9457

Industrial PC/AT™ Computer System

P/N 110355-001B

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Part Number 110355-001B

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United States FCC Part 15, Subpart B, Class A EMI Compliance Statement

Note: This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case, the user will be required to correct the interference at his own expense.

For European Users - WARNING

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Installation: Electromagnetic Compatibility Warning

This monitor has been tested to EN 61000-4-8 for immunity to 50 Hz, 3 A/m magnetic fields. Magnetic fields of this magnitude have the potential to create slight "jitter" on the display. This jitter is the result of the magnetic field affecting the electron beam, which is inherent to CRT technology and so cannot be reduced through electrical design. In order to minimize the potential for this effect, do not install the monitor near devices which can be expected to create significant magnetic fields. Examples are devices with inductive coils such as alarm bells, speakers, relays, transformers, motors, or conductors which are expected to conduct high levels of current. If screen jitter occurs and is due to 60 Hz AC power, then setting the monitor vertical refresh rate to 60 Hz may correct the problem. Otherwise, set the vertical refresh rate to the highest possible frequency.

The connection of non-shielded equipment interface cables to this equipment will invalidate FCC EMI and European Union EMC compliance and may result in electromagnetic interference and/or susceptibility levels which are in violation of regulations which apply to the legal operation of this device. It is the responsibility of the system integrator and/or user to apply the following directions which relate to installation and configuration:

1. All interface cables must include shielded cables. Braid/foil type shields are recommended. Communication cable connectors must be metal, ideally zinc die-cast backshell types, and provide 360° protection about the interface wires. The cable shield braid must be terminated directly to the metal connector shell; ground drain wires alone are not adequate.
2. Protective measures for power and interface cables as described within this manual must be applied. Do not leave cables connected to unused interfaces or disconnected at one end. Changes or modifications to this device not expressly approved by the manufacturer could void the user's legal authority to operate the equipment.

Chapter 1 – Introduction

Product Overview

The 9457 Industrial Computer System puts the power and versatility of an IBM PC/AT-compatible computer in a package that is ideal for the factory floor and other harsh environments. The Xycom 9457 Industrial PC/AT Computer System features an open-architecture to meet a wide variety of applications where both a powerful PC and durable industrial enclosure are required. The system integrates a computer card cage, mass storage, display, keypads, and power supply in a truly industrial form factor.

The 9457 system includes a seven-slot passive backplane, a SVGA monitor, hard and floppy disk drive facilities, and data entry and function keypads. The front panel is sealed to NEMA 4/4X/12 standards, and the CRT is protected with an impact-resistant shield. The open-architecture design accepts any IBM PC, XT, AT or PCI-compatible cards.

The system is shipped with a Pentium® processor-equipped CPU board installed, the specific configuration of which is determined when the system is ordered. The processor board combines all the functions of a complete IBM PC/AT compatible computer on a single, industrially-hardened circuit board.

A complete 9457 computer system consists of two components: a computer module and a monitor module. This modular design allows easy access to the boards, switches, power supply and disk drives mounted in the computer module without removing the monitor module. Once mounted, the computer module is easily removed by loosening two thumb screws and sliding it out from under the monitor module.

The computer module provides the following standard features:

- A passive backplane featuring four ISA and two PCI slots for user expansion.
- CPU card featuring high-speed Pentium processor technology
- High-capacity IDE hard disk drive
- 3.5-inch, 1.44 Mbyte floppy drive
- MS-DOS installed on the hard disk
- 200-watt power supply
- IBM PC/AT/XT compatibility
- Parallel printer port
- Two RS-232C serial ports
- Integrated PCI video support

- One user-configurable rear-accessible 5.25" drive bay (used by CD-ROM drive option if purchased)
- One user-configurable front-accessible 3.5" drive bay

The monitor module provides the following standard features:

- 17" diagonal SVGA CRT with .28 mm dot pitch
- Variable scan frequencies in the following ranges:
  - 45 Hz to 125 Hz vertical scan frequency
  - 15 KHz to 125 KHz horizontal scan frequency
- 1280 × 1024 maximum resolution (at 60 Hz), non-interlaced
- Digitally-controlled “On-Screen Display” monitor adjustments
- NEMA 4/4X/12 sealed front panel
- Front- and rear-mounted PS/2-compatible keyboard connectors
- Hard drive and serial port activity, power, fault and maintenance LEDs

The monitor module is available in a configuration featuring sealed keypads and a mouse. This model also includes

- 30-position sealed function keypad with full alpha capability
- 28-position sealed numeric entry and cursor control keypad
- Alpha lock indicator LED
- Integrated mouse

A configuration featuring an analog touch screen is available, without keypads or an integrated mouse.

Optional items available for use with the 9457 include

- Touch screen (includes Windows 3.1 and Window 95 drivers)
- Windows® 95 or Windows NT™ operating systems
- Larger hard drives
- Solid state (Flash) drives
- CD-ROM drive
- 4100-KB2 External full-stroke keyboard*
- 8000-KB5 Panel-mount 104-key keyboard*
- 8000-KB7 Stand-alone 104-key QWERTY NEMA 4 sealed keyboard*
- 4100-WIN Microsoft Windows®
- 9457-RMK Remote mounting kit
- 9457-FFK Front-mount floppy drive kit
- 9457-RF 19" Rack filler panel

- 9457-RFC 19" Rack filler panel with cutout for front-mounted floppy drive.

**These peripheral devices are not CE compliant.*

About this Manual

This manual describes the 9457 Industrial PC/AT computer system. As the 9457 supports a variety of processor and peripheral options, refer to the documentation that accompanied the particular processor board or peripheral for information specific to that component.

Unpacking the System

The 9457 is shipped in two cartons. One contains the computer module, and the other the monitor. As you remove each from its shipping carton, verify that you have the parts listed below. It is a good idea to save the boxes and inner wrapping in case you need to reship the units.

The 9457 computer module carton contains

- 9457 computer module
- Documentation kit, which includes
  - Power cable
  - Diagnostic software disk
  - Processor card manual
  - Display drivers disk
  - 9457 user manual
  - Business reply card

If you ordered operating system software, you will receive operating system disks and manuals.

The monitor module carton should contain

- 9457 monitor module
- 3-foot (914.4 mm) monitor power cable
- 18-inch (457.2 mm) video cable
- 24-inch (609.6 mm) Host/LED cable
- 2 steel half-clamps
- 14 - #10-32 nuts
- 1 - #6-32 screw

If you ordered the system with a touch screen installed, you will receive

- Touch screen driver disk and manual

Note

Windows NT and OS/2 drivers must be ordered separately

- 18-inch (457.2 mm) touch screen (serial) cable

If you ordered the system with a built-in mouse, you will receive

- Mouse driver disk and manual
- 18-inch (457.2 mm) mouse (serial) cable

If you ordered the system with a CD-ROM installed, you will receive a CD-ROM driver disk.

System Components

Computer Module

Front

Figure Chapter 1 -1 illustrates the features on the front of the 9457 computer module.

