

Outputs

SB2 si10

System Bit 2 and System Integer 10

TS2	Scan Bit of Timer 2
TP2	Preset Value of Timer 2
TC5	Current Value of Timer 2
SK sk	Set Key
PS ps	PLC Status
RTC rtc	Real Time Clock
ID id	Unit ID

The following examples show **invalid** item names:

MI MB inp8,1 out08	Too few digits for Address or Bit position
MI1116 INP233,0 OUT00,9	Bit position is out of range
MI602400	Address is out of range
MN22 m001	Invalid item type

M200

The VISION Server can access the following types of Unitronics M200 PLC memory areas: MEMORY INT, MEMORY BIT, INPUT, OUTPUT, SYSTEM BIT and SYSTEM INT. The supported item/point types are Discrete and Integer. For item/point naming it is recommended to use the consecutive addresses (for example, MI16, MI17, MI18, etc.) - that can considerably increase the performance of VISION Server.

The table below lists the item/point names supported by VISION Server for M200 PLCs:

Item name	Description	Tag Type	Value Range	Range
MBn	Bit	Discrete	0,1	n = 0 to 1023
Min	Unsigned integer (16bit)	Integer	0...65535	n = 0 to 1023
MInSp	Integer (16bit) string	String		n = 0 to 1023, p = 1 to 63
INPnn,b	Bit	Discrete	0,1	n = 0 to 63 b = 0 to 7
OUTnn,b	Bit	Discrete	0,1	n = 0 to 63 b = 0 to 7
Sin	Unsigned integer (16bit)	Integer	0...65535	n = 0 to 65535
SBn	Bit	Discrete	0,1	n = 0 to 65535

Notes:

1. Also lower case letters **mi**, **mb**, **inp**, **out**, **si**, **sb**, etc. can be used as item name first characters.
2. All addresses are decimal.
3. Inputs are Read Only. System Bits and System Integers are Read/Write.
4. For Discrete INP and OUT items the last digit (**b**) represents the bit position inside the byte. The bit position can be from 0 to 7.

5. For **MI string items** the length of string **p** is the number of 16-bit integers in the string; correspondingly the number of characters in the string is **p * 4**.

Monitoring and Controlling Communication with a PLC

For each topic, there are following additional items offered by VISION 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:

=VISION|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.

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.

POLL_NOW

The **POLL_NOW** item is an Integer type Write Only item used for immediate one time polling of all active items; this one time polling is performed when **POLL_NOW** value switches from 0 to 1; no effect when switches from 1 to 0.

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 reseted 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 VISION Server with Suite Link and DDE Clients

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

Using the VISION Server with InTouch

To access to operands on Unitronics PLCs (M200, M90, M91, JAZZ, VISION 120/230/260/280/290) 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 **A**dd.... 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 VISION Server the "VISION" is used. Do not enter the .exe extension portion of the program name.

Topic Name

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

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

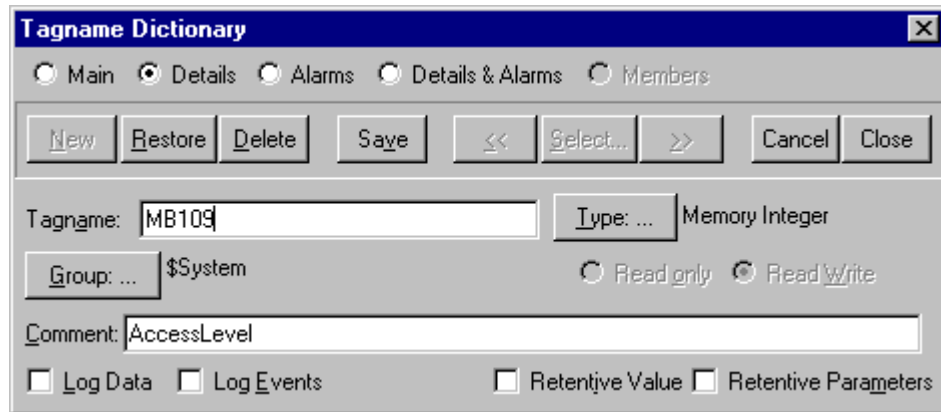
Select **Advise only active items** if you want the Server program to poll only points in visible windows and points that are alarmed, logged, trended or used in any script.

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.

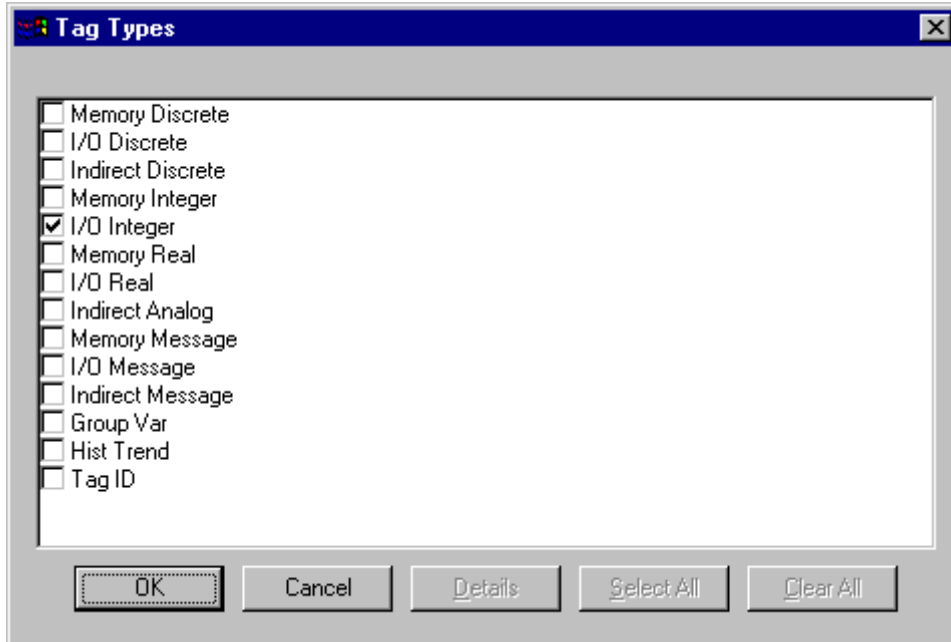
Defining the Tag names

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 VISION 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 VISION 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:

