3780Link for Windows

SmartSync/DCP Version Installation Guide

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<u>Technical Support</u>

Serengeti Systems provides technical support for as long as you use 3780Link at no additional cost to you. Support is available via the Internet from our web site or via e-mail, or by telephone.

- Access to Serengeti Technical Support is available from within the 3780Link GUI by way of your web browser or e-mail (assuming either or both of these are installed on the same PC as 3780Link.) Open the **Help** menu, click **Technical Support**, and follow the links to the Serengeti Web Page Technical Support or to access our support staff via e-mail.

- Visit the Serengeti Web Page (http://www.serengeti.com) directly and click on **Technical Support** to access our online technical database. You'll find answers to many of the most commonly asked questions at your fingertips.

- For fast response to your technical support issue, sum up your question or problem in writing and submit this via e-mail to Support@Serengeti.com. We'll respond to you by e-mail or a telephone call (if appropriate) as quickly as we can.

- If you cannot find the answers you're searching for online or you do not have e-mail access, you may call us at (512) 345-2211 and ask for technical support during our normal business hours of 9AM to 5PM Central Time Monday through Friday.

3780Link for Windows

3780Link operates under Microsoft Windows 95, Windows 98, or Windows NT Workstation or Server.

This installation guide applies only to the multi-port version of 3780Link that uses the SmartSync/DCP series of synchronous adapters. This guide is designed to step you through the installation process and to describe the key components of 3780Link. You may also wish to refer to the "readme.1st" file for more information.

There are two executable versions of 3780Link. One version, referred to as the 3780Link GUI, is intended for you to use interactively for direct control over a communications session. The second version, referred to as 3780Link Script Only, or 3780Link SO for short, is intended for unattended communication sessions controlled by script files(s) or by a separate program that you create. More detailed information on both versions is presented later in this guide and may be found in the 3780Link User's Guide.

Hardware Installation

This section applies only to the ISA-bus SmartSync/DCP adapter. The PCI-bus SmartSync/DCP adapter is Plug-n-Play (PnP), so if you are installing a PCI-bus adapter for use with 3780Link then simply insert it into any available PCI slot and skip ahead to the **Software Installation** section.

Installation of ISA-Bus SmartSync/DCP Adapter

Refer to the **DCP-286i INSTALLATION AND DIAGNOSTIC MANUAL**, or the **DCP-386i/e INSTALLATION GUIDE** for hardware configuration and installation instructions. It is a good idea to verify that all jumpers and switches on the board are set to the factory defaults prior to installation.

When used with 3780Link, the SmartSync/DCP does not require the use of an interrupt (IRQ) in your computer. Before installing the SmartSync/DCP board, be sure that the board is configured to NO INTERRUPT mode. Note: The diagnostic program provided with the DCP-286i and DCP-386i hardware requires that the IRQ jumper be set. If you wish to run this diagnostic program, you will have to set the IRQ jumper to a valid IRQ.

Hardware Port Addresses

When installing a SmartSync/DCP board, choose an address that does not conflict with other hardware installed on your system. Windows NT is able to detect a hardware port address conflict, and will not allow the device driver to start if a conflict exists.

The I/O address is set with the I/O Address Switch block on your SmartSync/DCP (see Figure 2-1 in either the **DCP-286i INSTALLATION AND DIAGNOSTIC MANUAL** or the **DCP-386i/e INSTALLATION GUIDE.** The following hardware port addresses may be configured:

> 0x03c, 0x07c, 0x0bc, 0x0fc, 0x13c, 0x17c, 0x1bc, 0x1fc
> 0x23c, 0x27c, 0x2bc, 0x2fc, 0x33c*, 0x37c, 0x3bc, 0x3fc
> *Factory setting

IMPORTANT: Make note of the I/O port you configure on your board since this information is required when installing 3780Link software.

