

Allen-Bradley DH+ Driver Help

© 2014 Kepware Technologies

Table of Contents

Table of Contents	2
Allen-Bradley DH+ Driver Help	5
Overview	5
External Dependencies	5
Channel Setup	6
Channel Properties	6
Channel Setup for the Allen Bradley- 1784 KT Card	7
Channel Setup for the Allen Bradley- 1784 KTX/KTX-D Card	9
Channel Setup for the Allen Bradley- 1784 PKTX/PKTX-D Card	11
Channel Setup for the AB 1784 PCMK/B Card	19
Channel Setup for the AB-1784-U2DHP USB Card	23
Channel Setup for 5136-SD-ISA Card	23
Channel Setup for 5136-SD-PCI Card	25
Device Setup	32
Cable Connections	32
Communications Parameters	35
Hardware Setup	36
Hardware Configuration of the 5136-SD-ISA (SST) Card	36
Hardware Configuration of Memory and Interrupt on 1784 KTXD card	36
Configuring the 1784-KT (ISA Bus) Communication Interface Card for DH+	37
Check Device Manager	38
Install and Connect KTX(D) to the Network	40
Modular I/O Selection Guide	41
SLC500 Slot Configuration	43
Optimizing Your Allen-Bradley DH+ Communications	44
Address Descriptions	45
General Addressing	45
Output Files	45
Input Files	46
Binary Files	47
Status Files	47
Timer Files	48
Counter Files	48
Control Files	49
Integer Files	50
Float Files	50
ASCII Files	51
String Files	51
SLC Family Open Addressing	52

PLC-5 Family Addressing	52
BCD Files	52
PID Files	52
Message Files	54
Block Transfer Files	54
SC Files	55
Data Types Description	56
Error Descriptions	57
Address Validation	57
Missing address	58
Device address '<address>' contains a syntax error	58
Address '<address>' is out of range for the specified device or register	58
Device address '<address>' is not supported by model '<model name>'	58
Data Type '<type>' is not valid for device address '<address>'	58
Device address '<address>' is read only	59
Array size is out of range for address '<address>'	59
Array support is not available for the specified address: '<address>'	59
Configuration Error Messages	59
File Corruption	59
Interrupt not configured	59
Device Status Messages	60
Device '<device name>' is not responding	60
Unable to write to '<address>' on device '<device name>'	60
Failed to connect to device '<device name>'	60
Device Specific Messages	61
Unable to read data starting at address '<address>' on device '<device name>'. Frame received contains errors	61
Unable to read data starting at address '<address>' on device '<device name>'. [STS=<value>, EXT STS=<value>]. Tag deactivated	61
Unable to write to address '<address>' on device '<device name>'. Frame received contains errors	62
Unable to write to address '<address>' on device '<device name>'. [STS=<value>, EXT STS=<value>]	62
Allen-Bradley Card Specific Error Messages	62
Failed to locate PKTX Channel 'Channel ID' of card 'PKTX card ID'	62
Failed to write to Dual port memory for device: <device name>	63
Failed to clear dual port memory while performing functionality test	63
Failed to start Board <board name>. Possible Resource Conflict	63
M16 Diagnostic 8-bit mode failure	63
Failed RAM, CTC or SIO Test	64
Failed to enable card for Device '<device name>'	64
Failed to perform M16 Key Write for device '<device name>'	64

Failed to complete diagnosis while performing M16 Diagnosis for device <device name>	64
Failed to complete loading protocol while performing M16 diagnosis for device <device name>	65
Failed to load binary resource <Resource ID> for device <Device>	65
Failed to allocate device for board '<channel>'	65
Error performing diagnostics test on channel '<channel name>'	65
SST Specific Error Messages	65
Duplicate Station ID detected by device '<device name>'	66
Invalid Station ID detected by device '<device name>'	66
Error writing to SST ports for device '<device name>'	66
Failed to take the SST card offline for device '<device name>'	66
Bad port/memory detected on SST card while loading module on device '<device name>'	66
Protocol is not reflected onto memory after being loaded on device '<device name>'	67
SST card execution error occurred on device '<device name>'	67
Failed to allocate device for board '<channel>'	67
Index	68

Allen-Bradley DH+ Driver Help

Help version 1.050

CONTENTS

[Overview](#)

What is the Allen-Bradley DH+ Driver?

[Channel Setup](#)

How do I configure a channel for use with 1784 KTX(D), 1784 PKTX, 1784 PCMK/B, 5136-SD-ISA or 5136-SD-PCI?

[Device Setup](#)

How do I configure a device for use with this driver?

[Hardware Setup](#)

How do I configure hardware for use with this driver?

[Optimizing Your Allen-Bradley DH+ Communications](#)

How do I get the best performance from the Allen-Bradley DH+ Driver?

[Data Types Description](#)

What data types are supported by this driver?

[Address Descriptions](#)

How do I address a data location on an Allen-Bradley DH+ device?

[Error Descriptions](#)

What error messages are produced by the Allen-Bradley DH+ Driver?

Overview

The Allen-Bradley DH+ Driver provides an easy and reliable way to connect Allen-Bradley DH+ devices to OPC Client applications, including HMI, SCADA, Historian, MES, ERP and countless custom applications.

This driver supports the Allen Bradley SLC family and PLC5 series PLCs, excluding the PLC5/250 series. Address ranges are open to support future models of these series of PLCs.

External Dependencies

This driver has external dependencies. It requires an interface card by Allen-Bradley or S-S Technologies (SST). For a list of supported cards, refer to [Channel Setup](#).

Channel Setup

Supported Network Cards

[AB 1784-KT](#)
[AB 1784-KTX\(D\)](#)
[AB 1784-PKTX](#)
[AB-1784-PKTX\(D\)](#)
[AB 1784-PCMK/B](#)
[AB 1784-U2DHP USB](#)
[SST 5136-SD-ISA](#)
[SST 5136-SD-PCI and SST 5136-DHP-PCI](#)

Supported Networks

Data Highway Plus (DH+)
Data Highway-485 (DH-485)

Note: Data Highway-485 (DH-485) is only applicable to Allen-Bradley cards.

Channel Properties

Board Type

This parameter specifies the board type. This driver supports 8 different board types by Allen-Bradley and SST. The Allen-Bradley types include KT, KTX, KTX-D, PKTX, PKTX-D and PCMK/B. The SST board types include 5136-SD-ISA and 5136-SD-PCI.

Note: Both the KTX and KTX-D card examples will select KTX (D) as the board type.

Network Type

This parameter specifies the network type. This driver supports both DH+ and DH-485: each of the Allen-Bradley cards support the DH+ and DH-485 networks, but SST cards only support the DH+ network.

Station Address

This parameter specifies the device's unique Node ID: 0-77 octal for DH+ and 0-31 decimal for DH-485. Users must make sure that this ID does not conflict with any other Node ID on the network.

Baud Rate

This parameter specifies the baud rate. Each of the card types support several different baud rates. For the DH+ network, Allen-Bradley cards support 57.6K, 115K and 230K. For the DH-485 Network, Allen-Bradley cards support 300, 600, 1.2K, 2.4K, 4.8K, 9.6K and 19.2K. Since SST cards only support the DH+ network, the supported baud rates are 57.6K, 115K and 230K.

Memory Address

This parameter specifies the card's memory address. The ISA cards (KT, KTX, KTX-D and 5136-SD-ISA) require that the user manually sets the memory address on the card. For more information, refer to the appropriate catalog, [Channel Setup for the Allen Bradley- 1784 KTX/KTX-D Card](#) and [Channel Setup for 5136-SD-ISA Card](#).

Interrupt

This parameter specifies interrupts, which are supported by each card type. The PCI card types automatically set up the interrupts, whereas the ISA cards (KT, KTX, KTX-D and 5136-SD-ISA) require that a unique interrupt level be selected. This setting must match the selection chosen during hardware configuration. To not use interrupts, select "None." For more information, refer to [Hardware Configuration of Memory and Interrupt on 1784 KTXD Card](#).

I/O Port Address

This parameter specifies the port address, which must be selected manually (in addition to configuring the memory address on the 5136-SD-ISA card). For more information, refer to [Hardware Configuration of the 5136-SD-ISA \(SST\) Card](#) and the appropriate SST catalog.

PCI Card Instance

This value depends on the number of similar PCI Card Instances on the computer. If the card is the first PCI being installed, then the PCI Card Instance should be 0. If the next PCI card being installed is from the same vendor, then the PCI Card Instance for that card should be 1 (and so forth). If the next PCI card is from a different vendor and is the first card of that type being installed, then the PCI Card Instance should be 0. Up to 4 card instances at a time are allowed. The maximum PCI Card Instance that can be selected is 3.

PKTX Channel ID

This parameter specifies which PKTX channel that the server should use for communications. PKTX cards come in two forms: a single channel (PKTX) or a dual channel card (PKTX-D). Therefore, when a PKTX/PKTX-D card is used, the driver must be told which channel it should use.

Note: When using the PKTX-D card, select the channel that will be used for the device. This should be 1 for PKTX Channel 1A and 2 for PKTX Channel 2.

Channel Setup for the Allen Bradley- 1784 KT Card

The KT card must be configured for a unique memory address and interrupt on the hardware before the Channel Properties may be selected. Note the chosen address and interrupt, as these parameters will be used when setting up the Channel Properties in the server.

Step 1: Configuring the Hardware

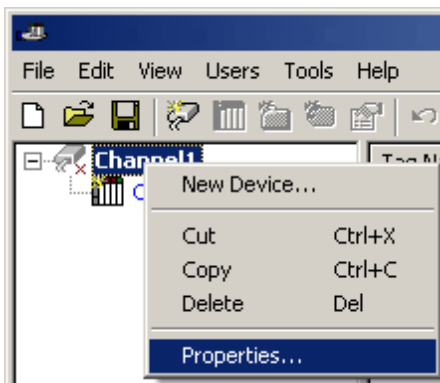
For information on hardware configuration, refer to the KT documents.

Step 2: Installing the KT Card

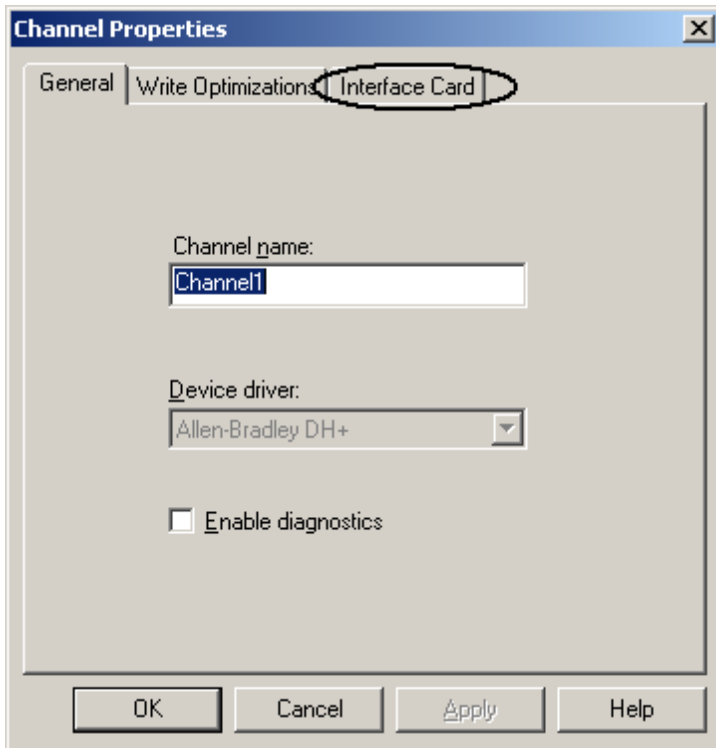
Install the KT card on an available ISA slot and then connect to the appropriate network.

Step 3: Setting Up Channel Properties for the KT Card

1. In the server application, right-click on the channel and then select **Properties**.

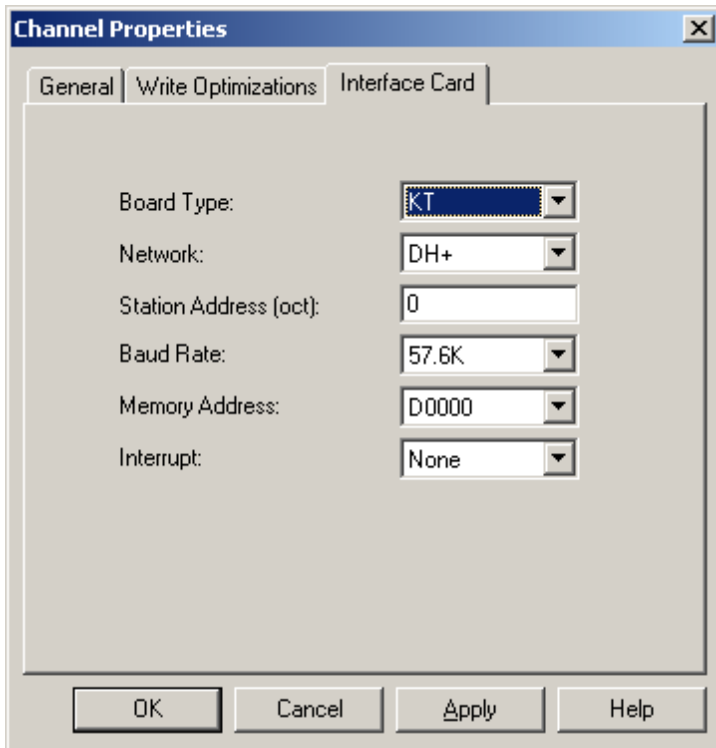


2. Next, select the **Interface Card** tab in Channel Properties.



3. Configure the following properties:

- **Board Type:** Select "KT" from the drop-down menu.
- **Network Type:** Select the type of network that is being used. This driver currently only supports the DH+ Network.
- **Station Address:** Select the device's unique Node ID, which ranges from 0-77 octal. Make sure that this ID does not conflict with any other Node ID on the network.
- **Baud Rate:** The only available baud rate for the DH+ network on a KT card is 57.6K.
- **Memory Address:** Select the memory address that was specified on the card during hardware configuration.
- **Interrupt:** If using interrupts, select a unique interrupt level from the drop-down menu. Make sure that it matches what was specified during hardware configuration. For no interrupts, select "None."



4. Click **OK**.

Channel Setup for the Allen Bradley- 1784 KTX/KTX-D Card

The KTX/KTX-D card must be configured for a unique memory address and interrupt on the hardware before the Channel Properties may be selected. Note the chosen address and interrupt, as these parameters will be used when setting up the Channel Properties in the server.

Step 1: Configuring the Hardware

For information on hardware configuration, refer to [Configuring Memory and Interrupt on 1784 KTX](#). Users may skip this step if it is already completed.

Step 2: Installing the KTX/KTX-D Card

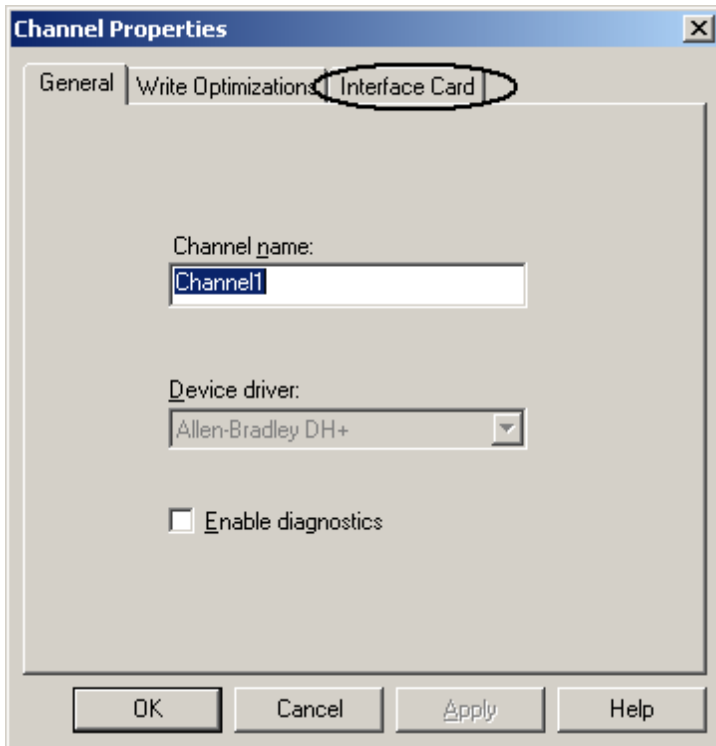
Install the KTX/KTX-D card on an available ISA slot and connect to the appropriate network.

Step 3: Setting Up Channel Properties for the KTX/KTX-D Card

1. In the server application, right-click on the channel and then select **Properties**.



2. Next, select the **Interface Card** tab in Channel Properties.



3. Configure the following properties:

- **Board Type:** Select "KTX(D)" from the drop-down menu.
Note: In this example, KTX (D) has been chosen for both the KTX and KTX-D cards.
- **Network Type:** Select the type of network that is being used. This driver currently supports DH+ and DH-485 networks.
- **Station Address:** This is the device's unique Node ID: 0-77 octal for DH+ and 0-31 decimal for DH-485. users must make sure that this ID does not conflict with any other Node ID on the network.
- **Baud Rate:** The available baud rates for the DH+ network are 57.6K, 115K and 230K. Under the DH+ network, the baud rates 115K and 230K may not be supported by the card or device. For more information, check the card and device vendor's specifications. The available baud rates for the DH-485 network are 300, 600, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K. The selected baud rate should match the device configuration.
- **Memory Address:** Sselect the exact memory address that was specified on the card during hardware configuration. For more information, refer to [Hardware Configuration of Memory and Interrupt on 1784 KTXD Card](#).
- **Interrupt:** If using Interrupts, select a unique interrupt level from the drop-down menu. Make sure it matches what was specified during hardware configuration. If not using interrupts, select "None."



4. Click **OK**.

Channel Setup for the Allen Bradley- 1784 PKTX/PKTX-D Card

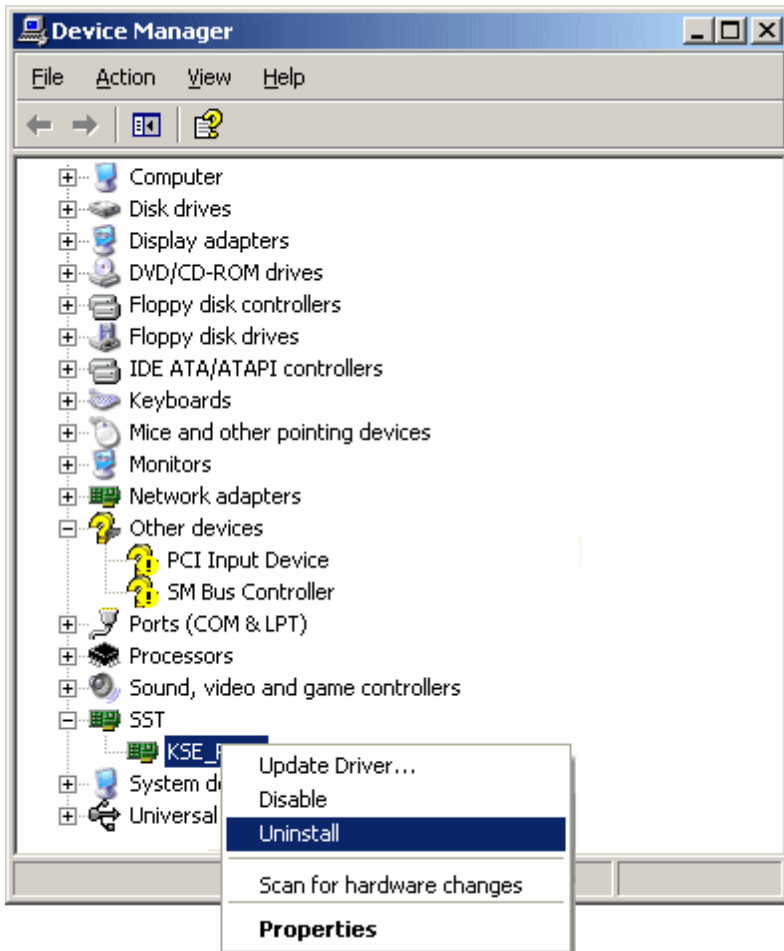
Before installing the PKTX/PKTX-D driver, make sure that any drivers that may have been used previously for this card (such as RSLinx) have been uninstalled. Then, restart the computer.

Caution: Failure to do so may result in unexpected consequences. It is recommended that a fresh PCI slot (which has not been used with other DH+ cards before) be used. This is not required for Windows NT.

Windows NT Users Note: Windows NT users must be logged in as an administrator the first time that the driver is used. This is because the driver must write some information to the registry before it can start loading the protocol to the cards.

Removing Old Drivers: An Example Procedure

Users familiar with SST or similar cards may have seen something like the following image under **Device Manager** before.



1. To start, expand SST. Select any driver beneath it, and then right-click and select **Uninstall**. This must be done for all the drivers that are installed under SST.

2. Once the procedure is complete, restart the computer. Before setting the Channel Properties, users must install an additional driver for the PKTX/PKTX-D card.