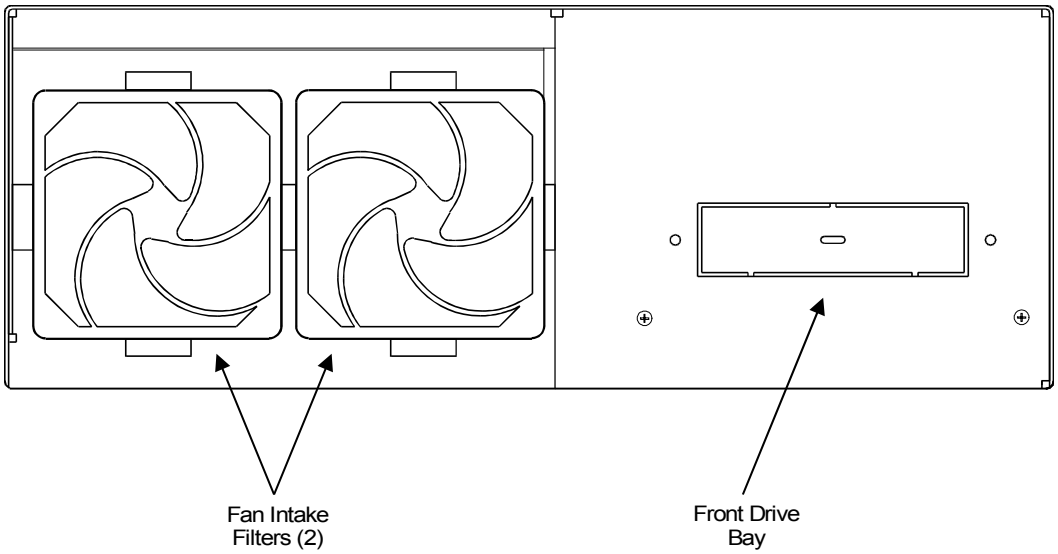

Figure Chapter 1 -1. 9457 Computer Module Front Components

Fan Intake Filters These replaceable filters separate particulate contaminants from the cooling air drawn into the 9457.

Front Drive Bay This bay may hold a single 3.5" externally-accessible mass storage device, such as a floppy drive or tape back-up unit. To install a device in this bay, you must install the 9457-FFK Front Floppy Kit.

Rear

Figure Chapter 1 -2 illustrates the features on the rear of the 9457 computer module.

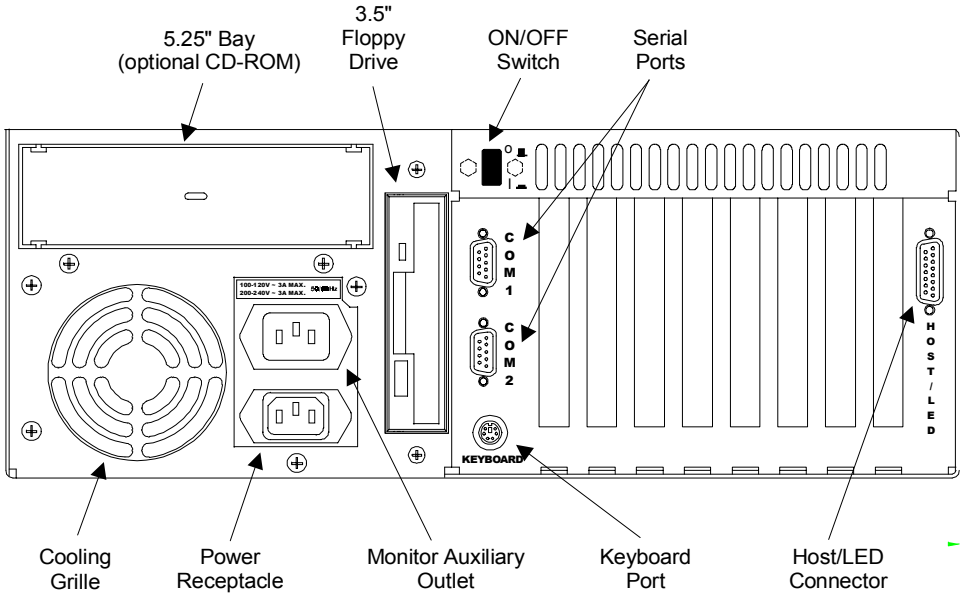

Figure Chapter 1 -2. 9457 Computer Module Rear Components

ON/OFF Switch This switch should be positioned to OFF (O) until the system is properly configured and connected to a 115 VAC or 230 VAC power source.

Cooling Grille Unobstructed airflow is essential to proper ventilation and cooling of the 9457. Do not obstruct this outlet.

Power Receptacle The plug and cord must be securely positioned before turning power ON.

Monitor Auxiliary Outlet This switched outlet may only be used to power the 9457 monitor module or a monitor or other device that draws less than 3.0 A peak current.

Serial Ports The serial port connectors are a pair of male DB-9 connectors located above the keyboard connector. As shipped, these are configured as COM1 and COM2, in the manner labeled on the back panel.

Keyboard Port This six-pin mini-DIN connector allows a PS/2-compatible keyboard to be directly connected to the 9457 computer module.

Use of this port is not recommended. If an external keyboard is desired, use the External Keyboard port *or* the Keyboard In port on the Monitor Module.

Note

Do not connect a keyboard to the keyboard port on the back of the 9457 computer module if the computer module is connected to the monitor module using the Host/LED cable.

Only connect a keyboard to this port if the computer and monitor modules are *not* connected using the Host/LED cable.

Host/LED Connector Connect the 15-pin Host/LED cable from the 9457 monitor module to this socket.

Monitor Module

Front Panel

The 9457 monitor module is equipped with a NEMA 4/4X/12 sealed front panel. The panel protects the system's interior when the system is properly panel mounted. See Chapter 3 for panel-mounting instructions. Figure Chapter 1 -3 illustrates the front panel features of the 9457 monitor module.

