Troubleshooting Guide

Software Installation Problems

There are currently two known problems when trying to install the software:

1. The first problem is only a Windows 3.1 or 3.11 problem, and it shows up when the software needs to prompt you to insert the second disk. What you see on the screen is a box stating the software has generated an Application Error. The file **LZWSERV** is usually mentioned. What has happened is that Windows is trying to get memory being used by an adapter such as a video card or network card in the high memory area of the computer. The remedy is to instruct Windows *not* to use this memory area. This is accomplished by adding the command line argument "**/D:X**" when you start Windows, where **X** means to exclude all of the high memory area:

    (example: **WIN /D:X**)

2. The second problem occurs *only* under Windows 95 and *only* if the installation diskettes are write-protected. The computer appears to lock up after the main installation screen appears. What is really happening is the message telling you the disk is write-protected is not being handled correctly and the dialog box that should prompt you to un–write-protect the disk and retry is not visible. The remedy is again very simple, un–write-protect the disk and retry the installation.

Communication Problems

The *Direct*SOFT programming software requires no additional hardware except for what is already available on a normal computer– –an unused serial port. The key word in this phrase is *unused*. Before continuing, some background information on how personal computers work with multiple serial devices will be discussed. Serial ports are pathways in a computer directing information to and from the attached serial devices. Although a computer can have multiple applications using these serial ports, only one serial device at a time can use any given port.

The serial ports get access to the CPU through a mechanism called "interrupts". This is where the initial design of a computer has become a liability. Since there are four serial ports available in the BIOS, you would think there would be four interrupts separately assigned, but this is not true. COM1 and COM3 share interrupt #4 and COM2 and COM4 share interrupt #3. To make it more complicated, there can be different settings for DOS and for Windows. The software expects the 'default' settings for ports COM1 and COM2. There could be different interrupt values for COM3 and for COM4 if you have this additional hardware present in the computer. From within Windows, you can use **Control Panel** to make sure the ports are set with default values. Select **Control Panel**, double click **Ports**, double click the COM port you want, click on **Advanced** to see the data for that port. These are the default values for the serial ports:

COM Port	Base I/O Port Address	Interrupt Request Line
COM 1	03F8	4
COM 2	02F8	3
COM 3	03E8	4
COM 4	02E8	3

Comm Error Connecting to PLC

In a typical personal computer running under *Direct*SOFT, there will be two serial devices active, the mouse with its device driver and the PLC with the *Direct*SOFT driver. As long as the mouse is connected to COM1 or COM3 and *DirectSOFT* is connected to COM2 or COM4 you should be able to communicate freely. The problem occurs when you have a third or possibly fourth serial device, like an internal fax/modem giving you three devices and essentially two serial ports (because of the shared interrupts). The first indication of an interrupt conflict is in the Configure Link screen when trying to establish a link to the PLC. If you selected **Auto**, you probably saw the list of parity and baud rate combinations change so fast you could not read them, then the message **"Comm Error Connecting to PLC"** appeared. If this list of combinations changed about once per second, you most likely do not have an interrupt conflict. In this case, it is probably a device driver interfering with the communications. You now need to determine what is using these COM resources. Typically it is either the mouse or an internal modem.

Internal Modem Card Conflicts

If you have an **internal modem** and it can be set to use some other interrupt by jumpers or by software, the problem can be resolved. Be aware most modems cannot be set this way. The only other option is to let the modem and the mouse share an interrupt by setting the mouse to COM1 and the fax/modem to COM3, leaving *Direct*SOFT on COM2. The disadvantage is the mouse may stop working when you dial the modem or the modem may not work because the mouse driver is already using the interrupt. Sometimes the only way to get the mouse and *Direct*SOFT to both work is to remove the modem card from the computer.

Other alternatives are to remove the mouse and its driver by selecting the "**No Mouse or Other Pointing Device**" in the Windows setup utility, purchase a bus mouse with its interface card that allows you to select an unused interrupt, or purchase an additional serial interface card to get COM3 and/or COM4 with the ability to select different interrupts for these ports.