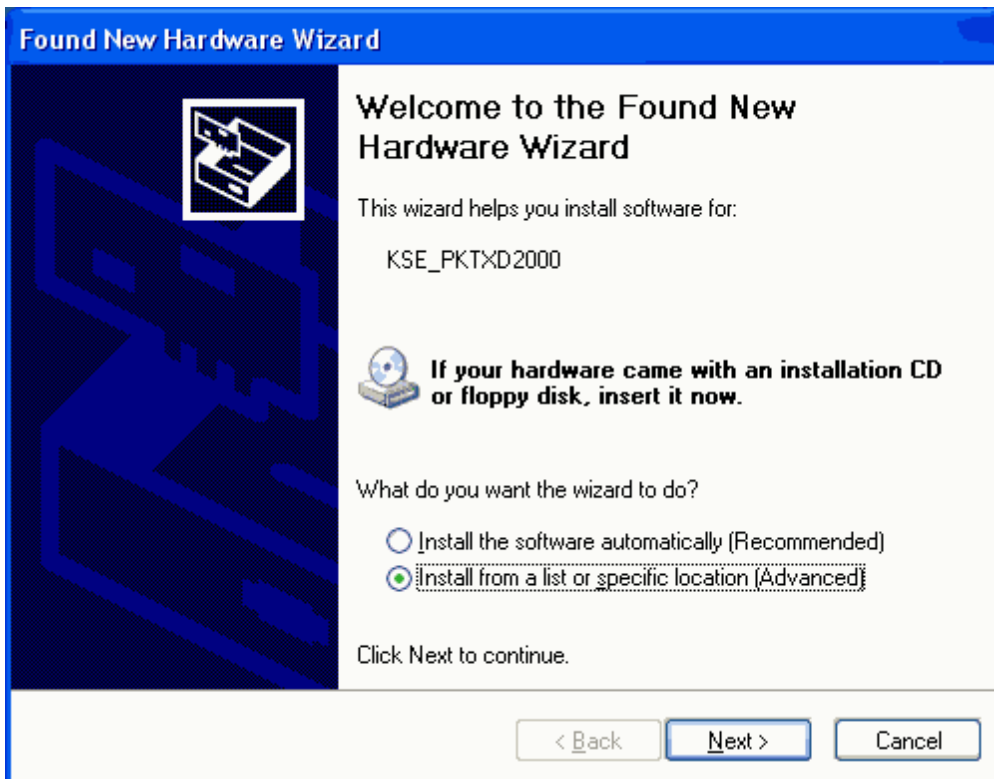
Note: If the driver is being installed on Windows NT, the instructions described in Step 1 are not required and should not be performed. The driver should automatically take care of the steps required for installation.

Step 1: Installing Additional Drivers

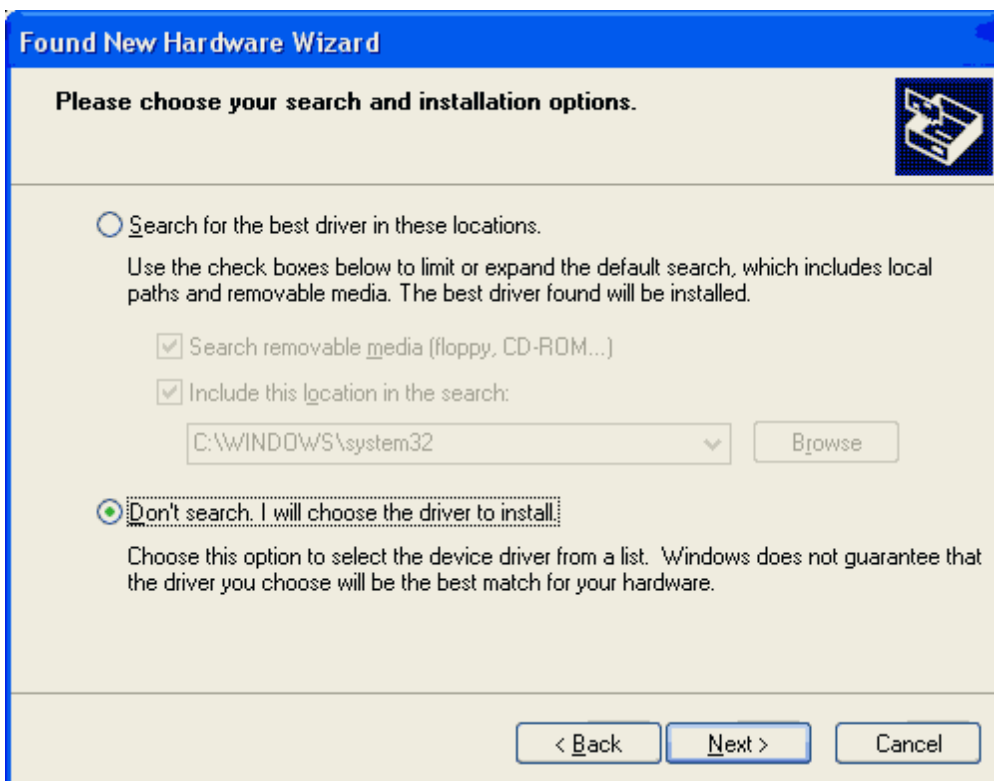
1. After the card has been installed, restart the PC. At start up, the **Found New Hardware Wizard** will pop up to configure the newly detected hardware.

Note: The images below refer to "KSE_PKTXD2000." This name can vary from computer to computer. When installing the device for the first time, some computers might say "Network Controller." In this case, it is referring to the device as "KSE_PKTXD2000."

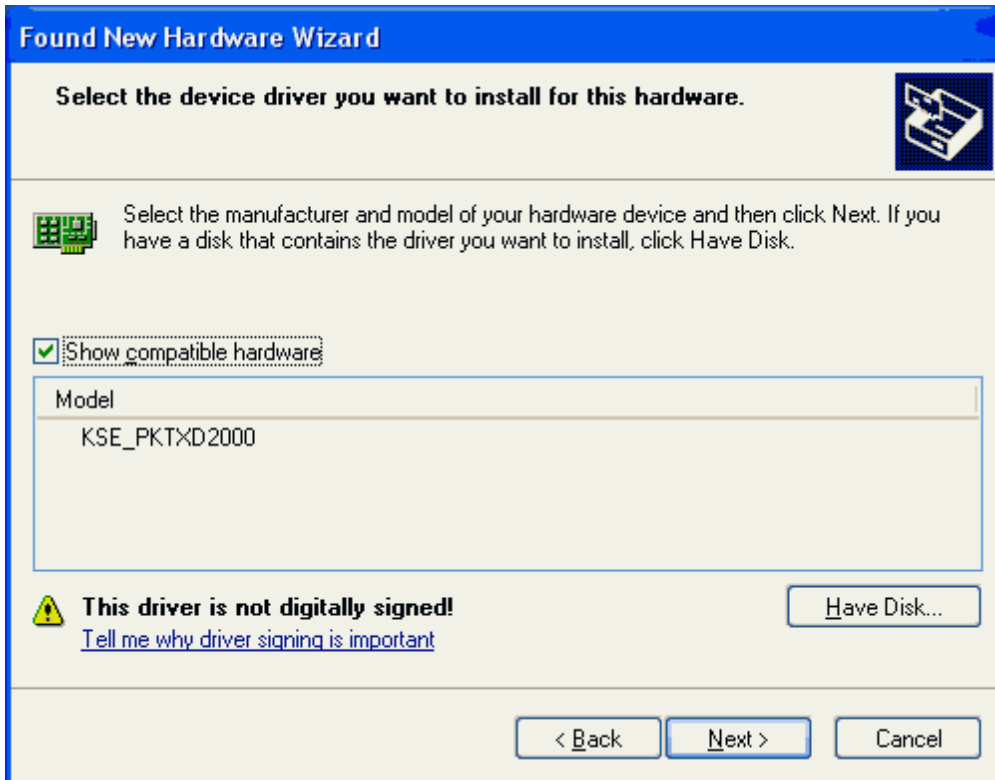
2. Select **Install from a list or specific location (Advanced)** and then click **Next**.



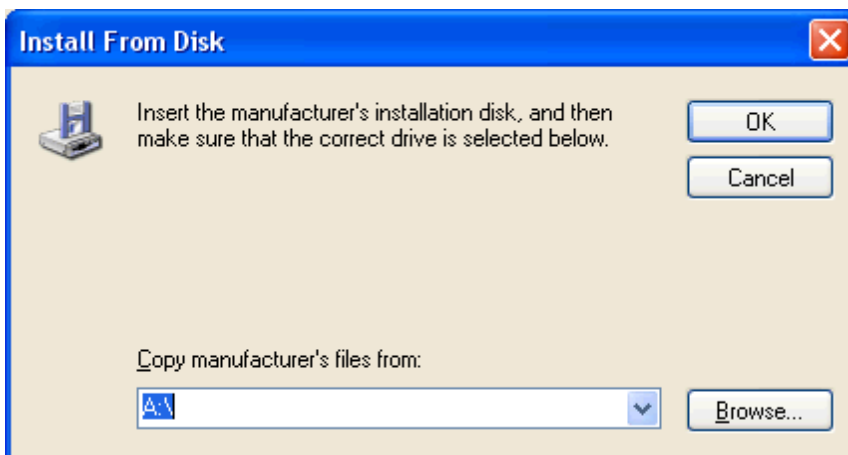
3. Select **Don't search. I will choose the driver to install** and then click **Next**.



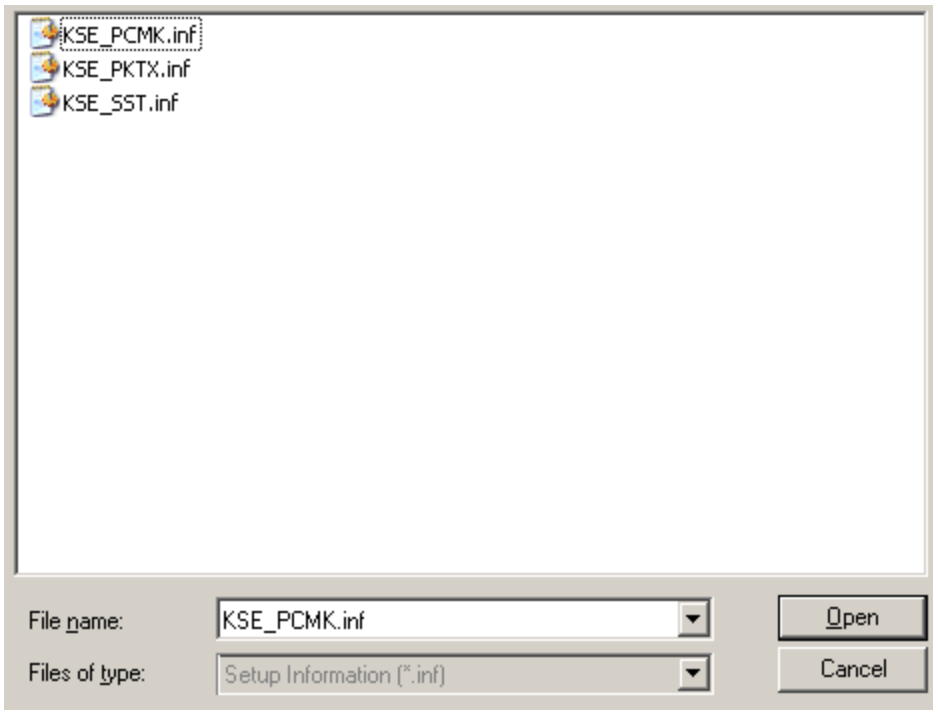
4. Select **Have Disk** regardless of whether or not the name **PKTX** appears on the list.



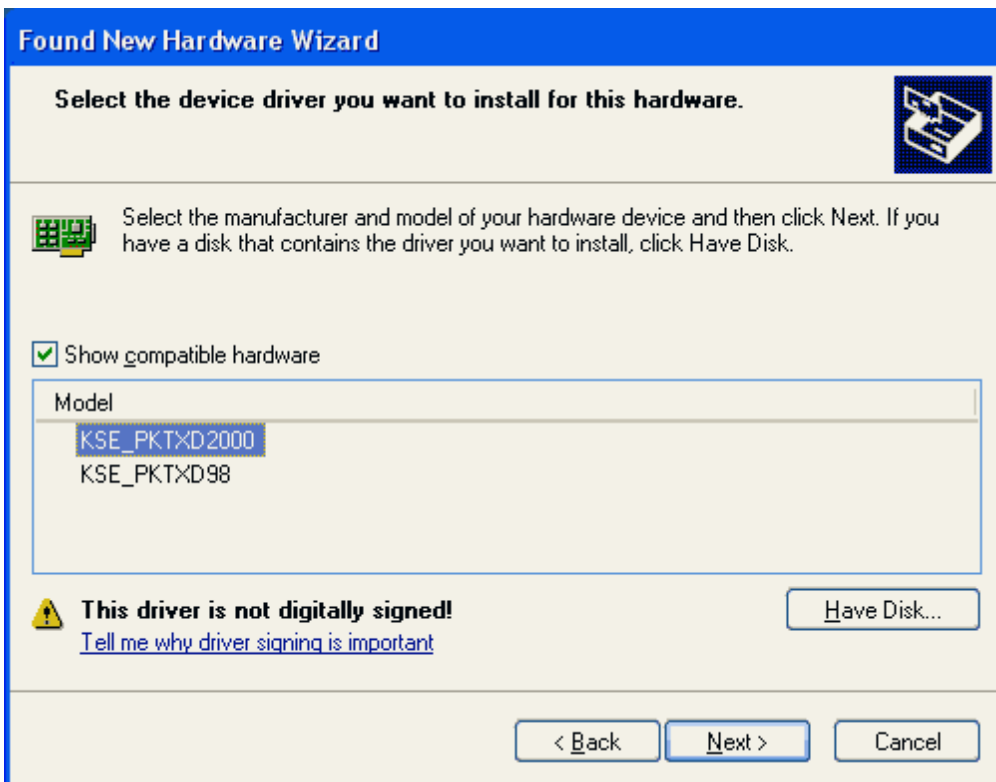
5. Next, click **Browse...** and go to the **C:\Program Files\yourOPCserver\drivers\Allen-Bradley DH+** directory.



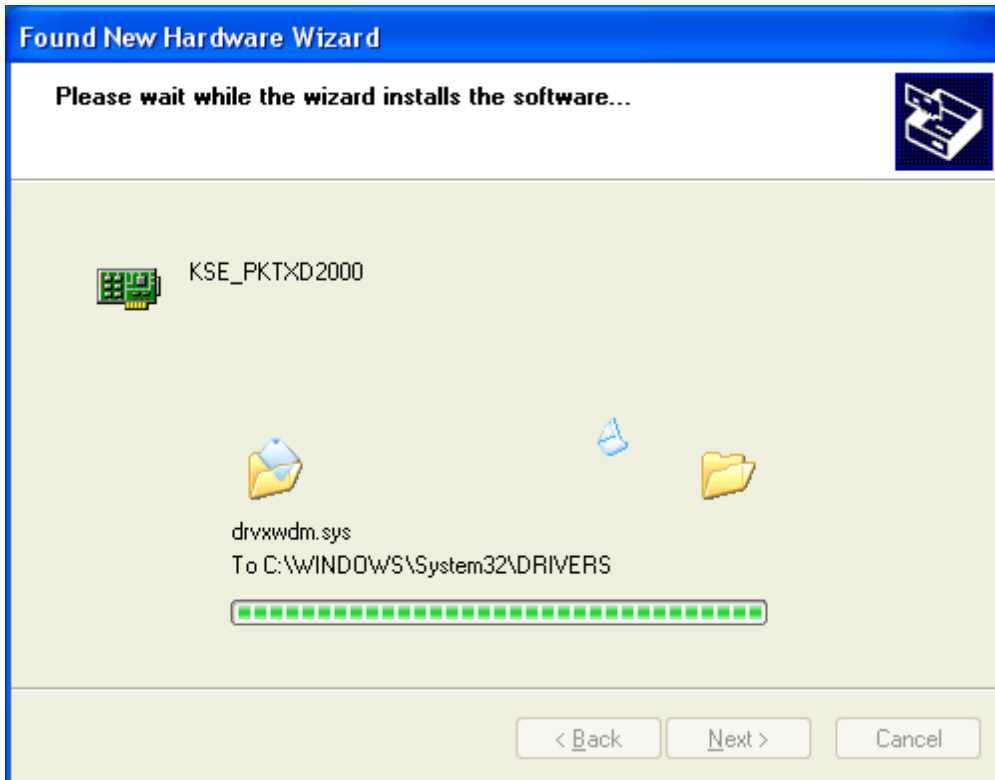
6. Multiple .inf files will be shown. If using Windows NT or Windows XP, select **KSE_PKTX.inf** as the driver.



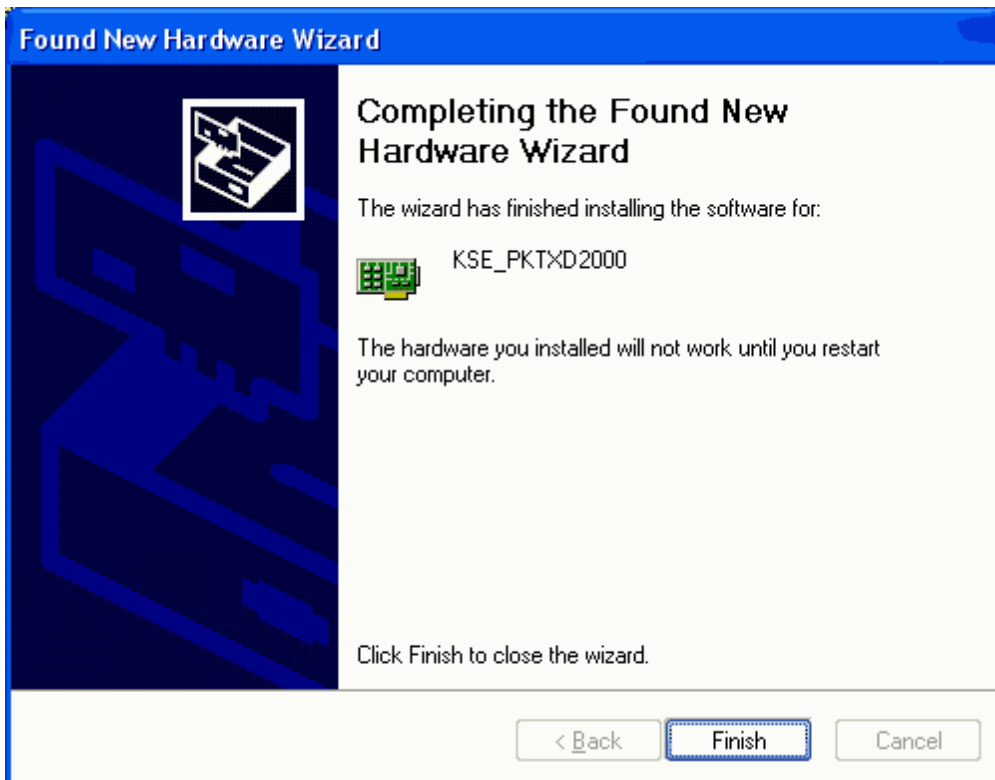
7. Select the appropriate driver for the device being used. If using a PKTXD card, select **KSE_PKTXD2000**; if using a PKTX card, select **KSE_PKTX2000**.



8. Wait while the **Found New Hardware Wizard** installs the software.



9. Click **Finish** and then restart the computer.



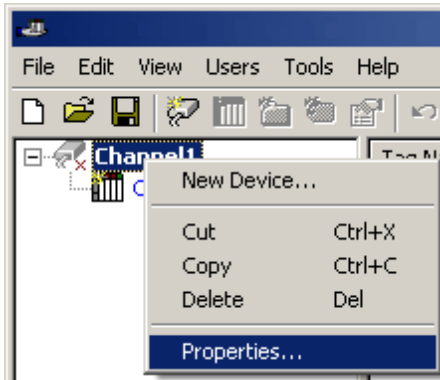
Note: If the computer still cannot detect the PKTX device, users should attempt one or both of the following:

- Completely uninstall any driver installed under the current slot.
- Try a different slot.