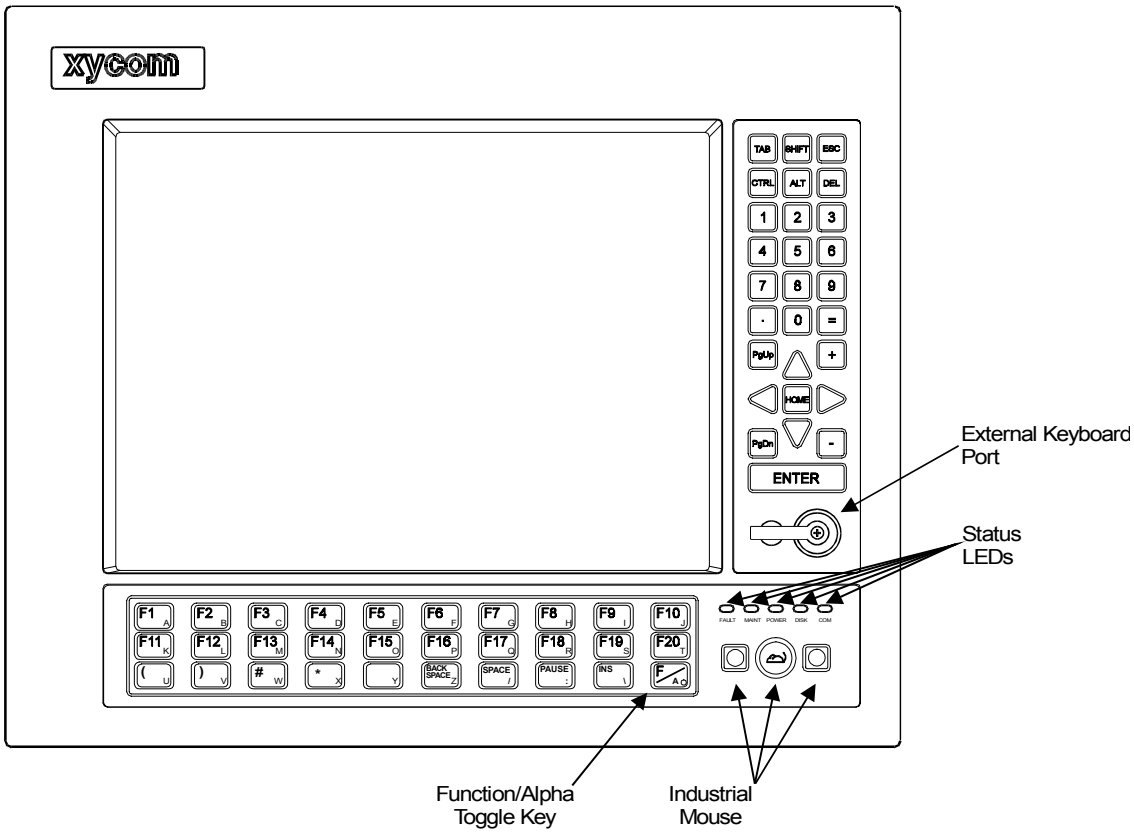

Figure Chapter 1 -3. 9457 Monitor Module Front Panel

Monitor

Protected from breakage by an impact-resistant shield, the 17" monitor supports high-resolution SVGA color modes. If the touch screen option is installed, the shield is replaced by a safety glass-backed touch panel.

Function/ Alpha Keys

These 30 keys provide the user with an easy means of entering text data, and easy access to familiar PC routines. These keys are located directly below the monitor.

On models ordered without keypads, this panel contains only the system status LEDs.

Data Entry Keypad

This 28-key numeric keypad includes 15 data entry keys; the up, down, left, and right arrows; and numbers 0-9.

On models ordered without keypads, this panel is blank.

External Keyboard Port

This six-pin mini-DIN connector allows you to connect a PS/2-compatible keyboard to the 9457 monitor module. For this feature to function, the Host/LED cable must be connected between the port on the back of the 9457 monitor module and the Host/LED port on the back of the 9457 computer module.

Caution

When not using a keyboard connected to the front keyboard port on the 9457 monitor module, *always* keep the keyboard port capped using the attached plug. Leaving the keyboard port uncapped defeats the NEMA-compliant seal feature incorporated into the design of the 9457 monitor module.

Left Mouse Key This key serves the same function as the left button on a conventional mouse.

Mouse Dome This dome is used to move the mouse pointer around the screen. Press the edge of the dome that corresponds to the direction in which you wish to move the pointer.

Right Mouse Key This key serves the same function as the right button on a conventional mouse.

Status LEDs Indicate the state of the computer, as described in Chapter 4, *System Status LEDs*.

Rear

Figure Chapter 1 -4 illustrates the rear components of the 9457 monitor module.

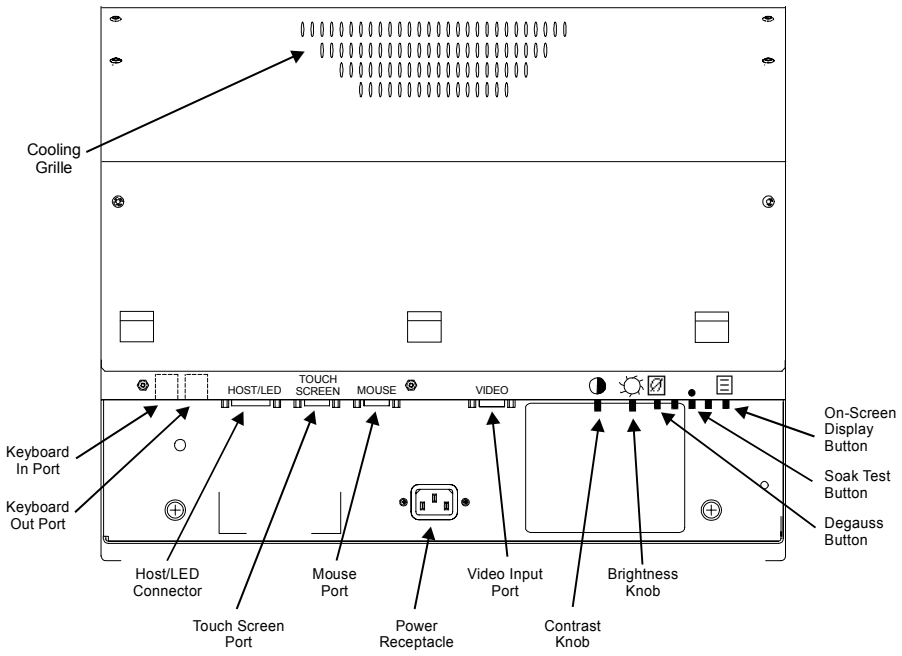

Figure Chapter 1 -4. 9457 Monitor Module Rear Components

Cooling Grille Unobstructed airflow is essential to proper ventilation and cooling of the 9457. Do not obstruct this outlet.

Keyboard In Port This port provides a location to connect a standard PS/2-compatible keyboard to the back of the 9457 monitor module.

Keyboard Out Port This six-pin mini-DIN connector allows you to connect a PS/2-compatible keyboard cable between the monitor module and a computer module.

Use of this port is not recommended, since in normal operation, keyboard signals are transmitted through the Host/LED connector.

Note

When connecting the monitor module to the computer module, use *either* the supplied Host/LED cable *or* a cable between the monitor module's Keyboard Out port and the computer module's Keyboard port, *but not both*. Using both cables will cause the keyboard to operate improperly.

Host/LED Connector Connect the 15-pin Host/LED cable from the 9457 computer module to this socket. This connector provides the power, keyboard, and LED signals to the monitor module's front panel.

Touch Screen Port If the 9457 monitor module comes equipped with a touch screen, you must connect a cable between this connector and either the COM1 or COM2 connector on the 9457 computer module.