Memory Mapped Addresses

Each SmartSync/DCP contains memory that is shared with your Windows system. This shared memory is located between 640KB and 1MB in 16KB segments. You choose the memory segment during the 3780Link installation − there is not a hardware switch or jumper associated with this memory location. Since VGA display adapters usually use selected memory between 0xA0000 and 0xCFFFF, most Windows systems will have only the memory between 0xD0000 and 0xEFFFF available.

It is possible that another adapter in your system may also require all or part of one of these segments − you must resolve this conflict so each adapter has its own segment.

Software Installation

Follow the steps below to install 3780Link for Windows.

•   When installing to a Windows NT system, you must have Administrator privileges to install 3780Link.

•   Insert the first 3780Link diskette into a diskette drive.

•   Click **Add/Remove Programs** from the Control Panel and follow the instructions on the screen.

•   Setup displays a welcome dialog and then displays the License Agreement. Read this agreement carefully before continuing.

•   Setup asks you for your Name, Company Name, and Serial Number. Enter this information and click **Next**.

•   Setup allows you to change the default installation directory and Program Folder for 3780Link. Typically, the default directory of "Program Files\3780Link" and Program Folder of "3780Link" are acceptable.

•   The following dialog allows you to select the number of DCP boards, the total number of ports and whether the boards are PCI or ISA bus adapters:
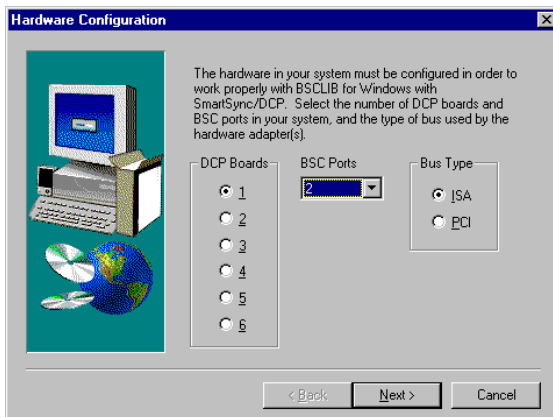
If the DCP adapter(s) in your machine use the ISA bus, the following dialog will allow you to set the I/O port address and the dual-ported memory address for each adapter installed.
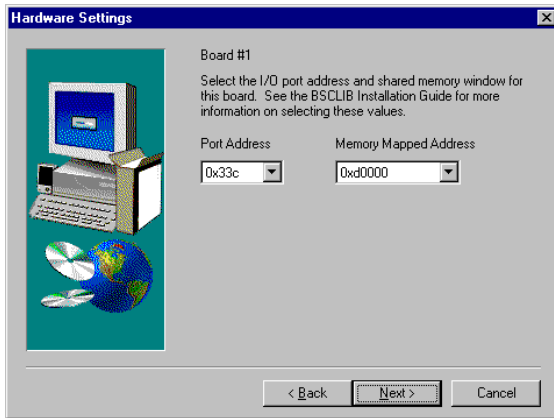
- If you are installing under Windows 95/98, you must reboot the machine before running 3780Link for the first time.

- You must run **Dcpload** to initialize the DCP hardware before running 3780Link. See the following descriptions of the 'amxbsc.exe' file and the **Dcpload** utility program.

Software Removal

To remove the 3780Link software, click on the **Uninstall 3780Link** icon in the 3780Link program folder or click on **Add/Remove Programs** in the Control Panel and follow the instructions on the screen. All programs and files that were originally installed on your machine are removed. Any files residing in the installation directory created after installation are not removed.

Running 3780Link GUI for the First Time

The first time that you run 3780Link GUI, you must configure the modem type to match the type of modem you will be using. 3780Link GUI will automatically display the "Modify Hardware Settings" window so that you may select the modem type. In addition, it may be necessary for you to modify the Link Settings, Terminal Settings, and Transfer Settings to match the requirements of the remote system(s) to which you will be connecting. After the configuration settings have been saved, you are ready to begin a communications session.

