
Chapter 3. Installing Options

This chapter provides instructions to help you add options to your system unit. If you have several internal options to install, you should install them all at one time, while the system unit is still open. You should install all SBC options first to prevent removing newly installed adapters or drives to access the SBC.

Use the figures in "General Layout of Components" on page 1-2 to locate components. Before performing any installation procedures, be sure to read the information in "Safety Information" on page F-11 and in "Handling Electrostatic-Discharge-Sensitive Devices" on page F-16. That information will help you work more safely with your computer and options.

CAUTION:

- **Power must always be removed before performing any removal or replacement procedures; electrical power and any backup power source also should be unplugged or disconnected. To make sure that power is off and disconnected in the correct order, start every removal and replacement procedure with "Switching Off Power and Disconnecting Cables."**
- **Depending on the options installed, the system unit could weigh more than one person can comfortably lift. Do not attempt to lift it by yourself; get another person to help you.**

Attention

Whenever handling electronic components, use precautions to prevent component damage due to electrostatic discharge. See "Handling Electrostatic-Discharge-Sensitive Devices" on page F-16 for a list of those precautions.

Switching Off Power and Disconnecting Cables

Use the following procedure to power-down the system unit and disconnect all cables before beginning any removal/replacement procedure. If it is necessary to remove the system unit from its mounting place, use this procedure before removing the system unit.

1. Remove any data media (diskettes, optical discs, tapes, and so forth) from the system unit.
2. Turn off the computer and all attached devices.
3. Record the location of all cables connected to the system unit to prevent confusing them while they are unplugged.
4. If you have a modem or fax machine attached, disconnect the telephone line from the wall outlet and then from the system unit.
5. Disconnect all electrical power and any backup power source.
6. Disconnect all other cables connected to the system unit. Where applicable, unplug the cable at the receptacle end first, and then at the device end.

When reassembling the system unit, reverse these steps.

Now you are ready to proceed.

Opening the System Unit

In most cases, you do not need to remove the system unit from its mounting. If you do need to remove the unit, do so before continuing.

CAUTION:

The unit weighs 12.5 kilograms (27.5 pounds); you should not try to hold the unit while you are removing the screws. Have another person hold the unit as you remove the screws.

To open the system unit, loosen the four cover screws and lift off the cover, as shown in Figure 1-2 on page 1-2.

Removing the SBC

The 7587 Industrial Computer uses a single-board computer for its processor. The SBC is described in Chapter 6, "Single Board Computer." To remove the SBC, do the following.

1. Using Figure 1-2 on page 1-2, remove the top cover from the unit and locate the SBC.
2. Record the position of any adapters that interfere with disconnecting cables from the SBC, and remove the adapters (see "Removing and Replacing Adapters" on page 8-34).
3. Remove the screw that secures the SBC bracket to the chassis.
4. Disconnect all the cables from the SBC.
5. Pull the cables away from the SBC and carefully lift it out of the unit. (You might have to rock the SBC slightly from front to rear to remove it.)
6. Place the SBC on a flat surface, with the components facing up and the backplane connector toward you. Then continue with "System Memory (SIMMs)."

System Memory (SIMMs)

Adding system memory to your system increases system performance by providing more memory for programs to use. If you have memory to install, continue with the following. Otherwise, go to “Installing a PMC Card” on page 3-7.

The SBC has four memory connectors that are grouped in two banks. Each connector supports 8-MB, 16-MB, 32-MB, and 64-MB SIMMs that are 60-nanosecond, EDO, gold-tab parity memory.

Memory must be installed in matched pairs (same size, speed, and type). You can increase total system memory by installing additional SIMMs, or by replacing SIMMs with larger capacity SIMMs. The system detects the additional memory automatically as part of POST, and will display a prompt for you to run configuration.

Notes:

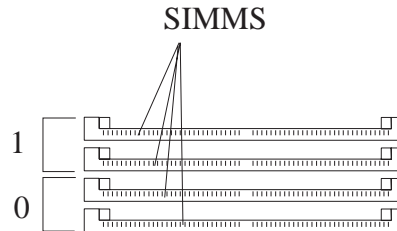
1. SIMMs can have a maximum height of 1.0 inch (25.4 millimeters).
2. Install only parity SIMMs.

