Your comments and suggestions on the operation of this software are welcome. Please address them to:

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ICONICS Technical Support

Welcome To Help

Use the Help system to lean more about the OPC Server for Allen-Bradley networks.

- Find answers to your questions
- Get connected easily using Quick Start
- Connect to the web to get updates
- Troubleshoot your server

Using the 1784-PCMK on WIN NT

Platforms: WIN NT

The driver does not support PCMCIA socket services on WIN NT. To use the 1784-PCMK on WIN NT, you will need a copy of RSLinx-Lite (version 2.1 or later) to configure and allocate the WIN NT system resources used by the 1784-PCMK.

Once the system resources have been allocated, RSLinx-Lite does not need to run.

If you do not have a copy of RSLinx-Lite, a copy can be downloaded freely from the Web Updates area of the Rockwell Software support site http://support.software.rockwell.com/WebUpdates Part # 9355WAB100END

Procedure

- Start RS-Linx Lite
- From the RSLinx-Lite menu click **Communications -> Configure Drivers…**
- Select **1784-PCMK Devices** from the **Available Driver Types** then click **Add New..**
- Assign a name to the driver
- Record the **Board Address** used by the 1784-PCMK (default D800)
- All other RSLinx-Lite PCMK settings in are not required by the OPC Server.
- Click **Ok**

Select the **Board Address** value in the OPC Server driver configuration.

Using the 1784-PCMK on Windows 95/98

Platforms: WIN 95/98

The OPC Server does not support PCMCIA socket services on WIN 95/98. To use the 1784-PCMK on WIN 95/98 you will need the Rockwell Software 1784-PCMK Plug n-Play drivers. If you do not have a copy of the Plug-n-Play driver, a copy can be downloaded freely from the Download area of the Rockwell Software support site

http://www.software.rockwell.com/download/pcmk/rsipcmk.zip

Procedure

- Download the 1784-PCMK Plug-n-Play driver
- Install the Plug-n-Play driver
- Click **Start -> Settings -> Control Panel -> System**
- Click **Device Manager Tab** of **System Properties**
- Expand the **Allen-Bradley PCMK Family** device
- Select **Allen-Bradley 1784-PCMK/B (Driver 2.21)** device
- Click the Properties… button
- Select the **Resources Tab** of the Allen-Bradley 1784-PCMK/B (Driver 2.21) Properties
- Record the first value of the **Memory Range** (e.g. 04010000 – 04010FFF)
- Enter the Memory Range value in the OPC Server driver configuration.

Using the 1784-PTKX on Win 95/98

Platforms: WIN 95/98

Only the single channel version of the 1784-PKTX is supported in this release. The dual-channel version (1784-PKTX/D) is not supported.

You must install the PKTX Plug-n-Play driver in Windows 95/98 platforms.

The Plug-n-Play driver is not required for WIN NT

Installing the PKTX Plug-n-Play Driver

- Click **Start -> Settings -> Control Panel**
- Click **Add New Hardware -> New Hardware Wizard**
- Select **Unknown or Other -> (Standard System Devices)**

- Select **PCI Bus -> Have Disk** "\Program Files\….\AB OPCServer\IGPKTX.INF"

Quick Start

Drivers

What is a Driver ?

☐ Add Serial DF1 Driver

☐ Add Ethernet Driver to PLC/SLC

☐ Ethernet Driver to Control Logix 5550

☐ Add 1784-KT, KTX, PKTX, PCMK Card Driver

☐ Add SS-Technologies 5136SD Card Driver

☐ Edit an Existing Driver

☐ Delete an Existing Driver

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What is a Device ?

☐ Add a Device

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☐ Edit a Tag

☐ Delete a Tag

☐ Scaling a Tag Value

☐ Tag Multiply

OPC

☐ What is OPC

☐ OPC Test Client Application

Adding a Serial DF1 Driver

Platforms: WIN NT/95/98 WINCE

What is a Driver

Use this driver when communicating to PLC-5, SLC, MicroLogix and ControlLogix 5550 via Channel 0, 1770-KF2, 1770-KF3.

Recommended Channel 0 Settings

☐ PLC-5

☐ SLC/MicroLogix

☐ ControlLogix 5550

Note: The driver does not support the 1770-PIC module.

- Click **Edit -> Comm Settings …**
- From the **Supported Drivers**
  - select -
  Serial DF1 (Full Duplex) to PLC/SLC/MicroLogix/L5550
- Click **Add…**
- Enter a Driver Name for the DF_1 driver.
  Examples of a Driver Name
  DF_1
  COM1_CH0
- Click **Ok**
- Select a **Port**
  Port Ranges COM1: to COM24:

- Select the **Baud Rate**
  Baud Rate = 300 -115200
  Select the baud rate that matches the PLC communication setting.

- Select the **Parity**
  Parity = **N**one, **O**dd, **E**ven
  Select parity that matches the PLC communication setting.
  Normally the PLC is configured **PARITY = NONE**

- Select the **Flow**
  Flow = Hardware RTS/CTS, Modem RTS+timeout, None
  Select the Flow that matches the communication setting of the PLC.
  Normally the PLC is configured for **FLOW = NONE**

- Select the **DataBits**
  DataBits = 7 or 8
  Select the Databits that match the communication setting of the PLC.
  Normally the PLC is configured for **DATABITS = 8**

- Select the **StopBits**

StopBits = 1 or 2
Select the StopBits that match the communication setting of the PLC.
Normally the PLC is configured for **STOPBITS = 1**

- Select the **Checksum**

Checksum = BCC or CRC
Select the Checksum that matches the communication setting of the PLC.
CRC preferred checksum method

- Click **Ok**

Adding a Ethernet Driver to PLC/SLC

Platforms: WIN NT/95/98 WINCE

What is a Driver

Use this driver when communicating Ethernet to a PLC-5 Processor, 1785-ENET Side Car module, or SLC 5/05 Ethernet Processor.

- Click **Edit -> Comm Settings…**

- From the **Supported Drivers**
  - select -
  AB 1785 ENET (PLC-5/SLC)

- Click **Add…**

- Enter a Driver Name for the Ethernet driver.
  Examples
  1785ENET_1
  PLC_ENET_6

- Click **Ok**

- Enter the **IP Address** of the Ethernet PLC
- Click **Ok**

Adding 1784 Card Drivers

Platforms: WIN NT/95/98

What is a Driver

Select the type of Communication Card you wish to add

☐ Adding a 1784-KT Card

☐ Adding a 1784-KTx Card

☐ Adding a 1784-PKTX Card (PCI Card)

☐ Adding a 1784-PCMK Card (PCMCIA Card)

Adding a 1784-KT Card Driver

Platforms: WIN NT/95/98

Use this driver when using a 1784-KT (ISA Bus) Communication Interface Card for Data Highway Plus.

Note: Administrator Rights is required on WIN NT to add, delete or modify this driver.

- Click **Edit -> Comm Settings …**
- From the **Supported Drivers**
  - select -
  1784-KT/KTX(d)/PKTX/PCMK
- Click **Add …**
- Enter a Driver Name for the KT Card.
  Examples
  KT_1
  KT_NODE_77
- Click **Ok**

- Select **Network Type = DH+**
- Select **Card Type = KT**
- Select the **Base Address**
  Base Address = A0000-EF000
  The Base Address must match the DIP SW configuration settings of the KT Card.
- Select a **Station ID** (Node Address) to assign the KT card.
  This must be a unique address from 00-77 octal and not conflict with any other nodes on the network.
- Select the **Baud Rate**
  Only 57.6K is supported for the 1784-KT
- *(Optional)* – Enter a **Terminal Name** for the KT Card.
  The Terminal Name can be 8 characters (MAX)
- Click **OK**

Adding a 1784-KTX/(d) Card Driver

Platforms: WIN NT/95/98

Use this driver when using a 1784-KTx or 1784-KTxD (ISA Bus) Communication Interface Card for Data Highway Plus or Data Highway 485.

