Chapter3
Installing the STS-10x

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This chapter provides instructions for installing the STS-10x, which include:

- Connecting terminal lines
- Applying power to the system
- Establishing a site log

You may want to start a site log or record book of procedures performed on the system. Guidelines for establishing this record, and a sample site log, are provided at the end of this section.

Installation

The STS-10x is a fixed-configuration terminal server, so installation is relatively simple. You will need to connect the following cables:

- Power cable.
- Ethernet thin-wire cable, or transceiver cable (between the STS-10x and the Ethernet transceiver).

- RS-232 terminal line cables, RJ-11 to RJ-45. You may also need RJ-11 to DB-25 adapters.

Follow these steps to install the STS-10x:

Step 1: Ensure that your site meets the site preparation requirements described in the previous chapter, “Preinstallation.”

Step 2: Attach your network interface (Ethernet) cable to either the 15-pin D-type connector port, or to the BNC connector port on the STS-10x backpanel. Move the slide switch (Switch 1, located between the two ports) towards the connector port you are using.

Step 3: Connect the opposite end of thick-wire Ethernet cable to the Ethernet transceiver, or connect the opposite end of the thin-wire Ethernet cable to your Ethernet network.

Step 4: Attach your RJ-45 cable jacks to the terminal lines (1 to 9) on the STS-10x front panel. Insert the RJ-11 cable jacks into the jacks or jack adaptors on each terminal. Line 0 is the console port which may be used as the tenth port after installation is complete.

Warning: If the voltage indicated on the label is different from the power outlet voltage, do not plug the power cord into the outlet. A voltage mismatch can cause equipment damage and may pose a fire hazard.

Step 5: Attach the power cord to the AC power input port on the back panel. Plug the opposite end into a power socket.

Step 6: Turn on the STS-10x power switch.

Step 7: Check the *power* and *run* indicators on the STS-10x front panel. The power indicator lights when power is supplied to the server. The run indicator lights and remain lit after the system has successfully completed its internal hardware diagnostic.

Step 8: Installation is complete. Proceed to the *Terminal Server Configuration and Reference* publication for the startup procedures.

Site Log

The site log provides a historical record of all actions relevant to the system. You may want to start such a document and keep it in a common place near the STS-10x where anyone who performs tasks has access to it. Site log entries might include:

- Installation progress—Make your completed Installation Checklist the first entry in your site log. It provides a historical record of when, and by whom, each installation step was completed.
- Upgrades and Removal/Replacement Procedures—Use the site log as a record of ongoing system maintenance and/or other applicable history. Each time any procedure is performed on the system, update the site log to reflect:
  - EPROM upgrades
  - Corrective maintenance performed
  - Intermittent problems

Connecting DTE and DCE Devices

The following sections provide specific signal requirements for Data Terminal Equipment (DTE) and Data Communications Equipment (DCE) devices. DTE equipment, as the name implies, consists of data terminals. DCE equipment includes modems, printers, and the terminal server. Where applicable, software commands are included with the description, only for your convenience. This publication does not include instructions for configuring software. To do so, refer to the *Terminal Server Configuration and Reference* publication.

Connecting Terminal (DTE) Devices

In the simplest case of connecting a terminal (a DTE device) to the terminal server, you need connect only Signal Ground, Transmit Data, and Receive Data signals. Table 3-1 shows the pinouts.

For more line control, connect the DTR output (pin 20) of the terminal to the CTS (Clear to Send) input line of the terminal server (see Table 3-2). Then, refer to the *Terminal Server Configuration and Reference* publication to configure the line with the **modem cts-required** subcommand of the line configuration command. In this mode, the terminal server always asserts DTR (Data Terminal Ready) except when it briefly lowers the signal before entering the idle state. The terminal server requires that the attached device assert the CTS input at all times. If CTS goes down, any connections are closed and the terminal server enters the idle state. The terminal server will not respond to the activation character or form a reverse connection while the CTS signal is low on such a line.