Mouse Port If the 9457 monitor module comes equipped with a built-in mouse, you must connect a cable between this connector and either the COM1 or COM2 connector on the 9457 computer module.

Power Receptacle The plug and cord must be securely positioned before turning power ON.

Video Input Port This 15-pin high-density female connector is used to connect the 9457 monitor module to the video output of the 9457 computer module.

Video Controls

The video controls consist of two knobs and five buttons. These are, from left to right:

Contrast knob – Turning this knob adjusts the contrast on the display.

Brightness knob – Turning this knob adjusts the brightness of images on the display.

Degauss button – Used to manually degauss the monitor. Use of this control is described in Chapter 4.

Soak Test button – This button is not used during normal operation.

On-Screen Display mode button – This button is used to select On-Screen Display mode to adjust the vertical size, horizontal position and vertical position of the image on the display. This mode is described in the *On-Screen Display Mode Options* section in Chapter 4.

Note

The pinouts for connectors and ports are shown in Appendix B.

Quick Start-Up

Note

This section gets your 9457 up and running without explaining the capabilities and options of the system. The appendices provide technical specifications, diagrams, and other information required for system operation.

Chapter 3 contains important safety information describing requirements for the safe operation of this product. Xycom strongly recommends that you read Chapter 3 before mounting the 9457 in a panel, or otherwise placing it into regular service.

To prepare the system for use, perform the following steps.

Warning

Turn off the power to the unit and unplug the power cord before making any adjustments to the inside or outside of the computer.

1. Install any additional cards you wish to use in the computer module, then reassemble the unit.

2. Connect the video cable from the 15-pin video input connector on the monitor module to the 15-pin video output connector on one of the processor board ORBs on the computer module.
3. Connect the Host/LED 15-pin cable from the Host/LED connector on the monitor module to the Host/LED connector on the computer module.
4. If you wish to use an external keyboard, connect it to the port on either the front or rear of the monitor module.

Note

If you connect a keyboard to the rear keyboard connector on the computer module, ***Do not*** connect the Host/LED cable between the monitor module and the computer module. Doing so will cause improper keyboard operation.

5. If the monitor module is equipped with a touch screen, connect a nine-pin cable from the touch screen port on the monitor module to the COM1 port on the computer module.

Note

By default, the driver software for the touch screen is set to communicate with the touch screen through serial port COM1. If you connect the touch screen to any other serial port, you will need to set the driver software to use that port. Refer to the instructions accompanying the driver disk for more details.

6. If the monitor module is equipped with a mouse, connect a nine-pin cable from the mouse port on the monitor module to the COM2 port on the computer module.
7. Attach any other optional equipment following the instructions in Chapter 3.
8. Connect the monitor module power cord from the power receptacle on the monitor to the monitor auxiliary outlet on the computer module.
9. Connect the computer module power cord from the power receptacle to a properly grounded 115/230 VAC, 50/60 Hz outlet. Attach the power cord to the lower power receptacle.
10. Turn on power to the unit by pressing the On/Off switch in.
11. Set the contrast and brightness controls on the back panel of the monitor module to the desired levels.
12. Install driver and application software via drive A:.

Regulatory Compliance

The Xycom 9457 Computer is UL and CUL recognized and has been investigated for compliance with the following standards:

Agency Approvals

- UL — UL 1950 (Information Technology Equipment)
- CUL — CSA 22.2, #950 (Information Technology Equipment)

Regulatory Compliance

- EU "CE Marking"
  - EMI — EN 55022, Class A
  - Immunity — EN 50082-2
  - Safety — EN 60950
- FCC — 47 CFR, Part 15, Class A
- Industry Canada — ICES-003, Class A

The manufacturing facility Xycom, Inc. maintains at Saline, Michigan is ISO 9001 Quality System certified, and is accredited by ANSI-RAB and the RvA.

Chapter 2 – Testing

Diagnostic tests are provided as a tool to verify the operation of the 9457 system hardware functions. If any of these tests fail, either you do not have the correct default setting or there is a failure. Check the default settings and run the tests again. If there is a failure, contact Xycom's Product Repair Department.

> **Note**
>
> Unexpected failures may occur if Xycom diagnostics are run with device drivers or memory resident programs installed on the system. Remove these before running any diagnostic tests.
>
> Also, the diagnostic disk does not provide an option to test a CD-ROM drive.

Checking System Setup

Make sure the Setup Menu is configured properly (factory-set configuration). To enter the Setup Menu, press F2, and then press F2 to display the Main Menu. Make the necessary changes by following the on-screen directions. General instructions for navigating through the Setup screens are described below:

- ←↑↓→ move the cursor left, up, down, and right. Press ENTER to validate your selection.
- ESC exits the menu. You are prompted to save changes.
- F5 selects the previous or smaller value.
- F6 selects the next or higher value.
- F9 automatically configures the system with the default values. These values are defined by the system configuration and the values are set in the Setup Menu.
- F10 loads previous values.

Initiating the Tests

To test your system, you need the following equipment.

- Xycom System Test Disk—3.5-inch, DS/HD disk (bootable), part number 99290-001
- IBM PC/AT-compatible keyboard (Xycom P/N 91971-001 or equivalent)
- Centronics-compatible printer cable

- Parallel printer (Centronics-style interface)
- Two serial loopback test connectors (refer to Figure 2-1 for pinouts)
- Scratch disk—formatted 3.5 -inch, DS/HD (1.44 Mbyte)

Preparing for the Tests

Perform the steps below before starting the system test:

1. Place the CPU board jumpers and switches to the factory-set positions. Refer to the processor manual for jumper and switch settings. The numbers in parenthesis refer to the pins onto which to install the jumper, (e.g. J1 (3-4) indicates the jumper is on pins 3 and 4 of J1).
2. Plug the female end of the AC power cable into the rear of the computer module and the male end into a properly grounded outlet.
3. Connect the video cable to the 15-pin connectors on the monitor module and on the processor card in the computer module.
4. Connect the Host/LED 15-pin cable between the Host/LED ports on monitor and computer modules.
5. Attach the monitor power cord from the monitor to the power receptacle on the back of the computer module.
6. Connect the serial loopback connector(s) and the printer cable to the appropriate connectors and connect a PC/AT keyboard to a keyboard connector on the monitor module. Figure Chapter 2 -1 illustrates the wiring necessary for the loopback connection.

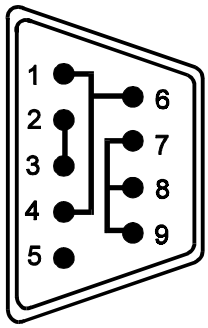

Figure Chapter 2 -1. Serial Loopback Connections

Running the Tests

To run the tests, insert the diagnostics disk into drive A. Turn on the computer and the diagnostics program will boot up. Figure Chapter 2 -2 shows the Main Menu as it is displayed on the screen.