Note: Administrator Rights is required on WIN NT to add, delete or modify this driver.

- Click **Edit -> Comm Settings …**
- From the **Supported Drivers**
  - select -
  1784-KT/KTX(d)/PKTX/PCMK
- Click **Add...**
- Enter a Driver Name for the KTX Card.
  Examples
  KTX_1
  KTX_DH485_17
- Click **Ok**
- Select **Network Type = DH+ or DH-485**
- Select **Card Type = KTx(d)**

- Select the **Base Address** setting for the 1784-KTx card
  Base Address = A0000-EF000.
  This setting must match the ROTARY SW configuration settings of the KTX Card.

- Select a **Station ID** (Node Address) to assign the KTX card.
  This must be a unique number and not conflict with other nodes on the network
  DH+ = (00-77 octal)
  DH-485 = (00-31 decimal)

- Select the **Baud Rate**
  DH+ Baud Rates = 57.6, 115K and 230K **(default 57.6)**.
  DH-485 Baud Rates = 9600 or 19200 **(default 19200)**
  The baud rate must match baud rate of the entire network,

- *(Optional)* – **Last Node** (DH-485 Only).
  Select the last node address used on the DH-485 network.
  This can often increase the performance of the DH-485 network.

- *(Optional)* - Enter a **Terminal Name** for the KTX Card.
  The Terminal Name can be 8 characters (MAX)

- Click **OK**

Adding a 1784-PTKX Card Driver

Platforms: WIN NT/95/98

Use this driver when using a 1784-PKTX (PCI Bus) Communication Interface Card for Data Highway Plus or Data Highway 485.

See Release Note Using the 1784-PTKX on Win 95/98

Note: Administrator Rights is required on WIN NT to add, delete, or modify this driver

- Click **Edit -> Comm Settings …**

- From the **Supported Drivers**
  - select -
  1784-KT/KTX(d)/PKTX/PCMK

- Click **Add...**

- Enter a Driver Name for the PKTX Card.
  Examples
  PKTX_0
  PKTX_1

- Click **Ok**
- Select **Network Type = DH+ or DH-485**
- Select **Card Type** = **PKTX**
- The **Base Address** Setting is disabled.
  The driver will acquire the PKTX base address from the PCI BIOS
- Select a **Station ID** (Node Address) to assign the PKTX card.
  This must be a unique number and not conflict with other nodes on the network
  DH+ (00-77 octal)
  DH 485 (00-31 decimal)
- Select the **Baud Rate**.
  DH+ Baud Rates = 57.6, 115K and 230K **(default 57.6)**.
  DH-485 Baud Rates = 9600 or 19200 **(default 19200)**.
  The baud rate must match baud rate of the entire network,
- *(Optional)* – **Last Node** (DH-485 Only).
  Select the last node address used on the DH-485 network.
  This can often increase the performance of the DH-485 network.
- *(Optional)* - Enter a **Terminal Name** for the PKTX Card.
  The Terminal Name can be 8 characters (MAX)
- Click **OK**

Adding a 1874-PCMK Card Driver

Platforms: WIN NT/95/98

Use this driver when using a 1784-PCMK (PCMCIA) Communication Interface Card for Data Highway Plus or Data Highway 485.

Note: Administrator Rights is required on WIN NT to add, delete, or modify this driver

See Release Notes

Using the 1784-PCMK on WIN NT

Using the 1784-PCMK on Windows 95/98

- Click **Edit -> Comm Settings …**
- From the **Supported Drivers**
  - select -
  1784-KT/KTX(d)/PKTX/PCMK

- Click **Add...**
- Enter a Driver Name for the PCMK Card.
  Examples
  PCMK_1
  PCMK_DHP_42
- Click **Ok**
- Select **Network Type** = **DH+ or DH-485**
- Select **Card Type** = **PCMK**
- Enter the **Base Address** setting for the 1784-PCMK card
- Select a **Station ID** (Node Address) to assign the PCMK card.
  This must be a unique number and not conflict with other nodes on the network.
  DH+ = (00-77 octal)
  DH-485 = (00-31 decimal)
- Select the **Baud Rate**
  DH+ Baud Rates = 57.6, 115K and 230K **(default 57.6)**
  DH-485 Baud Rates = 9600 or 19200 **(default 19200).**
  The baud rate must match baud rate of the entire network,
- *(Optional)* – **Last Node** (DH-485 Only).
  Select the last node address used on the DH-485 network.
  This can often increase the performance of the DH-485 network.
- *(Optional)* - Enter a **Terminal Name** for the PCMK Card.
  The Terminal Name can be 8 characters (MAX)
- Click **OK**

Adding a SS-Technologies 5136SD Card Driver

Platforms: WIN NT/95/98

What is a Driver

Use this driver when using a SS-Technologies 5136SD (ISA Bus) Communication Interface Card for Data Highway Plus.

Note: Administrator Rights is required on WIN NT to add, delete, or modify this driver.

- Click **Edit -> Comm Settings …**
- From the **Supported Drivers**
  - select -
  SST-5136SD

- Click **Add...**

- Enter a Driver Name for the SST Card.
  SST_1
  SST_DHP_77

- Click **Ok**

- Select **Card Personality** = **Native DH+ (default)** or **KT Emulation**.
  KT Emulation permits the SST-5136SD card to be used concurrently by another application such as PLC Programming Software. Consult the SST-56136SD Users Manual for more information regarding KT Emulation Mode.

- Select **I/O Port**
  I/O Port = 200 – 2F8 and 600 – 6F8 **(default = 250)**
  Select the I/O Port assigned to the SST-5136SD by the DIP SWITCH settings on the card.

- Select the **Base Address** setting to be assigned to the card
  Base Address = A0000-EF000.

- Select a **Station ID** (Node Address) to assign the SST-5136SD card.
  DH+ = (00-77 octal)
  This must be a unique number and not conflict with other nodes on the network

- Select the **Baud Rate**
  Baud Rates = 57.6, 115K and 230K **(default = 57.6)**
  The baud rate must match baud rate of the entire network,

- *(Optional)* - Enter a **Terminal Name** for the SST-5136SD Card.
  The Terminal Name can be 8 characters (MAX)

- Click **OK**

OPC Device

A **Device** is the end-point piece of hardware that you are communicating to such as a single node on a PLC network. A Device is associated to a server Driver that is responsible for handling the details of communication. You can configure as many devices in the OPC server as you like. When naming Devices, you are encouraged to use intuitive names such as **PLC5_StampPress42**

OPC Group

A **Group** is an optional means for organizing data points from Devices. You can define any of Groups underneath each Device to organize the data the way it would be most intuitive for your application. For example, you can define a Group consisting solely of data points representing **Temperature Readings**, and have other Groups defined for data points representing **Alarms**, **Presets** or **Setpoints**.

An OPC client can configure the rate that an OPC server should provide the data changes to the OPC client.

OPC Item

An **OPC Item** (commonly referred to as a **Tag**) represents a connection to a data source within the server. All access to OPC Items is via an OPC Group objects that "contain" the OPC item, or simply where the OPC Item is defined.