A communications session may be started in one of the following two ways:

1. Use the 3780Link GUI menus to interactively issue commands such as Auto Dial, Send File, and Disconnect.

2. Run a script file that automates the entire communications session. A script file can be run either through the Transfers | Run Script menu option of 3780Link GUI or through the 3780Link SO program. You may customize one of the sample script files or create your own using the **Notepad** (available via a button within 3780Link SO) or any text editor. 3780Link's script language is documented in the 3780Link User's Guide and in the help file.

The 3780Link GUI Window

The 3780Link GUI window consists of a menu, toolbar, and link state indicator. The layout of the window is shown below:
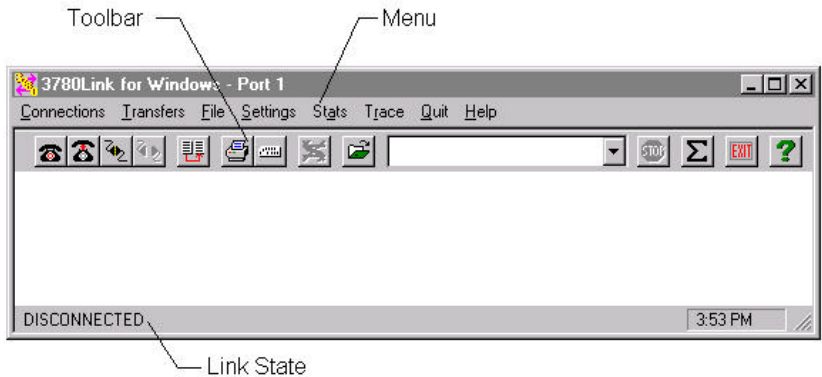
The 3780Link GUI Toolbar

There are 13 toolbar buttons to control a communications session using 3780Link GUI. The buttons and their equivalent keyboard commands are shown below:
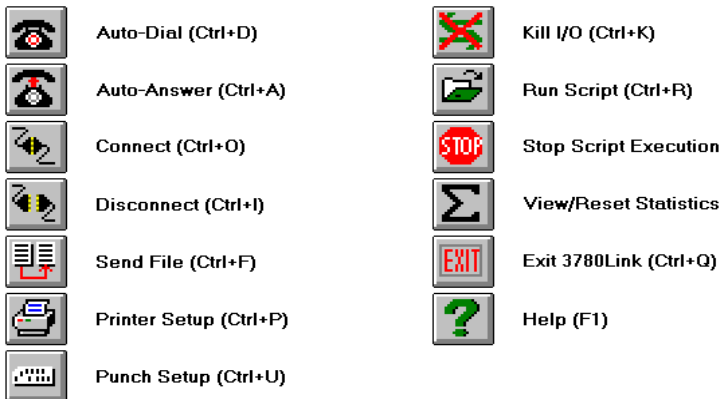
Receiving Files Using 3780Link GUI

3780Link GUI does not have a function that explicitly allows data to be received. When data is sent from the remote system once a communication session is established, it is received automatically and is stored according to the Printer/Punch Defaults.

Running 3780Link SO for Attended Communications Sessions

The 3780Link SO program allows you to run completely automated, unattended communications sessions.

There are three ways to start 3780Link SO:

- Click on the "3780Link Script Only" icon and then click the open file button on the toolbar to specify the script file you wish to run.

- Add "-s<filename>" to the command line of the 3780Link SO program item short-cut, where <filename> is the name of your script file. Doing this will automatically run the selected script file when double-clicking upon the icon.

- Drag and drop your script file onto an active 3780Link SO window.

