
TITAN



INSTALLATION GUIDE

Release 1.0

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INSTALLATION GUIDE



TITAN graphics supercomputer installation consists of hardware installation and booting the system.

The TITAN system is shipped in several boxes that together contain the System Module, the monitor, other components of the User Interface Module, cables, documentation, and cartridge tapes. Whereas usual care can be taken in unpacking the monitor and accessories, *special care must be taken in unpacking the System Module.*

Hardware Installation

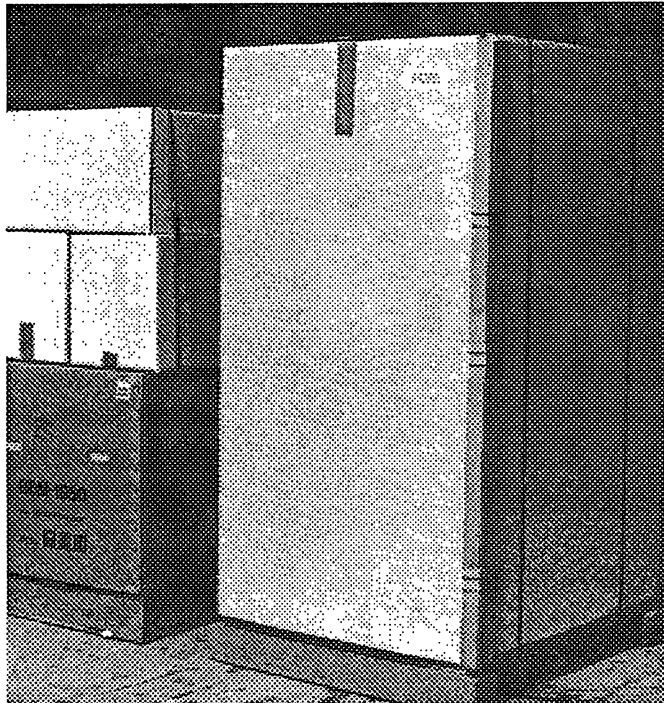
The System Module box (the largest box) is shipped on a cushioned pallet. The box is held together with a wood joint that is held firm with three metal clamps. The box is also bound with shipping straps. To unpack the System Module you must have enough space to roll the System Module down a ramp (about 8 feet).

Unpacking the System Module

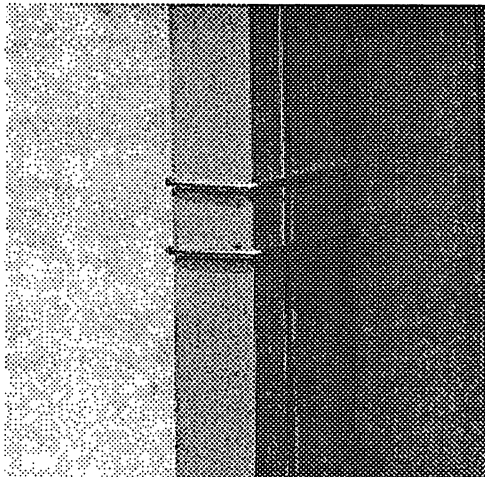
The illustrations and instructions on the next several pages show you how to unpack and position the TITAN System Module.

Hardware Installation
(continued)