Adding A Device

What is Device

- Click **Add -> New Device…**
- Enter a Name for the Device
  Examples:
  PLC-5 Node 17 Paint Booth
  SLC-ENET Assembly Line 6
  L5550-ENET Test Stand 11
- Select the Driver Name to used to communicate to the Device See Quick Start

Serial Devices

☐ Adding a PLC-5 Device

☐ Adding a SLC Enhanced

☐ Adding a SLC/MicroLogix 1000/1500

☐ Adding a ControlLogix 5550

Ethernet Devices

☐ Adding a PLC-5 Device

☐ Adding a SLC 5/05 Device

☐ Adding a Control Logix 5550

Data High Plus Devices

☐ Adding a PLC-5 Device

☐ Adding a SLC 5/04 Device

Data Highway 485-Devices

☐ Adding SLC Enhanced

☐ Adding SLC/Micro Logix 1000/1500

Adding a PLC-5 Serial Device

Platforms: WIN NT/95/98 WINCE

PLC-5's Devices supported on DF1

Under Device Properties

- Select the DF1 Driver Name you created by Adding a Serial DF1 Driver
- Select **PLC-5 Family**
- *(Optional)* - **PLC Node** (required when using a KF2 communication interface)

PLC Node = (00-77 octal)

- Enter a **Timeout** period (50-10000ms) 3000ms default.
- *(Optional)* Simulate
- Click **OK.**

Adding a SLC Enhanced Serial Device

Platforms: WIN NT/95/98 WINCE

SLC's (Enhanced) Devices supported on DF1

- Select the DF1 Driver Name you created by Adding a Serial DF1 Driver
- Select **SLC Enhanced**
- *(Optional)* - **PLC Node** (required when using a KF2/KF3 communication interface)

PLC Node = (00-77 decimal) KF2 to SLC 5/04
PLC Node = (00-31 decimal) KF3 to SLC 5/03

- Enter a **Timeout** period (50-10000ms) 3000ms. default.
- *(Optional)* - Simulate
- Click **OK.**

Adding a SLC/MicroLogix Serial Device

Platforms: WIN NT/95/98 WINCE

SLC/MicroLogix Devices supported on DF1

- Select the DF1 Driver Name you created by Adding a Serial DF1 Driver
- Select **SLC/MicroLogix**
- *(Optional)* - **PLC Node** (required when using a KF3 communication interface)

PLC Node = (00-31 decimal)

- Enter a **Timeout** period (50-10000ms) 3000ms default.
- *(Optional)* - Simulate
- Click **OK.**

Adding a Control Logix 5550 Serial Device

Platforms: WIN NT/95/98 WINCE

- Select the DF1 Driver Name you created by Adding a Serial DF1 Driver
- Select **ControlLogix**
- Enter a **CPU Slot** of the ControlLogix 5550
- Enter a **Timeout** period (50-10000ms) 3000ms default.

- *(Optional)* - Simulate
- Click **OK.**

PLC-5 Devices Supported Under DF1

Channel 0 and 1770-KF2

PLC-5/10, PLC-5/15, PLC-5/20, PLC5-20E, PLC-5/25, PLC-5/30, PLC-5/40, PLC-5/40E, PLC-5/60, PLC-5/80, PLC-5/80E

SLC Enhanced Devices Supported Under DF1

Channel 0 - SLC 5/03, SLC 5/04, SLC 5/05

1770-KF3 – SLC 5/03

1770-KF2 – SLC 5/04

SLC/MicroLogix Supported Under DF1

Channel 0 – MicroLogix 1000/1500

1770-KF3 – SLC 500, 5/01, 5/03

Simulate

Simulates data from a Device, but no I/O access to the Device occurs

Adding a Ethernet Driver to Control Logix 5550

Platforms: WIN NT/95/98 WINCE

What is a Driver

Use this driver when communicating Ethernet to a Control Logix 5550 Processor.

- Click **Edit -> Comm Settings…**
- From the **Supported Drivers**
  - select -
  AB 1756 ENET (Control Logix)
- Click **Add…**
- Enter a Driver Name for the Ethernet driver.
  Examples
  1756ENET_1
  L5550_LINE_4
- Click **Ok**
- Enter the **IP Address** of the Ethernet PLC
- Click **Ok**

Adding a PLC-5 Ethernet Device

Platforms: WIN NT/95/98 WINCE

PLC-5 Devices supported on Ethernet

Under Device Properties

- Select the Ethernet Driver Name you created by Adding a Ethernet Driver to PLC/SLC
- Select **PLC-5 Family**
- *(Optional)* - **PLC Node**
- Enter a **Timeout** period (50-10000ms) 3000ms default.
- *(Optional)* Simulate
- Click **OK.**

PLC-5 Ethernet Devices

- **Ethernet Processors**
  PLC-5/20E, PLC-5/40E, PLC-5/80E
- **1785-ENET (Ethernet Side Car)**
  PLC-5/10, PLC-5/15, PLC-5/20, PLC-2/25, PLC-5/30, PLC-5/40, PLC-5/60, PLC-5/80

Adding a SLC 5/05 Ethernet Device

Platforms: WIN NT/95/98 WINCE

Under Device Properties

- Select the Ethernet Driver Name you created by Adding a Ethernet Driver to PLC/SLC
- Select **SLC Enhanced**
- *(Optional)* - **PLC Node**
- Enter a **Timeout** period (50-10000ms) 3000ms default.
- *(Optional)* Simulate
- Click **OK.**

Adding a Control Logix 5550 Ethernet Device

Platforms: WIN NT/95/98 WINCE

Under Device Properties

- Select the Ethernet Driver Name you created by Adding a Ethernet Driver to Control Logix 5550
- Select **Control Logix 5550**
- **CPU Slot** Enter the rack I/O Slot where the Control Logix 5550 Processor resides

- Enter a **Timeout** period (50-10000ms) 3000ms default.
- *(Optional)* Simulate
- Click **OK.**

Adding a PLC-5 Data Highway Plus Device

Platforms: WIN NT/95/98

PLC-5 Devices supported on Data Highway Plus

Under Device Properties

- Select the KT/KTX/PKTX/PCMK/SST Driver Name you created by Adding 1784 Card Drivers
- Select **PLC-5 Family**
- **PLC Node** address of the device

PLC Node = (0-77 octal)

- Enter a **Timeout** period (50-10000ms) 3000ms default.
- *(Optional)* Simulate
- Click **OK.**

PLC-5 Device supported on Data Highway Plus

PLC-5/10, PLC-5/15, PLC-5/20, PLC5-20E, PLC-2/25, PLC-5/30, PLC-5/40, PLC-5/40E, PLC-5/60, PLC-5/80, PLC-5/80E

Adding a SLC 5/04 Data Highway Plus Device

Platforms: WIN NT/95/98

Under Device Properties

- Select the KT/KTX/PKTX/PCMK/SST Driver Name you created by Adding 1784 Card Drivers
- Select **SLC Enhanced**
- **PLC Node** address of the device

PLC Node = (00-77 decimal)

- Enter a **Timeout** period (50-10000ms) 3000ms default.
- *(Optional)* Simulate
- Click **OK.**

Modifying a Driver

- Stop all client applications communicating to the server
- Click **View -> Comm Settings…**
- Double click the **Driver Name** in the list of Installed Drivers

- Edit the **Driver Properties**
- Click **OK**

Deleting A Driver

- Stop all client applications communicating to the server
- Click **View -> Comm Settings…**
- Select the **Driver Name** in the list of Installed Drivers
- Click the **Delete** button
- Click **OK**

IMPORTANT: When deleting a driver, you must make sure the are no Devices referencing that driver.