Initial Value:	<input type="text" value="0"/>	Min EU:	<input type="text" value="-32768"/>	Max EU:	<input type="text" value="32767"/>
Deadband:	<input type="text" value="0"/>	Min Raw:	<input type="text" value="-32768"/>	Max Raw:	<input type="text" value="32767"/>
Eng Units:	<input type="text"/>				Conversion
<input type="button" value="Access Name: ..."/> Unassigned					<input checked="" type="radio"/> Linear
					<input type="radio"/> Square Root
Item:	<input type="text"/>				
<input type="checkbox"/> Use Tagname as Item Name					Log Deadband: <input type="text" value="0"/>

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

Access Names	
<input type="text" value="unit1"/>	<input type="button" value="Close"/>
	<input type="button" value="Add..."/>
	<input type="button" value="Modify..."/>
	<input type="button" value="Delete"/>

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:

Initial Value:	<input type="text" value="0"/>	Min EU:	<input type="text" value="-32768"/>	Max EU:	<input type="text" value="32767"/>
Deadband:	<input type="text" value="0"/>	Min Raw:	<input type="text" value="-32768"/>	Max Raw:	<input type="text" value="32767"/>
Eng Units:	<input type="text"/>				Conversion
<input type="button" value="Access Name: ..."/> unit1					<input checked="" type="radio"/> Linear
					<input type="radio"/> Square Root
Item:	<input type="text"/>				
<input type="checkbox"/> Use Tagname as Item Name					Log Deadband: <input type="text" value="0"/>

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 VISION 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 **unit1** is the Topic Name configured for VISION Server):

=view|DDEStatus!unit1

or

=view|IOStatus!unit1

Notes on Using Microsoft Excel

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

= VISION|topic!item

Note!

Sometimes, Excel requires the topic and/or item/points to be surrounded by apostrophes if it is required by Excel syntax.

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:

```
= VISION|unit1!MI16
= VISION|rack2!MB10
= VISION|'tank-2'!INP01,3'
```

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

Writing Values to VISION 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("VISION","topicname")
=POKE(channel,"itemname", Data_Reference)
=TERMINATE (channel)
=RETURN()
```

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

```
channel=INITIATE("VISION","topicname")
```

Opens a channel to a specific topic name (defined in the Server) in an application with name VISION (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 Unitronics PLC) 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 **unit1** item **MI100**:

```
PokeMacro -Ctrl a
=INITIATE("VISION","unit1")
=POKE(A2,"MI100",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 VISION Server with OPC Clients

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

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

1. Run OPC Client application and select the “VISION OPC and DDE Server” from the list of available OPC Servers. If VISION 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 VISION 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 VISION Topic definition.
 - c) By browsing the server address space.

By default the VISION Server is installed and used as a local OPC Server - both OPC Server and OPC Client reside on same computer. The VISION 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.