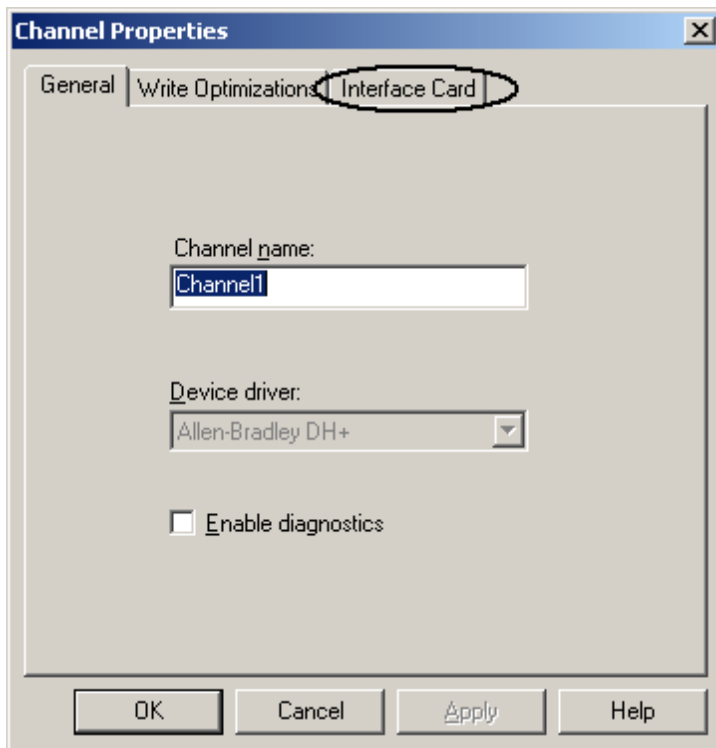
Step 2: Channel Configuration

The following steps should be performed after Step 1, and once the computer has been restarted.

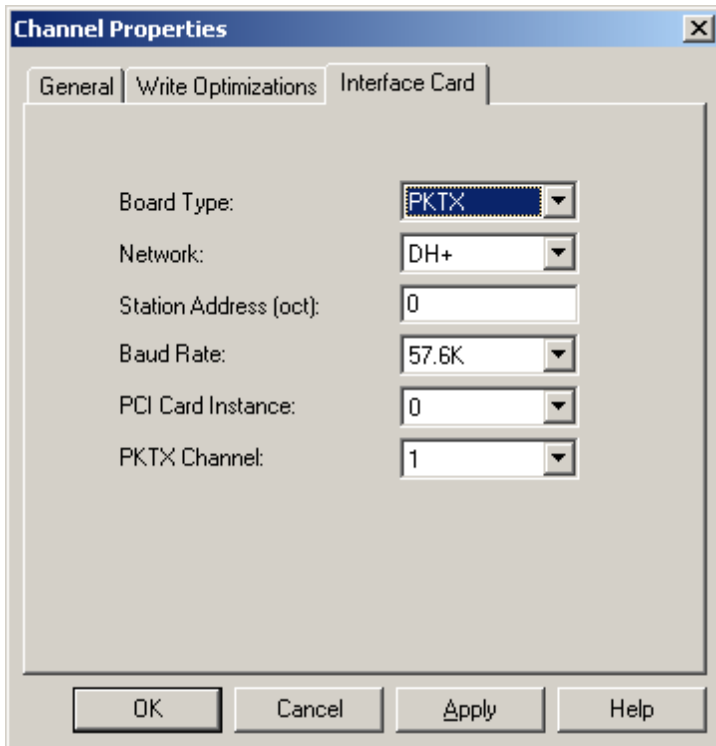
1. In the server application, right-click on the channel and select **Properties**.



2. Next, select the **Interface Card** tab in Channel Properties.

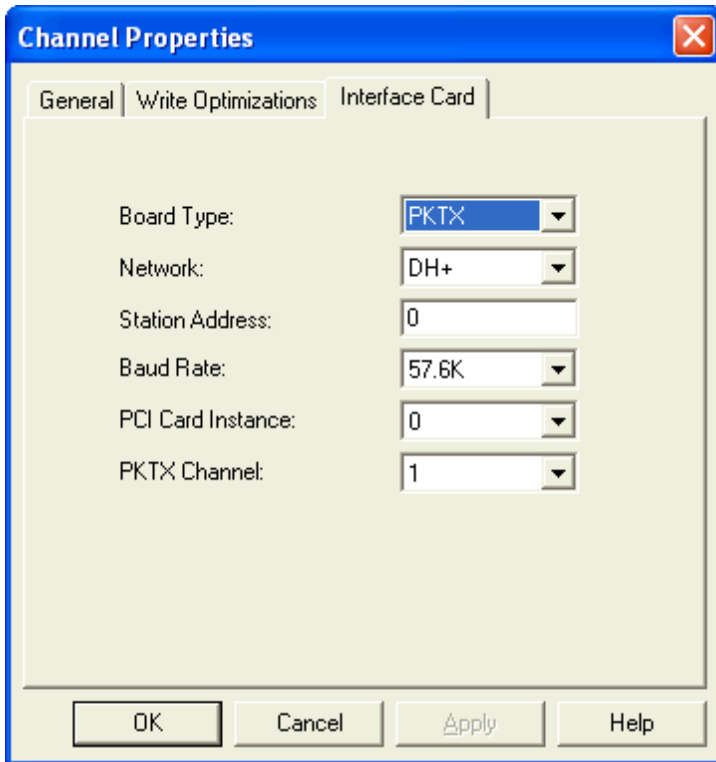


3. In the **Interface Card** tab, configure the properties.



Description of the parameters are as follows:

- **Board Type:** Select "PKTX" or " PKTX-D" from the drop-down menu, depending on which card is being used.
- **Network Type:** This driver currently supports the DH+ and DH-485 networks for PKTX/PKTX-D cards.
- **Station Address:** This is the device's unique Node ID: 0-77 octal for DH+ and 0-31 decimal for DH-485. Users must make sure that this value does not conflict with any other Node ID on the network.
- **Baud Rate:** The available baud rates for the DH+ network are 57.6K, 115K and 230K. Under the DH+ network, the baud rates 115K and 230K under may not be supported by the card or device. For more information, check the card and device vendor's specifications. The available baud rates for the DH-485 network are 300, 600, 1.2K, 2.4K, 4.8K, 9.6K and 19.2K. The selected baud rate should match the device configuration.
- **PCI Card Instance:** On Windows XP, this number depends on the number of PKTX/PKTX-D card instances on the computer. If the card being installed is the first PKTX/PKTX-D, the PCI Card Instance should be 0. The PCI Card Instance for the next PKTX/PKTX-D card will be 1, and so forth. On Windows NT, however, PKTX and PKTX-D cards are treated as two different types of cards. Thus, if two cards are installed (one PKTX and one PKTX-D), the PCI Card Instance for both cards will be 0. The PCI Card Instance for the next PKTX will be 1 and for the next PKTX-D card will also be 1. Up to 4 card instances are allowed at a time. Thus, the maximum PCI Card Instances available for selection is 3.
- **PKTX Channel:** This number depends on the number of channels on the PKTX Card. If a PKTX card is being used, there would only be one channel. If a PKTX-D card is being used, there would be two different channels. When using the PKTX-D card, select the channel (1 for PKTX Channel 1A and 2 for PKTX Channel 2) that will be used for the device.



4. Next, click **OK**.

Channel Setup for the AB 1784 PCMK/B Card

An additional driver must be installed for the PCMK/B card before the Channel Properties may be set.

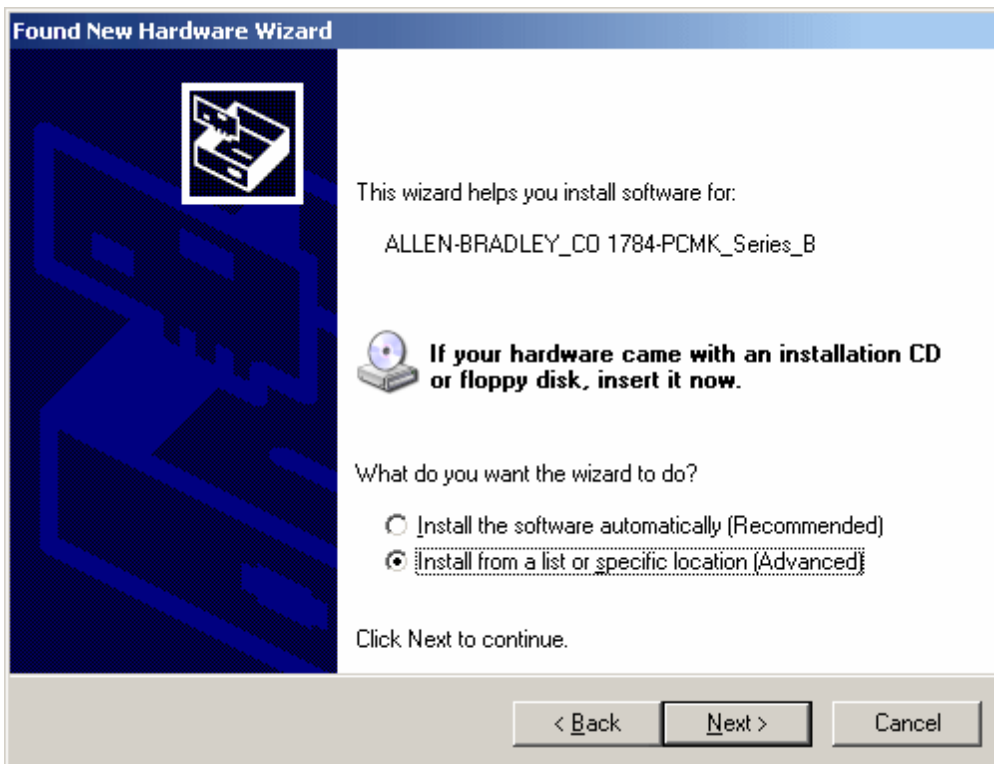
Note: The PCMK/B card is currently supported for WindowsXP and Windows2000 only. Before installing the PCMK/B driver, make sure any drivers that have previously been used for this card have been uninstalled. Then, restart the computer.

Step 1: Installing an Additional Driver

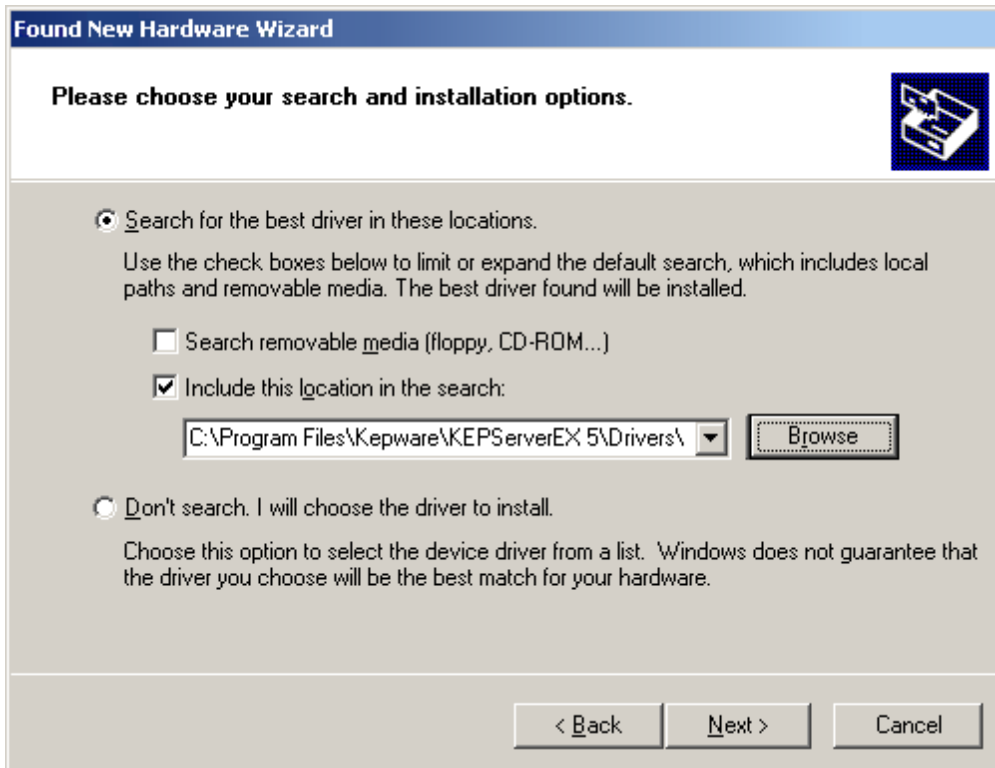
1. After the card has been installed, restart the computer. The **Found New Hardware Wizard** will be invoked, asking to configure the newly detected hardware. Select "No, not this time" and then click **Next**.



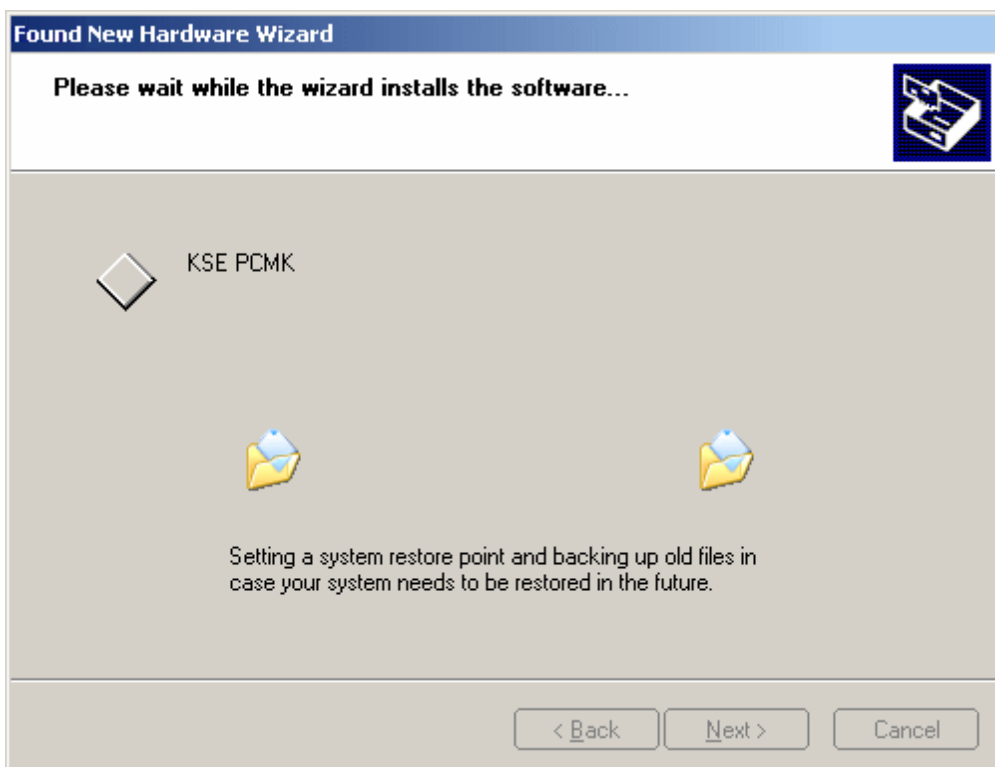
2. Select "Install from a list or specific location (Advanced)" and then click **Next**.



3. Select "Search for the best driver in these locations" and then check "Include this location in the search".

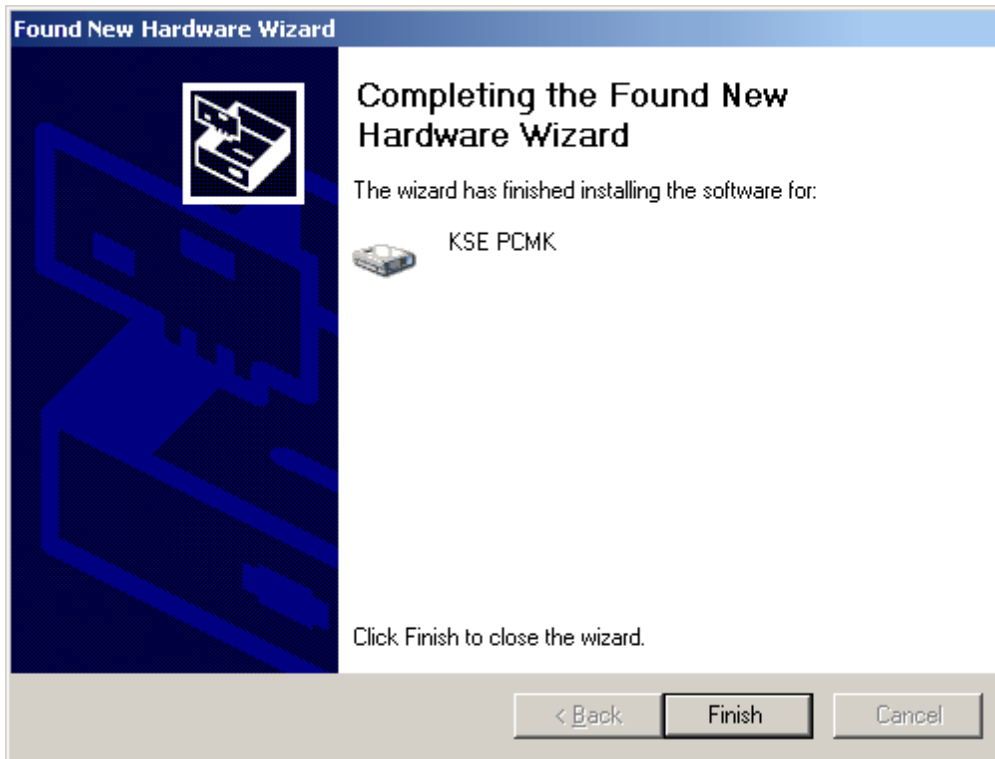


4. Next, click **Browse**. Navigate to the *C:\Program Files\yourOPCserver\drivers\Allen-Bradley DH+* directory. Once the folder is located, click **Next**.



Note: This will start the driver installation.

5. Once it completes, click **Finish**.



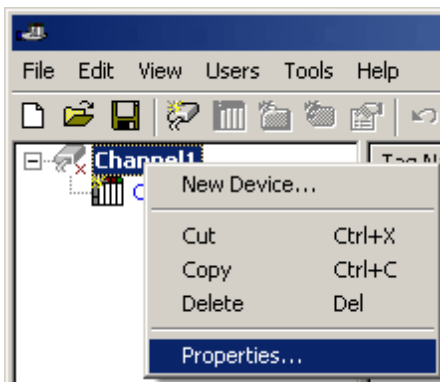
6. Then, restart the computer.

Note: If the computer still cannot detect the PCMK/B device, users should attempt one or both of the following:

- Uninstall any driver installed under the current slot.
- Try a different slot.

Step 2: Channel Properties Setup

1. In the server application, right-click on the channel and then select **Properties**.



2. Next, select the **Interface Card** tab in Channel Properties.



3. Under the **Interface Card** tab, make the following changes:

- **Board Type:** Select "PCMKB" from the drop-down menu.
- **Network type:** This driver currently supports DH+ and DH-485 networks for PCMKB cards.
- **Station Address:** This is the device's unique Node ID: 0-77 octal for DH+ and 0-31 decimal for DH-485. Users must make sure that this ID does not conflict with any other Node ID on the network.
- **Baud Rate:** The available baud rates for the DH+ network are 57.6K, 115K and 230K. The baud rates 115K and 230K under the DH+ network may not be supported by the card or device. For more information, refer to the card and device's vendor specifications. The available baud rates for the DH-485 network are 300, 600, 1.2K, 2.4K, 4.8K, 9.6K, and 19.2K. Select the one that matches the device configuration.
- **PCI Card Instance:** This number depends on the number of PCMKB card instances on the computer. If the card is the first PCMKB being installed, the PCI Card Instance ID should be 0. Up to 4 card instances are allowed at a time. Therefore, the maximum PCI Card Instance that can be selected is 3.

4. Click **OK**.

Channel Setup for the AB-1784-U2DHP USB Card

The 1784-U2DHP USB adapter converts DF1 to DH+. For more information on configuration, refer to the Allen-Bradley DF1 Driver help file.

Channel Setup for 5136-SD-ISA Card

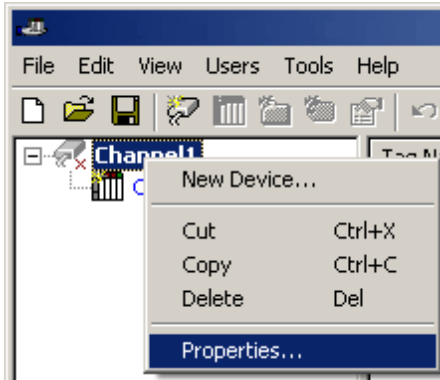
Note: Users will not need any additional drivers or additional software from any other vendor. Any additional drivers/software that may be required will either be supplied or recommended.