The 3780Link SO Window

When not minimized, 3780Link SO runs in a window with the script commands echoed as they are performed. After an introduction screen, you will see a window like the one below:
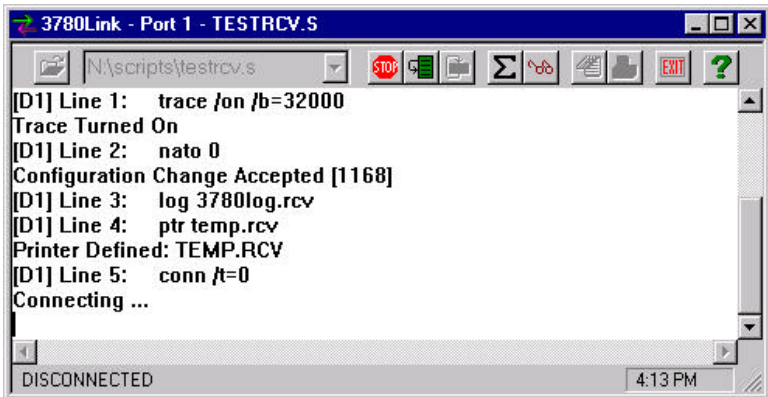
The 3780Link SO Toolbar

There are 10 toolbar buttons to control the execution of your script files. The buttons and their equivalent keyboard commands are shown below:
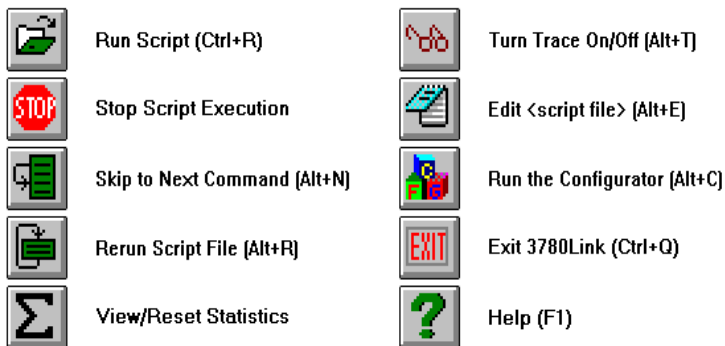
📁	Run Script (Ctrl+R)	ᦒᧆ	Turn Trace On/Off (Alt+T)
STOP	Stop Script Execution	📝	Edit <script file> (Alt+E)
📋	Skip to Next Command (Alt+N)	🔲	Run the Configurator (Alt+C)
📑	Rerun Script File (Alt+R)	EXIT	Exit 3780Link (Ctrl+Q)
Σ	View/Reset Statistics	❓	Help (F1)

General Features of 3780Link for Windows

Command Line Switches

Command line switches are passed to 3780Link GUI or 3780Link SO by adding the switch to the "Target" field in the "Shortcut Properties" window.

See the 3780Link User's Guide for more information on command line switches.

Running 3780Link SO as an Icon or as a Window

When 3780Link SO is running as an icon, the link state of the connection is included in the program title. The five link states are:

Disconnected	Line is disconnected
Line Idle	Line is connected, no data is currently being sent or received
Reader Active	Data is being transmitted
Printer Active	Data is being received to the printer device

Punch Active	Data is being received to the punch device

When 3780Link SO is not iconized, these states are shown at the bottom of the window.

When running as an icon, 3780Link SO terminates without any user intervention when script execution is complete. If you wish to review the 3780Link SO session, use the **Notepad** to look at the "3780link.log" file (or whatever log file name you may have specified.)

If 3780Link SO is running as a window, the window remains as an active application when script execution is complete. This allows you to scroll back and view the output from the 3780Link SO session, or to restart the session.

Drag and Drop

Drag and drop may be used to run script files, to call other script files, to chain to other script files, and to send files. No file name extension verification is performed. In other words, 3780Link SO attempts to run any file that is dragged to it. Script files conventionally are given a ".s" extension, but you are free to use any extension you wish. It is up to you to drag and drop an appropriate script file when using Windows Explorer.