Modifying a Device

- Stop any client applications using this Device
- Select the **Device** to Modify in the Device/Group pane of the server.
- Click **Edit -> Properites**
- Edit the Device Settings
- Click **OK**

Deleting a Device

- Stop all client applications communicating to the server
- Select the **Device** to Modify in the Device/Group pane of the server.
- Click **Edit -> Delete**
- Click **OK**

Adding A Tag

What is a Tag

- Select the Device or Group that you want to add tags to.
- Click Add -> New Tag
- Enter a Name for the Tag.

Examples of Tag names:
Temp Zone 1 Preset
Batch Step Sequence Number

- *(Optional)* – Enter a Description of the Tag

- Enter the data point for the Tag

☐ PLC/SLC/MicroLogix Data Table File Addressing
☐ ControlLogix 5550 CPU Tag Addressing

- Select the Data Type for the Tag

VT_BOOL
VT_UI1
VT_I2
VT_I4
VT_R4
VT_BSTR

- *(Optional)* – Scaling
- *(Optional)* – Simulation signal
- Click **OK**

Adding a Group

What is a Group

- Click **Add -> New Group…**
- Enter a name for the Group
  A Group name can be up to 32 characters (max), but cannot contain any periods "."
  Example Group names:
  Phase 1 Test Parameters
  Zone 3 Alarms
  Servo Positions
- Click **OK**

What is a Driver

A driver is a configurable portion of the server that enables a specific piece of hardware (e.g. 1784-KTX communication interface card) to send and receive data packets to an end device (e.g. PLC-5).

PLC/SLC Data Table Addressing

The OPC Server supports native Allen-Bradley data-element addressing.

FileType FileNumber:FileElement.FileSub-element

Refer to your Allen-Bradley PLC Users Manual for additional information regarding data element addressing.

Examples of data table addressing
I:0, I:0/15 (PLC,SLC, Micro Discrete Input)
I:1.3, O:3.7 (SLC Analog Input)
B3:100, B3:100/7, B3/255
N7:15, N7:15/6
F8:325
T4:0.PRE, T4:8.DN
PD32:11.SP, PD32:11.MO

FileType	FileNumber	FileElement	FileSub-Element
I – INPUT	N/A	0-277 (oct) PLC-5 0-30 (dec) SLC 0 (MicroLogix)	/0 to /15 (Discrete Input) /0 to /15 (Discrete Input) .0 to .31 (Analog Input) /0 to 15 (Discrete Input)
O – OUTPUT	N/A	0-277 (oct) PLC 0-30 (dec) SLC 0 (MicroLogix)	/0 to /15 (Discrete Output) /0 to /15 (Discrete Output) .0 to .31 (Analog Output) /0 to /15 (Discrete Output)
S – STATUS	N/A	0-127 (PLC-5) 0-82 (SLC) 0-32 (MicroLogix)	/0 to /15
B – BINARY	3 (default) or user defined	0-999 (PLC-5) 0-255 (SLC) 0-31 (MicroLogix)	/0 to /15
T – TIMER	4 (default) or user defined	0-999 (PLC-5) 0-255 (SLC) 0-39 (MicroLogix)	.EN .TT .DN .PRE .ACC
C – COUNTER	5 (default) or user defined	0-999 (PLC-5) 0-255 (SLC) 0-31 (MicroLogix)	.CU .CD .DN .OV .UN .UA *(SLC only)* .PRE .ACC
R – CONTROL	6 (default) or user defined	0-999 (PLC-5) 0-255 (SLC) 0-15 (MicroLogix)	.EN .EU .DN .EM .ER .UL .FD .UL

			.IN .LEN .POS
N – INTEGER	7 (default) or user defined	0-999 (PLC-5) 0-255 (SLC) 0-104 (MicroLogix)	/0 to /15
F – FLOATING PT.	8 (default) or user defined	0-999 (PLC-5) 0-255 (SLC) N/A (MicroLogix)	N/A
D – BCD	User defined	0-999 (PLC-5) 0-255 (SLC) N/A (MicroLogix)	/0 to /15
A – ASCII	User defined	0-999 (PLC-5) 0-255 (SLC) N/A (MicroLogix)	/0 to /15
ST – STRING TBL	User defined	0-999 (PLC-5) 0-255 (SLC) N/A (MicroLogix)	N/A
PD – PID BLK	User defined	0-999 (PLC-5) N/A (SLC/MicroLogix)	.INI .SPOR .OLL .OLH .EWD .DVNA .DVPA .PVLA .PVHA .EN .CT .CL .PVT .DO .SWM .CA .MO .PE .SP .KP .KI .KD .BIAS .MAXS .MINS .MAXO .MINO .UDP .PV

			.ERR .OUT .PVH .PVL .DVP .DVN .PVDB .DVDB .MAXI .MINI .TIE .ADDR[0-3] .DATA[0-13]
SC – SFC Status	User Defined	0-999 (PLC-5) N/A (SLC/MicroLogix)	.SA .FS .LS .OV .ER .DN .PRE .TIM
MG – MSG BLK	User defined	0-999 (PLC-5) N/A (SLC/MicroLogix)	.NR .TO .EN .ST .ER .CO .EW .ERR .RLEN .DLEN .DATA[0-51]
BT – BLK XFR	User Defined	0-999 (PLC-5) N/A (SLC/MicroLogix)	.EN .ST .DN .ER .NR .TO .RW .RLEN .DLEN .FILE .ELEM .RGS

ControlLogix 5550 CPU Tag Addressing

The OPC Server supports native ControlLogix 5550 CPU Tag addressing.
Also see ControlLogix 5550 Optimized Reads

For additional information on ControlLogix 5550 CPU tag addressing, refer to the ControlLogix 5550 Users Manual.

- ControlLogix 5550 tags fall into 2 categories:
  Global and **Program**

- **Global Tag** addressing syntax
  TagName
  Examples:
  MyTag
  MyArray[11]
  MyStruct.Subelement

- **Program Tag** addressing syntax
  Program:ProgramName.TagName
  Examples:
  Program:MyProgram.MyTag
  Program:MyProgram.MyArray[11]
  Program:MyProgram.MyStruct.Subelement

Tag or Array Type	**Sub - Element**
BOOL	N/A
SINT	N/A
INT	N/A
DINT	N/A
REAL	N/A
User Defined Data Type	User Defined
TIMER	.PRE .ACC .EN .TT .DN .FS .LS
COUNTER	.PRE .ACC .CU .CD .DN

	.OV
	.UN
	.UA
MESSAGE	.Flags
	.ERR
	.EXERR
	.DN_LEN
	.EW
	.DN
	.ST
	.TO
	.EN_CC
MOTION_GROUP	.GroupStatus,
	.MotionFault
	.ServoFault
	.GroupFault
	.InhibStatus.
	.GroupSynced
	.ACAsyncConnFault
	.ACSyncConnFault
	.POtrvlFault
	.NotrvlFault
	.PosErrorFault
	.EncCHALLossFault
	.EncCHBLossFault
	.EncCHZLossFault
	.EncNsFault
	.DriverFault
	.SyncConnFault
	.HardFault
	.GroupOverlapFault
MOTION_STATUS	.Flags
	.ERR
	.STATUS
	.STATE
	.EN
	.EW
	.DN
	.ER
	.PC
	.IP
PID	.CTL
	.SP
	.KP
	.KI
	.KD
	.BIAS
	.MAXS
	.MINS
	.DB
	.SO
	.MAXO
	.MINO
	.UPD