Before You Begin

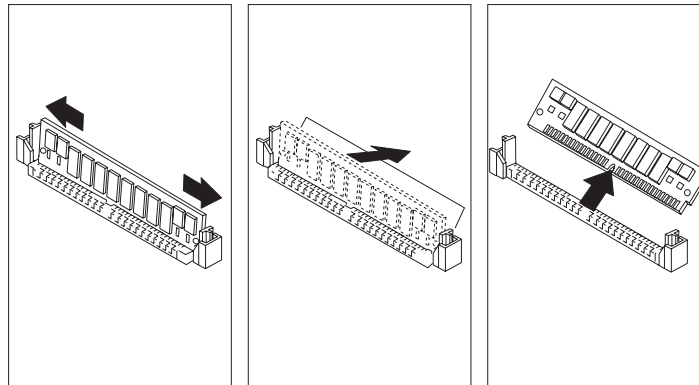
1. Read “Safety Information” on page F-11 and “Handling Electrostatic-Discharge-Sensitive Devices” on page F-16.
2. Turn off the computer.
3. Disconnect all external cables and power cords.
4. Loosen the four cover screws and lift off the system unit cover.
5. Remove the SBC as described in “Removing the SBC” on page 3-2.
6. Locate the SIMM sockets.
7. If any adapters or drives are in the way, record their location and the cables connected to them. Then remove the adapters or drives.
8. Touch the static-protective bag in which the SIMM was packaged to any unpainted metal surface on the system unit. Then remove the SIMM from the package.

Installing SIMMs

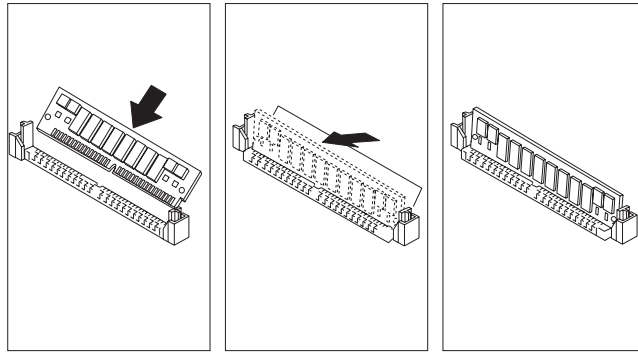
The following illustration shows the SIMM banks on the SBC. Bank 1 and bank 0 hold matched-pair SIMMs. When installing a SIMM, a matched-pair is first loaded into bank 0, and then into bank 1 as required.



1. Place the SBC on a clean, static free work area.
2. If you are not replacing SIMMs, go to step 7 on page 3-5. If you are replacing SIMMs with larger capacity modules, continue with the next step.
3. Starting with the top-most populated SIMM connector, push outward against the retaining clips at both ends of the SIMM connector.



4. Rotate the SIMM away from the connector until it is released from the clips.
5. Lift the SIMM out of the connector.
6. Repeat these steps for each SIMM you are removing (they must be replaced in pairs).
7. Align the center key of the new SIMM with the connector (the notch in the SIMM should be to the right). Then insert the SIMM into the connector. The SIMM will seat at an angle.



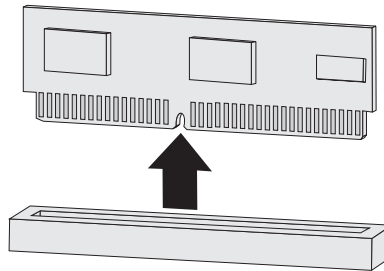
8. Rotate the top of the SIMM until it snaps into the retaining clips, as shown in the previous figure.
9. Repeat these steps for each SIMM. (Remember to install them in matched pairs.)
10. Record the configuration changes in Appendix A, "System Records."
11. Continue with "Installing Cache Memory."

Installing Cache Memory

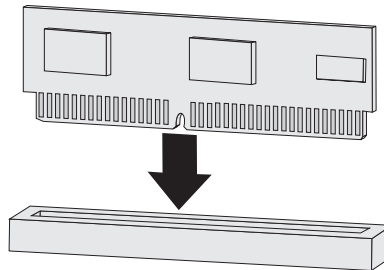
The cache memory module is located on the SBC. Adding cache memory can increase the performance of your system unit. If you are installing a cache memory module, continue with the following. If you are installing a PMC card, go to “Installing a PMC Card” on page 3-7. Otherwise, go to “Reinstalling the SBC” on page 3-7.

One cache memory size is available, 512 KB.

1. Touch the static-protective bag in which the modules were packaged to any unpainted metal surface on the system unit. Then remove the memory modules from the package.
2. Gently pull the top edge of the cache memory module up and out of the connector.



3. Position the new module so the notch on the bottom edge aligns with the notch in the connector.
4. Insert the cache memory module into the connector and push down evenly. Make sure the module is fully seated in the connector.