There are several ways to utilize drag and drop:

- From Windows Explorer, drag a script file and drop it onto the "w3780so.exe" file. Windows NT asks you if you want to start 3780Link SO with the file you dragged as the initial file. If you answer yes, 3780Link SO attempts to run the dropped file as a script file.

     - or -

- Any time 3780Link SO is active and not running a script, you may drop a script file on it from Windows Explorer.

     - or -

- Drag and drop may also be implemented by using the **-d[=n]** switch on the SEND, CALL, and CHAIN script commands. The SEND command waits for a dropped file to send, and the CALL and CHAIN commands wait for a dropped script file to execute. Use the -**d** switch in place of a file name with the SEND, CALL, and CHAIN commands. See the 3780Link User's Guide for more information on script commands.

  If the optional **[=n]** is omitted, a default value of 0 is assumed, causing 3780Link to wait indefinitely for a dropped file. If the optional **[=n]** is included, 3780Link waits *n* seconds for a file to be dropped.

  As an example, consider the following script file, named "dropscri.s."

      :loop
      CALL /d
      GOTO loop

  When running this script file, 3780Link SO waits indefinitely for another script file to be dropped, effectively resulting in a script file server. When a script file is eventually dropped, the file is executed and control returns to "dropscri.s" after the dropped script completes.

MESS_BOX.EXE - Message Box Display Program

If you would like a message box to display at some point during script processing, add the following line to your script file:

    EXEC mess_box.exe "text" "title"

When this command is encountered, script processing will stop and a message box containing the specified text and title string will appear on the screen. Script processing will resume when the operator presses the "OK" button in the message box.

TXLAT.EXE - Trace Translation Program

The TXLAT utility accepts 3780Link trace files as input and converts the hexadecimal EBCDIC codes of these files into a more readable format. TXLAT runs only from within a MS-DOS session. The DOS command line syntax of TXLAT is:

> **txlat [-b] [-x<file>] -i<file> -o<file>**

-b	suppress translation of non-protocol trace characters (use if binary data is expected)
-x	specify an alternate translation table file (corresponds to **-x** switch in 3780Link)
-**i**	specify the input trace file
-o	specify the translated output file

AMXBSC.EXE – SmartSync/DCP Download File

The "amxbsc.exe" file is downloaded to each SmartSync/DCP prior to loading 3780Link by running the **Dcpload** program that is described below. A download need only be performed once before the first use of 3780Link.

IMPORTANT

This file is NOT an executable Windows program.

DCPLOAD – SmartSync/DCP Download Utility

This program is used to initialize each SmartSync/DCP co-processor and download the "amxbsc.exe" file. The "amxbsc.exe" file is expected to be found in the current working directory. The optional command line switches for **Dcpload** are described below:

-b *board*   **Specific board number to load [1-6]**

The **-b** switch specifies which SmartSync/DCP **Dcpload** is to load. You must indicate the board number, 1 through 6, as appropriate. The board number

corresponds to the order in which they were configured. If omitted, **Dcpload** loads all boards found.

**-f** *name*   **Path/File to download**

The **-f** switch specifies the full path name of "amxbsc.exe" if it is not in the currently logged subdirectory. For example:

> **dcpload -f \other_dir\amxbsc.exe**

DCPPEEK – SmartSync/DCP BSC Process Status Utility

This program is used to "peek" at each SmartSync/DCP and verify that the various processes running in the co-processor are active. This utility is intended primarily for trouble-shooting purposes, but can be run at any time to check the status of BSC processes.