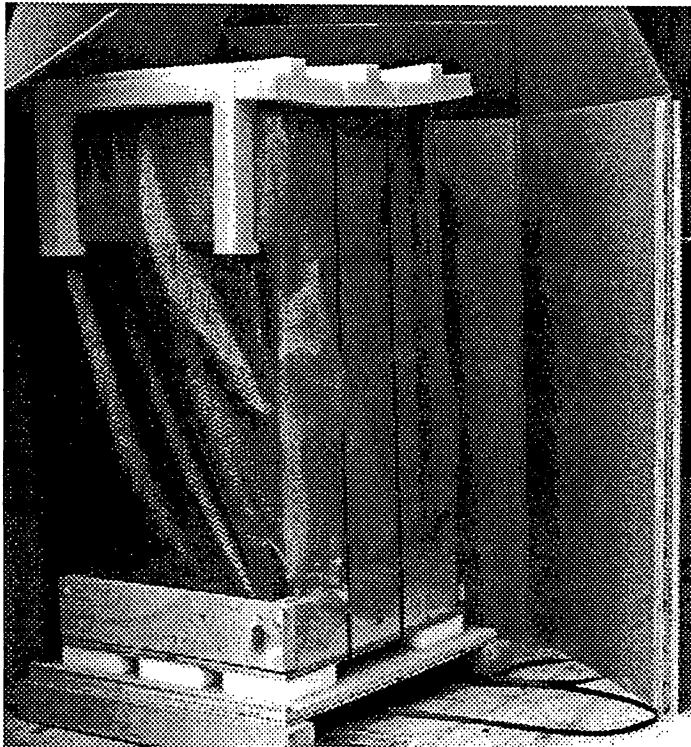
Use a claw hammer or crow bar to remove the 3 metal clamps holding the wooden joint together.



Avoid damaging the box.



Hardware Installation
(continued)



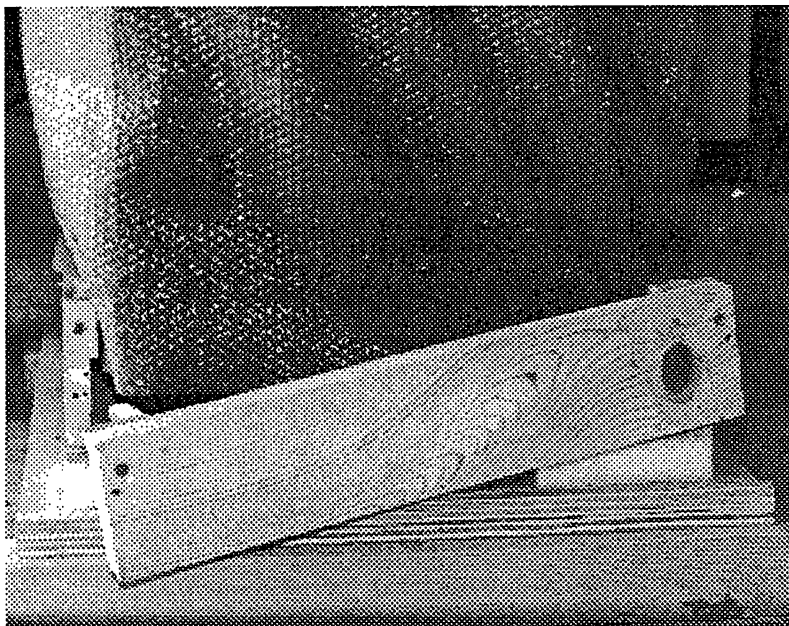
Cut the shipping straps and remove the box.



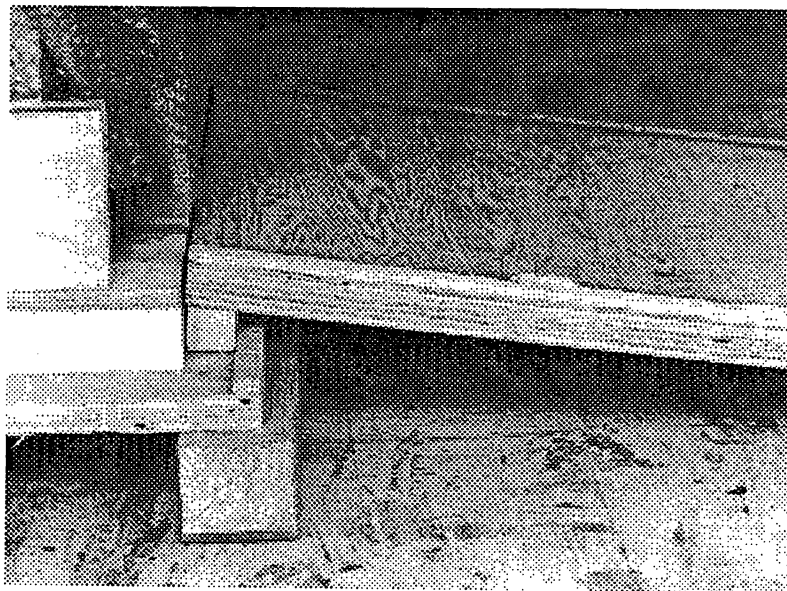
Locate the wooden ramp that is to be used to remove the System Module from the cushioned pallet. The ramp is fastened to the cushioned pallet with 2 bolts. Remove the bolts before removing the foam cap from the top of the System Module.