Step 1: Configuring the SST ISA Card

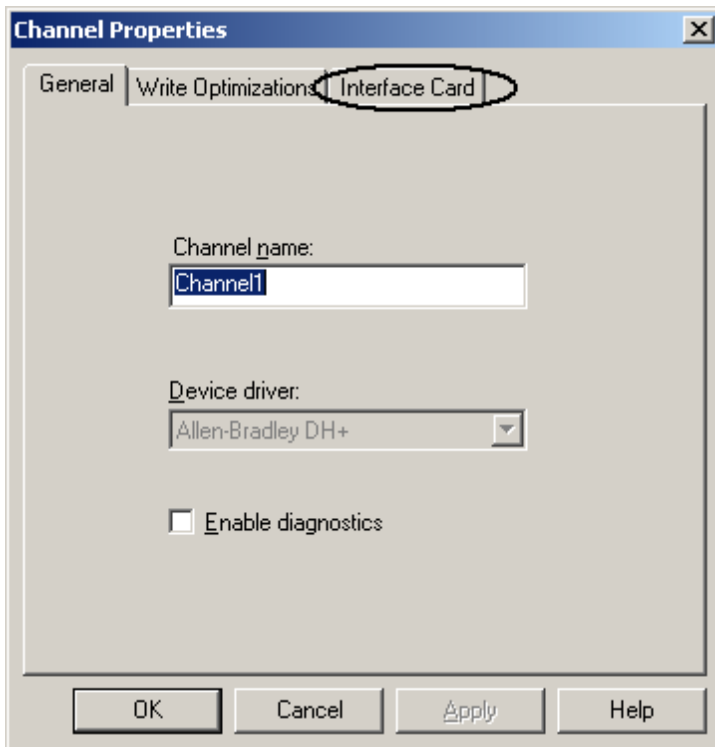
For more information on configuring the I/O port and jumper settings on the SST ISA card, refer to [Hardware Configuration of the 5136-SD-ISA \(SST\) Card](#).

Step 2: Setting Up the Channel Properties

1. In the server application, right-click on the channel and then select **Properties**.

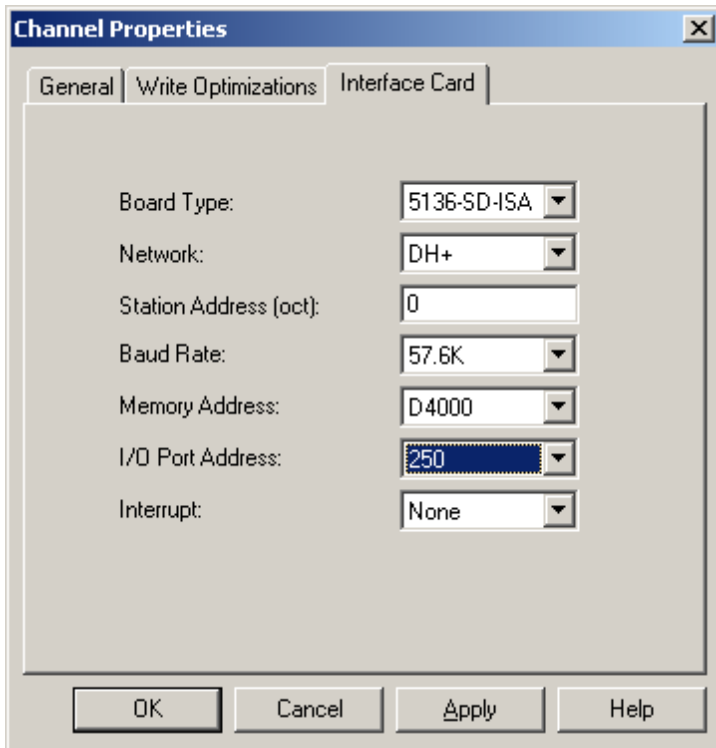


2. Select the **Interface Card** tab in Channel Properties.



3. Under the **Interface Card** tab, configure the properties.

- **Board Type:** Select "5136-SD-ISA" from the drop-down menu.
- **Network Type:** SST cards only support the DH+ network.
- **Station Address:** This is the device's unique Node ID: 0-77 octal for DH+ and 0-31 decimal for DH-485. Users must make sure that this ID does not conflict with any other Node ID on the network.
- **Baud Rate:** The available baud rates are 57.6K, 115K and 230K. Select the rate that matches the device configuration.
- **Memory Address:** Users must choose a unique memory address for the 5136 -SD- ISA card from the range A0000-FC000.
- **I/O Port Address:** Users must select the exact I/O port that was selected for the DIP switches while installing the 5136-SD-ISA card.
- **Interrupt:** If using interrupts, a unique interrupt level must be selected from the drop-down menu. To check for any conflicts, check the [Device Manager](#). If not using interrupts, select "None."



Channel Setup for 5136-SD-PCI Card

Before installing the 5136-SD-PCI driver, make sure that any drivers that have been used for this card previously (such as RSLinx or SST) have been uninstalled. Then, restart the computer.

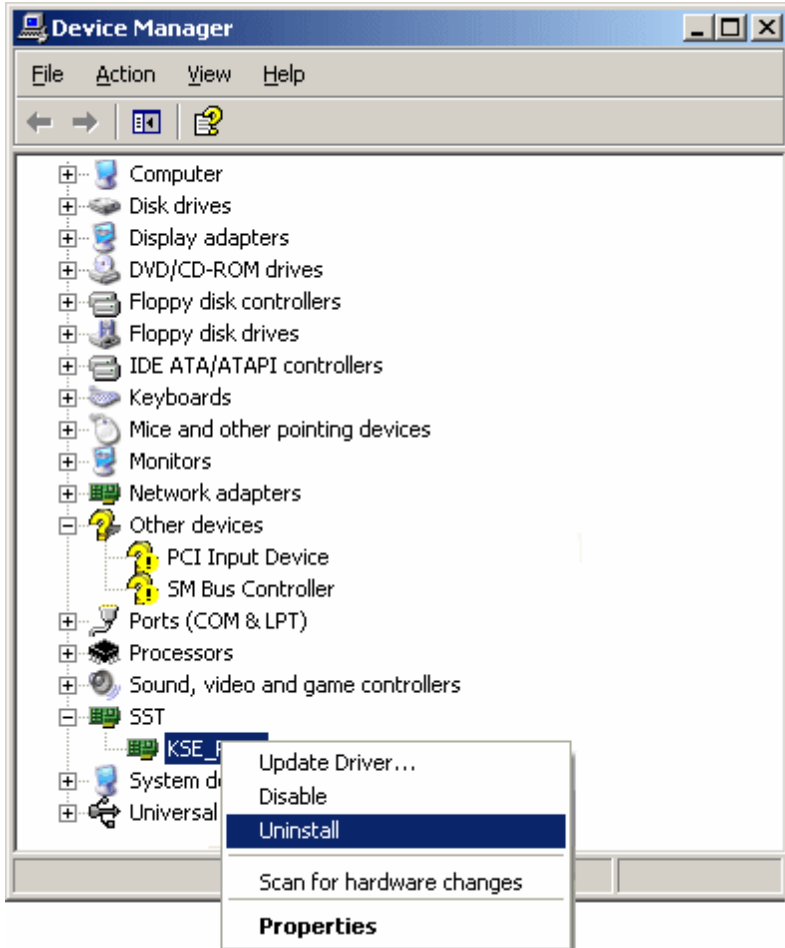
Caution: Failure to do so may result in unexpected consequences. A fresh PCI slot that has not been used with other DH+ cards before is recommended. This is not required for Windows NT.

Note: Multiple instances of the SST PCI card are not currently supported. It is not recommended that users run multiple PCI cards of similar category (such as PKTX and PKTXD) while the SST PCI is running.

Windows NT Users Note: Windows NT users must be logged in as an administrator the first time that the driver is used. This is because the driver must write some information to the registry before it can start loading the protocol to the cards.

Removing Old Drivers: Example Procedure

Users familiar with the PKTX or the SST card may have seen something like the following image under **Device Manager** before.



1. To start, expand SST. Select any driver beneath it and then right-click and select **Uninstall**. This must be done for all drivers that are installed under SST.

2. Once the procedure is complete, restart the computer. Before the Channel Properties are set, users must have an additional driver installed for the SST PCI card.

Note: No other drivers or software will be needed from any other vendor. Any additional driver/software that may be required will either be supplied or recommended. Also, when using Windows NT, the instructions described in Step 1 are not required and should not be performed. The driver should automatically take care of the steps required for the NT installation.

Step 1: Installing Additional Drivers

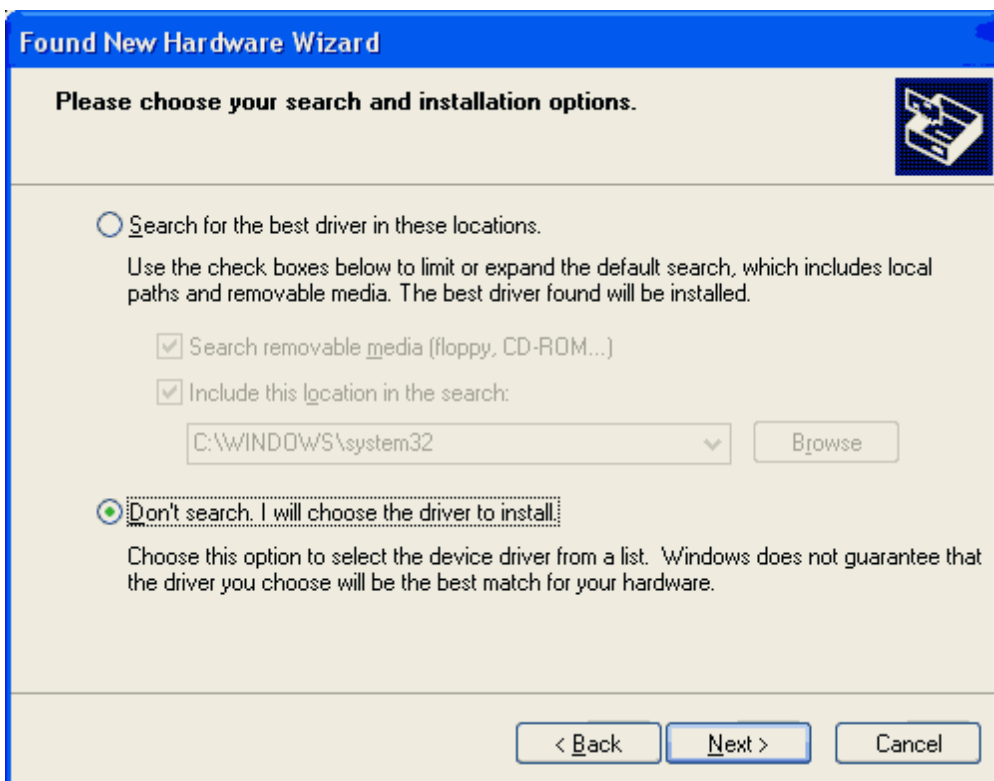
1. After the card has been installed, restart the PC. At start up, the **Found New Hardware Wizard** will pop up to configure the newly detected hardware.

Note: The images below refer to "KSE_PKTXD2000" and are taken from a different case. They are presented here as an example. Names vary from case to case.

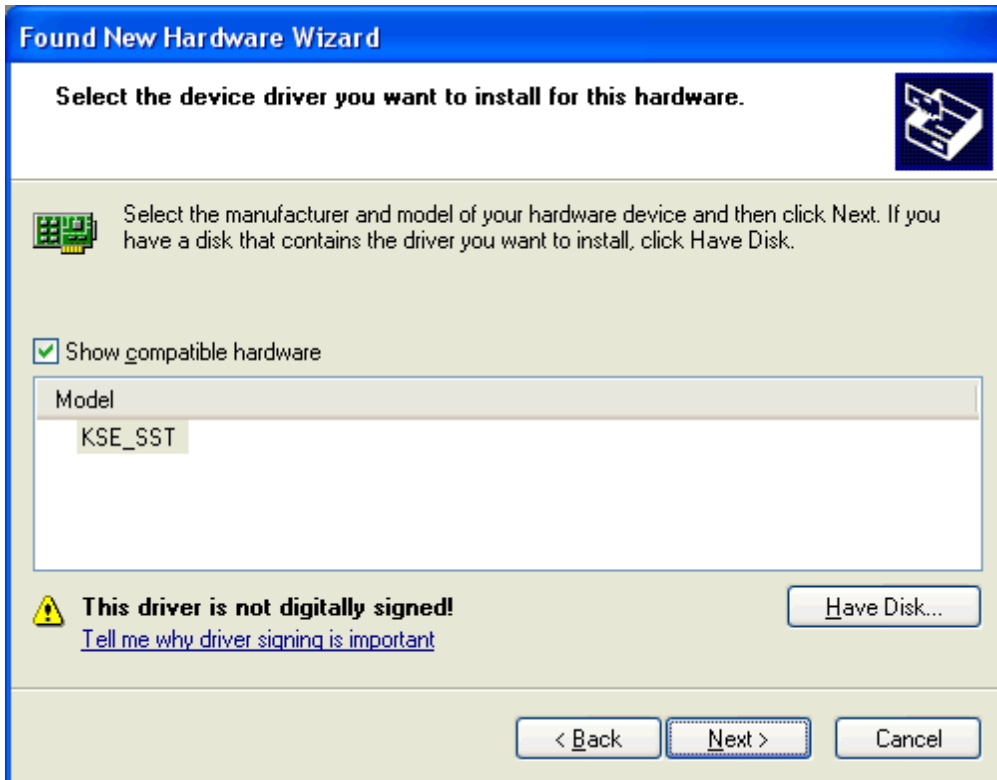
2. Select **Install from a list or specific location (Advanced)** and then click **Next**.



3. Select **Don't search. I will choose the driver to install** and then click **Next**.

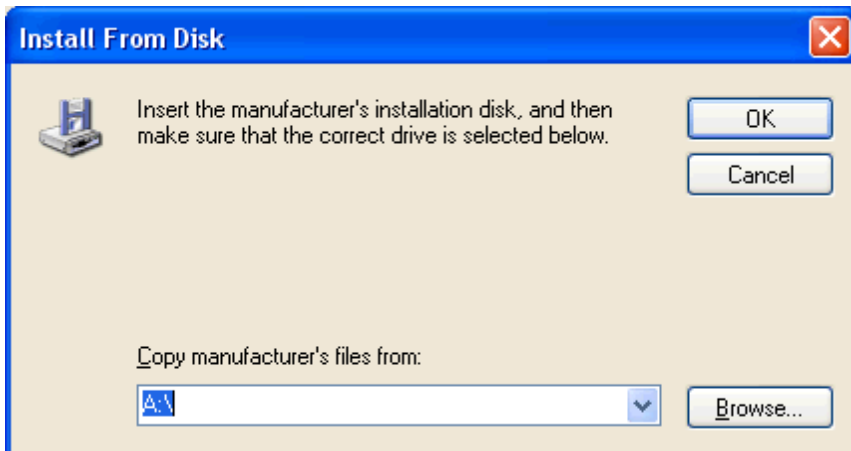


4. Click **Have Disk**, regardless of whether or not the **KSE** driver is there.

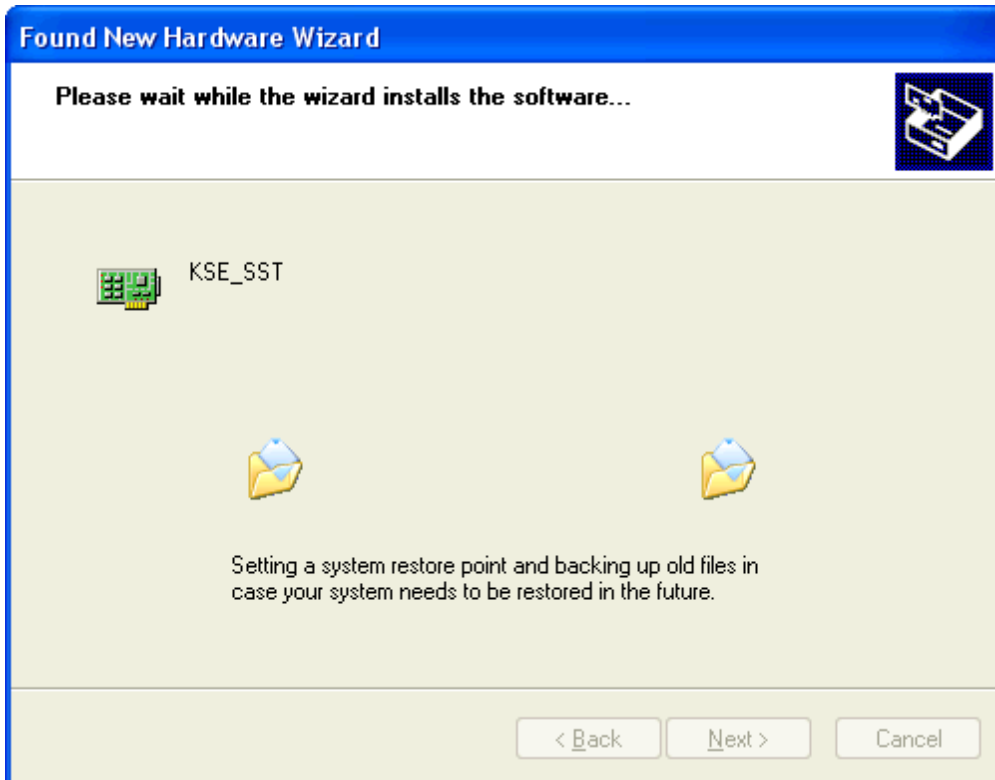


5. Click **Browse...** and go to the **C:\Program Files\yourOPCserver\drivers\Allen-Bradley DH+** directory. Multiple **.inf** files will be shown.

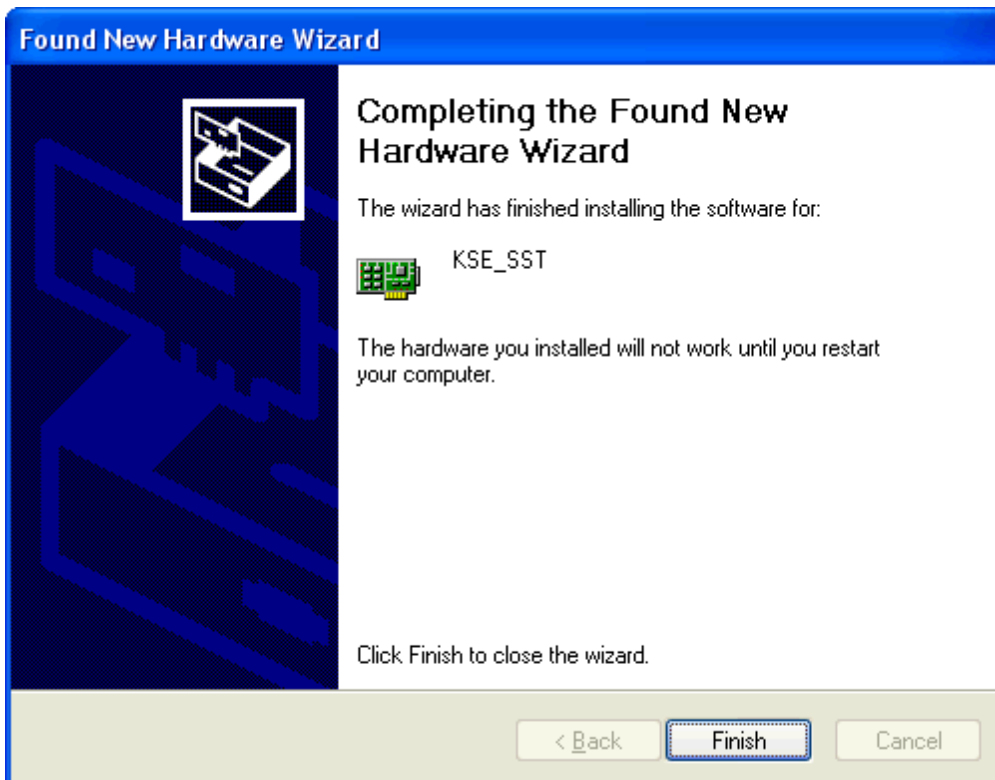
6. Select the **KSE_SST2000.inf** file and then click **OK**.



7. Wait while the **Found New Hardware Wizard** installs the software.



8. Click **Finish** and then restart the computer.

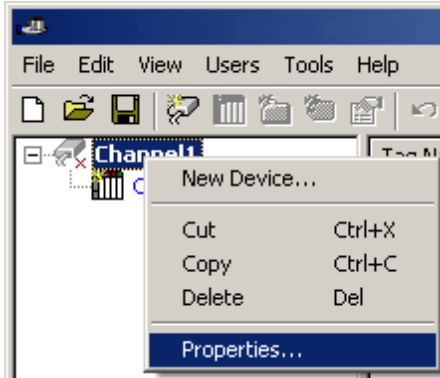


Note: If the computer still doesn't detect the SST-PCI device, users may have to try one or both of the following:

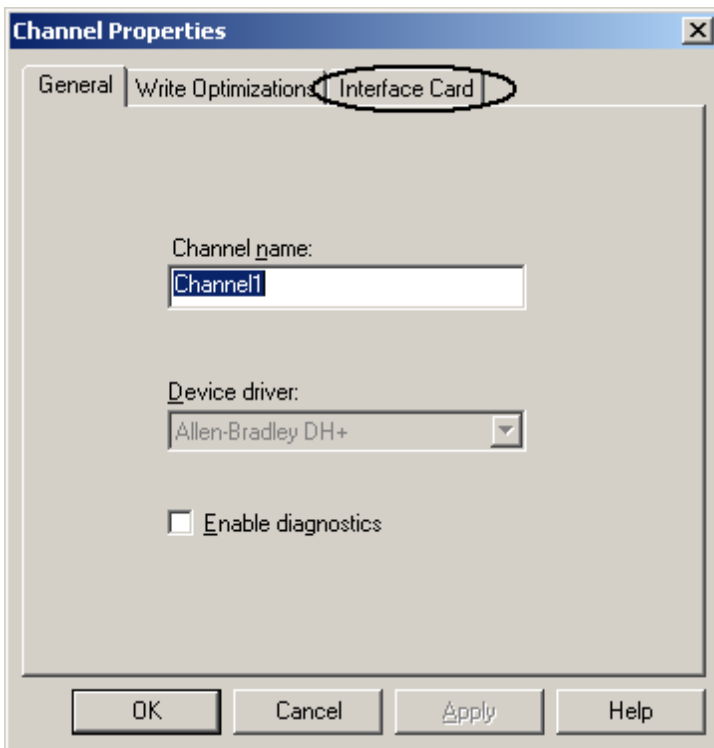
- Completely uninstall any driver installed under the current slot.
- Try a different PCI slot.