.PV
.ERR
.OUT
.PVH
.PVL
.DVP
.DVN
.PVDB
.DVBD
.MAXI
.MINI
.TIE
.MAXCV
.MINCV
.MINTIE
.MAXTIE
.DATA[0-16]
.INI
.SPOR
.OLL
.OLH
.EWD
.DV
.DVNA
.DVPA
.PVLA
.PVHA
.EN
.CT
.CL
.PVT
.DO
.SWM
.CA
.MO
.PE
.NDF
.NOZC
.NOBC

Edit a Group

- Stop all client applications using the server
- Select the **Group** to Modify in the Device/Group pane of the server.
- Click **Edit -> Properites**
- Edit the Group Name
- Click **OK**

Deleting a Group

- Stop all client applications using the server

- Select the **Group** to Delete in the Device/Group pane of the server.
- Click **Edit -> Delete**
- Click **OK**

Edit a Tag

- Stop all client applications using the server
- Select the **Tag** to Edit in the Tag pane of the server.
- Click **Edit -> Properties**
- Click **OK**

Deleting a Tag

- Stop all client applications using the server
- Select the **Tag** to Delete in the Tag pane of the server.
- Click **Edit -> Delete**
- Click **OK**

VT_BOOL Data Type

VT_BOOL - Boolean, Discrete, ON/OFF, True/False

- **PLC-5/SLC/MicroLogix**

Bit-Level Element

- **ControlLogix 5550**

BOOL Tag

VT_UI1 Data Type

VT_UI1 - BYTE Value (0-255)

- **PLC-5/SLC/MicroLogix**

No equivalent data type

- **ControlLogix 5550**

SINT Tag

VT_I2 Data Type

VT_I2 – 16-Bit Signed Integer value (positive *32767* to negative *32768*)

- **PLC-5/SLC/MicroLogix**

Data Table Word Value

- ControlLogix 5550

INT Tag

VT_I4 Data Type

VT_I4 – 32-Bit signed long value (positive *2147483647* to negative *2147483648*)

- **PLC-5/SLC/MicroLogix**
  No equivalent data type

- **ControlLogix 5550**
  DINT Tag

VT_R4 Data Type

VT-R4 - 32-Bit IEEE single precision real (positive *3.40282347E+38* to negative *1.40239846E-45)*

- **PLC-5/SLC/MicroLogix**

Floating Point Data Table Element

- **ControlLogix 5550**
  REAL Tag

VT_BSTR Data Type

VT_BSTR – String Data Type

- **PLC-5/SLC/MicroLogix**
  ST Table, ASCII Table
- **ControlLogix 5550**
  SINT Array

Tag Multiply

Tag Multiply allows you to quickly create a block tags derived from a root tag.

- Tag Multiply only supports PLC-5/SLC/MicroLogix data table files I, O, S, N, B, F
- Tag Multiply cannot be used for structure-based data table files (e.g Timers/Counters/PD Blk, etc..)
- Tag Multiply cannot be used for mnemonic data table sub-elements (e.g T4:0.PRE, C5:0.DN)
- The user is responsible to ensure the tags created do not exceed the size of the data table
- Tag Multiply cannot be used for ControlLogix 5550 CPU Tags

Using Tag Multiply

- Select a Tag from the Tag Pane of the server.
- Click **Add -> Multiply..**
- Enter a **Base Name** for the Tag
- Enter the **File Addr**
  This is the starting file address File Address (e.g. **N7, B3, F8**)
  For INPUTS enter **I**

For OUTPUTS enter **O**
For STATUS enter **S**

- Enter the **First Element**
  This is the starting data table element in the file address (e.g. **1, 13, 255**)

- *(Optional)* **Bit**
  Select the Bit checkbox
  Enter the value for the starting bit (**0-15**)

- Enter the **Number of Places**
  This will pad the address and Tag Name with this number of characters (**1-6**)

- Enter the **Number of Tags**
  This is the number of Tags to create (**1-999**)

- Click **OK**.

Example
Base Name = MyTag
File Element = N7
First Element = 1
Number of Places = 3
Number of Tags = 10

Tags Created	
MyTag001	N7:001
MyTag002	N7:002
MyTag003	N7:003
MyTag004	N7:004
MyTag005	N7:005
MyTag006	N7:006
MyTag007	N7:007
MyTag008	N7:008
MyTag009	N7:009
MyTag010	N7:010

Bit Tag Example
Base Name = Bit Tag
File Element = B3
First Element = 0
Number of Places = 3
Number of Tags = 10

Tags Created	
Bit Tag001	B3:0/0
Bit Tag002	B3:0/1
Bit Tag003	B3:0/2
Bit Tag004	B3:0/3
Bit Tag005	B3:0/4
Bit Tag006	B3:0/5
Bit Tag007	B3:0/6
Bit Tag008	B3:0/8
Bit Tag009	B3:0/9
Bit Tag010	B3:0/10

File New

File New creates a new workspace and tag database for the server

Click **File -> New**

File Open

File Open loads an existing tag database to be used by the server

Click **File -> Open..**

File Save

File Save saves the current tag database

Click **File->Save**

File Save As

File Save As saves the current tag database as a different filename

Click **File->Save As…**

File ImportCSV

File ImportCSV imports a CSV (Comma Separated Variable) file previously saved with File ExportCSV

Click **File->ImportCSV…**

Note: The CSV functions only import/export Device, Group and Tag Information. CSV functions do not import/export Driver information

File ExportCSV

File ExportCSV exports the Device, Group and Tag information to a CSV (Comma Separated Variable) file.

Click **File -> ExportCSV…**

File ReimportCSV

File ReimportCSV re-imports the current CSV file

Click **File -> ReimportCSV**

Also See File ImportCSV

File ReexportCSV

File ReexportCSV re-exports the current CSV file

Click File -> ReexportCSV

Also See File ExportCSV

Most Recently Used List

File display the list of the Most Recently Used (MRU) tag databases

Click the FileName in the MRU to open that tag database

OPC Server Window

Platforms: WIN NT/95/98 WIN CE

The OPC Server is divided into 3 Panes

- **Device/Group Pane**
  Displays all the Devices and Groups defined in the server

- **Tag Pane**
  Displays the Tags associated a given Device or Group
  Name – OPC Tag Name
  Type – Data Type of Tag
  Location – Data Source of the Tag
  Processing – Scaling, Simulation, etc..
  Value – Current Tag Value
  Description – Tag Description

- **Driver Status Pane**
  Displays Status and diagnostic information for the drivers used by the server
  Driver Name – Displays Driver and communication information
  Status – Current Status of the driver
  Sent – Driver Messages Sent to the Device(s)
  Recv – Driver Messages Received from the Device(s)
  Last Error – Last Communication Error the driver had with the Device(s)

OPC Server Monitor

Platforms: WIN NT/95/98

The OPC Server allows you to monitor and test Drivers, Devices, Groups and Tags

Click **View -> Monitor**

Software Requirements

Platforms: WIN NT/95/98

- Microsoft Windows NT 4.0 Service Pack 3 or later is highly recommended
- Microsoft Windows 95 with DCOM for Windows 95
- Microsoft Windows 98

Platforms: WIN CE

- Microsoft Windows CE 211

Hardware Requirements

Platforms: WIN NT/95/98

Minimum Hardware Requirements

- Intel-based Pentium Processor with at least 64 Megs of RAM
- At least 10 Megs of available hard disk space
- A 16-color SVGA display
- A Windows-compatible pointing device