Diagnostic Tests Sequence/Selection Menu (Rel. 1.0)

0)	WILL pause on an error	4)	Auto-select tests
1)	SINGLE PASS test mode	5)	Deselect all tests
2)	Save setup to file	6)	Quit and exit to DOS
3)	Extract setup from a file	7)	Return to Previous screen

A)	RAM Test	K)	Video Interface Test
B)	Video RAM Test	L)	Speaker Port Test
C)	Extended RAM Test	M)	LPT1: Printer Port Test
D)	Real Time Clock Test	N)	LPT2: Printer Port Test
E)	COM1 Serial Port Test	O)	C: Hard Drive Interface Test
F)	COM2 Serial Port Test	P)	D: Hard Drive Interface Test
G)	COM3 Serial Port Test	Q)	A: Floppy Drive Interface Test
H)	COM4 Serial Port Test	R)	B: Floppy Drive Interface Test
I)	Math Coprocessor Test	S)	Keyboard, Keypad Tests
J)	Video Adjustments Test	/	= Test Selected

[ENTER] = START TESTING
Use the letters to move the cursor and select/deselect, or use the arrow keys to move, then use the [SPACE] key to select/deselect a test or function:

Figure Chapter 2 -2. Main Menu

You can select tests individually. However, we recommend that you use Auto-select (4) which will select all tests appropriate to your configuration.

Note

Please read the files DIAG.TXT and CMOS.TXT on the diagnostics disk for detailed information on these tests. Refer to the CMOS.TXT file for BIOS setup information.

Note

If the Solid State (Flash) drive option is used, avoid repeatedly running any hard drive diagnostic utility on it. The Flash drive has a limited number of writes to each logical sector over its life span. Repeated writes caused by a diagnostic utility will prematurely shorten the life of the drive.

Chapter 3 – Installation

This chapter discusses how to install options into the 9457 and considerations to take into account when mounting the monitor and computer modules.

System Components

The figures on this and the next several pages show the internal and external components on the front and rear of the modules to help you locate features relevant to installing these modules.