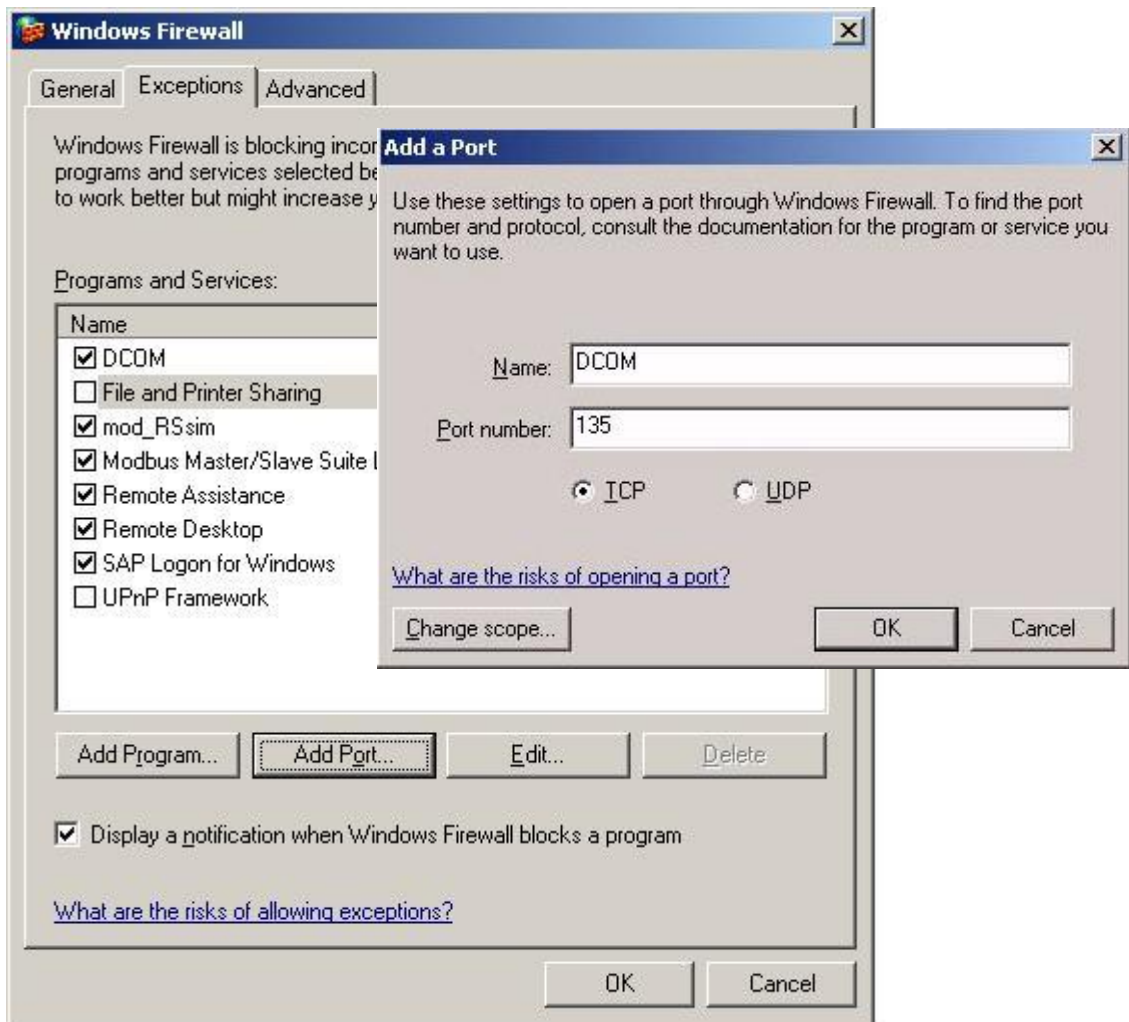
Configuring DCOM

To access VISION Server as a remote OPC Server, it is necessary to do some changes in default security settings selected for the OPC Server’s and Client’s computers. The following Windows XP SP2 based explanation describes the necessary settings to be done for XP SP2 firewall, for OPC Server and for OPC Client computers.

Firewall

When setting up the OPC Server/Client, it is recommended initially to switch the firewall off. After the necessary configuration is done, the firewall should be restarted and the

DCOM port added to the exception list – by selecting "Add Port..." in firewall "Exceptions" pane and adding TCP port 135 as it is needed to initiate DCOM communications:

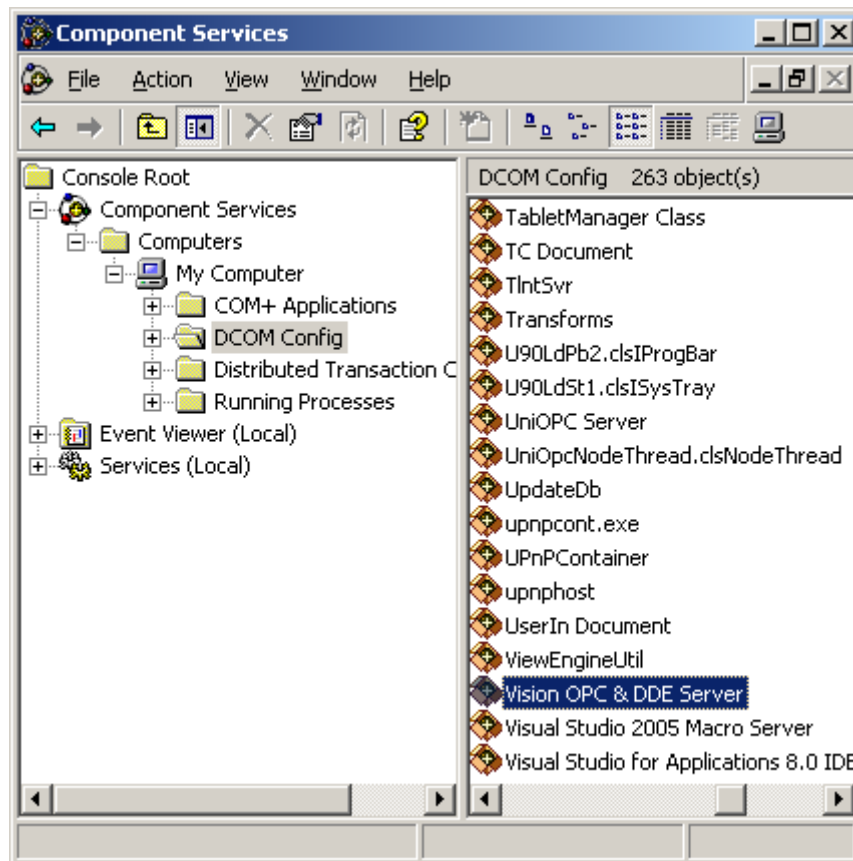


As well by selecting the "Add Program...", all necessary OPC Server and OPC Client programs should be added to the exception list.