The following is an example of output from **Dcppeek** after running **Dcpload** with a single 4-port SmartSync/DCP:
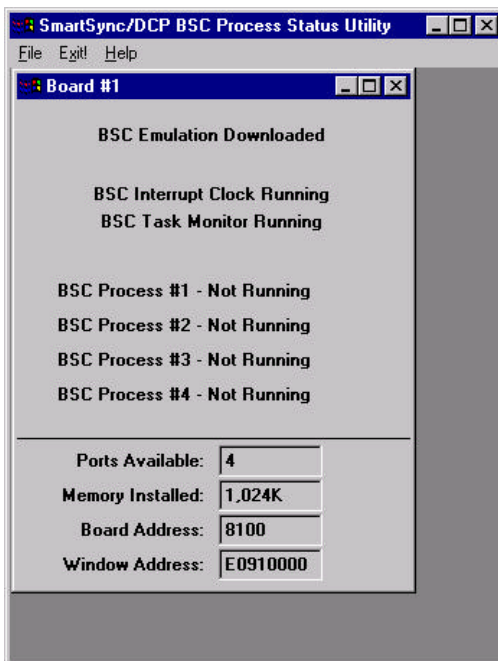
The BSC Task Monitor and Interrupt Clock should always be "Running" during normal operation.

The BSC Processes can have the following states: "Not Running", "Running in IDLE State", "Running in XMT State", "Running in RCV State", and "Not Running in IDLE State" (this is an error state).

If the BSC Task Monitor or Interrupt Clock is in the "Not Running" state, you must run **Dcpload** to reinitialize the SmartSync/DCP board. This is also true if one the BSC Processes is hung in one of the "Running" states (i.e., **Killbsc** is unable to return it to the "Not Running" state).

DCPDUMP – SmartSync/DCP Dump Utility

This program is used to access the onboard memory and registers of SmartSync/DCP. This utility is strictly for diagnostic purposes and should only be used under the direction of Serengeti Technical Support.

DCPDEBUG – SmartSync/DCP Debug Utility

This program is used to access debug messages generated by SmartSync/DCP BSC processes. This utility is used strictly for diagnostic purposes and should only be used under the direction of Serengeti Technical Support.

The debug messages obtained by **Dcpdebug** are automatically written to both the screen and a file. For best results, **Dcpdebug** should be run minimized so as not to affect transmission throughput when running 3780Link. If you've configured one SmartSync/DCP, the default file name is "debug. *x*" where *x* is the port number. If you've configured more than one board, the default file name is "debug.*xy*" where *x* is the port number and *y* is the board number. By default the output file is reset when it reaches 100,000 bytes. This enables **Dcpdebug** to run continuously without overflowing disk storage. The optional command line switches for **Dcpdebug** are described below:

-b *board*　　　　**Board number [1-6]**

The **-b** switch specifies which SmartSync/DCP associated with the BSC process is to be killed. You must indicate the board number, 1 through 6, as appropriate. The board number corresponds to the order in which they were configured. If omitted, the default is board 1.

-p *port*　　　　**Port number [1-8]**

The **-p** switch specifies the port associated with the BSC process that is to be killed. If omitted, the default is port 1.

-m *size*　　　　**Maximum size of debug file (kilobytes)**

The **-m** switch changes the default maximum output file size. By default the debug file is reset when it exceeds 100,000 bytes. To change this default, specify the maximum file size in kilobytes (1,024 bytes). For example, **-m50** establishes the maximum file size to be 50K bytes.

-s　　　　**Silent mode**

The **-s** switch prevents **Dcpdebug** from echoing debug messages to the screen. If the message "DEBUG TRACKING MESSAGES LOST" appears on the screen or in your debug output file when running **Dcpdebug**, use silent mode. Silent mode may also be entered by unchecking the "Echo to Screen" menu item under the "Options" menu.

-l　　　　**Priority mode**

The **-l** switch causes **Dcpdebug** to run at a higher priority level. If the message "DEBUG TRACKING MESSAGES LOST" appears on the screen or in your debug output file when running **Dcpdebug**, first try using silent mode. If silent mode does not prevent the messages from appearing, use priority mode. When using priority mode, be sure to run **Dcpdebug** in the background to lessen the effect on other running processes.