Platforms: WIN CE 211

- HPC X86
- HPC SH/3
- HPC SH/4
- HPC StrongArm
- HPC MIPS

PLC-5 Channel 0 Settings

Typical Channel 0 (DF1) Settings for a PLC-5 Device

Communication Module

- Point-To-Point

Serial Port Tab

- Baud Rate = 19.2K
- Bits Per Char = 8
- Stop Bits = 1
- Control Line = No Handshaking
- Parity = None

- Error Detect = CRC

Options Tab

- NAK Receive = 3
- DF1 ENQ's = 20
- ACK Timeout = 50
- Detect Duplicate Messages = Checked
- Message Application Timeout = 30 Seconds

SLC Channel 0 Settings

Typical Channel 0 Settings for a SLC/MicroLogix Device

Chan. 0 – System Tab

- Driver = DF1 Full Duplex
- Baud = 19200
- Parity = NONE
- Stop Bits = 1

Protocol Control Settings

- Control Line = No Handshaking
- Error Detection = CRC
- Embedded Responses = Enabled
- Duplicate Packet Detect = Checked
- ACK Timeout (x20 ms) = 50
- NAK Retries = 3
- ENQ Retries = 3

ControlLogix 5550 Channel 0 Settings

Typical Channel 0 Settings for ControlLogix 5550

Serial Port Tab

- Baud Rate = 19200
- Parity = None
- Data Bits = 7
- Stop Bits = 1
- Control Line = No Handshaking
- RTS Send Delay (x20 ms) = 0
- RTS Off Delay (x20 ms) = 0

Serial Protocol Tab

- Protocol = DF1 Pt to Pt
- Station Address = 0
- NAK Receive Limit = 3
- ENQ Transmit Limit = 3
- ACK Timeout (x20 ms) = 50
- Embedded Responses = Autodetect
- Error Detection = CRC
- Enable Duplicate Detection = Checked

Adding a SLC Enhanced Device to DH-485

Applies to SLC 5/03

Under Device Properties

- Select the KTX/PKTX/PCMK/SST Driver Name you created by Adding 1784 Card Drivers
- Select **SLC Enhanced**
- **PLC Node** address of the device

PLC Node = (00-31 decimal)

- Enter a **Timeout** period (50-10000ms) 3000ms default.
- *(Optional)* Simulate
- Click **OK.**

Adding a SLC/MicroLogix Device to DH-485

Platforms: WIN NT/95/98

Applies to SLC 500, 5/01, 5/02, MicroLogix AIC

Under Device Properties

- Select the KTX/PKTX/PCMK/SST Driver Name you created by Adding 1784 Card Drivers
- Select **SLC/MicroLogix**
- **PLC Node** address of the device

PLC Node = (00-31 decimal)

- Enter a **Timeout** period (50-10000ms) 3000ms default.
- *(Optional)* Simulate
- Click **OK.**

Dialog Box Error Messages

Message	Cause	Solution
OLE Initialization Failed	The OLE libraries failed to initialize	Contact Product Support
Windows sockets initialization failed	WINSOCK libraries failed to initialize.	Install Windows TCP/IP networking on your system
Could not run …	The server did not recognize the command line parameter	REGSERVER and UNREGSERVER are the only 2 command line parameters available.
No drivers have been installed	A warning is being provided indicating that there are no drivers available for devices	Add one or more drivers
Please Enter a Driver Name	A name was not assigned to a driver	Assign a unique name to the driver
DriverName **is already using COM***n***:**	*DriveName* has already been assigned this *COM Port*	Select an alternate COM Port
DriverName **is already using Address** *IP Address*	*DriverName* has already been assigned this *IP Address*	Select an alternate IP Address
DriverName **is already using Base Address** *BaseAddress*	*DriverName* has already been assigned this *BaseAddress*	Select an alternate Base Address
Administrator rights are required to create registry settings for *DriverName*	The current user does not have sufficient privileges to change the driver settings	A user with Administrator privileges is required to change these settings
DriverName **is already using I/O Port** *PortNum*	*DriverName* has already been assigned this I/O Port	Select an alternate I/O Port

Cannot change driver configuration while server is running or connected to clients	An attempt was made to change a driver configuration while the server had clients connected	Stop all client applications before changing driver configuration
Invalid character(s) in Driver Name	The Driver Name contains one or more invalid characters	Rename the driver using characters "A-Z", "0-9" and underscore "_"
Please enter an IP Address or computer name	An IP Address or Computer Name was not provided for an Ethernet drivers	Provide a valid IP Address or Computer Name.
Select a Baud Rate	A Baud Rate has not been assigned to the current driver	Assign a baud rate
Select a Station ID	A Station ID has not been assigned to the current driver	Assign a Station ID
Select a driver for this device	A driver has not been associated to a newly created device	Select a Driver in Device Properties
Group's Name already exists	The Group Name is already in use under device	Provide a unique GroupName
Group's Name cannot accept Dots	A Group Name contained one or more Dots "."	Remove the Dots from the Group Name
Tag Name already exists	The Tag Name is already in use under Device/Group	Provide a unique Tag name
Tag Name cannot accept Dots	A Tag Name contained one or more Dots "."	Remove the Dots from the Tag Name
Cannot Scale VT_BOOL or VT_BSTR data types	An attempt was made to scale a VT_BOOL or VT_BSTR data type	Scaling for VT_BOOL and VT_BSTR is not supported
Unable to Open File	The selected tag database failed is not valid. The file/disk may be corrupt or damaged	Select a valid tag database
IMPORT FAILED, No Device or Group Available.	No Device or Groups were found in the CSV File. The file may be corrupt or damaged	Export a CSV file containing appropriate Device/Groups
Bad lines encountered.	The CSV file contained invalid information. The file may be corrupt or damaged	Export a CSV file containing appropriate information
File exception while reading.	An error occurred while reading the file from disk. The file/disk may be corrupt or damaged.	Select and alternate file, or use a backup copy.
Unable to create file.	An error occurred while creating the file to disk. The disk may be full, corrupt or damaged	Select and alternate disk to save the file to.
File exception while writing	An error occurred while writing the file to disk. The disk may	Select and alternate disk to save the file to.

	be full, corrupt or damaged	

Driver Error Messages

Error Message	Cause	Solution
ERROR! - Device Conflict	The driver has detected a resource conflict with another system device	Correct the system resource conflict
ERROR! - Driver Cannot Connect to Hardware	The driver cannot connect the hardware interface	Contact Technical Support
ERROR opening file *FileName*	An error has occurred while attempting to open *FileName*. The file may not exist, or the file/disk is corrupt or damage	Replace the file or disk with a back-up copy
ERROR reading file *FileName*	An error has occurred while reading *FileName*. The file/disk is corrupt or damage	Replace the file or disk with a back-up copy
ERROR Diagnostic Failed	A 1784 card device failed a diagnostic test	Verify the Base Address Setting assigned to the card Replace the card
ERROR allocating PCL Memory	Memory could not be allocated	Contact Technical Support
ERROR Protocol Load Failed	The 1784 card device failed to load the protocol	Replace the card
ERROR Failed to go on line	The DH+/DH-485 card failed to connect to network	Verify network connection Replace the card
ERROR Duplicate node detected	The Station ID assigned to the DH+/DH-485 card is already being used by another node on the netword	Change the Station ID assigned to the card
ERROR! - Card is Not SD-2 Type Card	The SS-Technologies 5136SD is not a SD-2 type card.	Replace the card with a SD-2 type card.
ERROR! - Cannot not access low memory block	The driver could not access a low memory block of the SST-5136SD card	Verify driver settings Replace the card
ERROR! - SST Card is in BUSY STATE	The SST card has failed a diagnostic test and is not responding	Verify driver settings Replace the card
ERROR! - Card is not in a READY STATE	The SST card has failed a diagnostic test and is not responding	Verify driver settings Replace the card
ERROR! - Card halted in TEST STATE	The SST card has failed a diagnostic test and is not	Verify driver settings