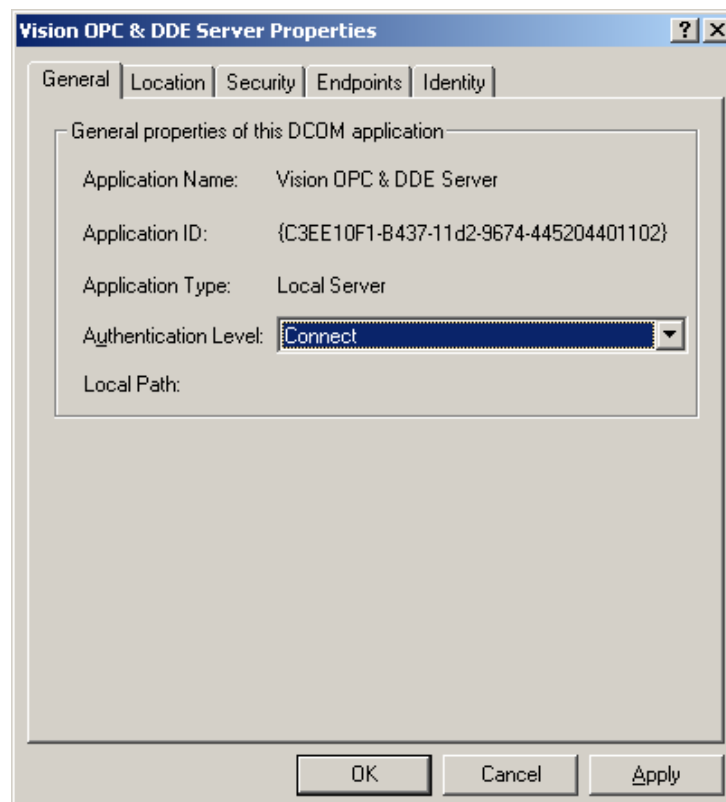
VISION OPC Server settings

After VISION Server "OPC & DDE" version installation, the System Administrator must configure DCOM by using the **dcomcnfg.exe** system utility, the following steps:

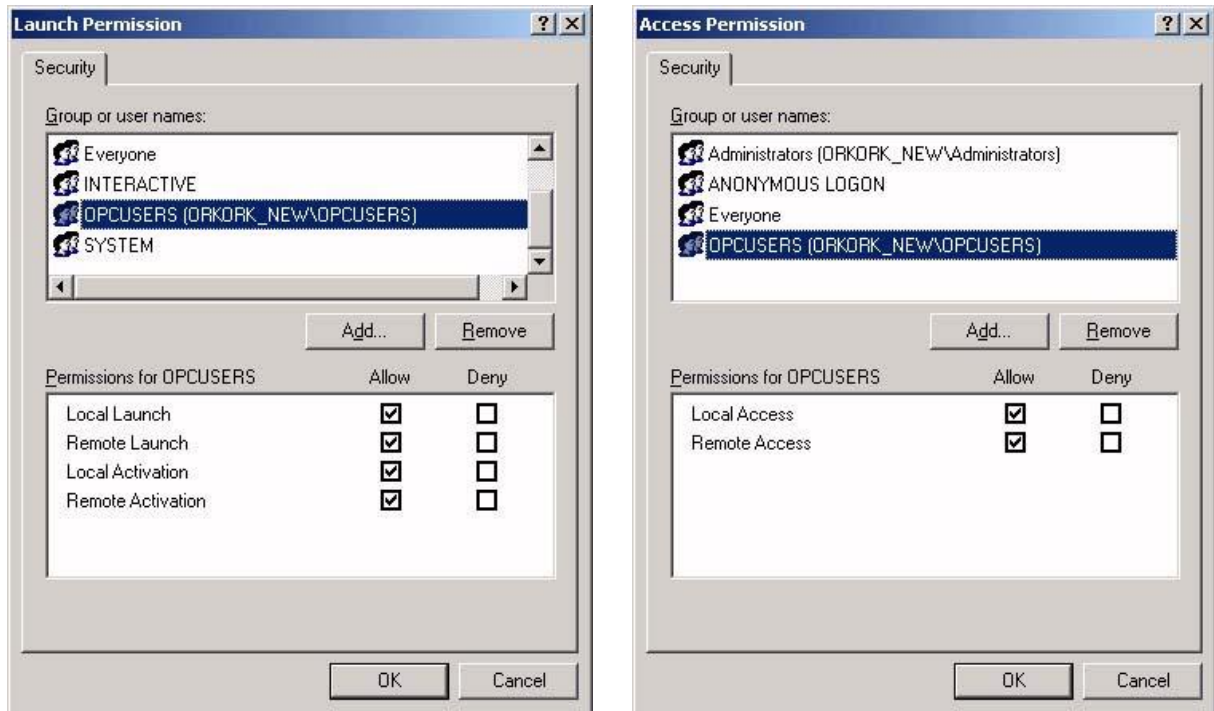
1. At first, it is recommended to create a local group (i.e. OPCUSERS) that contains a list of all the users who will have permission to access the VISION OPC server.
2. Start dcomcnfg.exe from Windows XP Start-Run line and select the "VISION OPC & DDE Server" from the list of DCOM entries:



3. Right click on “VISION OPC & DDE Server” and select the Properties item from the pull down menu that appears. In the window that appears select the **General** tab and make sure the “Authentication Level” field is set to “Connect”:



4. Select the **Security** tab and customize the **Launch and Activation** and **Access** permissions by adding the user group with user who will have permission to access the VISION OPC server. Give all permissions to that group:

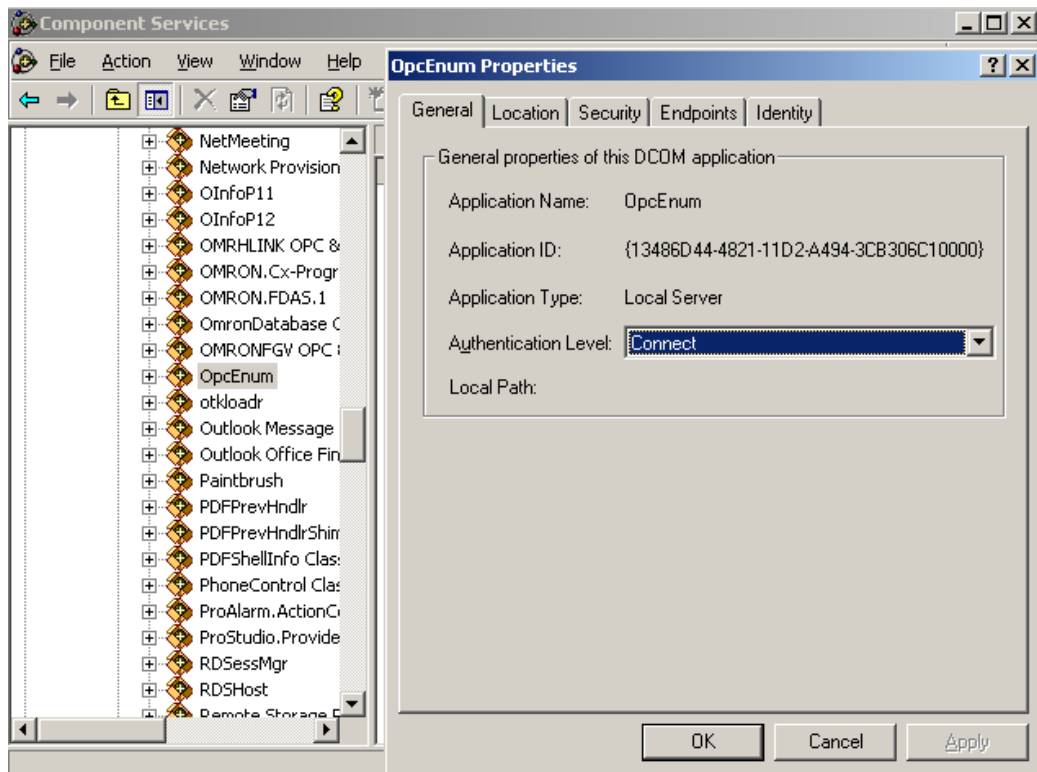


5. Now the configuration of OPC Server is completed – close the dcomcnfg program and restart the VISION OPC Server to put new settings into effect.

OPCEnum settings

OPCEnum (OPC Enumeration Service) is OPC standard component that allows remote OPC Client to browse the local machine to identify OPC Servers that are installed on it.

To configure OPCEnum settings, start dcomcnfg.exe from Windows XP Start-Run line and select the "OPCEnum" from the list of DCOM entries. Right click on "OPCEnum" and select the Properties item from the pull down menu that appears. In the window that appears select the **General** tab and make sure the "Authentication Level" field is set to "Connect":

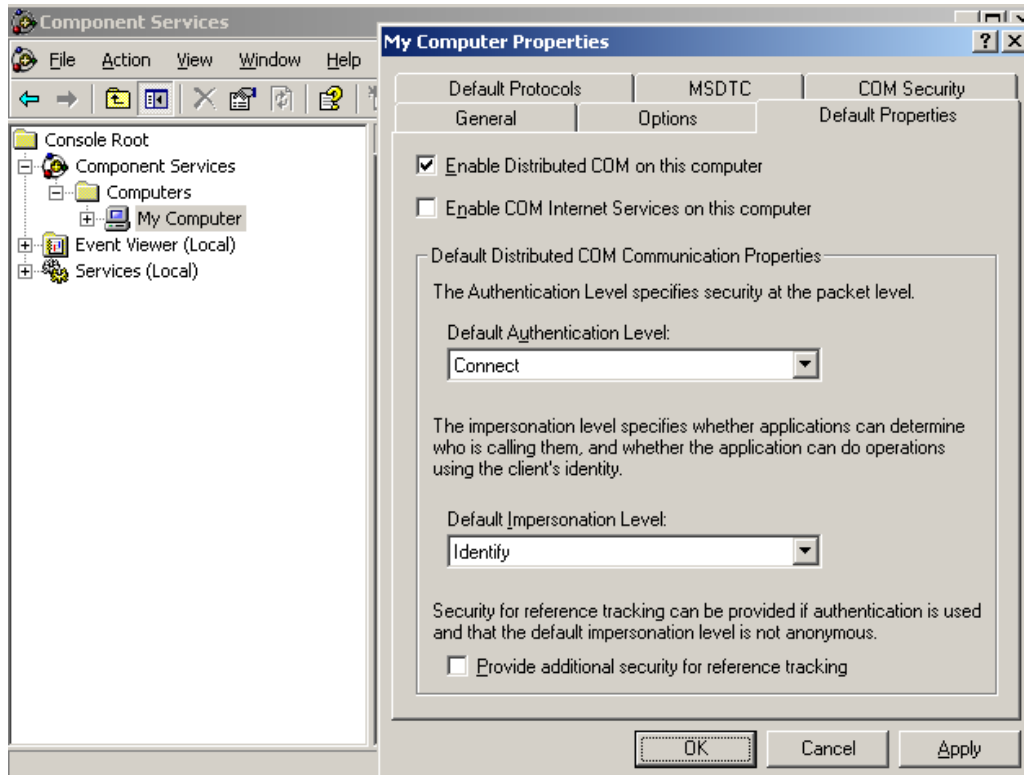


Select the **Security** tab and customize the **Launch and Activation** and **Access** permissions by adding the user group OPCUSERS same way like for “VISION OPC & DDE Server”. Give all permissions to that group.