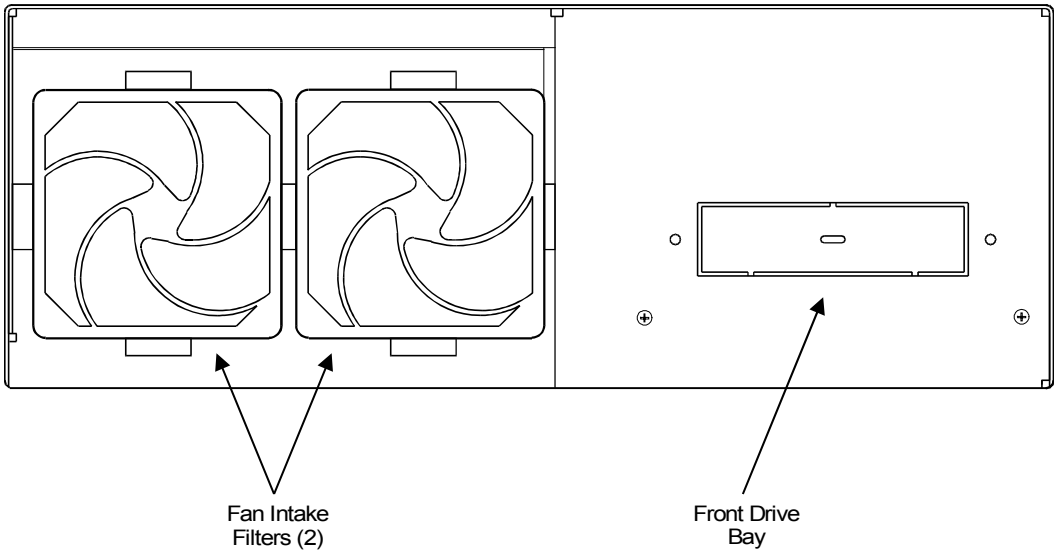

Figure Chapter 3 -1. 9457 Computer Module Front Components

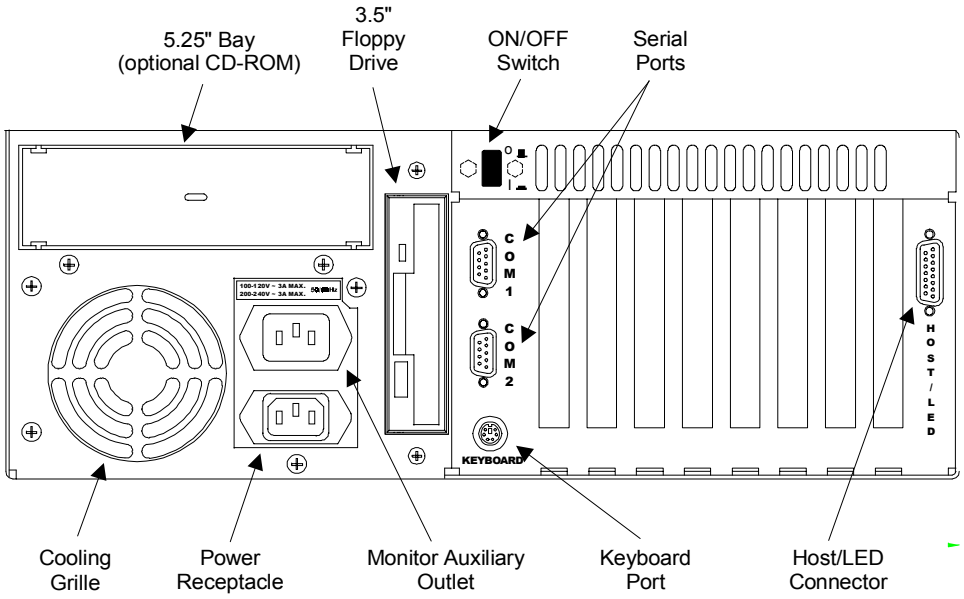

Figure Chapter 3 -2. 9457 Computer Module Rear Components

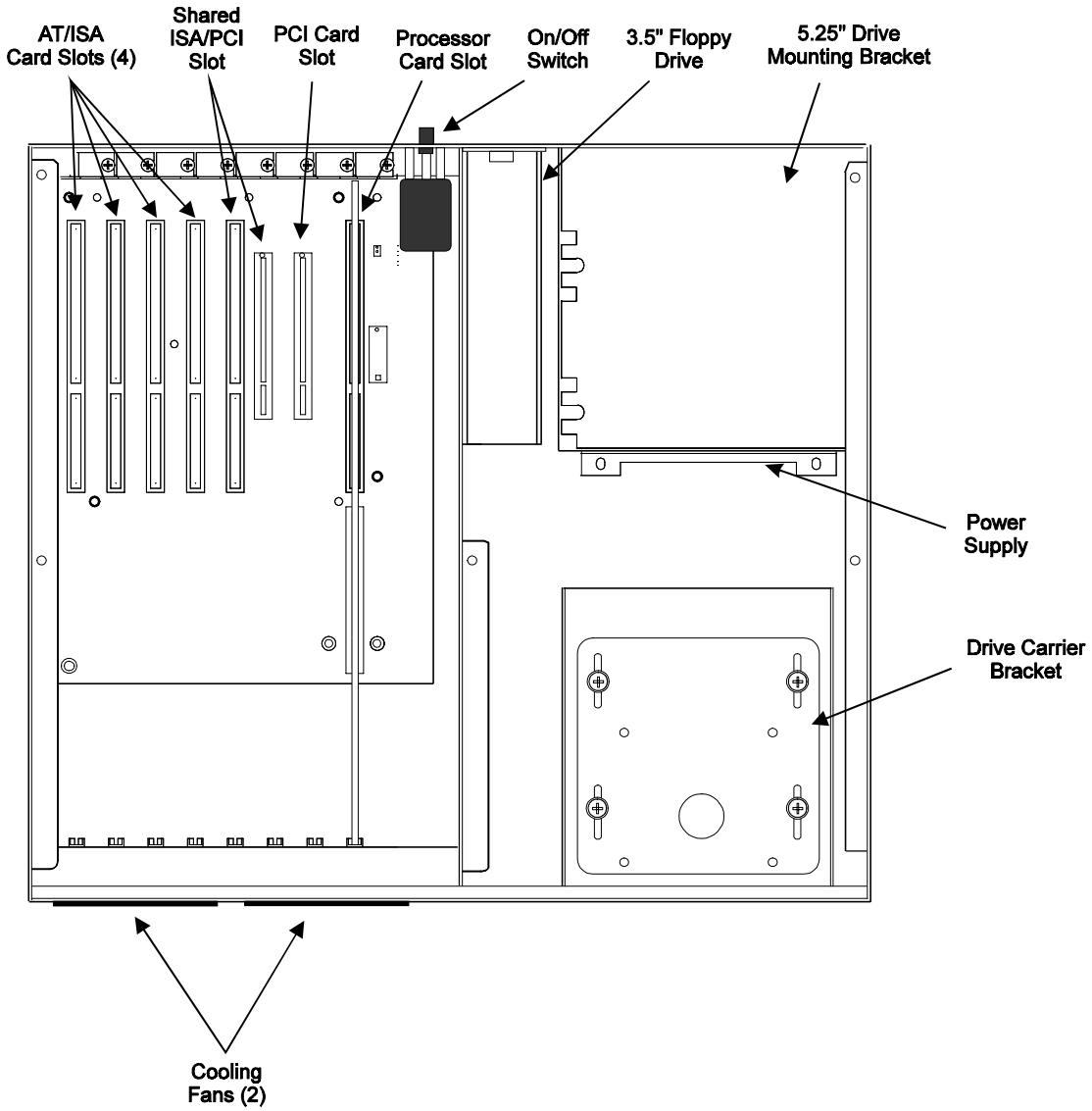

Figure Chapter 3 -3. Computer Module Internal Components

Preparing the System for Use

To prepare the system for use, perform the steps listed below. If you purchased any options, install them according to the instructions in the next two sections.

1. Make certain that the power switch on the computer module is turned OFF.
2. Connect the video cable between the 15-pin Video In connector on the back of the monitor module and the video connector on the processor card in the computer module.
3. Connect the Host/LED 15-pin cable between the Host/LED ports on the monitor module and the computer module.
4. Attach any other optional equipment following the instructions in *Installing External Options*, later in this chapter.
5. Attach the monitor power cord from the monitor to the power receptacle on the back of the computer module.
6. Attach the power cord from the power receptacle on the computer module to a properly grounded 115/230 VAC, 50/60 Hz outlet.
7. Turn on power to the 9457 by pressing in the On/Off switch on the back of the computer module.
8. Set the contrast and brightness controls on the back panel to the desired levels.
9. Install application software via drive A: located behind the access door on the front panel.

Installing Internal Hardware Options

Caution

The computer module ***must be turned off*** before installing internal hardware.

Internal hardware options may be installed through the top cover of the computer module. If the computer module is mounted to the monitor module, the computer module must be removed from the monitor module, as described in *Removing the Computer Module*, later in this chapter.

Installation and Removal of the CPU Board

This section describes the steps required to install and remove the CPU board. Some CPU boards may require additional steps, or specific configuration parameters. Consult the manual that accompanied your CPU board to determine whether such additional steps are necessary.

Warning

Disconnect all external power supplies before you open and service any piece of equipment. Also, always use static protection when handling CPU boards.

Caution

Verify the positions of all jumpers and switches on the CPU board before installation. Check configurations with the lists and diagrams in the manual that accompanies the CPU board.

Note

Before connecting a ribbon cable to latched connectors, make sure that the latches are pulled down near the surface of the board. When the cable connection is made, the latches snap up. When removing a cable connector, move the latches down near the board. This nudges the connector up so you can remove it easily.

Installing the CPU Board

1. Disconnect all power supplies from both the monitor and computer modules.
2. If the computer module is mounted to the monitor module, remove the computer module, as described in *Removing the Computer Module*, later in this chapter.
3. Remove the five screws that secure the top cover to the computer module. Save the screws in a location where you can locate them later.
4. Verify all jumper settings.
5. Hold cables FDD, HDD-I, COM1, COM2, LED and KEYBOARD toward the side of the CPU module.
6. Place the CPU card into slot 0 in the passive backplane. Push the card down 3/4 of the way.
7. Attach flat cables FDD, HDD-I, COM1, COM2, LED, and KEYBOARD to the respective connectors on the CPU board. Push down on the card evenly until it firmly seats into the card edge connector.
8. Secure the ORB with one screw at the top.
9. Close the top cover and re-install and tighten the screws. If the computer module was mounted to the monitor module, refer to *Replacing the Computer Module*, later in this chapter, for re-installation instructions.
10. Connect power sources and external cables previously disconnected.

The 9457 is now ready for operation.

Removing the CPU Board

1. Disconnect all power supplies from both the monitor and computer modules.
2. If the computer module is mounted to the monitor module, remove the computer module, as described in *Removing the Computer Module*, later in this chapter.
3. Remove and save the CPU board ORB screw.
4. Unseat the CPU board from the backplane. Pull the board upward just far enough to unlatch and remove connectors, about 1" (2.5 cm).
5. Remove the cable connectors FDD, HDD-I, COM1, COM2, LED, and KEYBOARD.
6. Once the cables are disconnected, pull the CPU board out of the computer module.

Installing PC Boards

Check that the memory and I/O configuration of the board you want to install does not conflict with the CPU and I/O memory maps, as found in your CPU board manual.

1. Disconnect all power supplies from both the monitor and computer modules.
2. If the computer module is mounted to the monitor module, remove the computer module, as described in *Removing The Computer Module*, later in this chapter.
3. Remove the screws from the top cover and open the case.
4. If present, remove the blank ORB from the slot that the PC board will occupy. Save the screw.
5. Slide the PC board into an open slot in the backplane. Push down on the board evenly until it firmly seats into the card cage connectors.