Hardware Installation
(continued)

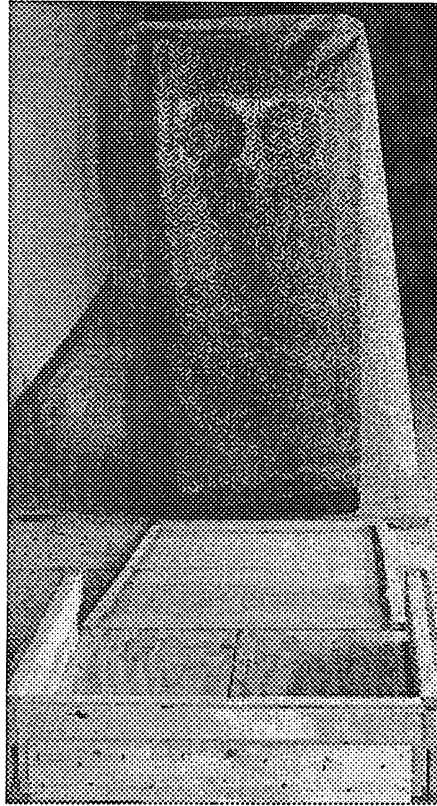
Locate the two bolts on the opposite side of the pallet from the ramp. These 2 bolts hold a wooden support that must be removed before the System Module can be unloaded. Remove the 2 bolts and the wooden support they secure.



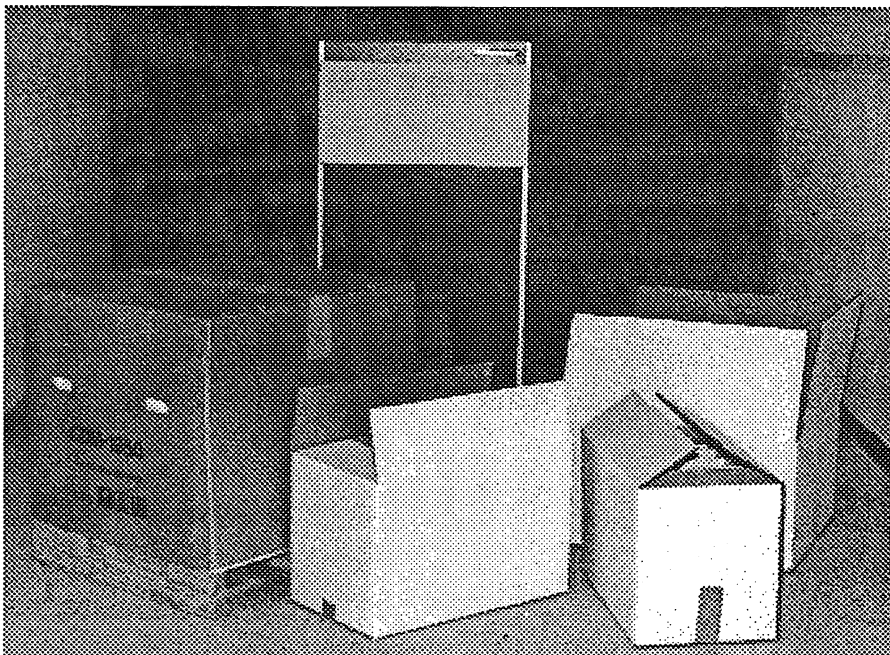
Put the wooden ramp in place where the wooden support was just removed. At the top of the ramp is a lip that should be secured with a corresponding lip on the cushioned pallet.