Step 2: Channel Properties Setup

1. In the server application, right-click on the channel and select **Properties**.

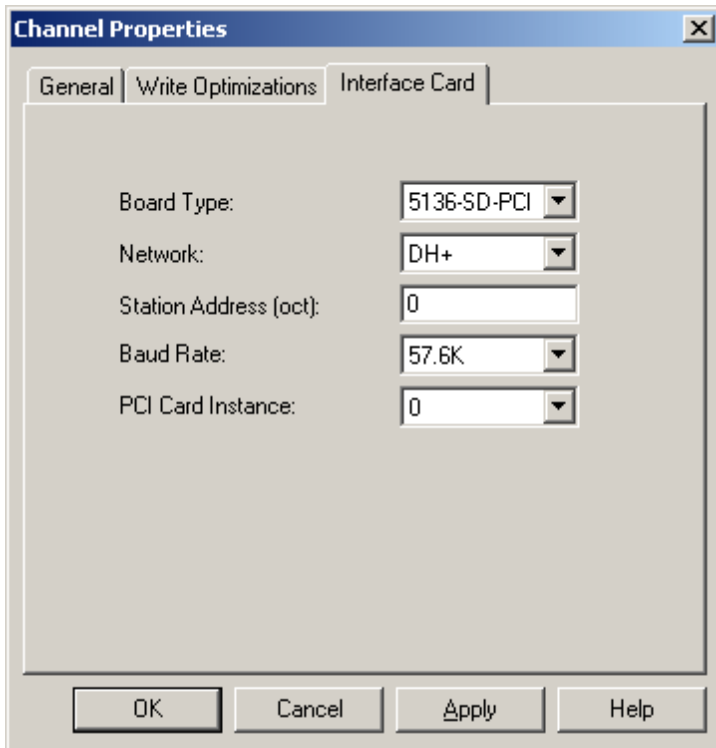


2. Select the **Interface Card** tab in Channel Properties.



3. Under the **Interface Card** tab, complete the following:

- **Board Type:** Select "5136-SD-PCI" from the drop-down menu.
- **Network Type:** This driver currently supports only DH+ networks for 5136-SD-PCI cards.
- **Station Address:** This is the device's unique Node ID: 1-77 octal for DH+. Users must make sure that this ID doesn't conflict with any other Node ID on the network.
- **Baud Rate:** The available baud rates are 57.6K, 115K and 230K. Select the baud rate that matches the device configuration.
- **PCI Card Instance:** Currently, only a single instance of the SST PCI card is supported. Thus, the PCI Card Instance number for SST PCI will always be zero.



4. Click **OK**.

Device Setup

System Restrictions

This driver does not work on 64 bit operating systems.

Supported Devices

SLC Family processors*
PLC5 series excluding the PLC5/250 series

*Address ranges have been opened up in the driver to allow for future devices. Therefore, the driver may still support a device even if it is not listed above.

Communication Protocol

Allen-Bradley DH+/DH-485

Maximum Number of Channels and Devices

The maximum number of channels supported is 100. The maximum number of devices supported per channel is 1024.

Timeout Parameters

Connect Timeout

This parameter specifies the time that the driver will wait for a connection to be made with a device. The valid range is 1 to 60 seconds.

Request Timeout

This parameter specifies the time that the driver will wait on a response from the device before giving up and going on to the next request. The valid range is 100 to 300000 milliseconds.

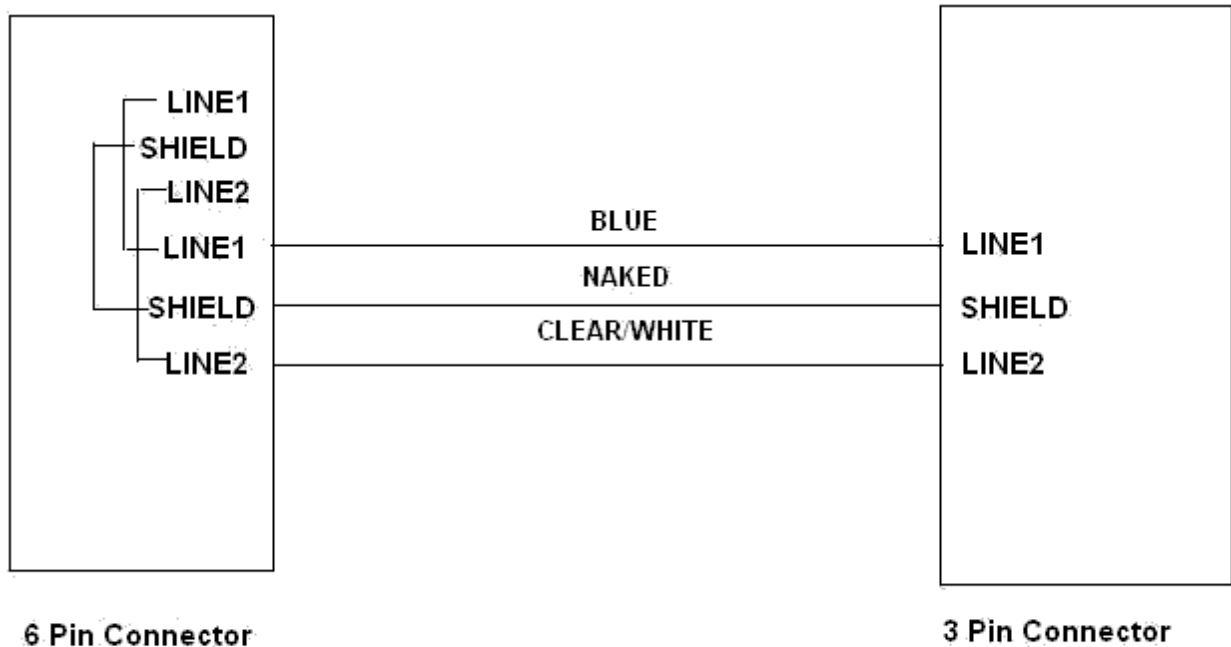
Retry Attempts

This parameter specifies the number of times that the driver will retry a message before giving up and going on to the next message. The valid range is 1 to 10. The default setting is 3.

See Also: [SLC500 Slot Configuration](#)

Cable Connections

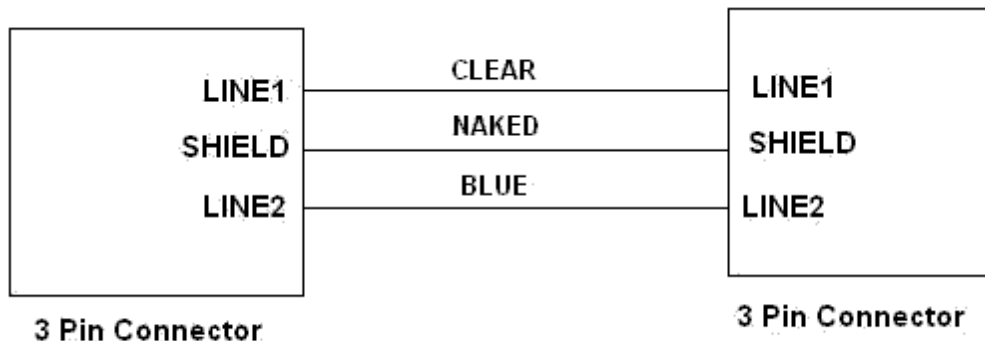
SST Card Connection to the DH+ Network



SST card connection to the DH+ Network.

- * 6 pin connector connects to the card and 3 pin connector connects to the device.
- * Line 2 of the 6 pin connector is the line closest to the LED on the SST PCI card. However, on the ISA card, it is line 1 that is closest to the LED.

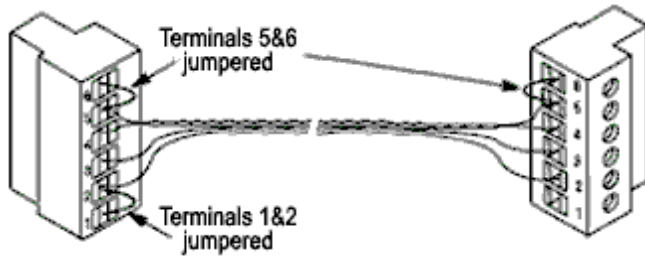
KTX(D) and PKTX(D) Connection to DH+ Network



KTX(D) and PKTX(D) connection to DH+ Networks.
One end connected to card and the other to the device.

KTX(D) and PKTX(D) Connection to DH-485 Network

As shown in the following diagram, terminals 5 and 6 should be jumpered together at both ends of the link. Terminals 1 and 2 should be jumpered together only at one end.



1784 KTX(D) and PKTX(D) Cable Connection to the DH-485 Network

Line 1 is nearest to the "1784" label on the card.

1784 PCMK/B Connection to DH+ Network

Items required for the connection are as follows:

- A 1784-PCM5/B cable, which can be obtained from Allen Bradley. The PCM5/B cable is used with a DH+ network.
- A 1784-CP7 adapter, which can be obtained from Allen Bradley.

For information on connecting the 1784 PCMK/B to the DH+ network, refer to the instructions below.

1. Connect the left end of the 1784-PCM5/B cable to the PCMK card. The silver side of the left end of the cable should face the top of the PCMK card.



2. Next, attach the 9-Pin end of the 1784-CP7 adapter to the right end of the 1784-PCM5/B cable (a 9-Pin D-shell).
3. Then, attach the 8-pin end of the adapter (an 8-pin mini DIN connector) of the adapter to the device.



1784 PCMK/B Connection to DH-485 Network

The 1784-PCM4/B cable is required for the connection to the network and may be obtained from Allen Bradley. The PCM4/B cable is used with a DH-485 network. For information on connecting the 1784 PCMK/B to the DH-485 network, refer to the instructions below.

1. Connect the left end of the 1784-PCM4/B cable to the PCMK card. The silver side of the left end of the cable should face the top of the card.



- Next, connect the right end of the cable (an RJ-45 connector) to the device.



Communications Parameters

Block Request Size

Request size refers to the number of bytes that may be requested from a device at one time. This driver's performance can be refined by configuring the request size to one of the following settings: 32, 64, 128 or 230 bytes. The default value is 230 bytes.

Hardware Setup

For more information on a specific hardware setup, select a link from the list below.

- [Hardware Configuration of 5136-SD-ISA \(SST\) card](#)
- [Hardware configuration of memory and interrupt on 1784 KTX](#)
- [Configuring the 1784-KT \(ISA Bus\) Communication Interface Card for DH+](#)
- [Check Device Manager](#)
- [Install and Connect KTXD to Network](#)

Note: For information on system restrictions, refer to [Device Setup](#).

Hardware Configuration of the 5136-SD-ISA (SST) Card

Important: Users must ground themselves by touching a grounded object (such as the chassis of the computer) before handling the card.

I/O Port Configuration

The 5136-SD-ISA card uses I/O ports. The default address is 250. DIP switches are available on the card to configure a unique I/O port address in case another device is already using that address. The I/O space required is 8 bytes. Thus, the setting of 250 will select ports 250-257.

The table below displays some of the DIP switch settings options that may be selected for the port addresses. If another address is required, refer to the SST card's 5136-SD-ISA User's Guide.

PORT ADDRESS IN HEX	SW1	SW2	SW3	SW4	SW5	SW6	REMARKS
200	ON	ON	ON	ON	ON	ON	Game Port
208	ON	ON	ON	ON	ON	OFF	
210	ON	ON	ON	ON	OFF	ON	
218	ON	ON	ON	ON	OFF	OFF	
220	ON	ON	ON	OFF	ON	ON	
228	ON	ON	ON	OFF	ON	OFF	
230	ON	ON	ON	OFF	OFF	ON	
238	ON	ON	ON	OFF	OFF	OFF	
240	ON	ON	OFF	ON	ON	ON	
248	ON	ON	OFF	ON	ON	OFF	
250	ON	ON	OFF	ON	OFF	ON	DEFAULT
258	ON	ON	OFF	ON	OFF	OFF	

Transmit Jumper

The 5136-SD-ISA card uses jumper JB2 to enable or disable transmission from the card. Position "DISA" disables transmission whereas position "ENB" enables it. The jumper must be set to "ENB" to enable message transmission through the DH+ network.

Note: Users should now be all ready to install the card on an ISA slot in the computer.

Hardware Configuration of Memory and Interrupt on 1784 KTXD card

Users must select a unique memory address and Interrupt Request Level (IRQ). The valid memory address range is C800-D700. The valid interrupt levels are 3, 4, 5 and 7. To make sure that the value chosen for the interrupt is unique, users should check the Device Manager. For more information, refer to [Check Device Manager](#).

Memory Configuration

The Allen Bradley 1784-KTX (D) card has two channels for communication. When planning to use channel 1, users must turn the knobs (sw3 and sw4) under Channel 1 to reflect the selected memory address. For example, if address D000 is chosen, then the sw3 should point to "D" and sw4 should point to "0." Similarly, when planning to use channel 2, users must turn the knobs (sw1 and sw2) to reflect the selected memory address. For more information, refer to [Cable Connections](#).

Interrupt Configuration

When using interrupts, users should choose an interrupt level. As mentioned above, valid interrupt levels are 3, 4, 5 and 7. The KTX (D) card comes with two jumpers. Each jumper is used for selecting the interrupt level for each of the channels. The jumper should be placed corresponding to the chosen channel number, horizontally across the two pins next to the selected interrupt level. For example, if using channel 1 with interrupt level 3

selected, users should place one of the jumpers horizontally across pin 3 under channel number 1. If not using interrupts, the jumper should be placed vertically, thus connecting pins of two different interrupt levels (such as 3 and 5).

Configuring the 1784-KT (ISA Bus) Communication Interface Card for DH+

Important: Before handling the card, users must ground themselves by touching a grounded object (such as the chassis of the computer).

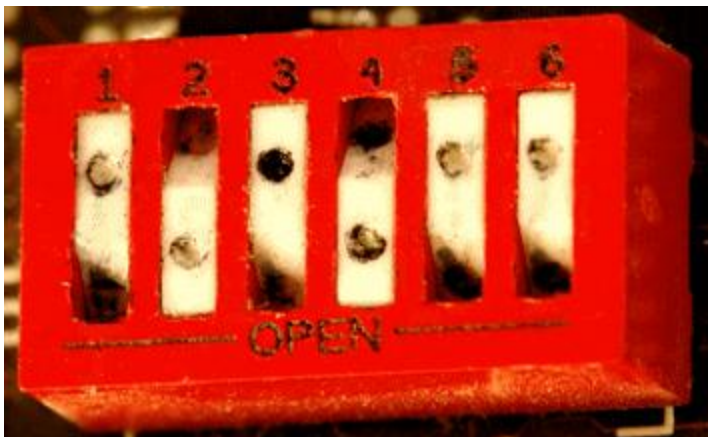
Requirements for the 1784-KT (ISA Bus) card are as follows:

- The 1784-KT card's DIP switch configuration must match the driver's KT communications address settings.
- The selected address must not conflict with any other address used by the computer.
- If planning to use multiple 1784-KT cards, each one must be assigned a unique address.

1784-KT Card DIP Switch Configuration for DH+

MEMORY ADDRESS IN HEX		SW1	SW2	SW3	SW4	SW5	SW6
Use these addresses only if an EGA or VGA display adapter is not installed.	A0000	OPEN	OPEN	OPEN	CLOSED	OPEN	CLOSED
	A4000	CLOSED	OPEN	OPEN		OPEN	CLOSED
	A8000	OPEN		OPEN	CLOSED	OPEN	CLOSED
	AC000	CLOSED	CLOSED	OPEN		OPEN	CLOSED
			CLOSED		CLOSED		
					CLOSED		
Use these addresses only if an MDA display adapter is not installed.	B0000	OPEN	OPEN	CLOSED	CLOSED	OPEN	CLOSED
	B4000	CLOSED	OPEN	CLOSED	CLOSED	OPEN	CLOSED
	B8000	OPEN		CLOSED	CLOSED	OPEN	CLOSED
			CLOSED		CLOSED		
					CLOSED		
Use these addresses only if the Dxxxx addresses do not work (since one of the Cxxxx addresses may be used by the AT BIOS).	C0000	OPEN	OPEN	OPEN	OPEN	CLOSED	CLOSED
	C4000	CLOSED	OPEN	OPEN	OPEN	CLOSED	CLOSED
	C8000	OPEN		OPEN	OPEN	CLOSED	CLOSED
	CC000	CLOSED	CLOSED	OPEN	OPEN	CLOSED	CLOSED
			CLOSED				
These addresses will yield the best results. The default address is shown in bold.	D0000	OPEN	OPEN	CLOSED	OPEN	CLOSED	CLOSED
	D4000	CLOSED	OPEN	CLOSED	OPEN	CLOSED	CLOSED
	D8000	OPEN		CLOSED	OPEN	CLOSED	CLOSED
			CLOSED				

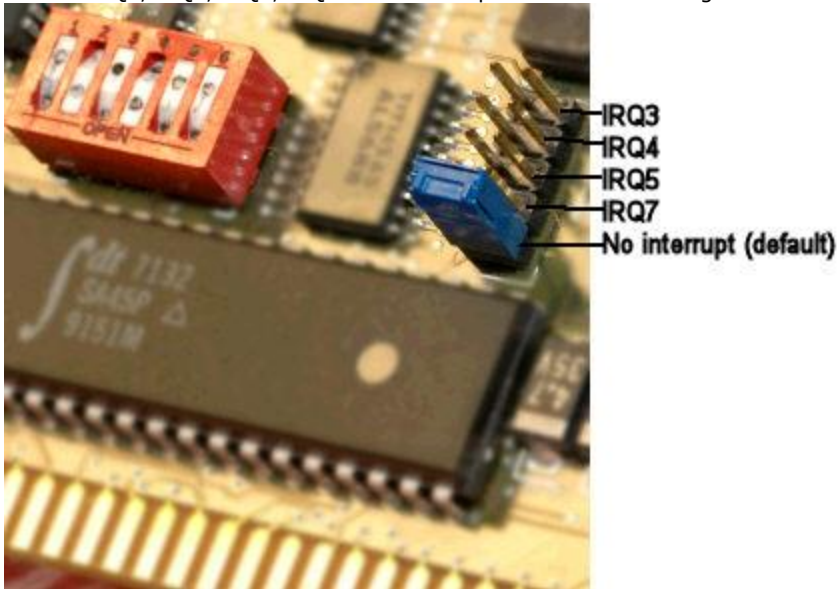
DIP Switches on the 1784-KT Card Shown for Default D4000



1. Configure the 1784-KT card DIP switches by pressing each switch in at the top or in at the bottom. Descriptions of the settings are as follows:

- **Open:** Pressed in at the top.
- **Closed:** Pressed in at the bottom.

2. Next, select an interrupt by placing the jumper on the two pins for the setting that has been chosen. Settings include IRQ3, IRQ4, IRQ5, IRQ7 or no interrupt. The default setting is no interrupt.



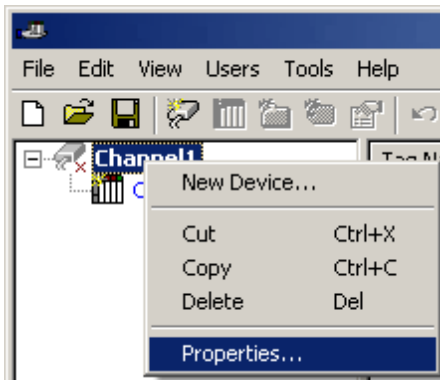
3. Carefully slide the 1784-KT card into the I/O expansion slot, and then press firmly until the card is seated in the slot.