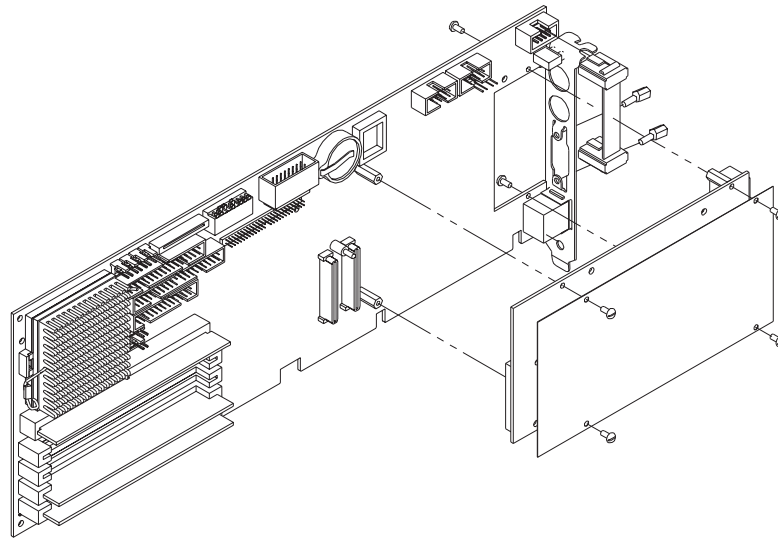
5. Record the size of the cache memory module you just installed in Appendix A, “System Records.”
6. Continue with “Installing a PMC Card” on page 3-7.

Installing a PMC Card

If you are installing a PMC card, continue with the following. Otherwise, go to “Reinstalling the SBC.”

See Chapter 7, “Analog Video PMC Form Factor Card” for information on the PMC video card.

1. Place the SBC on a clean, static-free work area.
2. Remove the retaining bracket from the SBC.
3. Remove the PMC card from the static-free bag.
4. Attach the new retaining bracket and mounting hardware to the SBC.
5. Connect any cables between the PMC card and SBC (refer to the instructions that came with the PMC card).
6. Align the connectors on the PMC card with the connectors on the SBC and press the two cards together.



7. Install the four mounting screws.
8. Record the PMC card in Appendix A, “System Records.”
9. Continue with “Reinstalling the SBC.”

Reinstalling the SBC

1. Reinstall the SBC and reconnect all internal cables.
2. Reinstall any adapters that were removed into the same slots from which they were removed.
3. Continue with “Installing Adapters.”

Installing Adapters

To install an adapter, do the following.

1. Loosen the four cover screws and lift off the system unit cover.
2. Read the instructions that came with the adapter to determine if the adapter must be installed in a certain slot. If not, you can use any empty slot. Determine which empty slot you will use.
3. Note the locations of any installed adapters or drives that are in the way, and then remove them.
4. Read the instructions that came with the adapter to determine if you must set any switches, jumpers, and so forth on the adapter.
5. Touch the static-protective bag in which the adapter was packaged to any unpainted metal surface on the system unit. Then remove the adapter from the package.
6. Set any required switches, jumpers, and so forth on the adapter. Also, install any required memory modules on it.
7. Install the adapter as follows.
 - a. Grasp the adapter at the front and rear.
 - b. Align the adapter with the front and rear adapter guides and slide it into the guides. (Some adapters are shorter and do not extend to the front adapter guide.)
 - c. Press the adapter **firmly** into the expansion slot. Full-length adapters slide into the latch on the front adapter guide.
 - d. Install and tighten the expansion slot screw.
 - e. Record the type of adapter you just installed in Appendix A, "System Records."
8. Reinstall any removed adapters into their original slots.
9. Proceed to "Installing the Card Hold-Down Spacers" on page 3-9.

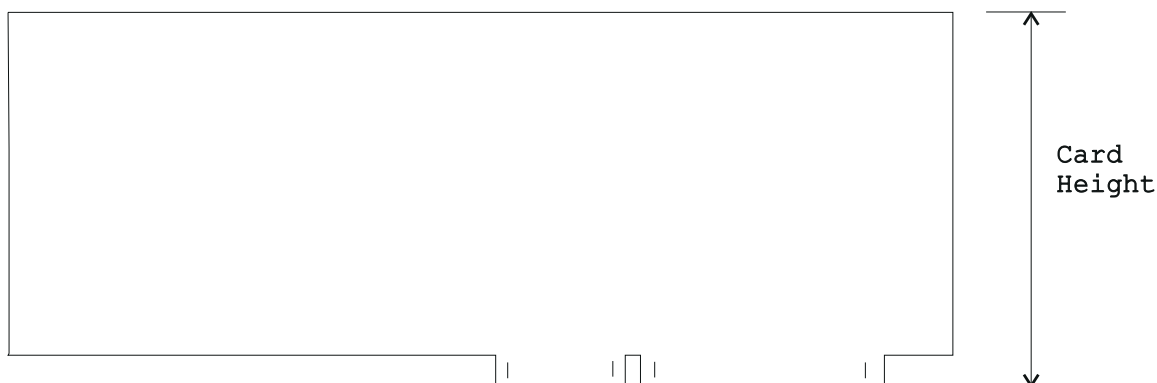
Installing the Card Hold-Down Spacers

The 7587 Industrial Computer includes card hold-down brackets to retain adapters in their slots during shock and vibration. These brackets are designed to secure the standard sizes of cards.