Mouse Driver Conflicts

Problems like **"my mouse quits working when I start Direct**SOFT**"** are probably caused by *Direct*SOFT scanning the COM port where the mouse is connected when the communication server starts up. This problem usually occurs with older mouse drivers (like those shipped with the Windows software) that do not register themselves with Windows correctly. This registration error prevents *Direct*SOFT from accurately detecting ports already in use. It can be corrected by instructing *Direct*SOFT which ports it can access. The file **DIRCTSFT.INI** located in the WINDOWS directory contains a section that controls port access. This file can be edited with any text editor, such as Windows Notepad. Open the file and search for the section **[devasync.dll]** to see the following information.

```
[devasync.dll]
COM1Enable=1            COM3Enable=1
COM2Enable=1            COM4Enable=1
```

Set the port enable bits to match your machines configuration (1=enable, 0=disable) for the ports you do not want *Direct*SOFT to use. It is good practice to disable all ports EXCEPT for the one used to connect to the PLC. For example, to disable COM1 (mouse), COM3 (not present) and COM4 (not present) set the port enable bits as follows:

```
[devasync.dll]
COM1Enable=0            COM3Enable=0
COM2Enable=1            COM4Enable=0
```

Now save the changes and restart *Direct*SOFT.

Swapping Ports to Solve a Mouse Conflict

If you still cannot get a connection established to a PLC, the next logical step is to swap the mouse and *Direct*SOFT ports to make sure both serial ports are working correctly inside Windows. Doing this can sometimes require the Windows installation diskettes to load the mouse driver for the other serial port. If you are using one of the mouse drivers supplied with Windows, first exit Windows, change to the WINDOWS directory, and run SETUP.EXE. Select the mouse option from the menu, choose a driver for the COM port you want to use, (if you were using COM1 pick a driver for COM2 and vice versa); then accept the changes. If SETUP needs drivers from the Windows diskettes, it will instruct which disk to use.

If you are not using a mouse driver supplied with Windows (for example a Logitech Mouse), refer to the mouse installation guide on what it takes to move the driver to the COM port you want. For a Logitech Mouse, specify what COM port you want as a command line parameter in **AUTOEXEC.BAT**, such as '**c:\lmouse\mouse 2**' to only use COM2. Once you do this, power down, swap the mouse and *Direct*SOFT cables, power up and make sure the mouse is found on the COM port you specified, and make sure it works in Windows. If the mouse does not work, you may have found the source of the communication problem, a hardware problem of some kind with the COM port. If you are able to navigate around in Windows without the mouse, you should now be able to create a link to the PLC on the available COM port.

Other Driver Conflicts

If you still cannot get a connection established, try the following to see if there is some other DOS device driver causing the problem. You essentially need to reboot the system clean except for the one device driver needed for Windows. If you have DOS 6.00 or greater, there is a simple way to accomplish this. Reboot the computer, wait until you see the line "**Starting MS–DOS...**" appear on the monitor, then press the **F8** key. DOS will now prompt you to confirm each line in **CONFIG.SYS**. You should type "**N**" to every option except for the line that has something similar to "**DEVICE=C:\WINDOWS\HIMEM.SYS**". Once at the DOS prompt, change to the WINDOWS directory and start Windows as normal and retry the connection.

If you do not have **DOS 6.XX** or greater you should comment out each line of **CONFIG.SYS** (insert a **REM** at the beginning of the line) except for the line containing **HIMEM.SYS**, reboot and retry the connection.

Driver Conflicts with Laptop Computers

Laptop computers bring an entirely new set of problems because they are usually laden with device drivers for all of the options on the computer. The option that usually causes a problem is the **PCMCIA** driver set. You usually see the "**Comm Error Connecting To PLC**" message when trying to establish a link to the PLC. With a PCMCIA slot you usually get a new Windows serial device driver, possibly some other Windows drivers and a CONFIG.SYS full of "**device=**" commands. The Windows serial driver is found in the SYSTEM.INI file located in the WINDOWS directory. In the **[boot]** section at the top of the file, there is a line starting with "**comm.drv=**". *Direct*SOFT expects the default driver therefore the line needs to read "**comm.drv=comm.drv**". If "**comm.drv=c:\pcmplus\pcmplus.drv**" or something similar appears, comment it out (insert a ';' as the first character on the line) and add the line comm.drv=comm.drv. While editing the file, continue to look through the file for other lines that have the same path information as the driver you commented out. If you find any, comment them out as well. If there are any, they will most likely be in the **[386Enh]** section. Most PCMCIA cards will work with the Windows version of the driver. You now need to do the same to the CONFIG.SYS file, commenting out lines (insert a **REM** at the beginning of each line) that have anything to do with the PCMCIA slot. Restart the computer and try again.

Power Management Conflicts

Another problem you may find on laptop computers is the **Power Management** software. This software monitors system activity and shuts down power to parts of the PC to conserve the batteries. Since the serial port is monitored, this driver can keep a connection to a PLC from working. This option is usually installed in the CONFIG.SYS file as a **"device=XXXXXX"** line. It is hard to be specific about the file name, but a few examples are BATTERY.PRO, POWER.EXE and PM.EXE. Comment out the drivers, reboot your computer and try the connection again.