4. Install the retaining screw into the retaining bracket.

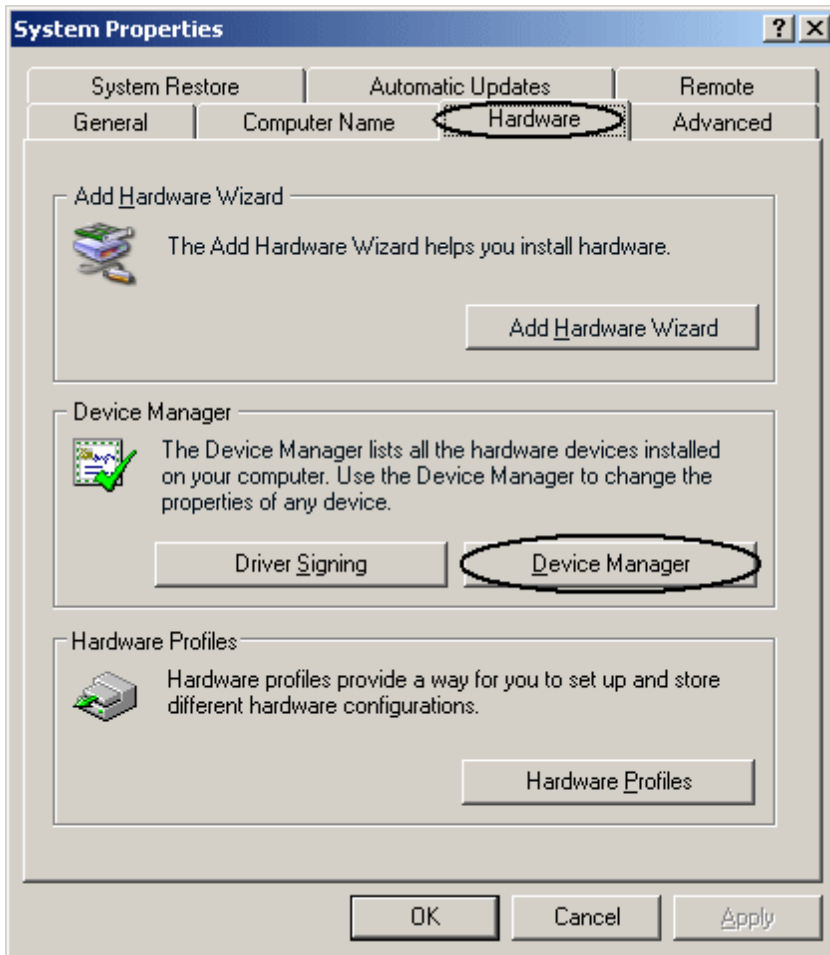
Check Device Manager

Windows XP

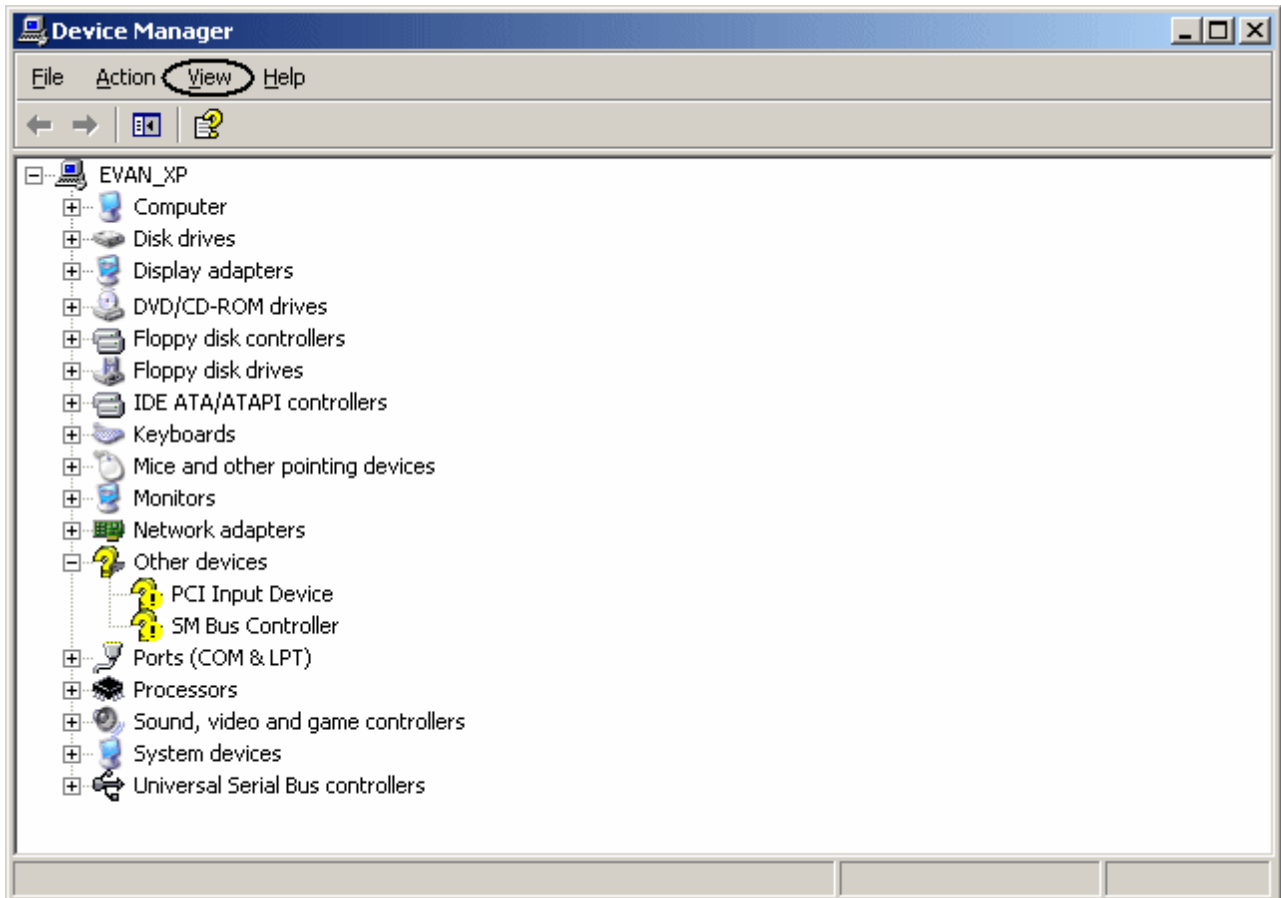
1. Right-click on the **My Computer** icon on the desktop and then select **Properties**. Alternatively, press the **Windows** button on the keyboard at the same time as the **Pause/Break** button.



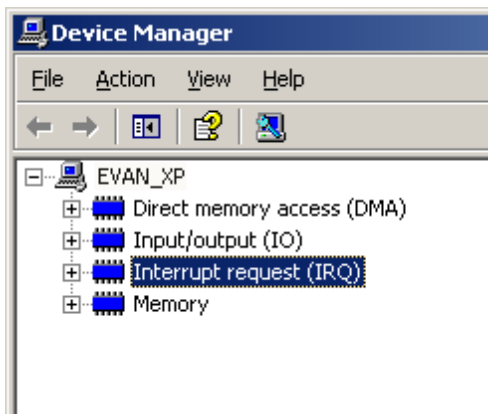
2. Next, click on the **Hardware** tab and then select **Device Manager**.



3. Click on **View** in the toolbar and then select **Resources by Type**.



4. Expand **Interrupt Request (IRQ)** if it is not already expanded by right-clicking the plus sign. All interrupt levels being used by other devices should be visible. If the device is using an interrupt, pick a level that is not already being used by any other device. For example, if the device allows an interrupt level of 3, 5, 7 and 9, and the list suggests that the levels 3 and 7 are already being used, then users should select either interrupt level 5 or interrupt level 9. Choosing levels 3 and 7 would produce a resource conflict error, which might cause the device to act erroneously.



Install and Connect KTX(D) to the Network

Installing the KTX(D) Card

For information on installing the KTX(D) card, refer to the instructions below.

1. To start, shut down the computer.
2. Touch something conductive connected to the ground line of AC power (such as the chassis of the computer while it is plugged to the AC power) in order to be grounded.
3. Insert the card on an available ISA slot, making sure it is inserted properly.

Connecting the Card to the Network

The KTX(D) has two channels. Channel 1 can only connect to DH+, whereas Channel 2 can have connections to either a DH+ or DH-485 network. Thus, users can have two different DH+ network connections or one DH+ and one DH-485 network connection to the KTX (D) card.

Modular I/O Selection Guide

The following table lists the number of input and output words available for each I/O module in the Slot Configuration list.

Module Type	Input Words	Output Words
1746-I*8 Any 8 pt Discrete Input Module	1	0
1746-I*16 Any 16 pt Discrete Input Module	1	0
1746-I*32 Any 32 pt Discrete Input Module	2	0
1746-O*8 Any 8 pt Discrete Output Module	0	1
1746-O*16 Any 16 pt Discrete Output Module	0	1
1746-O*32 Any 32 pt Discrete Output Module	0	2
1746-IA4 4 Input 100/120 VAC	1	0
1746-IA8 8 Input 100/120 VAC	1	0
1746-IA16 16 Input 100/120 VAC	1	0
1746-IB8 8 Input (Sink) 24 VDC	1	0
1746-IB16 16 Input (Sink) 24 VDC	1	0
1746-IB32 32 Input (Sink) 24 VDC	2	0
1746-IG16 16 Input [TTL] (Source) 5VDC	1	0
1746-IM4 4 Input 200/240 VAC	1	0
1746-IM8 8 Input 200/240 VAC	1	0
1746-IM16 16 Input 200/240 VAC	1	0
1746-IN16 16 Input 24 VAC/VDC	1	0
1746-ITB16 16 Input [Fast] (Sink) 24 VDC	1	0
1746-ITV16 16 Input [Fast] (Source) 24 VDC	1	0
1746-IV8 8 Input (Source) 24 VDC	1	0
1746-IV16 16 Input (Source) 24 VDC	1	0
1746-IV32 32 Input (Source) 24 VDC	2	0
1746-OA8 8 Output (Triac) 100/240 VAC	0	1
1746-OA16 16 Output (Triac) 100/240 VAC	0	1
1746-OB8 8 Output [Trans] (Source) 10/50 VDC	0	1
1746-OB16 16 Output [Trans] (Source) 10/50 VDC	0	1
1746-OB32 32 Output [Trans] (Source) 10/50 VDC	0	2
1746-OBP16 16 Output [Trans 1 amp] (SRC) 24 VDC	0	1
1746-OV8 8 Output [Trans] (Sink) 10/50 VDC	0	1
1746-OV16 16 Output [Trans] (Sink) 10/50 VDC	0	1
1746-OV32 32 Output [Trans] (Sink) 10/50 VDC	0	2
1746-OW4 4 Output [Relay] VAC/VDC	0	1
1746-OW8 8 Output [Relay] VAC/VDC	0	1
1746-OW16 16 Output [Relay] VAC/VDC	0	1
1746-OX8 8 Output [Isolated Relay] VAC/VDC	0	1
1746-OVP16 16 Output [Trans 1 amp] (Sink) 24VDC3	0	1
1746-IO4 2 In 100/120 VAC 2 Out [Rly] VAC/VDC3	1	1
1746-IO8 4 In 100/120 VAC 4 Out [Rly] VAC/VDC4	1	1
1746-IO12 6 In 100/120 VAC 6 Out [Rly] VAC/VDC	1	1
1746-NI4 4 Ch Analog Input	4	0

1746-NIO4I Analog Comb 2 in & 2 Current Out	2	2
1746-NIO4V Analog Comb 2 in & 2 Voltage Out	2	2
1746-NO4I 4 Ch Analog Current Output	0	4
1746-NO4V 4 Ch Analog Voltage Output	0	4
1746-NT4 4 Ch Thermocouple Input Module	8	8
1746-NR4 4 Ch Rtd/Resistance Input Module	8	8
1746-HSCE High Speed Counter/Encoder	8	1
1746-HS Single Axis Motion Controller	4	4
1746-OG16 16 Output [TLL] (SINK) 5 VDC	0	1
1746-BAS Basic Module 500 5/01 Configuration	8	8
1746-BAS Basic Module 5/02 Configuration	8	8
1747-DCM Direct Communication Module (1/4 Rack)	2	2
1747-DCM Direct Communication Module (1/2 Rack)	4	4
1747-DCM Direct Communication Module (3/4Rack)	6	6
1747-DCM Direct Communication Module (Full Rack)	8	8
1747-SN Remote I/O Scanner	32	32
1747-DSN Distributed I/O Scanner 7 Blocks	8	8
1747-DSN Distributed I/O Scanner 30 Blocks	32	32
1747-KE Interface Module, Series A	1	0
1747-KE Interface Module, Series B	8	8
1746-NI8 8 Ch Analog Input, Class 1	8	8
1746-NI8 8 Ch Analog Input, Class 3	16	12
1746-IC16 16 Input (Sink) 48 VDC	1	0
1746-IH16 16 Input [Trans] (Sink) 125 VDC	1	0
1746-OAP12 12 Output [Triac] 120/240 VDC	0	1
1746-OB6EI 6 Output [Trans] (Source) 24 VDC	0	1
1746-OB16E 16 Output [Trans] (Source) Protected	0	1
1746-OB32E 32 Output [Trans] (Source) 10/50 VDC	0	2
1746-OBP8 8 Output [Trans 2 amp] (Source) 24 VDC	0	1
1746-IO12DC 6 Input 12 VDC, 6 Output [Rly	1	1
1746-INI4I Analog 4 Ch. Isol. Current Input	8	8
1746-INI4VI Analog 4 Ch. Isol. Volt./Current Input	8	8
1746-INT4 4 Ch. Isolated Thermocouple Input	8	8
1746-NT8 Analog 8 Ch Thermocouple Input	8	8
1746-HSRV Motion Control Module	12	8
1746-HSTP1 Stepper Controller Module	8	8
1747-MNET MNET Network Comm Module	0	0
1747-QS Synchronized Axes Module	32	32
1747-QV Open Loop Velocity Control	8	8
1747-RCIF Robot Control Interface Module	32	32
1747-SCNR ControlNet SLC Scanner	32	32
1747-SDN DeviceNet Scanner Module	32	32
1394-SJT GMC Turbo System	32	32
1203-SM1 SCANport Comm Module - Basic	8	8
1203-SM1 SCANport Comm Module - Enhanced	32	32
AMCI-1561 AMCI Series 1561 Resolver Module	8	8

SLC500 Slot Configuration

Slot Configuration

SLC500 models (modular I/O racks) must be configured for use with the Allen-Bradley DH+ Driver if the I/O is to be accessed by the driver. Up to 30 slots can be configured per device.

Using the Slot Configuration Dialog

1. In the **Slot/Module** list box, left-click on the row to select the slot to configure.
2. Next, left-click on a module from the **Available Modules** list box in order to select it.
3. Click **Add** to add the module.

Note: To remove a module, first select the slot in the slot/module list box and then click **Remove**. The module selections available are the same as those in the Allen Bradley APS software.

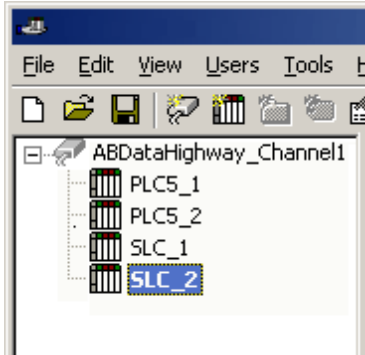
Addressing I/O

Users must know the number of input and output words in each slot. In order to address the I/O in a particular slot, all slots up to and including that slot must be configured with I/O. For example, if a user is only interested in the I/O in slot 3, the I/O for slots 1 and 2 must be configured. For more information, refer to [Modular I/O Selection Guide](#).

Optimizing Your Allen-Bradley DH+ Communications

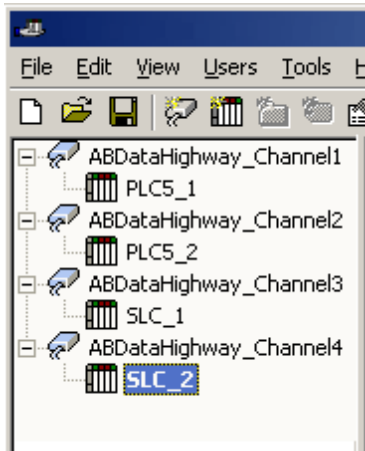
The Allen-Bradley DH+ Driver has been designed to provide the best performance with the least amount of impact on the system's overall performance. While the Allen-Bradley DH+ Driver is fast, there are a couple of guidelines that can be used in order to control and optimize the application and gain maximum performance.

Our server refers to communications protocols like Allen-Bradley DH+ as a channel. Each channel defined in the application represents a separate path of execution in the server. Once a channel has been defined, a series of devices must then be defined under that channel. Each of these devices represents a single Allen-Bradley PLC from which data will be collected. While this approach to defining the application will provide a high level of performance, it won't take full advantage of the Allen-Bradley DH+ Driver or the network. An example of how the application may appear when configured using a single channel is shown below.



Each device appears under a single Allen-Bradley DH+ channel. In this configuration, the driver must move from one device to the next as quickly as possible in order to gather information at an effective rate. As more devices are added or more information is requested from a single device, the overall update rate begins to suffer.

If the Allen-Bradley DH+ Driver could only define one single channel, then the example shown above would be the only option available; however, the Allen-Bradley DH+ Driver can define up to 100 channels. Using multiple channels distributes the data collection workload by simultaneously issuing multiple requests to the network. An example of how the same application may appear when configured using multiple channels to improve performance is shown below.



Each device has now been defined under its own channel. In this new configuration, a single path of execution is dedicated to the task of gathering data from each device. If the application has 100 or fewer channels, it can be optimized exactly how it is shown here.

The performance will improve even if the application has more than 100 channels. While 100 or fewer channels may be ideal, the application will still benefit from additional channels. Although by spreading the device load across all channels will cause the server to move from device to device again, it can now do so with far less devices to process on a single channel.

Address Descriptions

Address specifications vary depending on the model in use. To obtain specific address information for the model of interest, select a link from the list below.

[General Addressing](#)

[SLC Family Open Addressing](#)

[PLC-5 Family Addressing](#)

General Addressing

These general addresses pertain to both the SLC50/5 and PLC-5.

[Output Files](#)

[Input Files](#)

[Status Files](#)

[Binary Files](#)

[Timer Files](#)

[Counter Files](#)

[Control Files](#)

[Integer Files](#)

[Float Files](#)

[ASCII Files](#)

[String Files](#)

See Also: [SLC Family Open Addressing](#) and [PLC-5 Family Addressing](#).

Output Files

The syntax for accessing data in the output file depends on the PLC model. Data locations are Read/Write for PLC-5 Models and Read Only for all other models. Arrays are not supported. The default data type for all syntax is shown in **bold**.

Note: PLC-5 Model Word and bit address information is in octal. This follows the convention of the programming software.

PLC-5 Model Syntax

Syntax	Data Type
O: <word>	Short, Word , BCD
O: <word>/<bit>	Boolean
O/bit	Boolean

SLC Family Open Models (Modular I/O) Syntax

Syntax	Data Type
O: <slot>	Short, Word , BCD
O: <slot>.<word>	Short, Word , BCD
O: <slot>/<bit>	Boolean
O: <slot>.<word>/<bit>	Boolean

The following slot and word locations are allowed for each model.

PLC Model	Min Slot	Max Slot	Max Word
SLC Family	1	30	*
PLC-5 Family	NA	NA	277

*For information on the number of input or output words available for each I/O module, refer to [Modular I/O Selection Guide](#).

Note: For more information on slot configuration, refer to [Device Setup](#).

Examples

PLC-5	Addresses
-------	-----------

O:0	word 0
O:37	word 31 (37 octal=31 decimal)
O/42	bit 34 (42 octal=34 decimal)
O:2/2	bit 2 word 2 (same as O/42)

SLC Family	Addresses
O:1	word 0 slot 1.
O:1.0	word 0 slot 1 (same as O:1).
O:12	word 0 slot 12.
O:12.2	word 2 slot 12.
O:4.0/0	bit 0 word 0 slot 4.
O:4/0	bit 0 slot 4 (same as O:4.0/0).
O:4.2/0	bit 0 word 2 slot 4.
O:4/32	bit 32 slot 4 (same as O:4.2/0).

Input Files

The syntax for accessing data in the input file depends on the PLC model. Data locations are Read/Write for PLC-5 Models and Read Only for all other models. Arrays are not supported. The default data type for all syntax is shown in **bold**.

Note: PLC-5 Model Word and bit address information is in octal. This follows the convention of the programming software.

PLC-5 Model Syntax

Syntax	Data Type
I: <word>	Short, Word , BCD
I: <word>/<bit>	Boolean
I/bit	Boolean

SLC Family Open Models (Modular I/O) Syntax

Syntax	Data Type
I: <slot>	Short, Word , BCD
I: <slot>.<word>	Short, Word , BCD
I: <slot>/<bit>	Boolean
I: <slot>.<word>/<bit>	Boolean

The following slot and word locations are allowed for each model.

PLC Model	Min Slot	Max Slot	Max Word
SLC 5/05	1	30	*
PLC-5 Family	NA	NA	277

*For information on the number of input or output words available for each I/O module, refer to [Modular I/O Selection Guide](#).

Note: For more information on slot configuration, refer to [Device Setup](#).

Examples

PLC-5	Addresses
I:0	word 0
I:10	word 8 (10 octal=8 decimal)
I/20	bit 16 (20 octal=16 decimal)
I:1/0	bit 0 word 1 (same as I/20)

SLC Family	Addresses
I:1	word 0 slot 1.
I:1.0	word 0 slot 1 (same as I:1).