	responding	Replace the card
ERROR Opening COM Port	The driver could not open the Com Port. See Error Codes	Verify the COM port is not being used by another application
		Verify the COM port settings
ERROR GetCommState() Failed	See Error Codes	Verify the COM port is not being used by another application
		Verify the COM port settings
ERROR SetCommState() Failed	See Error Codes	Verify the COM port is not being used by another application
		Verify the COM port settings
ERROR GetCommTimeouts() Failed	See Error Codes	Verify the COM port is not being used by another application
		Verify the COM port settings
ERROR SetCommTimeouts() Failed	See Error Codes	Verify the COM port is not being used by another application
		Verify the COM port settings
ERROR writing to COM Port	An error occurred while attempting to write to the COM Port	Verify the COM port settings
		Verify the connection to the device
ERROR reading from COM Port	An error occurred while attempting to write to the COM Port	Verify the COM port settings
		Verify the connection to the device
ERROR Socket Create	An error occurred while attempting to open a TCP/IP socket See Error Codes	Verify the operation of your TCP/IP network
ERROR Socket Connect	An error occurred while attempting to establish a TCP/IP connection to the PLC See Error Codes	Verify the operation of your TCP/IP network
ERROR Socket Send	An error occurred while sending data to an Ethernet PLC See Error Codes	Verify the IP Address you assigned to the Ethernet driver.
		Verify the operation of your TCP/IP network
ERROR Recv Socket	An error occurred while sending data to an Ethernet PLC See Error Codes	Verify the IP Address you assigned to the Ethernet driver.
		Verify the operation of your TCP/IP network

ERROR PLC Connection Error	An error occurred while attempting to establish dialog with a PLC-5/SLC Ethernet device	Verify you are using the 1785-ENET Driver See Adding a Ethernet Driver to PLC/SLC
ERROR ControlLogix 5550 Connection Error	An error occurred while attempting to establish dialog with a PLC-5/SLC Ethernet device	Verify you are using the 1756-ENET Driver See Adding a Ethernet Driver to Control Logix 5550

Error Codes

System/Driver Error Codes

ERROR CODE	Description
2	(COM PORT) COM Port does not exist
5	(COM PORT) Access is denied – COM Port is already in use
6	(COM PORT) Handle is invalid – COM Port cannot be accessed
276D	(WINSOCK) Windows Sockets initialized
2742	(WINSOCK) The network subsystem has failed
274D	(WINSOCK) PLC refused connect attempt
2743	(WINSOCK) The network cannot be reached from the Host at this time
2747	(WINSOCK) No buffer space is available. The socket cannot be connected

PLC Communication Error Codes

ERROR CODE	Description
104	Invalid Tag Name (ControlLogix 5550)
1FF	Invalid Data Type for Tag Name (ControlLogix 5550)
200	Cannot guarantee delivery.
300	duplicate token hold detected
400	local port is disconnected
500	application layer timed out waiting for response

600	duplicate node detected
700	station is off line
800	hardware fault
1000	illegal command or format
2000	host has problem and cannot communicate
3000	remote node is missing, disconnected or shutdown
4000	host could not complete function due to hardware fault
5000	addressing problem
6000	function disallowed
7000	processor in program mode
8000	compatibility mode file missing
9000	remote node cannot buffer command
B000	remote node problem due to download
C000	cannot execute due to active IPBS
F001	a field has an illegal value
F002	less levels specified in address than minimum for any address
F003	more levels specified in address than system supports
F004	symbol not found
F005	symbol is not proper format
F006	file address doesn't point to something useful
F007	file is wrong size
F008	cannot complete request
F009	data or file is too large
F00A	transaction plus word size is too large
F00B	access denied
F00C	condition cannot be generated
F00D	condition already exists
F00E	command cannot be executed
F00F	histogram overflow
F010	no access

F011	illegal data type
F012	invalid parameter or invalid data
F013	address reference exists to deleted area
F014	command execution failure for unknown reason
F015	data conversion error

OPC Test Client Connecting to the Server

WIN NT/95/86

- Start the OPC Test Client Application **OPCLIENT.EXE**
- Click **OPC -> Connect …**
- Select the **Iconics.ABServer** Server
- Click **OK**

WIN CE

- Start the OPC Test Client Application **OPCLIENTCE.EXE**
- Click **OPC -> Connect …**
- Select the **ABWinCE** Server
- Click **OK**

OPC Test Client Tag Browsing

- Click **OPC -> Add Item …**
- Select the Device in the Browse items Window
- Select a Group under the Device
- Select a Tag from the Group
- Click **OK.**

The data value for the Tag and the Value will be shown in the test client window.

Browse for additional Tags if desired

OPC Test Client Writing a Value

- Select a Tag from the OPC Test Client Window
- Click **OPC -> Write Value to Item…**
- Enter a new value for the Item
- Click **OK**

OPC Test Client

☐ Connecting to the Server

☐ Tag Browsing

☐ Writing a Value

What is OPC

OPC stands for OLE for Process Control. OPC is a specification that defines how two software applications should communicate with each other. OPC is a specification that is specific to the manufacturing automation industry. OPC was created by manufacturers and users in the automation industry. The OPC specification is managed by the independent OPC Foundation, whose members include over 200 automation industry software developers from around the world. The OPC Foundation was founded in 1996. The OPC technical specifications are based upon the Microsoft Component Object Model (COM) and the Distributed Component Object Model (DCOM). The COM and DCOM specifications are the core architectural pieces that make up the Microsoft Windows 95,98, and NT operating systems.

☐ OPC Server

☐ OPC Device

☐ OPC Group

☐ OPC Item

☐ OPC Client

☐ OPC Client/Server Relationship

Learn More…

OPC Foundation

Microsoft's Manufacturing Industry Section

OPC Servers and Clients

OPC Client/Server Relationship

The drawing below illustrates graphically the concept of OPC Client and Server applications interacting with each other. An interesting point to note is that the client and server applications need not reside on the same computer. When the do, the COM architecture is used for communications. When the client and server are on separate PCs with a network connecting them, the Microsoft DCOM architecture is used for communications.

OPC Servers and Clients go much further than just device communications drivers. In fact, a single application can be an OPC Client and an OPC Server. For example, there are some HMI packages that are OPC Clients and they connect to OPC Servers, which in turn gather the data from the user's PLCs or control hardware. At the same time, some of those same HMI packages are also OPC Servers and make their tag databases available to other OPC Client applications.

OPC Client

OPC Client

The requesting program or application is called an **OPC Client**. A single OPC Client application can talk to multiple OPC Server applications. Examples of OPC Client applications include many Human Machine Interface (HMI) packages, including Iconics™ Genesis32™, GE Cimplicity™, RS-View32™, Citect™, Wonderware InTouch™, Intellution iFix/Fix Dynamics™, and many more. With over 200 member companies supporting the OPC specification, the number and variety of OPC client applications continues to grow.

OPC Server

OPC Server

An OPC DataAccess Server is comprised of several objects: the server, the Group, and the Item. The OPC server object maintains information about the server and serves as a container for OPC group objects. The OPC group object maintains information about itself and provides the mechanism for containing and logically organizing OPC items.