DCPTRACE – SmartSync/DCP Trace Dump Utility

This program is used to access the line trace buffers updated by SmartSync/DCP BSC processes. This utility is strictly for diagnostic purposes and should only be used under the direction of Serengeti Technical Support. You must turn on line trace from within 3780Link, but the dumping of the line trace information is handled by running **Dcptrace** thereafter.

The trace data retrieved by **Dcptrace** is automatically written to both the screen and an output file. If you've configured one SmartSync/DCP, the default file name is "trace. x" where x is the port number. If you've configured more than one board, the default file name is "trace.xy" where x is the port number and y is the board number. By default the output file is reset when it reaches 100,000 bytes. This enables **Dcptrace** to run continuously without overflowing disk storage. The optional command line switches for **Dcptrace** are described below:

-b *board*   **Board number to trace [1-6]**

The **-b** switch specifies which SmartSync/DCP **Dcptrace** is to access. The board number corresponds to the order in which they were configured. If omitted, **Dcptrace** defaults to board 1.

-p *port*   **Port number to trace [1-8]**

The **-p** switch specifies which of the SmartSync/DCP ports to monitor for trace data. If omitted, **Dcptrace** defaults to monitor port 1.

-f *name*   **Alternative trace file name**

The **-f** switch specifies a file, other than the default, to record trace data.

-m *size*   **Maximum size of trace file (kilobytes)**

The **-m** switch changes the default maximum output file size. By default the trace file is reset when it exceeds 100,000 bytes. To change this default, specify the maximum file size in kilobytes (1,024 bytes). For example,   **-m50** establishes the maximum file size to be 50K bytes.

-s   **Silent mode**

The **-s** switch prevents **Dcptrace** from echoing debug messages to the screen. To lessen the impact on other processes when running **Dcptrace**, use silent mode. Silent mode may also be entered by unchecking the "Echo to Screen" menu item under the "Options" menu.

KILLBSC – Kill BSC Protocol Task Program

This program is used to terminate BSC processes running in the SmartSync/DCP. You should not need to use **Killbsc** during normal operation. However, if 3780Link terminates abnormally, you may have to run **Killbsc** to set the corresponding BSC process to the "Not Running" state before running it again. The optional command line switches for **Killbsc** are described below.

-f   **Forced kill**

The **-f** switch may be used to force the termination of a BSC process when it is not "Running in IDLE State".

-b *board*   **Board number [1-6]**

The **-b** switch specifies which SmartSync/DCP associated with the BSC process is to be killed. You must indicate the board number, 1 through 6, as appropriate. The board number corresponds to the order in which they were configured. If omitted, the default is board 1.

-p *port*   **Port number [1-8]**

The **-p** switch specifies the port associated with the BSC process that is to be killed. If omitted, the default is port 1.

-s   **Silent mode**

The **-s** switch enables the silent mode that suppresses all output to the terminal with the exception of error messages.
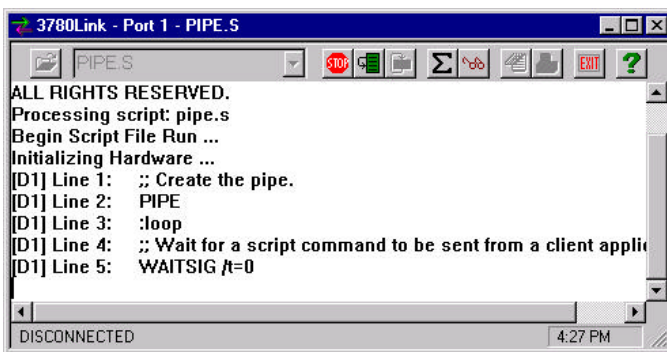
3780Link Client Application Program

For those of you who wish to incorporate 3780 emulation into your own applications, 3780Link SO may be used as a server application.   (In fact, the 3780Link GUI program uses 3780Link SO in this manner.) Two example programs, a fully functional one written in C and C++, and a very simple one written using Microsoft FoxPro, are included with 3780Link. The FoxPro program, "client.prg", is very simple and will not be discussed here.