> **Note**
>
> ***Do not*** force the boards or apply uneven pressure.

6. Secure the board by replacing and tightening the screw that was removed in Step 4.
7. Replace the top cover and replace and tighten the screws that hold it in place. If the computer module was mounted to the monitor module, refer to *Replacing the Computer Module*, later in this chapter, for re-installation instructions.

Installing the Front Floppy Kit

As shipped, the computer module contains a 3.5" floppy drive mounted for access from the rear of the unit (see Figure Chapter 3 -2). If you wish to relocate the floppy drive to the front of the computer module, you must install the 9457-FFK Front Floppy Kit.

This kit includes the following components:

- Rear drive bay cover plate
- Floppy drive access door and mounting hardware for use in panel mounting installations.

To install the floppy drive on the front of the computer module,

1. Disconnect all power supplies from both the monitor and computer modules.
2. If the computer module is mounted to the monitor module, remove the computer module, as described in *Removing the Computer Module*, later in this chapter.
3. Remove the five screws that secure the top cover to the case, and open the case.
4. Use a screwdriver to pry out the knockout panel in front of the drive bay. Remove and discard the knockout panel.

Caution

To avoid injury, be sure to completely remove the knockout tabs from the module chassis and dress the opening with a file to completely remove any burrs. Take care to ensure that metal filings do not contaminate the interior of the 9457 case.

5. Locate the floppy drive, at the rear of the case, then disconnect its power and data cables.
6. Remove the two screws on the module's rear wall that hold the drive bracket to the chassis, then slide the drive and bracket forward and up to remove it from the module.
7. Remove the four screws that hold the drive to the mounting bracket. Set the bracket aside.
8. Remove the four screws that hold the front drive mounting plate to the front drive mounting bracket, and remove the front drive mounting plate from the case.
9. Mount the floppy drive to the front drive mounting plate by installing the four screws you removed from the drive mounting bracket in Step 7 through the front drive mounting plate into the mounting holes on the bottom of the floppy drive.

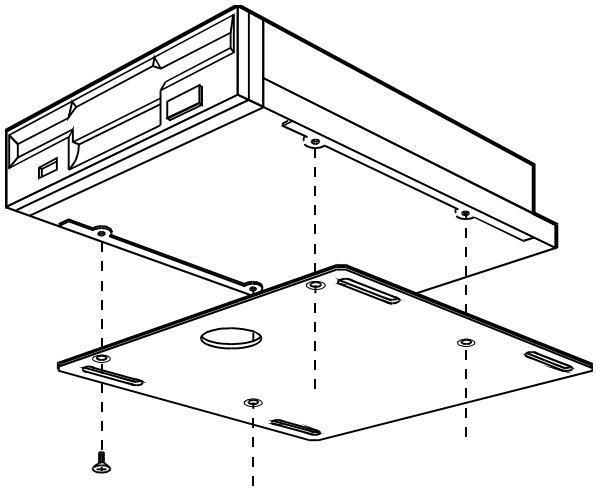

Figure Chapter 3 -4. Mounting the Floppy Drive to the Front Drive Mounting Plate

10. Install the assembled drive and mounting plate by placing the assembly back inside the case so that the mounting slots in the mounting plate align with the screw holes in the front drive mounting bracket.
11. Position the front drive mounting plate so that the front of the drive protrudes from the front of the case as far as you wish. If you will be using the 9457-RFC Rack Filler with Cutout, the face of the floppy drive must extend 0.5" (13 mm) from the front of the computer module.
12. Tighten the four screws that hold the mounting plate in place.
13. Reconnect the power and data cables to the drive.
14. Remount the drive bracket and install the rear drive bay cover plate included in the Front Floppy Kit. Install the cover plate from the inside of the case, securing it in place between the drive bracket and the case, using the screws removed in Step 6.
15. Replace the top cover and re-install the screws that secure the top cover to the case.
16. Re-install the computer module under the monitor module, if necessary.

Installing the Floppy Drive Access Door

The floppy drive access door is provided for installations using the 9457-RFC Rack Filler with Cutout, or panel mount installations that provide a cutout for the front-mounted floppy drive. Mount the floppy drive access door to the rack filler plate or the panel, using the four mounting nuts, as shown in Figure Chapter 3 -5. Torque the nuts to 35 in/lb (3.95 Nm).

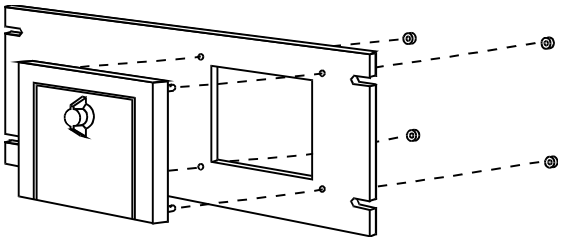

Figure Chapter 3 -5. Mounting the Front Floppy Drive Access Door to the 9457-RFC Rack Filler with Cut-out

Installing a Device in the 5.25" Drive Bay

Caution

Use of controls adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

The 5.25" drive bay located on the rear of the computer module may be used to hold an externally-accessible 5.25" mass storage device. A CD-ROM drive will occupy this bay if purchased as an option on this system.

To install a device in this bay,

1. Disconnect all power supplies from both the monitor and computer modules.
2. If the computer module is mounted to the monitor module, remove the computer module, as described in *Removing the Computer Module*, later in this chapter.
3. Remove the screws from the top cover and open the case.
4. Remove the three screws that hold in the 5.25" drive mounting plate. Two are located immediately below the 5.25" drive bay on the rear of the module, and the other is on the side.

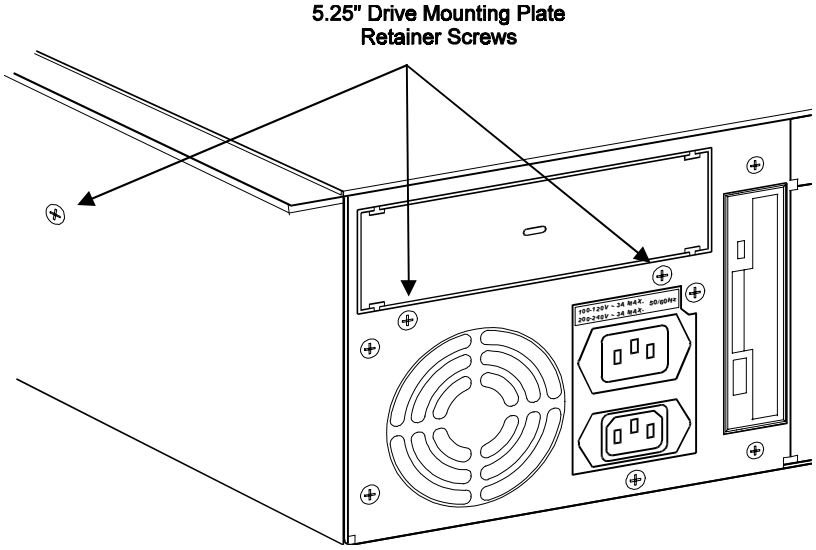

Figure Chapter 3 -6. 5.25" Drive Mounting Plate Retainer Screw Locations

5. Remove the 5.25" drive mounting plate from its position on top of the power supply.
6. Use a screwdriver to pry out the 5.25" drive bay's knockout panel out. Remove and discard the knockout panel.