I:12	word 0 slot 12.
I:12.2	word 2 slot 12.
I:4.0/0	bit 0 word 0 slot 4.
I:4/0	bit 0 slot 4 (same as I:4.0/0).
I:4.2/0	bit 0 word 2 slot 4.
I:4/32	bit 32 slot 4 (same as I:4.2/0).

Binary Files

To access a binary file, specify a file number, a word and (optionally) a bit within the word. The default data type for all syntax is shown in **bold**.

Syntax	Data Type
B<file>:<word>	Short, Word , BCD, DWord, Long, LBCD
B<file>:<word> [rows][cols]	Short, Word , BCD, DWord, Long, LBCD*
B<file>:<word> [cols]	Short, Word , BCD, DWord, Long, LBCD*
B<file>:<word>/<bit>	Boolean
B<file>/bit	Boolean

*Array types.

The number of array elements (in bytes) cannot exceed the block request size specified. This means that array size cannot exceed 16 words given a block request size of 32 bytes. For more information, refer to [Communications Parameters](#).

The following file numbers and maximum word locations are allowed for each model. The maximum word location is one less when accessing as a 32 bit data type (Long, DWord or Long BCD).

PLC Model	File Number	Max Word
SLC 5/05 Open	3, 9-999	999
PLC-5 Family	3-999	1999

Example	Description
B3:0	word 0.
B3/26	bit 26.
B12:4/15	bit 15 word 4.
B3:10 [20]	20 element array starting at word 10.
B15:0 [6] [6]	6 by 6 element array starting at word 0.

Status Files

To access a status file, specify a word and (optionally) a bit within the word. The default data type for all syntax is shown in **bold**.

Syntax	Data Type
S:<word>	Short, Word , BCD, DWord, Long, LBCD
S:<word> [rows][cols]	Short, Word , BCD, DWord, Long, LBCD*
S:<word> [cols]	Short, Word , BCD, DWord, Long, LBCD*
S:<word>/<bit>	Boolean
S/bit	Boolean

*Array types.

The number of array elements (in bytes) cannot exceed the block request size specified. This means that array size cannot exceed 16 words given a block request size of 32 bytes. For more information, refer to [Communications Parameters](#).

The following word locations are allowed for each model. The maximum word location is one less when accessing as a 32 bit data type (Long, DWord or Long BCD).

PLC Model	Max Word
SLC Family	999
PLC-5 Family	999

Example	Description
S:0	word 0.
S/26	bit 26.
S:4/15	bit 15 word 4.
S:10 [16]	16 element array starting at word 10.
S:0 [4] [8]	4 by 8 element array starting at word 0.

Timer Files

Timer files are a structured type whose data is accessed by specifying a file number, an element and a field. The default data type depends on the field being accessed. Integer fields receive a default data type of Word.

Syntax	Data Type
T<file> : <element> .<field>	Depends on field

The following file numbers and maximum element are allowed for each model.

PLC Model	File Number	Max Element
SLC Family	4, 9-999	999
PLC-5 Family	3-999	1999

The following fields are allowed for each element. For the meaning of each field, refer to the PLC's documentation. The default data type is shown in **bold**.

Element Field	Data Type	Access
ACC	Short, Word , Boolean	Read/Write
PRE	Short, Word , Boolean	Read/Write
DN	Boolean	Read Only
TT	Boolean	Read Only
EN	Boolean	Read Only
S	Word , Short, Boolean	Read/Write

Example	Description
T4:0.ACC	Accumulator of timer 0 file 4.
T4:3.ACC/0	Accumulator of timer 3 file 4 (bit 0).
T4:10.DN	Done bit of timer 10 file 4.
T15:0.PRE	Preset of timer 0 file 15.
T4:3.PRE/1	Preset of timer 3 file 4 (bit 1).
T4:0.S	Status word of timer 0 file 4.
T4:0.S/12	Status word of timer 0 file 4 (bit 12).

Counter Files

Counter files are a structured type whose data is accessed by specifying a file number, an element and a field. The default data type depends on the field being accessed. Integer fields receive a default data type of Word.

Syntax	Data Type
C<file> : <element> .<field>	Depends on field

The following file numbers and maximum element are allowed for each model.

PLC Model	File Number	Max Element
SLC Family	5, 9-999	999
PLC-5 Family	3-999	1999

The following fields are allowed for each element. For the meaning of each field, refer to the PLC's documentation. The default data type is shown in **bold**.

Element Field	Data Type	Access
ACC	Word , Short, Boolean	Read/Write
PRE	Word , Short, Boolean	Read/Write
UA	Boolean	Read Only
UN	Boolean	Read Only
OV	Boolean	Read Only
DN	Boolean	Read Only
CD	Boolean	Read Only
CU	Boolean	Read Only
S	Word , Short, Boolean	Read/Write

Example	Description
C5:0.ACC	Accumulator of counter 0 file 5.
C5:2.ACC/2	Accumulator of counter 2 file 5 (bit 2).
C5:10.DN	Done bit of counter 10 file 5.
C15:0.PRE	Preset of counter 0 file 15.
C5:2.PRE/3	Preset of counter 2 file 5 (bit 3).
C5:0.S	Status word of counter 0 file 5.
C5:0.S/9	Status word of counter 0 file 5 (bit 9).

Control Files

Control files are a structured type whose data is accessed by specifying a file number, an element and a field. The default data type depends on the field being accessed. Integer fields receive a default data type of Word.

Syntax	Data Type
R<file> : <element> .<field>	Depends on field

The following file numbers and maximum element are allowed for each model.

PLC Model	File Number	Max Element
SLC Family	6, 9-999	999
PLC-5 Family	3-999	1999

The following fields are allowed for each element. For the meaning of each field, refer to the PLC's documentation. The default data type is shown in **bold**.

Element Field	Data Type	Access
LEN	Word , Short, Boolean	Read/Write
POS	Word , Short, Boolean	Read/Write
FD	Boolean	Read Only
IN	Boolean	Read Only
UL	Boolean	Read Only
ER	Boolean	Read Only
EM	Boolean	Read Only
DN	Boolean	Read Only
EU	Boolean	Read Only
EN	Boolean	Read Only
S	Word , Short, Boolean	Read/Write

Example	Description
R6:0.LEN	Length field of control 0 file 6.
R6:1.LEN/5	Length field of control 1 file 6 (bit 5).
R6:10.DN	Done bit of control 10 file 6.

R15:18.POS	Position field of control 18 file 15.
R6:1.POS/4	Position field of control 1 file 6 (bit 4).
R6:0.S	Status word of control 6 file 0.
R6:0.S/6	Status word of control 6 file 0 (bit 6).

Integer Files

To access an integer file, specify a file number, a word and an optional bit in the word. The default data type for all syntax is shown in **bold**.

Syntax	Data Type
N<file>:<word>	Short, Word , BCD, DWord, Long, LBCD
N<file>:<word> [rows][cols]	Short, Word , BCD, DWord, Long, LBCD*
N<file>:<word> [cols]	Short, Word , BCD, DWord, Long, LBCD*
N<file>:<word>/<bit>	Boolean
N<file>/bit	Boolean

*Array types.

The number of array elements (in bytes) cannot exceed the block request size specified. This means that array size cannot exceed 16 words given a block request size of 32 bytes. For more information, refer to [Communications Parameters](#).

The following file numbers and maximum word locations are allowed for each model. The maximum word location is one less when accessing a 32 bit data type (Long, DWord or Long BCD).

PLC Model	File Number	Max Word
SLC Family	7, 9-999	999
PLC-5 Family	3-999	1999

Example	Description
N7:0	word 0.
N7/26	bit 26.
N12:4/15	bit 15 word 4.
N7:10 [8]	8 element array starting at word 10.
N15:0 [4] [5]	4 by 5 element array starting at word 0.

Float Files

To access data in a Float file, specify a file number and an element. The only data type allowed is Float.

Syntax	Data Type
F<file>:<element>	Float
F<file>:<element> [rows][cols]	Float array
F<file>:<element> [cols]	Float array

The number of array elements (in bytes) cannot exceed the block request size specified. This means that array size cannot exceed 8 Floats given a block request size of 32 bytes). For more information, refer to [Communications Parameters](#).

The following file numbers and maximum word locations are allowed for each model.

PLC Model	File Number	Max Word
SLC Family	8-999	999
PLC-5 Family	3-999	1999

Example	Description
F8:0	Float 0.
F8:10 [16]	16 element array starting at word 10.
F15:0 [4] [4]	16 element array starting at word 0.

ASCII Files

To access data in an ASCII file, specify a file number and character location. The default data type for all syntax is shown in **bold**.

Syntax	Data Type
A<file>:<char>	Char , Byte
A<file>:<char> [rows][cols]	Char , Byte
A<file>:<char> [cols]	Char , Byte
A<file>:<word> offset>/length	String

Note: The number of array elements cannot exceed the block request size specified. For more information, refer to [Communications Parameters](#).

Internally, the PLC packs two characters per word in the file, with the high byte containing the first character and the low byte containing the second character. The PLC programming software allows access at the word level or two-character level. The Allen-Bradley DH+/DH-485 driver allows accessing to the character level. This means that if the programming software A10:0=AB is used, 'A' would be stored in the high byte of A10:0 and 'B' would be stored in the low byte. If the Allen-Bradley DH+ Driver is used, two assignments would be made: A10:0=A and A10:1=B. This would result in the same data being stored in the PLC memory.

Referencing this file as string data allows access to data at word boundaries like the programming software. The length can be up to 236 characters. If a string that is sent to the device is smaller in length than the length specified by the address, the driver null terminates the string before sending it down to the controller.

The following file numbers and maximum character locations are allowed for each model.

PLC Model	File Number	Max Character
SLC Family	9-999	1999
PLC-5 Family	3-999	1999

Note: All SLC Family PLCs do not support ASCII file types. For more information, refer to PLC documentation.

Example	Description
A9:0	Character 0 (high byte of word 0).
A27:10 [80]	80 character array starting at character 10.
A15:0 [4] [16]	4 by 16 character array starting at character 0.
A62:0/32	32 character string starting at word offset 0.

String Files

To access data in a string file, specify a file number and an element. The only data type allowed is string, which are 82 character null terminated arrays. The driver places the null terminator based on the string length returned by the PLC.

Note: Arrays of strings are not supported.

Syntax	Data Type
ST<file>:<element>	String

The following file numbers and maximum word locations are allowed for each model.

PLC Model	File Number	Max Word	Element Field
SLC Family	9-999	999	NA
PLC-5 Family	3-999	999	.LEN

Example	Description
ST9:0	string 0.
ST18:10	string 10.

SLC Family Open Addressing

Open Addressing

The actual number of addresses available depends on the model of the PLC being used. The ranges have been opened up to allow for maximum flexibility with future models. If the driver finds at Runtime that an address is not present in the device, it will post an error message and remove the tag from its scan list.

Note: This model has no model specific addressing.

See Also: [General Addressing](#)

PLC-5 Family Addressing

General Addressing

[General Addressing](#)

Model Specific Addressing

[BCD Files](#)

[PID Files](#)

[Message Files](#)

[Block Transfer Files](#)

[SC Files](#)

BCD Files

To access data in a BCD file, specify a file number and a word. The only data types allowed are BCD and Long BCD. The default data type is always BCD.

Syntax	Data Type
D<file>:<word>	BCD, LBCD, Boolean
D<file>:<word> [rows][cols]	BCD, LBCD*
D<file>:<word> [cols]	BCD, LBCD*

*Array types.

The number of array elements (in bytes) cannot exceed the block request size specified. This means that array size cannot exceed 16 BCDs given a block request size of 32 bytes. For more information, refer to [Communications Parameters](#).

The following file numbers and maximum word locations are allowed for each model.

PLC Model	File Number	Max Word
SLC 5/05 Open	NA	NA
PLC-5 Family	3-999	999

Example	Description
D9:0	Word 0.
D8:9/10	File 8 BCD element 9 (bit 10).
D27:10 [16]	16 element array starting at word 10.
D15:0 [4] [8]	32 element array starting at word 0.

PID Files

PID files are a structured type whose data is accessed by specifying a file number, an element and a field. The default data type depends on the field being accessed. Integer fields receive a default data type of Word.

Syntax	Data Type
PD<file>:<element>.<field>	Depends on field

The following file numbers and maximum element are allowed for each model.

PLC Model	File Number	Max Element
-----------	-------------	-------------

SLC 5/05 Open	NA	NA
PLC-5 Family	3-999	999

The following fields are allowed for each element. For the meaning of each field, refer to the PLC's documentation.

Element Field	Data Type	Access
SP	Real	Read/Write
KP	Real	Read/Write
KI	Real	Read/Write
KD	Real	Read/Write
BIAS	Real	Read/Write
MAXS	Real	Read/Write
MINS	Real	Read/Write
DB	Real	Read/Write
SO	Real	Read/Write
MAXO	Real	Read/Write
MINO	Real	Read/Write
UPD	Real	Read/Write
PV	Real	Read/Write
ERR	Real	Read/Write
OUT	Real	Read/Write
PVH	Real	Read/Write
PVL	Real	Read/Write
DVP	Real	Read/Write
DVN	Real	Read/Write
PVDB	Real	Read/Write
DVDB	Real	Read/Write
MAXI	Real	Read/Write
MINI	Real	Read/Write
TIE	Real	Read/Write
FILE	Word, Short, Boolean	Read/Write
ELEM	Word, Short, Boolean	Read/Write
EN	Boolean	Read/Write
CT	Boolean	Read/Write
CL	Boolean	Read/Write
PVT	Boolean	Read/Write
DO	Boolean	Read/Write
SWM	Boolean	Read/Write
CA	Boolean	Read/Write
MO	Boolean	Read/Write
PE	Boolean	Read/Write
INI	Boolean	Read/Write
SPOR	Boolean	Read/Write
OLL	Boolean	Read/Write
OLH	Boolean	Read/Write
EWD	Boolean	Read/Write
DVNA	Boolean	Read/Write
DVHA	Boolean	Read/Write
PVLA	Boolean	Read/Write
PVHA	Boolean	Read/Write

Example	Description
PD14:0.SP	Setpoint field of PD 0 file 14.
PD18:6.EN	Status enable bit of PD 6 file 18.
PD21:5.FILE/8	File number for PD 5 file 21 (bit 8).
PD21:5.ELEM/9	Element number for PD 5 file 21 (bit 9).

Message Files

Message files are a structured type whose data is accessed by specifying a file number, an element and a field. The default data type depends on the field being accessed. Integer fields receive a default data type of Word.

Syntax	Data Type
MG<file> : <element> .<field>	Depends on field

The following file numbers and maximum element are allowed for each model.

PLC Model	File Number	Max Element
SLC 5/05 Open	NA	NA
PLC-5 Family	3-999	999

The following fields are allowed for each element. For the meaning of each field, refer to the PLC's documentation. The default data types are shown in **bold**.

Element Field	Data Type	Access
ERR	Short, Word	Read/Write
RLEN	Short, Word	Read/Write
DLEN	Short, Word	Read/Write
EN	Boolean	Read/Write
ST	Boolean	Read/Write
DN	Boolean	Read/Write
ER	Boolean	Read/Write
CO	Boolean	Read/Write
EW	Boolean	Read/Write
NR	Boolean	Read/Write
TO	Boolean	Read/Write

Example	Description
MG14:0.RLEN	Requested length field of MG 0 file 14.
MG18:6.CO	Continue bit of MG 6 file 18.

Block Transfer Files

Block transfer files are a structured type whose data is accessed by specifying a file number, an element and a field. The default data type depends on the field being accessed. Integer fields receive a default data type of Word.

Syntax	Data Type
BT<file> : <element> .<field>	Depends on field

The following file numbers and maximum element are allowed for each model.

PLC Model	File Number	Max Word
SLC 5/05 Open	NA	NA
PLC-5 Family	3-999	1999

The following fields are allowed for each element. For the meaning of each field, refer to the PLC's documentation.

Element Field	Data Type	Access
RLEN	Word , Short	Read/Write
DLEN	Word , Short	Read/Write
FILE	Word , Short, Boolean	Read/Write
ELEM	Word , Short, Boolean	Read/Write
RW	Boolean	Read/Write
ST	Boolean	Read/Write

DN	Boolean	Read/Write
ER	Boolean	Read/Write
CO	Boolean	Read/Write
EW	Boolean	Read/Write
NR	Boolean	Read/Write
TO	Boolean	Read/Write
EN	Boolean	Read/Write
S	Word, Short, Boolean	Read/Write

Example	Description
BT14:0.RLEN	Requested length field of BT 0 file 14.
BT18:6.CO	Continue bit of BT 6 file 18.
BT12:4.FILE/6	File number for BT 4 file 12 (bit 6).
BT12:4.ELEM/7	Element number for BT 4 file 12 (bit 7).
BT12:0.S	Status word of BT 0 file 12.
BT12:0.S/7	Status word of BT 0 file 12 (bit 7).

SC Files

SC files are a structured type whose data is accessed by specifying a file number, an element and a field. The default data type depends on the field being accessed.

Syntax	Data Type
SC<file>: <element>.<field>/<bit>	Depends on field

The following file numbers and maximum element are allowed for each model.

PLC Model	File Number	Max Element
SLC-500	NA	NA
PLC-5	3-999	1999

The following fields are allowed for each element. For the meaning of each field, refer to the PLC's documentation. The default data type is shown in **bold**.

Element Field	Data Type	Access
PRE	Word, Short, Boolean	Read/Write
TIM	Word, Short, Boolean	Read/Write
S	Word, Short, Boolean	Read/Write
DN	Boolean	Read/Write
ER	Boolean	Read/Write
OV	Boolean	Read/Write
LS	Boolean	Read/Write
SA	Boolean	Read/Write

Example	Description
SC9:0.PRE	Preset word.
SC9:0.TIM	Active-time bit.
SC9:0.SA	Scan-active bit.
SC9:0.FS	First-scan bit.
SC9:0.LS	Last-scan bit.
SC9:0.OV	Timer-overflow bit.
SC9:0.ER	Step-errored bit.
SC9:0.DN	Done bit.
SC21:0.S	Status word of SC 0 file 21.
SC21:0.S/1	Status word of SC 0 file 21 (bit 1).

Data Types Description

Data Type	Description
Boolean	Single bit
Byte	Unsigned 8 bit value
Char	Signed 8 bit value
Word	Unsigned 16 bit value
Short	Signed 16 bit value
DWord	Unsigned 32 bit value
Long	Signed 32 bit value
BCD	Two byte packed BCD, four decimal digits
LBCD	Four byte packed BCD, eight decimal digits
Float	32 bit IEEE Floating point
String	Null terminated character array

Note: The DWord, Long and LBCD data types are not native to any of the PLC models.

When referencing a 16 bit location as a 32 bit value, the location referenced will be the low word, and the next successive location will be the high word. For example, if N7:10 is selected as a DWord data type, N7:10 would be the low word and N7:11 would be the high word.

Error Descriptions

The following error/warning messages may be generated. Click on the link for a description of the message.

Address Validation

[Missing address](#)

[Device address '<address>' contains a syntax error](#)

[Address '<address>' is out of range for the specified device or register](#)

[Device address '<address>' is not supported by model '<model name>'](#)

[Data Type '<type>' is not valid for device address '<address>'](#)

[Device address '<address>' is read only](#)

[Array size is out of range for address '<address>'](#)

[Array support is not available for the specified address: '<address>'](#)

Configuration Error Messages

[File Corruption](#)

[Interrupt not configured](#)

Device Status Messages

[Device '<device name>' is not responding](#)

[Unable to write to '<address>' on device '<device name>'](#)

[Failed to Connect to device '<device name>'](#)

Device Specific Messages

[Unable to read data starting at address '<address>' on device '<device name>'. Frame received contains errors](#)

[Unable to read data starting at address '<address>' on device '<device name>'. \[STS=<value>, EXT STS=<value>\]. Tag deactivated](#)

[Unable to write to address '<address>' on device '<device name>'. Frame received contains errors](#)

[Unable to write to address '<address>' on device '<device name>'. \[STS=<value>, EXT STS=<value>\]](#)

Allen-Bradley Card Specific Error Messages

[Failed to locate PKTX Channel 'Channel ID' of card 'PKTX Card ID'](#)

[Failed to write to Dual Port memory for device: '<device name>'](#)

[Failed to clear dual port memory while performing functionality test](#)

[Failed to start Board <board name>. Possible Resource Conflict](#)

[M16 Diagnostic 8-bit mode failure](#)

[Failed RAM, CTC or SIO Test](#)

[Failed to enable card for device '<device name>'](#)

[Failed to perform M16 Key write for device '<device name>'](#)

[Failed to complete diagnosis while performing M16 Diagnosis for device '<device name>'](#)

[Failed to complete loading protocol file while performing M16 diagnosis for device '<device name>'](#)

[Failed to load binary resource <Resource ID> for device '<device name>'](#)

[Failed to allocate device for board '<channel>'](#)

[Error performing diagnostics test on channel '<channel name>'](#)

SST Specific Error Messages

[Duplicate Station ID detected by device '<device name>'](#)

[Invalid Station ID detected by device '<device name>'](#)

[Error writing to SST ports for device '<device name>'](#)

[Failed to take the SST card offline for device '<device name>'](#)

[Bad port/memory detected on SST card while loading module on device '<device name>'](#)

[Protocol is not reflected onto memory after being loaded on device '<device name>'](#)

[SST card execution error occurred on device '<device name>'](#)

[Failed to allocate device for board '<channel>'](#)

Address Validation

The following error/warning messages may be generated. Click on the link for a description of the message.