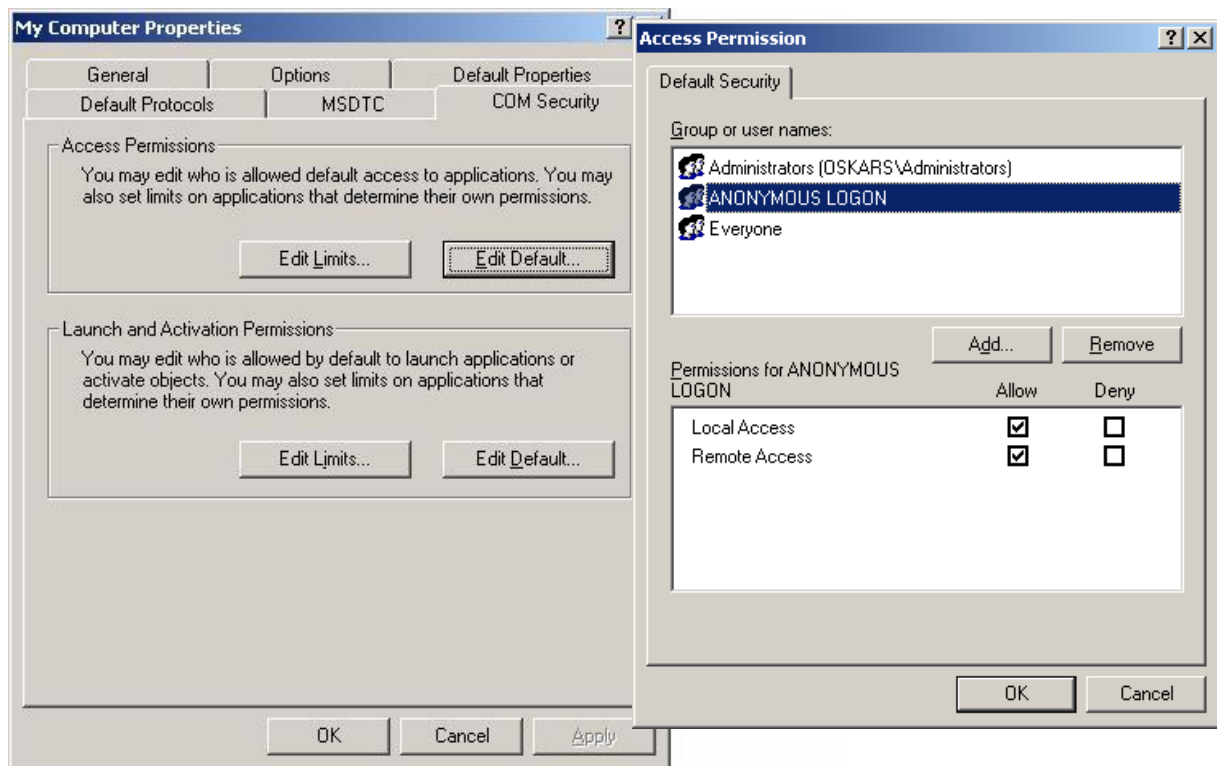
OPC Client side settings

To configure necessary settings on OPC Client computer:

1. Start dcomcnfg.exe from Windows XP Start-Run line, navigate to and right click on “My Computer” and select Properties item from the pull down menu that appears. In the window that appears select the **Default Properties** tab and make sure the settings there are filled like as shown below:



2. Select the **Com Security** tab and edit the Default settings for **Access Permissions** by adding (if not yet added) ANONYMOUS LOGON and giving it all access permissions. Do the same also for "Edit Limits":



3. Edit the Default settings for **Launch and Activation Permissions** by adding (if not yet added) ANONYMOUS LOGON and giving it all all access permissions. Do the same also for "Edit Limits".

Note!

In case the "Edit Limits" selections are not available (grayed) that would mean the DCOM Security Options for some reason have Security Setting other than "Not defined". To correct that: select *Control Panel/ Administrative Tools/Local Security Policy* and select *Local Policies/Security Options* in "Local "Security Settings" dialog box; select, right click and invoke Properties for "DCOM: Machine Access Restrictions..." and "DCOM: Machine Launch Restrictions..." and change their "Security Setting" to "Not defined".

4. Now the configuration of OPC Client side is completed – close the dcomcnfg program and restart the OPC Client.

Running VISION "OPC & DDE" version as Windows Service

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

VISION /Service

After this the "VISION OPC & DDE Server" Service will be installed with Startup type "Manual". The Service Startup configuration can be changed by MS Windows XP *Control Panel/Administrative Tools/Services* configuration. The **Allow service to interact with desktop** checkbox in "Log On" tab must be checked (the "Log On" tab can be invoked from Properties item from the pull down menu that appears when right clicking on **VISION OPC & DDE Server** Service). If **Allow service to interact with desktop** is not selected then VISION Server full functionality is not ensured (e.g. the Server configuration can not be changed, no message boxes will be displayed, etc.).

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

VISION /DelService

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

Using VISION 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 VISION 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 VISION Server then there must exist one or more topics defined for VISION Server. There are following important fields on the “OPCLink Topic Definition” dialog box:

Topic Name

Enter a unique name (e.g. **UNIT1**) 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 (**VISION.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. **UNIT1.**) 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 VISION Server can be obtained by clicking on “Browse” button (this allows to view the VISION 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 VISION Server.

Browse

Clicking on this button initiates the browsing through exposed address space of VISION 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 VISION 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 VISION 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, **UNIT1**.

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 VISION Server. Some examples of possible item names acceptable by OPCLink Server/ VISION Server connection:

- iM10** MEMORY INTEGER, address 0
- dMB28** discrete MEMORY BIT, address 28

Troubleshooting

WIN.INI entries

The first time you run the VISION 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 VISION Server:

```
[VISION]
ProtocolTimer=10
ConfigurationFile=C:\VISION\
WinIconic=0
WinFullScreen=0
WinTop=110
WinLeft=0
WinWidth=200
WinHeight=170
DumpScreen=1
```

The following additional entries can be used:

SlowPollRetries and SlowPollInterval

The **SlowPollRetries** entry is used to enter the number of consecutive error retries for one topic. If after **SlowPollRetries** there is still no successful response from unit (Unitronics 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).