Hardware Installation
(continued)



Carefully slide the System Module down the ramp. (The System Module has built-in casters.) *The System Module should slide smoothly, with no bumps or jolts.*



Once the System Module is on the floor, roll it into place.

Inventory

Use the checklist in Table 1 to make sure you have received a full system.

Table 1. Component Checklist

System Module	
junction box	
monitor	
keyboard	
mouse	
mouse pad	

Cables:	
System Module AC line cord	
junction box AC line cord	
User Interface Cable (50 or 200 ft.)	
3 (12 in.) coaxial cables	
short AC cord	

Use the checklist in Table 2 to make sure you have received a full documentation set.

Table 2. Documentation Checklist

C: A Reference Manual (Harbison and Steele)	
Commands Reference Manual	
Documentation Roadmap	
Doré Reference Manual	
Doré Programmer's Guide	
End-User Interface Guide	
Experienced Programmer's Quick Start	
Graphics Toolkit Manual	
Installation Guide	
Principles of Operation Manual	
Programmer's Guide	
Programmer's Reference Manual (Vols 1 and 2)	
Site Preparation Guide	
Software Release Notes	
System Administrator's Guide	
Technical Overview	
Uni-Ops Catalog	
Window System Manual	

Warnings

The front door of the TITAN System Module should remain closed and locked during system operation.

During operation each slot in the card cage should be filled with a circuit board or board filler.

The System Module should be a minimum of 12 inches from the wall.

The power should be turned off completely before anything is removed from the System Module cabinet.

The circuit breaker should be able to handle the expected load.

Circuit boards and devices should not be removed without consulting the procedures in the Field Service Manual.

Air vents should not be blocked.

Placement and Cabling

Follow the steps given here to connect cables and line cords. Refer to Figure 1 for a diagram of System Module connector locations.

Step 1. The User Interface Cable has four connectors at the User Interface Module end and six connectors at the System Module end. Connect the User Interface Cable to the System Module as indicated in Table 3.

Table 3. User Interface Cable to System Module Connections

connector label	connect to	on board
RS-232-C,D	RS-232 ports C and D	I/O
keybd-mouse-spkr	keybd-mouse-spkr port	I/O
RED	RED connector	graphics
GREEN	GREEN connector	graphics
BLUE	BLUE connector	graphics

Step 2. Connect the User Interface Module end of the User Interface Cable to the junction box as indicated in Table 4.

Table 4. User Interface Cable to User Interface Module Connections

connector label	connect to
system in	system in port on junction box
RED	RED port on junction box
GREEN	GREEN port on junction box
BLUE	BLUE port on junction box

Step 3. Plug the keyboard into the "keyboard" port on the junction box and the mouse into the "mouse" port on the junction box.

Step 4. Use the 3 short round coaxial cables to connect the

"red out" of the junction box to the "red" input of the monitor.

"green out" of the junction box to the "green" input of the monitor.

"blue out" of the junction box to the "blue" input of the monitor.

Step 5. Plug the short AC cord into the monitor and into the junction box.

Step 6. Plug the AC line cord for the System Module into the lower right rear of the System Module. Just above the line cord socket is a power switch. Make sure it is off.

Step 7. Plug the other end of the System Module line cord into an appropriate wall outlet. (See the *Site Preparation Guide* for power requirements).

Step 8. Plug the AC line cord for the User Interface Module into the socket on the junction box and into an appropriate wall outlet.