Address Validation

Missing address**Device address '<address>' contains a syntax error****Address '<address>' is out of range for the specified device or register****Device address '<address>' is not supported by model '<model name>'****Data Type '<type>' is not valid for device address '<address>'****Device address '<address>' is read only****Array size is out of range for address '<address>'****Array support is not available for the specified address: '<address>'****Missing address**

Error Type:

Warning

Possible Cause:

A tag address that has been specified dynamically has no length.

Solution:

Re-enter the address in the client application.

Device address '<address>' contains a syntax error

Error Type:

Warning

Possible Cause:

A tag address that has been specified dynamically contains one or more invalid characters.

Solution:

Re-enter the address in the client application.

Address '<address>' is out of range for the specified device or register

Error Type:

Warning

Possible Cause:

A tag address that has been specified dynamically references a location that is beyond the range of supported locations for the device.

Solution:

Verify that the address is correct; if it is not, re-enter it in the client application.

Device address '<address>' is not supported by model '<model name>'

Error Type:

Warning

Possible Cause:

A tag address that has been specified dynamically references a location that is valid for the communications protocol but not supported by the target device.

Solution:

Verify that the address is correct; if it is not, re-enter it in the client application. Also verify that the selected model name for the device is correct.

Data Type '<type>' is not valid for device address '<address>'

Error Type:

Warning

Possible Cause:

A tag address that has been specified dynamically has been assigned an invalid data type.

Solution:

Modify the requested data type in the client application.

Device address '<address>' is read only

Error Type:

Warning

Possible Cause:

A tag address that has been specified dynamically has a requested access mode that is not compatible with what the device supports for that address.

Solution:

Change the access mode in the client application.

Array size is out of range for address '<address>'

Error Type:

Warning

Possible Cause:

A tag address that has been specified dynamically is requesting an array size that is too large for the address type or block size of the driver.

Solution:

Re-enter the address in the client application to specify a smaller value for the array or a different starting point.

Array support is not available for the specified address: '<address>'

Error Type:

Warning

Possible Cause:

A tag address that has been specified dynamically contains an array reference for an address type that doesn't support arrays.

Solution:

Re-enter the address in the client application to remove the array reference or correct the address type.

Configuration Error Messages

The following error/warning messages may be generated. Click on the link for a description of the message.

Configuration Error Messages

[File Corruption](#)

[Interrupt not configured](#)

File Corruption

Error Type:

Fatal

Possible Cause:

One or more binary files that came with the driver may have been corrupted.

Solution:

Contact Technical Support.

Interrupt not configured

Error Type:

Fatal

Possible Cause:

1. The interrupt may not be configured on the device.
2. The interrupt configured on the device may not match with the one selected in Channel Setup.

Solution:

1. Enable the interrupt by setting the correct jumper/DIP switch combination.
2. Set the interrupt parameter on the Channel Properties matching the one set up on the card.

Device Status Messages

The following error/warning messages may be generated. Click on the link for a description of the message.

Device Status Messages

[Device '<device name>' is not responding](#)

[Unable to write to '<address>' on device '<device name>'](#)

[Failed to Connect to device '<device name>'](#)

Device '<device name>' is not responding

Error Type:

Warning

Possible Cause:

1. The connection between the card and the device may be broken.
2. The connection between the PC and the card may be broken.
3. The card may have been loaded with an incorrect protocol.
4. The named device may have been assigned an incorrect memory address.
5. The channel may have been set up incorrectly.
6. The response from the device took longer to receive than the amount of time specified in the "Request Timeout" device setting.

Solution:

1. Verify that the card is inserted correctly onto the right slot.
2. Verify the Device ID given to the named device matches that of the actual device.
3. Make sure the channel settings (such as baud rate, card type and so forth) match that of the card and device settings.
4. Increase the Request Timeout setting so that the entire response can be handled.

Unable to write to '<address>' on device '<device name>'

Error Type:

Warning

Possible Cause:

1. The connection between the device and the card is broken.
2. The connection between the host PC and the card is broken.
3. The card may have been loaded with incorrect module.

Solution:

1. Verify the cabling between the device and the card.
2. Verify that the card is inserted properly onto the right slot.
3. Verify that all the parameters (card, memory address, I/O port and so forth) are correctly chosen while creating the project.

Failed to connect to device '<device name>'

Error Type:

Fatal

Possible Cause:

1. The card may not have been installed correctly.
2. An inappropriate "*.inf" file may have been loaded for this device.

Solution:

1. Verify that all the card pins are comfortably connected to the slot.
2. Go to the Device Manager and make sure that the right driver is installed for this device.

Note:

The driver supplied by the OPC server for the card being used must be installed. For more information, refer to [Channel Setup](#).

Device Specific Messages

The following error/warning messages may be generated. Click on the link for a description of the message.

Device Specific Messages

[Unable to read data starting at address '<address>' on device '<device name>'. Frame received contains errors](#)

[Unable to read data starting at address '<address>' on device '<device name>'. \[STS=<value>, EXT STS=<value>\]. Tag deactivated](#)

[Unable to write to address '<address>' on device '<device name>'. Frame received contains errors](#)

[Unable to write to address '<address>' on device '<device name>'. \[STS=<value>, EXT STS=<value>\]](#)

Unable to read data starting at address '<address>' on device '<device name>'. Frame received contains errors

Error Type:

Warning

The Error Could Be:

1. Incorrect frame size received.
2. TNS mismatch.
3. Invalid response command returned from device.

Possible Cause:

1. Misalignment of packets due to connection/disconnection between PC and device.
2. There is bad cabling connecting the devices causing noise.

Solution:

The driver will recover from this error without intervention. If this error occurs frequently, there may be an issue with the cabling or the device itself.

Unable to read data starting at address '<address>' on device '<device name>'. [STS=<value>, EXT STS=<value>]. Tag deactivated

Error Type:

Warning

Possible Cause:

The address requested in the block does not exist in the PLC.

Solution:

Check the status and extended status codes that are being returned by the PLC. Note that an extended status code may not always be returned and thus the error information is contained within the status code. The codes are displayed in hexadecimal.

Status code errors in the low nibble of the status code indicate errors found by the local node. The driver will continue to retry reading these blocks of data periodically. Errors found by the local node occur when the KF module cannot see the destination PLC on the network for some reason.

Status code errors in the high nibble of the status code indicate errors found by the PLC. These errors are generated when the block of data the driver is asking for is not available in the PLC. The driver will not ask for these blocks again after receiving this kind of error. This kind of error can be generated if the address does not exist in the PLC.

Note:

The block starting at address '<address>' may be deactivated in the process depending on the severity of the error. The error message will state this as it does above.

Unable to write to address '<address>' on device '<device name>'. Frame received contains errors

Error Type:

Warning

The Error Could Be:

1. Incorrect frame size received.
2. TNS mismatch.
3. Invalid response command returned from device.

Possible Cause:

1. Misalignment of packets due to connection/disconnection between PC and device.
2. There is bad cabling connecting the devices causing noise.

Solution:

The driver will recover from this error without intervention. If this error occurs frequently, there may be an issue with the cabling or the device itself.

Unable to write to address '<address>' on device '<device name>'. [STS=<value>, EXT STS=<value>]

Error Type:

Warning

Possible Cause:

The address written to does not exist in the PLC.

Solution:

1. Check the status and extended status codes that are being returned by the PLC. Note that an extended status code may not always be returned and thus the error information is contained within the status code. The codes are displayed in hexadecimal.
2. Status code errors in the low nibble of the status code indicate errors found by the local node. Errors found by the local node occur when the card cannot see the destination PLC on the network for some reason.
3. Status code errors in the high nibble of the status code indicate errors found by the PLC. These errors are generated when the data location is not available in the PLC or not writeable.

Allen-Bradley Card Specific Error Messages

The following error/warning messages may be generated. Click on the link for a description of the message.

Allen-Bradley Card Specific Error Messages

[Failed to locate PKTX Channel 'Channel ID' of card 'PKTX Card ID'](#)

[Failed to write to Dual Port memory for device: '<device name>'](#)

[Failed to clear dual port memory while performing functionality test](#)

[Failed to start Board <board name>. Possible Resource Conflict](#)

[M16 Diagnostic 8-bit mode failure](#)

[Failed RAM, CTC or SIO Test](#)

[Failed to enable card for device '<device name>'](#)

[Failed to perform M16 Key write for device '<device name>'](#)

[Failed to complete diagnosis while performing M16 Diagnosis for device '<device name>'](#)

[Failed to complete loading protocol file while performing M16 diagnosis for device '<device name>'](#)

[Failed to load binary resource <Resource ID> for device '<device name>'](#)

[Failed to allocate device for board '<channel>'](#)

[Error performing diagnostics test on channel '<channel name>'](#)

Failed to locate PKTX Channel 'Channel ID' of card 'PKTX card ID'

Error Type:

Fatal

Possible Cause:

1. The card is not installed properly.
2. Card instance ID may be used by other card.

3. The parameters selected for Channel Setup may be incorrect.
4. The card is corrupted.

Solution:

1. Verify all the pins are hooked into the slot comfortably.
2. Verify that the Instance ID is not used by any other PKTX card.
3. Modify the Channel Properties with appropriate values.
4. Replace the card.

Failed to write to Dual port memory for device: <device name>

Error Type:

Fatal

Possible Cause:

1. A network failure occurred.
2. Memory Conflict.
3. The parameters selected for the Channel Setup may be incorrect.
4. The parameters selected for the Channel Setup may be incorrect.
5. The card is corrupted.

Solution:

1. Check for any broken links between the card and the host. Make sure that the card is inserted properly on the appropriate slot and then restart the driver.
2. Assign a different memory base address.
3. Change the Channel Setup parameters with appropriate values.
4. Modify the Channel Properties with appropriate values.
5. Replace the card.

Failed to clear dual port memory while performing functionality test

Error Type:

Fatal

Possible Cause:

This error may occur due to a conflict between this OPC server and any other OPC servers supporting Allen-Bradley Data Highway drivers.

Possible Solutions:

Make sure that all other OPC servers (such as RSLinx) are completely uninstalled, and then restart the PC.

Failed to start Board <board name>. Possible Resource Conflict

Error Type:

Fatal

Possible Cause:

1. Memory Conflict.
2. Temporary network problem.
3. Bad memory address selected.
4. The parameters selected for Channel Setup may be incorrect.
5. The card is corrupted.

Solution:

1. Some other device may be using the same memory address. Configure device with different memory address.
2. Restart the driver.
3. Memory address selected is not within the range. Try a different memory address.
4. Modify the Channel Properties with appropriate values.
5. Replace the card.

M16 Diagnostic 8-bit mode failure

Error Type:

Fatal

Possible Cause:

This occurs when the jumper settings on the KTXD card are in 8 bit mode.

Solution:

Change it to 16-bit mode. Refer to KTXD user's guide for more information.

Failed RAM, CTC or SIO Test

Error Type:

Fatal

Possible Cause:

1. Memory Conflict.
2. Temporary network problem.
3. Bad memory address selected.
4. The parameters selected for Channel Setup may be incorrect.
5. Card Corrupted.

Solution:

1. Some other device may be using the same memory address. Configure the device with a different memory address.
2. Restart the driver.
3. The memory address selected is not within the range: try a different memory address.
4. Modify the Channel Properties with appropriate values.
5. Replace the card.

Failed to enable card for Device '<device name>'

Error Type:

Fatal

Possible Cause:

1. A network failure occurred.
2. A memory conflict occurred.
3. The Channel Properties may have been set inaccurately.
4. The card is corrupted.

Solution:

1. Check for any broken links between the card and the host. Make sure that the card is inserted properly on the appropriate slot and then restart the driver.
2. Assign a different memory base address.
3. Modify the Channel Properties with appropriate values.
4. Replace the card.

Failed to perform M16 Key Write for device '<device name>'

Error Type:

Fatal

Possible Cause:

1. The jumper settings on the KTXD card may be in 8 bit mode.
2. The ISA bus slot may be corrupted.
3. The card memory may be corrupted.

Solution:

1. Change it to 16-bit mode. Refer to KTXD user's guide for more information.
2. Try a different ISA slot.
3. Replace the card.

Failed to complete diagnosis while performing M16 Diagnosis for device <device name>

Error Type:

Fatal

Possible Cause:

This error should only occur when one of the errors listed below occurs.

Solution:

Refer to the specific error's solution.

See Also:

[Failed to perform M16 Diagnostic for base address '<memory address>'](#)

[Failed to perform M16 Key write for device '<device name>'](#)

[Failed to complete loading protocol file while performing M16 diagnosis for device '<device name>'](#)

Failed to complete loading protocol while performing M16 diagnosis for device <device name>

Error Type:

Fatal

Possible Cause:

One or more binary files related to M16 Diagnosis that came with the driver may have been corrupted.

Solution:

Contact Technical Support.

Failed to load binary resource <Resource ID> for device <Device>**Error Type:**

Fatal

Possible Cause:

One of the binary files required for loading the protocol may be corrupted.

Solution:

Contact Technical Support.

Failed to allocate device for board '<channel>'**Error Type:**

Fatal

Possible Cause:

1. The interface card is being used by another application.
2. The interface card is not functional.
3. If it is an ISA interface card, the memory address selected may be inappropriate.

Solution:

1. Uninstall any other application (such as RSLinx) that might be using the same interface card.
2. Verify that the card is functional and inserted properly in the appropriate slot.
3. Assign the correct memory address.

Error performing diagnostics test on channel '<channel name>'**Error Type:**

Fatal

Possible Cause:

1. The card is not installed properly.
2. The card is corrupted.

Solution:

1. Verify that all the pins are hooked into the slot comfortably.
2. Replace the card.

SST Specific Error Messages

The following error/warning messages may be generated. Click on the link for a description of the message.

SST Specific Error Messages

[Duplicate Station ID detected by device '<device name>'](#)

[Invalid Station ID detected by device '<device name>'](#)

[Error writing to SST ports for device '<device name>'](#)

[Failed to take the SST card offline for device '<device name>'](#)

[Bad port/memory detected on SST card while loading module on device '<device name>'](#)

[Protocol is not reflected onto memory after being loaded on device '<device name>'](#)

[SST card execution error occurred on device '<device name>'](#)

[Failed to allocate device for board '<channel>'](#)

Duplicate Station ID detected by device '<device name>'

Error Type:

Fatal

Possible Cause:

This indicates that there is more than one device with the same Device ID.

Solution:

Assign a different Station ID (Device ID) to one of the duplicate stations.

Invalid Station ID detected by device '<device name>'

Error Type:

Fatal

Possible Cause:

This occurs when the device with the specified ID could not be located in the network.

Solution:

1. Check if the specified Device ID is correct.
2. Check for broken connections between the card and the device.
3. Check if the device is on the appropriate network.
4. Check if the device is powered on.

Error writing to SST ports for device '<device name>'

Error Type:

Fatal

Possible Cause:

This indicates that the ports selected are not working properly, which usually results from conflicts with other devices.

Solution:

Assign a different port range and then restart the driver.

Failed to take the SST card offline for device '<device name>'

Error Type:

Fatal

Possible Cause:

This occurs when the driver has trouble taking the card off-line due to a bad/nonexistent device.

Solution:

1. Check for memory conflicts. If there is a conflict, try a different memory address.
2. Check for broken connections between the card and the host. Make sure that the card is installed correctly.
3. Restart the driver.
4. Restart the computer.

Bad port/memory detected on SST card while loading module on device '<device name>'

Error Type:

Fatal

Possible Cause:

A conflict has occurred on memory/ports between devices.

Solution:

1. Check for memory conflicts. If so, try different memory address.
2. Check for I/O ports conflicts. If so, try different port address.
3. The card or section of a card may be corrupted. If so, try different memory/port address.

Protocol is not reflected onto memory after being loaded on device '<device name>'

Error Type:

Fatal

Possible Cause:

1. The device is not configured properly.
2. A memory conflict occurred.
3. A problem occurred with the network.
4. The card is corrupted.

Solution:

1. Reconfigure the device with appropriate parameters.
2. Assign a different unique memory address.
3. Restart the driver.
4. Replace the card.

SST card execution error occurred on device '<device name>'

Error Type:

Fatal

Possible Cause:

1. There may be a memory conflict.
2. There might have been a temporary problem with the network.
3. Some binary file for the driver may be corrupted.
4. The card may be corrupted.

Solution:

1. Reconfigure the device with a different memory address.
2. Restart the driver.
3. Contact Technical Support.
4. Replace the card.

Failed to allocate device for board '<channel>'

Error Type:

Fatal

Possible Cause:

1. The interface card is being used by another application.
2. The interface card is not functional.
3. If it is an ISA interface card, the memory address selected may be inappropriate.

Solution:

1. Uninstall any other application (such as RSLinx) that might be using the same interface card.
2. Verify that the card is functional and inserted properly in the appropriate slot.
3. Assign the correct memory address.

Index

A

AB specific errors 62

Address '<address>' is out of range for the specified device or register 58

Address Descriptions 45

Address Validation 57

Array size is out of range for address '<address>' 59

Array support is not available for the specified address: '<address>' 59

ASCII Files 51

B

Bad port/memory detected on SST card while loading module on device '<device name>' 66

BCD Files 52

Binary Files 47

Block Transfer Files 54

C

Cable Connections 32

Channel Properties 6

Channel Setup 6

Channel Setup for 5136-SD-ISA 23

Channel Setup for the 5136-SD-PCI 25

Channel Setup for the AB-1784-U2DHP USB Card 23

Channel Setup for the AB-1784 KT Card 7

Channel Setup for the AB - 1784 PKTX Card 11

Channel Setup for the AB 1784 PCMK/B Card 19

Check Device Manager 38

Communications Parameters 35

Configuration Error Messages 59

Configuring the 1784-KT (ISA Bus) Communication Interface Card for DH+ 37

Configuring the AB-1784 KTXD Card 9

Control Files 49

Counter Files 48

D

Data Type '<type>' is not valid for device address '<address>' 58
Data Types Description 56
Device '<device name>' is not responding 60
Device address '<address>' contains a syntax error 58
Device address '<address>' is not supported by model '<model name>' 58
Device address '<address>' is read only 59
Device Setup 32
Device Specific Messages 61
Device Status Messages 60
Duplicate Station ID detected by device '<device name>' 66

E

Error Descriptions 57
Error performing diagnostics test on channel '<channel name>' 65
Error writing to SST ports for device '<device name>' 66
External Dependencies 5

F

Failed RAM CTC SIO TEST 64
Failed to allocate device for board '<channel>' 65
Failed to clear dual port memory while performing functionality test 63
Failed to complete diagnosis while performing M16 Diagnosis 64
Failed to complete loading protocol m16 diagnosis 65
Failed to Connect to Device 60
Failed to enable card for device 64
Failed to load binary resource for device 65
Failed to locate Channel 'Channel ID' of card 'PKTX card ID' 62
Failed to perform M16 Key write for device '<device name>' 64
Failed to start Board <board name>. Possible Resource Conflict 63
Failed to take the SST card offline for device '<device name>' 66
Failed to write to Dual Port memory for device: '<device name>' 63
File Corruption 59
Float Files 50

G

General Addressing 45

H

Hardware Configuration of 5136-SD-ISA (SST) Card 36

Hardware Configuration of Memory and Interrupt on 1784 KTX 36

Hardware Setup 36

Help Contents 5

I

Input Files 46

Install and Connect KTXD to Network 40

Integer Files 50

Interrupt not configured 59

Invalid Station ID detected by device '<device name>' 66

M

M16 Diagnostic 8-bit mode failure 63

Message Files 54

Missing address 58

Modular I/O Selection Guide 41

O

Optimizing Your Allen-Bradley DH+ Communications 44

Output Files 45

Overview 5

P

PID Files 52
PLC-5 Family Addressing 52
Protocol load error (SST) 67

S

SC Files 55
SLC5/05 Open Addressing 52
SLC500 Slot Configuration 43
SST card execution error occurred on device '<device name>' 67
SST Specific Error Messages 65
Status Files 47
String Files 51

T

Timer Files 48

U

Unable to read data starting at address '<address>' on device '<device name>'.
[STS='<value>_ EXT STS='<value>]. Tag deactivated 61
Unable to read data starting at address '<address>' on device '<device name>'. Frame received
contains errors 61
Unable to write to '<address>' on device '<device name>' 60
Unable to write to address '<address>' on device '<device name>'. [STS='<value>_ EXT
STS='<value>] 62
Unable to write to address '<address>' on device '<device name>'. Frame received contains
errors 62