Power Management could also be a BIOS setup option (check the CMOS setup). If it is, disable the option and retry the connection. Sometimes there is a driver used by Windows. It will usually show up in the WIN.INI file in the WINDOWS directory, usually on the line beginning with "**load=**" or "**run=**". If so comment them out, restart Windows and retry the connection.

Specialized Video Device Driver Problems

Toshiba laptops and any sold under different brand labels (with few exceptions) have a specialized video device driver that can adversely affect communications. They usually do not completely inhibit communications, but cause an excessive amount of data errors and retries. While in *Direct*SOFT, with status enabled, you probably see the word "**Error**" in red on the On–line toolbar where the word "**On–line**" usually appears. You can eliminate this by using the VGA driver provided with Windows instead of the Toshiba driver. Select the Windows **Setup** (it is usually in the **Main** group), click **Options**, then select **Change System Settings**, click the down arrow on the **Display** option to see the list of available drivers. Scroll through the list looking for the VGA option. Select the option then select OK. Windows should now ask if you want to use the current VGA driver or install a new one, select **Current**. Windows will now have to restart to take effect. There should be no visible difference with the new driver, but hopefully the communications will improve.

Serial Device Driver Bug with Some Computers

The standard Windows serial device driver that came as part of Windows 3.1 and 3.11 has a known bug only when used on Pentium 60 and 66 Mhz machines and some 486 computers with PCI motherboards. It causes something like '**my machine locks up when DirectSOFT tries to bring up its launch window**'. There is an updated driver provided by Microsoft. Obtain the new serial driver '**SERIAL.386**' (dated 2–17–94 or later), place it in the WINDOWS\SYSTEM directory then restart Windows. This file is available in numerous places on the Internet (example **ftp://ftp.microsoft.com/Softlib/WG1001.EXE**). It is important to note the date because there is another version of this file dated November 1993 that does not provide this solution..

Conflicts with other PLC Vendor Software Drivers

Software for other PLC vendors sometimes have device drivers that replace the default drivers. One example is Allen-Bradley. Their KT card has drivers you may need to comment out. Their APS software, if setup to run from within Windows, will put "**device=**" statements in the SYSTEM.INI file that may need to be commented out (search for things like "**dh485.386**" in the **[386Enh]** section).

Non–Shunted Power Supplies

If you are trying to connect *Direct*SOFT to a DL405 CPU being powered with 110VAC, you must install the shunt across the bottom two screws on the power supply connector (See the DL405 User Manual). Failure to connect the shunt when powering the CPU with 110VAC puts the CPU near brownout and prevents the COM ports from operating correctly.

Screen Saver Conflicts

There are some **screen savers** that can prevent *Direct*SOFT from establishing a connection to a PLC because they also monitor the machine (serial ports) for activity. Disable the screen saver and retry the connection.

Printing Problems There is only one problem currently with printing. If you have this problem it manifests itself by generating a **General Protection Fault** and dumping you out of the software any time any of the Print options are selected. This problem can be cured by deleting the global print settings file '**c:\dirctsft\program\bin\prntserv.rst**'. Exit Windows, delete the file, restart Windows and **Direct**SOFT, and try the print again.

Another problem that sometimes happens is the documentation shows up on the screen and in **Print Preview** but does not show up on the printed page. It is usually a color related problem. Windows uses the video card in combination with the printer driver to generate the output for the printer. Since the printer is black and white and the display is in color, Windows has to make the translation from color to monochrome as part of what is sent to the printer. Bugs in printer drivers will sometimes cause Windows to guess wrong at the color translation and generate white text on a white background. The solution is to go to the View menu, select **Color Setup** and set the colors to **Black Text on White Background** and retry the print.

As a general rule, if the **ladder view looks correct in Print Preview but does not show up correctly on the printed page**, you should suspect the printer driver you are using. Upgrade your printer driver to the most current one available (check for updated drivers on the Internet. Most companies now have home pages with driver updates available). The drivers that come packaged with Windows can sometimes be several years old and do not support all of the new printers correctly. If your printer has the ability to emulate another printer, you can use the printer driver for the one being emulated. Make sure it still looks correct in **Print Preview** and retry the print.

Programming Cables Since our CPUs provide so many different communication port possibilities, it is helpful to know exactly which communications cable is required. Use the table in Appendix A of the user manual to choose the proper cable for your particular application.