Step 9. Attach knob box and tablet cables (if you are installing those accessories) to the appropriately marked connectors on the junction box.

Step 10. Route cables and cords behind the cable and cord guards on the back of the System Module, then close the System Module door.

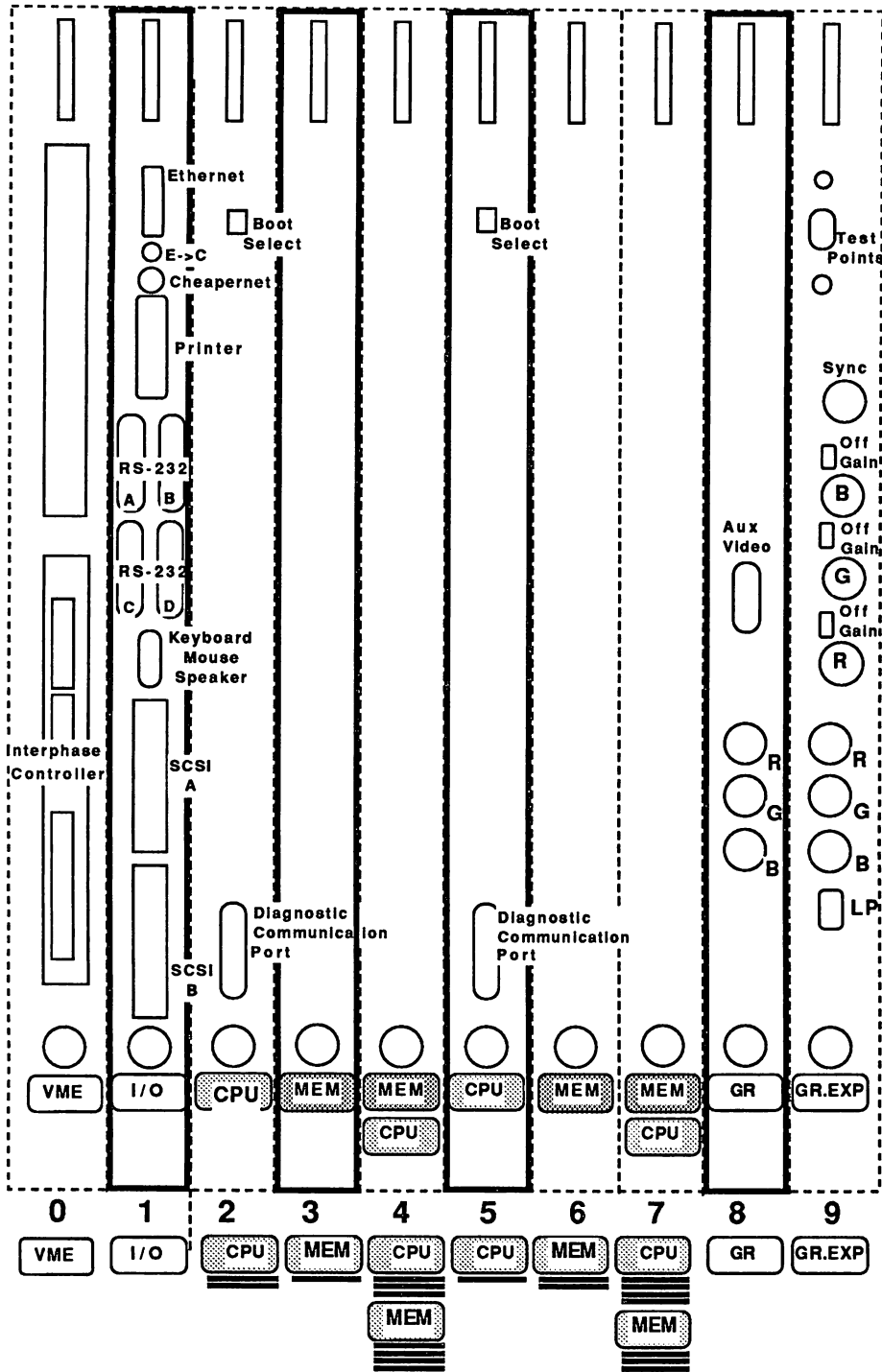


Figure 1. Back Panel Connections

Mounting the Junction Box

The junction box can be placed behind the monitor on a desk or table, or it can be mounted as shown in Figure 2. Use screws to mount the junction box bracket shown in the figure, then slide the junction box onto the bracket.

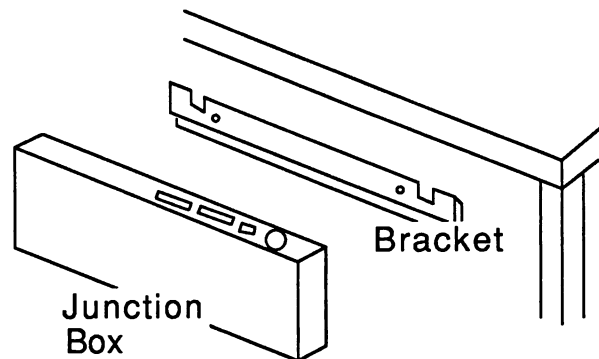


Figure 2. Junction Box Mounting

Connecting Other Components

This section describes how to install an Ethernet or Cheapernet network, terminals, modems, and printers. Keep in mind that TITAN is configured as DTE (data terminal equipment).

Ethernet/CheaperNet Network

Ethernet network: Connect the Ethernet transceiver cable to the Ethernet port on the TITAN System Module I/O board. Place the Ethernet/CheaperNet selection switch in the "Out" position. Note that Ethernet version 1 is not supported.

CheaperNet network: Attach a BNC "TEE" to the Cheapernet port on the I/O board. Place the Ethernet/CheaperNet switch in the "In" position. If TITAN is the end of the Cheapernet, install a Cheapernet terminator on the "TEE."

Before the network is used, certain network configuration files should be edited. See *Configuring the System* in the *System Administrator's Guide* for details.

Terminal

Connect a terminal to RS-232 port A or B on the System Module I/O board. Use an RS-232 "twisted" or "null modem" cable with minimum pin support as given in Table 5.