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

```
"Node:<NODENAME> Topic:<TOPICNAME>. Set slow poll mode - poll after each %ld secs. Stop error logging to topic."
```

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

```
"Node:<NODENAME> Topic:<TOPICNAME>. Return to normal communication to topic. Error logging reestablished"
```

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.

MultiWrite

If **MultiWrite=1** entry is added to WIN.INI file [VISION] section then write commands are processed in the following way: if server receives some new value to be written to unit and other writing command to same UNIT address is still pending (waiting for execution)

then no new write command is created - the value in existing write command is replaced by new one. As default (no **MultiWrite** entry or **MultiWrite=0**) all write values are delivered to UNIT, i.e. always new write command is created.

If **MultiWrite=2** then Server tries to include the new write value into the some of previously created messages **ignoring the sequence** of data changing in the client application. Server can include into one message only the consecutive item values. Example: value of MI100 in message with values of items MI99 or MI101.

Important! *If MultiWrite=2 then maximum writing speed is achieved, but this option is not recommended if data changing sequence is important for PLC program!*

WriteCapacity

The **WriteCapacity** entry can be used to specify how many values can be sent (written) by one write message. The **WriteCapacity** value becomes effective only starting with second pending write message, i.e. the first pending write message always will contain one value. The **WriteCapacity** entry is relevant only if parameter **MultiWrite=2**. The **WriteCapacity** default value is 1.

MessageRetries

The **MessageRetries=** entry can be used to specify how many times the VISION server will try to send any command to PLC. After **MessageRetries** expires the next command will be tried. As default (no **MessageRetries** entry or **MessageRetries=2**) the **MessageRetries** equal to 2 will be used. Note - the topic STATUS item value will change to 0 when **MessageRetries** expires.

WriteRetries

The **WriteRetries=** entry can be used only for write commands to specify how many times write command will be tried to send. The **WriteRetries** entry is used together with **MessageRetries** in the following way: if after **WriteRetries * MessageRetries** there is still no response from PLC then this write command is removed from list of pending write commands and will be no more executed. As default (no **WriteRetries** entry or **WriteRetries=3** the **WriteRetries** equal to 3 will be used. So, if default settings (**MessageRetries=2** and **WriteRetries=3**) are used, the write command will be deleted after 6 unsuccessful retries.

Examples:

- by settings **MessageRetries=2** and **WriteRetries=1** the VISION server will delete write command after 2 unsuccessful retries;
- by settings **MessageRetries=1** and **WriteRetries=1** the VISION server will delete write command immediately after first unsuccessful retry.

FirstPollDelay

The **FirstPollDelay=** entry can be used to specify how long is pause (delay) between connection establishing and first poll request issue. As default (no **FirstPollDelay** entry or **FirstPollDelay=0**) the **FirstPollDelay** equal to 0 will be used.

FirstWDDelay

The **FirstWDDelay =** entry can be used to specify how long is pause (delay) between connection establishing and first watchdog write message issue. As default (no **FirstWDDelay** entry or **FirstWDDelay=0**) the **FirstWDDelay** equal to 0 will be used.

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):

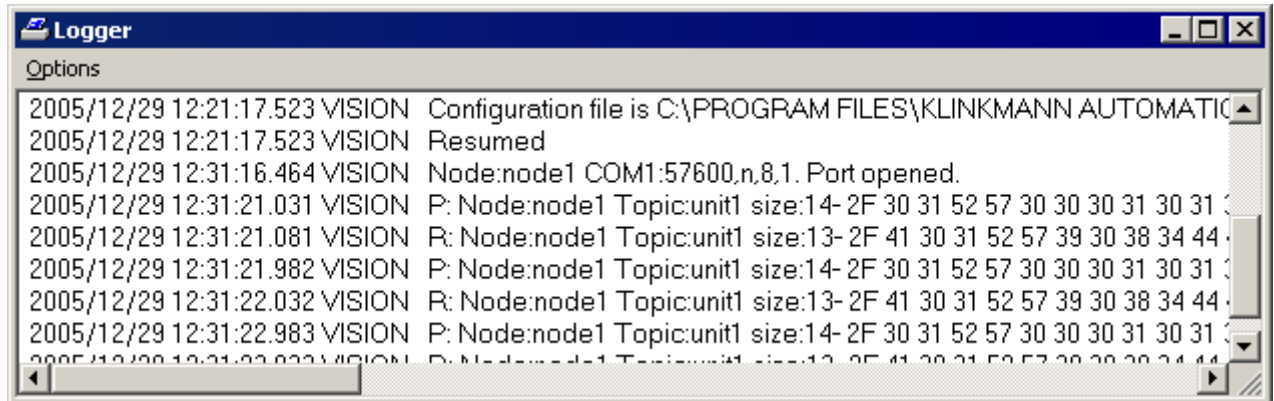
- Suspend Protocol/Resume Protocol** - these choices permit you to turn protocol processing on and off, what means that you can suspend access to PLC(s).
- Show Send** - if checked then all outgoing user data logged in hexadecimal format.
- Show Receive** - if checked then all incoming user data logged in hexadecimal format.
- Show Errors** - if checked then all information about errors is logged.
- Show Bad Writes** - if checked then Server displays information about all situations when data write commands are not executed successfully and after **WriteRetries** retries the write is rejected and write message is deleted from list of active (pending) write messages. This option (if checked) is effective even if other error logging is stopped.
- Verbose** - if checked then additional debugging information is displayed.
- 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 VISION main window. This also can be used to find out how many messages are actually sent to the PLC(s).
- Show Logger** - if checked then VISION Internal Logger is activated and all debug information is going to VISION Internal Logger (for VISION "Suite Link & DDE" version the log information will go both to Wonderware Logger and VISION Internal Logger). The VISION Internal Logger file is named in the format:
VISION_YYYYMMDD.LOGn
 where **YYYY** is a year, **MM** is a month, **DD** is a day and **n** is a order number of consecutive VISION Internal Logger file, starting from 1 (the VISION 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 VISION_19990413.LOG1, VISION_19990413.LOG2, etc.).