Table 3-1 Connecting an RS-232 DTE Without Controls

Signal	Name	Signal Source	Female DB-25 (DCE)	Modular Connector
GND	Signal Ground	—	Pin 7	4
TxD	Transmit Data	Server	Pin 3	3
RxD	Receive Data	Device	Pin 2	2
RING	Ring Indicate	Device	—	5
DTR	Data Terminal Ready	Server	—	1
CTS	Clear to Send	Device	—	6

Table 3-2 Connecting an RS-232 DTE with CTS Required

Signal	Name	Signal Source	Female DB-25 (DCE)	Modular Connector
GND	Signal Ground	—	Pin 7	4
TxD	Transmit Data	Server	Pin 3	3
RxD	Receive Data	Device	Pin 2	2
RING	Ring Indicate	Device	—	5
DTR	Data Terminal Ready	Server	—	1
CTS	Clear to Send	Device	Pin 20	6

If you want RTS/CTS or hardware flow control on a directly connected line, connect the RTS (Request to Send) output (pin 4) of the terminal to the CTS input of the terminal server (see Table 3-3). Then configure the line with the **flowcontrol** subcommand of the line configuration command. RTS/CTS flow control is not possible on a line using modem control.

Table 3-3 Connecting an RS-232 DTE with Hardware Flow Control

Signal	Name	Signal Source	Female DB-25 (DCE)	Modular Connector
GND	Signal Ground	—	Pin 7	4
TxD	Transmit Data	Server	Pin 3	3
RxD	Receive Data	Device	Pin 2	2
RING	Ring Indicate	Device	—	5
DTR	Data Terminal Ready	Server	—	1
CTS	Clear to Send	Device	Pin 4	6

Connecting Nonterminal (DCE) Devices

When you attach a DCE device with modem control to the terminal server, you may want to use the pin-out described in Table 3-4.

Table 3-4 Connecting a DCE with Modem Control

Signal	Name	Signal Source	Female DB-25 (DCE)	Modular Connector
GND	Signal Ground	—	Pin 7	4
TxD	Transmit Data	Server	Pin 2	3
RxD	Receive Data	Device	Pin 3	2
RING	Ring Indicate	Device	Pin 22	5
DTR	Data Terminal Ready	Server	Pin 20	1
CTS	Clear to Send	Device	Pin 8	6

You may vary this construction. For example, if you set up the device so that CTS follows DCE, you then wire the terminal server CTS input to pin 5 (standard CTS) instead of to pin 8 (standard DCE).

When you attach a dial-in modem (or a terminal switch with modem controls) to the terminal server, configure the terminal server line with the **modem callin** subcommand of the line configuration command. The terminal server handles the signals as follows:

Step 9: The terminal server waits for a transition on its RING input signal.

Step 10: The terminal server asserts its DTR output signal and waits up to 20 seconds for the attached device to assert the CTS input signal.

Step 11: When CTS goes high, the RS-232 connection is complete.

If CTS does not go high within 20 seconds, the terminal server drops its DTR output and returns to the idle state. If the CTS input is dropped at any time after the connection is completed, the terminal server drops its DTR output and returns to the idle state.

An alternative to the **modem callin** subcommand is the **modem ri-is-cd** subcommand, which provides hardware flow control for dial modems. Refer to the *Terminal Server Configuration and Reference* publication for further information and guidelines for using these commands.

If a device with modem control is to be attached to the terminal server and accessed by telnet to that particular serial line on the terminal server, then configure the line with the **modem callout** subcommand. The terminal server handles the signals as follows:

Step 12: The terminal server creates a driver process associated with the line.

Step 13: The terminal server raises the DTR output signal for that line, and waits up to 20 seconds for the device to assert the CTS input signal.

Step 14: When CTS is asserted, the RS-232 connection is complete.

If the CTS input is not asserted within 20 seconds, the terminal server drops its DTR output. The terminal server advances to the next line in the rotary group if the first line is part of a rotary group. The terminal server then raises DTR on that line and waits again for CTS.

If the terminal server cannot complete a handshake with a line or runs to the end of a rotary group without successfully connecting, it closes the connection. If the CTS input drops at any time after the connection is completed, the terminal server drops its DTR output, closes the connection, and returns to the idle state.