Tag Scaling

Scaling allows you to convert a raw (unscaled value) to given numeric range

Raw

- Enter the Min Raw Value to be scaled
- Enter the Max Raw Value to be scaled

Scales to

- *(Optional)* – Enter a Units of Measure Identifier (e.g. Degrees C)
- Enter the Min value of the scaled units
- Enter the Max value of the scaled units

Conversion Method

- Linear Conversion
- Square Root Conversion

Tag Simulation

Simulates a data value for the Tag

This feature is enabled when the Device Simulate option is selected.

Tag Scaling can be applied to simulated values.

Types of Tag Simulation

- Sine
- Ramp

- Random

WIN CE Server

The Windows CE version of the OPC Server is an In-Process DLL. (ABWINCE.DLL)

Since the .DLL itself has no user interface, a configuration application is provided to create and maintain the tag database.

Communication Interfaces Supported

- 1785-ENET for PLC-5, SLC-5/05
- 1756-ENET for ControlLogix 5550
- Full Duplex DF1 Serial, PLC-5/SLC/MicroLogix/ControlLogix 5550

Using the ABWINCE.DLL in-process server for Windows CE

- Create a tag database on your desktop computer using the configuration program
- Save the tag database under the filename ABWINCE.TDB.
- Copy ABWINCE.DLL and ABWINCE.TDB to any directory on the Windows CE device.
  NOTE: ABWINCE.DLL and ABWINCE.TDB must reside in the same directory.
- Run REGSVRCE /ABWINCE.DLL to set CE registry information for the server

What's Not Supported

- Control Logix 5550 via DH+
- PLC-2 Family of Processors
- PLC-3 Family of Processors
- PLC-5/250 Processors
- ControlLogix Gateway
- 1770-PIC/AIC Communication Interfaces
- Unsolicited Messages
- DH+/DH-485 Network Bridge and Routing

OPC Server Features

General Features

- Intuitive and easy to use
- Multiple communication interfaces supported in a single server
- Does not rely on middle-ware drivers
- Serial DF1 to PLC-5/SLC/MicroLogix/ControlLogix 5550 (COM1 ~ COM 24)
- ENET to PLC-5/SLC
- ENET to ControlLogix 5550
- 1784-KT/KTX/PKTX/PCMK/SST-5136 to PLC-5/SLC Data Highway Plus (Up to 230K Baud)
- 1784-KTX/PKTX/PCMK to SLC/MicroLogix Data Highway 485
- Use any mix and any number of communication interfaces concurrently
- 32-Bit multi-threaded driver operation for fast throughput
- Optimized Block Read/Write Operations
- Supports a wide range of OPC Clients

OPC Features

- OPC Specification Version 1.0/2.0 Compatible
- OPC Item (Tag) Browsing
- On-line/Off-Line Operation

Allen-Bradley Knowledge Base

Search the Allen-Bradley Knowledge Base

Driver Name

General

- Driver names must be unique

- Driver names can be up to 15 characters (MAX)
- Driver names can consist of letters "A-Z", numbers "0-9" and an underscore "_"

1784-PKTX

- Driver name must be **PKTX_0** for the first PKTX card, **PKTX_1** for the second, **PKTX_2** for the third, etc…

Device Names

General

- Device names must be unique
- Device names can be up to 32 characters (MAX)
- Device names can consist of any character except Dots (periods ".")

Tag Names

General

- Tag names must be unique
- Tag names can be up to 32 characters (MAX)
- Tag names can consist of any character except Dots (periods ".")

Group Names

General

- Group names must be unique
- Group names can be up to 32 characters (MAX)
- Group names can consist of any character except Dots (periods ".")

Software Registration

To register the OPC Server

- Click -> **License**
- Select **Server Registration…**

Contact your software vendor and provide

- **Installation ID**
- **Serial Number** you received when you purchased the Server

The software vendor will provide you with the **Registration Code**

- Click **OK**

If the Product Registration code is invalid, the server will operate in a 2-hour demo mode

Temporary Software License

You can immediately assign the server a one-time, 10-Day Temporary Software License.

- Click -> **License**
- Select **Temporary License**
- Restart the Server.

The server will operate without restriction for 10-Days.

- After the 10-Day period you will be required to register the server with your software vendor.
- If you do not register within the 10-Day period, the server will resume a 2-hour demo mode.
- You can register the server at any time during or after the 10-Day period.
- The server recognizes attempts to back up the system clock, and will revert to the 2-hour demo if detected.

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Year 2000 Statement

The AB OPC Server does not use dates in its functionality, and only uses a date one time when installed, AB OPC Server will not produce errors processing date data in connection with the year change from December 31, 1999 to January 1, 2000 when used with other products (e.g., other software, firmware and hardware) that properly exchange date data in compliance with year 2000 requirements.

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License Move

Often if is necessary to install and use the server on one computer for development and testing purposes, with the finally installation deployed on a different computer. License Move allows you to transfer the license from computer to computer. However, only one computer may use the license at a time. See License Agreement

Moving the license is a 3 step process

1. Create a transfer disk on the non-registered server
2. Move the license from a registered server to the transfer disk
3. Move the license from the transfer disk to a non-registered server

Creating a Transfer Disk

Creating a transfer disk identifies the machine that has the non-registered server. To create a transfer disk:

- Insert a blank floppy disk into driver A or B of the machine of the non-registered server
- Click License -> Move License

In the **Create License Transfer Disk** area

- Select the drive letter A: or B: where the floppy disk is inserted
- Click the Create button…

A license transfer file IGOPCAB.LTF is created on the floppy disk. This file can be e-mailed if you are transferring a license from a remote location.

Moving the license from a registered server to the transfer disk.

This moves a server license to the transfer disk. Only a registered license can be moved to a transfer disk.

- Insert the transfer disk into a floppy drive A: or B:
- Click **License -> Move License…**

In the **Move License** area

- From: Select **SYSTEM**
- To: Select **A: or B**:
- Click **OK**

The license file IGOPCAB.CLF is moved to the transfer disk. This file can be e-mailed if you are moving the license to a remove location.

Only the machine that created the transfer disk can use this license file.

Once the license has been transferred from the server:

- The server will operate in demo mode
- Re-installing the server software, or re-entering the software registration codes will not re-activate the license on the server.

Moving the license to a non-registered server.

Transfers the license to the non-registered server that created the Transfer Disk

- Insert the transfer disk into floppy drive A: or B:
- Click **License -> Move License**…

From the **Move License** area

- From: Select **A: or B:**
- To: Select **SYSTEM**
- Click **OK**

ControlLogix Optimized Reads

Unlike the PLC/SLC family of processors that have fixed data tables for registers, the ControlLogix 5550 implements user-defined variable declarations similar in nature to a high-level language. With the ControlLogix 5550 processor you can declare variables with similar names but different data types.

Example:

Var1 as BOOL
Var2 as REAL
Var3 as INT

The AB OPC Server cannot determine in advance the tag data type or where the tag is located in ControlLogix 5550 memory, making it difficult for the server to optimize read packets. As a result, server performance may suffer when reading a large number of tags from ControlLogix 5550 controller.

To achieve the optimum performance from the AB OPC server, you are encouraged to use ControlLogix 5550 array data types. Array data types occupy contiguous blocks of memory within the controller that can be read as a block of data by the OPC Server

Array Types Supported		
SINT	**VT_UI1**	Byte - singlle and multi-dimensional arrays
INT	**VT_I2**	16-Bit signed integer – single and multi-dimensional arrays
DINT	**VT_I4**	32-Bit singed integer – single and multi-dimensional arrays
REAL	**VT_R4**	32Bit IEEE floating point – single and multi-dimensional arrays
BOOL	**VT_BOOL**	Discrete bit array – single and multi-dimensional arrays.