Table 5. Serial Connections

TITAN Serial Pin	Terminal Pin
1	1
2	3
3	2
7	7

Cables are available from the Inmac catalog. Although the Inmac catalog does not list a standard cable assembly that fits the above requirements, the cables listed in Table 6 can be used in conjunction with a shielded null-modem (Male to Female, Inmac part number 335-3) to complete the connection. Note that the TITAN end requires a male connector.

Table 6. Serial Cables

Part Number	Type	Length
394-1†	Male-to-Female	10 feet
394-2†	Male-to-Male	10 feet
340-1†	Male-to-Female	15 feet
340-2†	Male-to-Male	15 feet
395-1†	Male-to-Female	25 feet
395-2†	Male-to-Male	25 feet
340-1†	Male-to-Female	35 feet
340-2†	Male-to-Male	35 feet

See *Configuring the System* in the *System Administrator's Guide* for instructions on how to configure terminals to work with the system.

† Must be used in conjunction with a null modem adapter if used on TITAN.

Modem

Connect a synchronous or asynchronous modem to RS-232 port A or B on the System Module I/O board. You can use any of the Inmac (or the equivalent) cables shown in Table 7. Each of these cables connects the following pins straight through from one end to the other: 1-8,13-15,17,20,22 and 24.

Table 7. Modem Cables

Part Number	Type	Length
402-1	Male-to-Female	10 feet
402-2	Male-to-Male	10 feet
346-1	Male-to-Female	15 feet
346-2	Male-to-Male	15 feet
403-1	Male-to-Female	25 feet
403-2	Male-to-Male	25 feet
535-1	Male-to-Female	35 feet
535-2	Male-to-Male	35 feet

See *Configuring the System* in the *System Administrator's Guide* for instructions on configuring a modem to work with the system.