The C and C++ client sample, named **client**, was written using Microsoft Visual C++ and the Microsoft Foundation Classes and it utilizes the Dynamic Data Exchange Management Library (DDEML.) The client program runs properly when 3780Link SO is executing the "pipe.s" script file. Studying the source code for this example program provides guidance in how to write your client application.

The client program provided gives a degree of direct manual control when used in conjunction with 3780Link SO and the "pipe.s" script file. The following paragraphs describe the use of the client program.

The client program automatically loads 3780Link SO if it's not already loaded (using a command line of "w3780so -spipe.s"). You'll see the following 3780Link SO window appear first on your screen followed by the client program window:

The client program window is shown below:
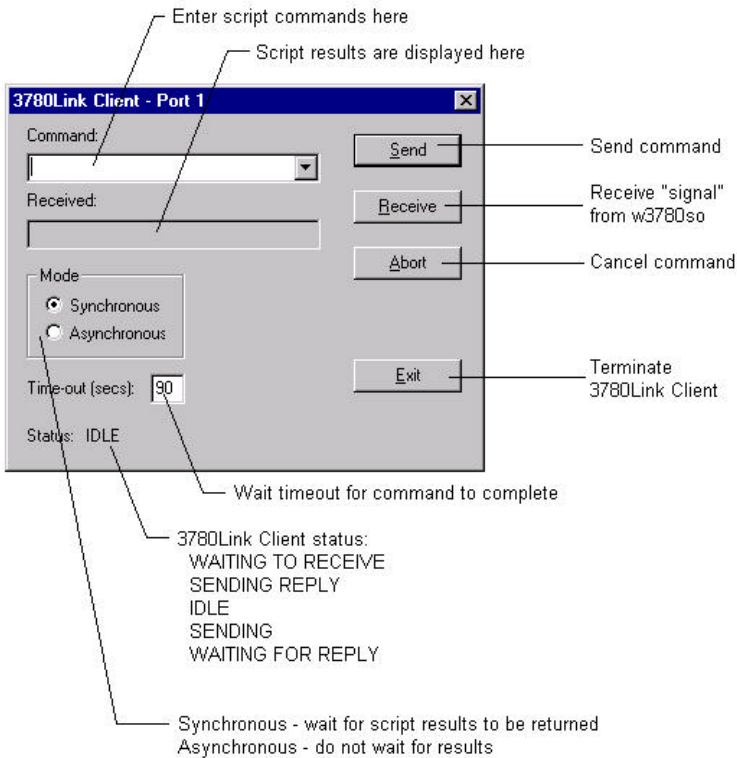
The client program can be used to exercise limited interactive control over a 3780Link SO session. This program allows you to enter script commands from the keyboard and have them executed by 3780Link SO. The results of each command are returned and displayed.

Caution

> The client program is provided as an example program demonstrating how commands may be piped to 3780Link SO from another program. It is *not* intended for production use and you may experience difficulties if you attempt to use it in such a manner.

As you enter commands via the command prompt, you can watch as they execute in the 3780Link SO window.

Note

> The time-out parameter must be long enough for 3780Link SO to complete the requested command. For example, if you ask 3780Link SO to send a large file and the time-out is too short, the client program will not be able to receive the results of the SEND command from 3780Link SO. You may set the time-out to zero to prevent the client program from timing out.

Some important things to consider when creating a client application of any type are:

- The client program must set itself up as a DDE <u>client</u> for writing script commands to 3780Link SO using DDE Poke transactions.

- The client program must set itself up as a DDE <u>server</u> for receiving result codes back from 3780Link SO using DDE Poke transactions.

- The client program must have a DDE callback function and must process the appropriate messages from the operating system.

- In order for 3780Link SO to act as a server, it must be running the "pipe.s" script file that endlessly waits for script commands to be sent to it and executed.

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