Plastic spacers and rubber pads are supplied in the ship group and should be installed (see the illustration in “Top Cover” on page 9-5). There are holes in the top cover shield that correspond to the slots. The holes are numbered to match the card slots. The holes for the PCI slots are indicated with an “A.”

Adapters are manufactured in many different sizes. The following table gives the combinations of cards and spacers for the various card sizes. Adapters that are shorter than those shown in the table cannot be retained. This is not a problem, because these cards are small and have low mass. The low mass means vibration and shock do not have a significant effect on these adapters.

Card Height (inches/millimeters)	Spacer Installed	Additional Number of Pads Needed	
4.8/121.8	No	0	standard <i>tall</i> card
4.7/119.3	No	1	
4.6/116.8	No	2	
4.5/114.2	No	3	
4.4/111.7	No	4	
4.3/109.1	No	5	standard <i>short</i> card
4.2/106.6	Yes	0	
4.1/104.1	Yes	1	
4.0/101.5	Yes	2	
3.9/98.9	Yes	3	
3.8/96.4	Yes	4	
3.7/93.9	Yes	5	



Reinstall the system unit cover you removed in “Installing Adapters” on page 3-8.

Installing an Internal Hard Drive

Important:

Some drives do not meet the industrially rated environmental specifications of the 7587 Industrial Computer. Before installing any drive that is not purchased from IBM or an IBM distributor specifically for use in a 7587 Industrial Computer, be sure the drive's specifications meet all environmental conditions to which it might be subjected. See "Hard Disk Drive Jumper Settings" on page C-2 for more information.

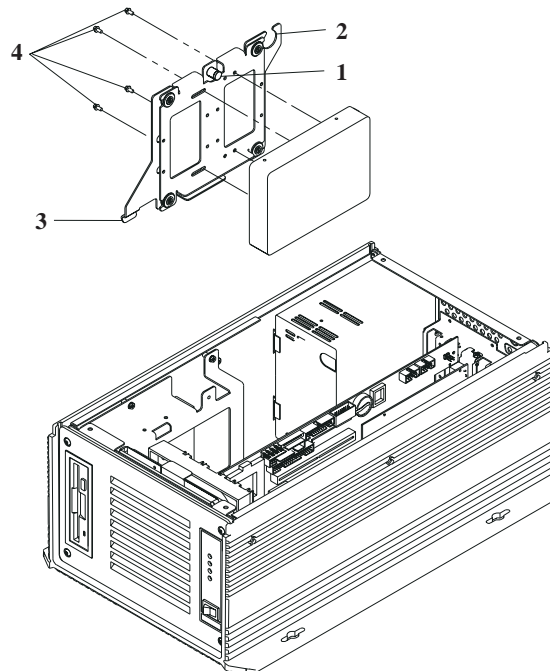
To install an internal hard drive, do the following.

1. Loosen the four cover screws and lift off the system unit cover.
2. Read the instructions that came with the drive to determine any special instructions for:
 - Installing or changing drive installation hardware
 - Setting jumpers or switches
 - Removing or installing a terminator
 - Setting a unique drive ID, for SCSI (small computer system interface) drives only.

Note: When you update your configuration information, as explained in "Using the Configuration/Setup Utility Program" on page 4-6, ensure that the hard disk drive you installed is included as a startup device under **Start Options** in the Configuration/Setup Utility screen; otherwise, you will not be able to boot your system unit from your hard disk.

In addition, if you find your hard disk drive is not capable of running in High Performance mode (the default mode selection for the primary and secondary IDE controllers), use the same screen to switch to Compatible mode.

3. Using the illustration, loosen the captive screw.



4. Rotate the plate to the side.
5. Lift the hard drive shock mount assembly out of the unit.
6. If a hard drive is already installed, disconnect the signal and power cables.

7. Four screws hold the hard drive to the shock mount assembly. These screws are accessible without disassembling the shock mount assembly. Use the screws supplied with the drive to mount the hard drive to the shock mount assembly, with the cables facing the rear of the unit.
8. Connect the power and signal cables to the new drive. (Cable connectors are keyed and connect only one way.)
9. Connect the 4-wire power supply cable, if required, to the drive.
10. Insert the tabs at the bottom of the shock mount assembly into the holes in the diskette bracket, and rotate the shock mount assembly into place.
11. Tighten the captive screw.
12. Reinstall the cover.
13. Record the type of drive you just installed in Appendix A, "System Records."