Printers

Parallel (Centronics compatible) printer. To connect a parallel printer, connect the parallel cable to the printer port of the I/O board.

The cable for a Centronics compatible printer is a 36-pin shielded cable with all pins wired straight through (pin 1 of one end wired to pin 1 of the opposite end connector and so on). A male cable end is required at the TITAN I/O board end. A male or female connector may be required at the printer or other accessory end, so be sure to check your printer equipment or documentation before purchasing a cable.

Table 8 lists Inmac part numbers and lengths for various types of Centronics compatible cables.

Table 8. Centronics Cables

Part Number	Type	Length
323-1	Male to Male	10 feet
323-2	Male to Male	20 feet
323-3	Male to Male	30 feet
324-1	Male to Female	10 feet
324-2	Male to Female	20 feet
324-3	Male to Female	30 feet

Serial Printer (Apple LaserWriter™). To connect a serial printer, use RS-232 port A or B on the I/O board.

To connect an Apple LaserWriter™, use a Male-to-Male RS-232 cable that has only the pins described in Table 9.

Table 9. Serial Printer Connections

TITAN Serial Pin	Printer Pin
1	1
2	3
3	2
7	7

Although the Inmac catalog does not list a standard cable assembly that fits the above requirements, the cables listed in Table 6 can be used in conjunction with a shielded null-modem (Male to Female, Inmac part number 335-3) to complete the connection.

RS-232 pin assignments vary across printers, so be sure to check your printer manual for its unique requirements. For your information, Table 10 lists the complete set of signals for the TITAN serial port to allow you to determine your own cabling needs.

Table 10. Pin Assignments For Serial Connectors

Connector Pin	Signal Name	I/O Type
1	protective ground	
2	transmit data	output
3	receive data	input
4	request to send	output
5	clear to send	input
6	data set ready	input
7	signal ground	
8	carrier detect	input
11	receiver reference	
15	transmit clock	input
17	receive clock	input
18	transceiver reference	
20	data terminal ready	output
22	ring indicator	input

Diagnostics Communication Port (DCP)

The CPU board has a communications port (DCP) for diagnostic purposes. To connect a terminal to the port you use a null modem cable as mentioned above in "Terminal." Note, however, that the DCP port uses different wiring than the serial ports on the I/O board. If your cable uses only the four wires listed in the table, you should have no problem. If you choose to use a cable that contains more than four wires, check Table 11 to make sure that the signals match those of the terminal you choose to connect.

To connect a modem to the DCP port, follow the cabling recommendations mentioned above in "Modem."

See the *System Administrator's Guide* for information about using the DCP port.

Table 11. Pin Assignments for the DCP Port

Connector Pin	Signal Name	I/O Type
1	protective ground	
2	transmit data	output
3	receive data	input
4	request to send	output
5	clear to send	input
7	signal ground	
14	transmit data DCP port 2 (inactive)	input
16	receive data DCP port 2 (inactive)	output
20	data terminal ready	output

Booting the System

Once your TITAN hardware and peripherals are installed you are ready to boot the system. Follow these steps.

Step 1. Make sure all cables and power cords are connected and plugged in.

Step 2. Place the power switch on the lower right rear of the System Module in the "on" position. Place the lower key switch on the front

Step 3. of the System Module in the "normal" position. Place the key in the upper key switch.

Step 4. Turn on the System Module and monitor power. To turn on the System Module power place the upper key switch in the "on" position.

Step 5. The system should boot automatically. Within a few minutes you should see a **login:** prompt appear on the monitor screen.

Step 6. If anything goes wrong, and you do not get a **login:** prompt, see *Booting the System* in the *System Administrator's Guide*.