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

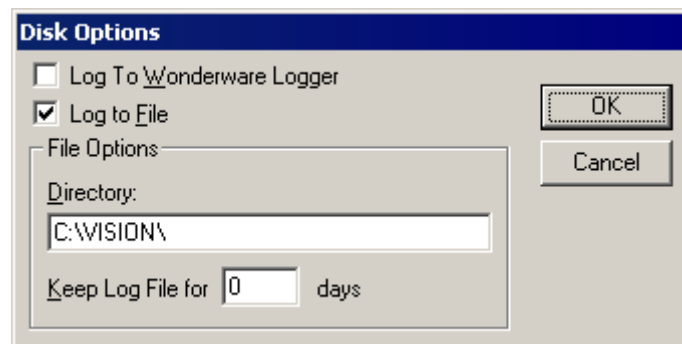
Note: If you check **Show Send** and/or **Show Receive** debug output grows very fast and it is possible that computer can become very slow.

Internal Logger

To enable the VISION Internal Logger, check the **Show Logger** option at the VISION Server System Menu (see *Troubleshooting menu* section above) - this command can be used to start/stop the Internal Logger. The Internal Logger window looks like following:



To save Internal Logger information to file, select *Options/Disk Options...* from Internal Logger main menu – the “Disk Options” dialog box will appear:



The following can be entered in this dialog box:

Log to Wonderware Logger

If checked then debug information will be logged also to Wonderware Logger or Log Viewer (if installed).

Log to File

If checked then Internal Logger information will be saved to Internal Logger File. The VISION Internal Logger file name is created in the following format:

VISION_YYYYMMDD.LOGn

where **YYYY** is a year, **MM** is a month, **DD** is a day and **n** is a order number of consecutive VISION Internal Logger file, starting from 1. The VISION 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 VISION_20030228.LOG1, VISION_20030228.LOG2, etc.

Directory

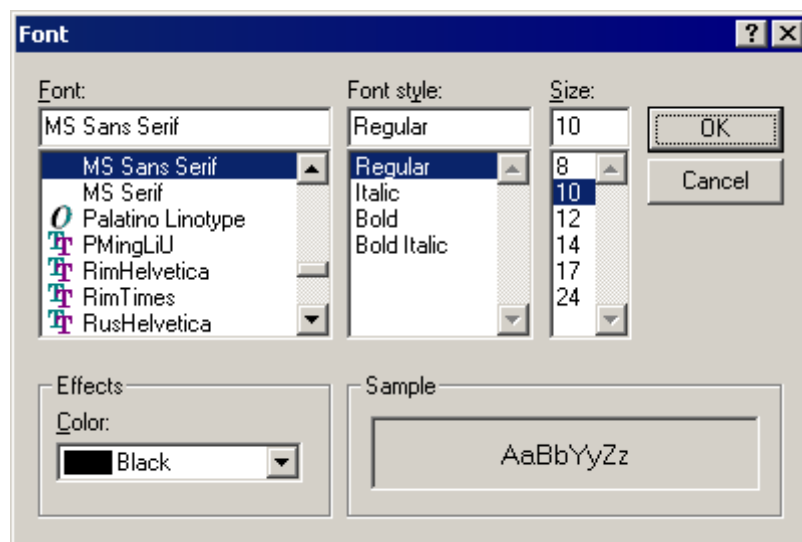
Enter the path where to keep the Internal Logger File.

Keep Log File for

Here the number of days how long to keep the Internal Logger File can be entered. After this number of days expires, the corresponding Internal Logger File will be automatically deleted. The default value **0** keeps Internal Logger Files forever - in this case they can be deleted manually.

Options/Font

To configure the font used by Internal Logger, select *Options/Font...* from Internal Logger main menu - the "Font" dialog box will appear:



KLINKMANN AUTOMATION
Unitronics Vision Communication Server
Revision History

Date	Number	Notes
Jul 2000	Rev 1.0	First Release
Oct 2000	Rev 1.1	System Integers added
Jan 2001	Rev 1.2	OPC compliance information added
Jul 2001	Rev 1.3	Notes on Using Microsoft Excel section modified
Oct 2001	Rev 1.4	Vision 230 and M200 support added
Mar 2002	Rev 1.5	Installation from CD information added.
Dec 2002	Rev 1.6	Vision 120 added.
Sep 2003	Rev 1.7	Ethernet support added.
Apr 2004	Rev 1.8	Server renamed to Vision. PCOM/IP protocol added.
May 2004	Rev 1.9	Memory Float added.
Dec 2005	Rev 2.0	UDP client added. POLL_NOW item added. Internal Logger section added.
Jun 2006	Rev 2.1	JAZZ and Vision 290 PLCs added. Node Definition Command chapter update. New protocols added. Topic Definition Command chapter update. WIN.INI entries added.
Jun 2006	Rev 2.2	ID String description changed in "Ethernet (server mode)" section.
May 2009	Rev 2.3	String items for MI and ML are added. Selection of "color" models in Topic definition added. Ranges for memory areas corrected in "Item names" section tables. "Configuring DCOM" section modified.
May 2010	Rev 2.4	Fast Memory (X operands - XB,XI,XL,XD) are added.
Oct 2010	Rev 2.5	Minor changes
May 2013	Rev 2.6	"Installing the VISION Server" section modified, "Licensing by using HASP HL key" and "Software license key" sub-sections added.