Caution

To avoid injury, be sure to completely remove the knockout tabs from the module chassis and dress the opening with a file to completely remove any burrs. Take care to ensure that metal filings do not contaminate the interior of the computer module case.

7. Mount the drive to the drive mounting plate by installing four screws through the drive mounting plate into the bottom of the drive.

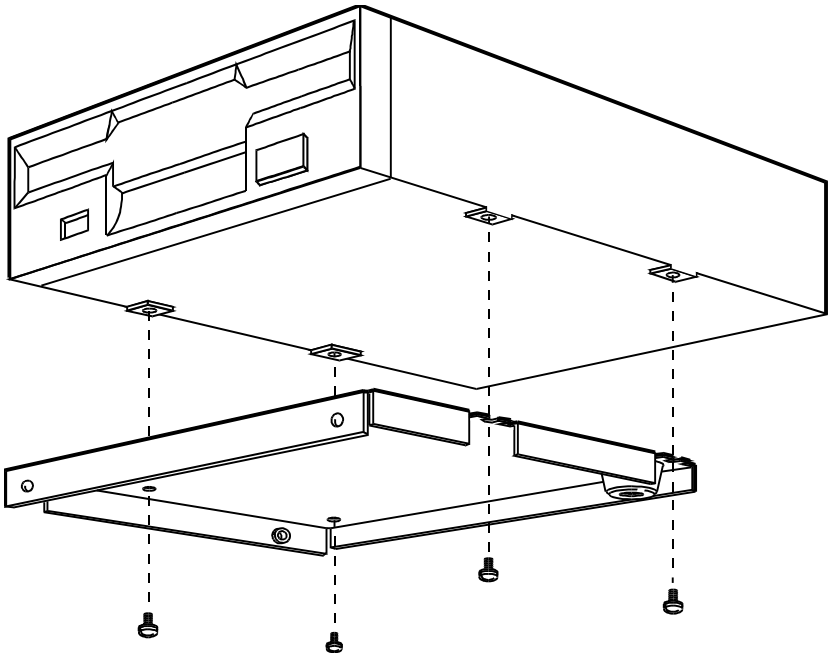

Figure Chapter 3 -7. Mounting a 5.25" Device to the 5.25" Drive Mounting Plate

8. Place the assembled drive and mounting plate into the computer so that the drive fits through the opening on the rear of the case, and the screw holes on the drive mounting plate align with the holes for the three screws removed in Step 4. Re-install the screws.
9. Install any card and internal cabling required by the new drive. The computer module's power supply provides extra power connectors which you may use, if needed.
10. Replace the top cover and re-install the screws that secure the top cover to the case.
11. Re-install the computer module under the monitor module, if necessary.
12. Install any driver software required by the new drive.

Installing External Hardware Options

This section explains how to install external hardware options available with the 9457.

Installing the Remote Mount Kit

The 9457-RMK remote mount kit provides the parts necessary to mount the computer module up to six feet away from the monitor module. This kit contains the following parts:

- Two remote mounting brackets
- 10 bracket mounting screws
- 72-inch (1.83 m) video cable

- 72-inch (1.83 m) monitor power cable
- Two 72-inch (1.83 m) serial cables, for the touch screen and built-in mouse
- 72-inch (1.83 m) Host/LED cable

The remote mounting brackets are designed to be used to mount the computer module to a shelf or other flat surface, from above or below. They are used to replace the plastic-covered brackets used to mate the computer module to the monitor module.

The brackets may be installed on the module in either of two positions. When installed along the bottom edge of the module, they allow the module to be mounted to the surface on which it will sit. When installed in place of the plastic-covered slide brackets along the top edges of the module, they may be used to hang the computer module on top of or underneath a shelf or cabinet.

When remote-mounting the computer module, be certain to observe the precautions described in *General Installation and Mounting Considerations*, later in this chapter.

1. Disconnect all power supplies and cables from both the monitor and computer modules.
2. If the computer module is mounted to the monitor module, remove the computer module, as described in *Removing the Computer Module*, earlier in this chapter.
3. Remove the two screws that hold each of the thumbscrew brackets to the top of the computer module, then remove the brackets.
4. If you intend to use the remote mounting brackets to replace the plastic-covered slide brackets along the top of the computer module, remove each of the five screws that hold the plastic-covered slide bracket to the side of the computer module, then remove the bracket.
5. Position the bracket from the Remote Mount Kit so that its five screw holes align with either the top or the bottom set of mounting holes on the computer module, then mount it using the screws supplied with the Remote Mounting Kit.

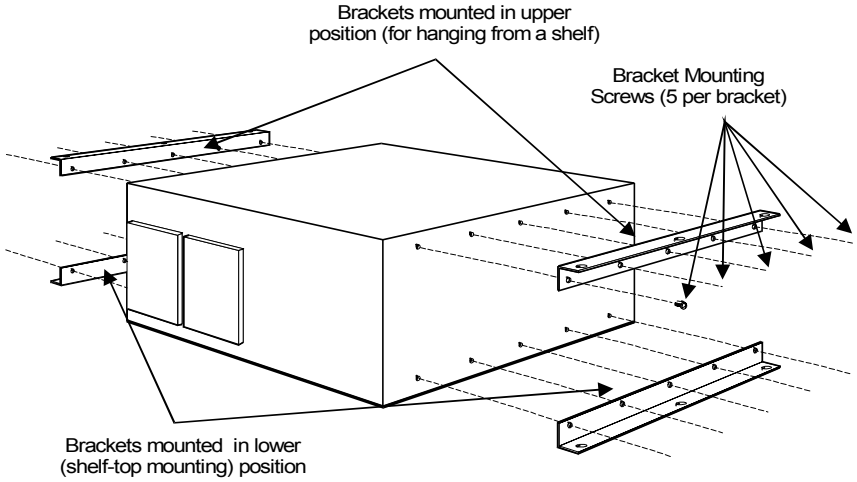

Figure Chapter 3 -8. Installing Remote Mounting Brackets

6. Turn the computer module around and repeat steps 4 and 5 to replace the bracket on the other side of the computer module.
7. Once the remote mounting brackets are installed, you are ready to mount the computer module in a suitable location of your choosing. When re-installing the cables disconnected in Step 1, use the longer cables included with the Remote Mount Kit.

> **Note**
>
> When remote-mounting the computer module, be certain that the surface to which the module is being mounted is capable of supporting the weight of the computer module, and that the module is securely fastened in such a manner as to minimize shock and vibration.

Installing Keyboard Cable Clamps

Two half-clamps are included to provide strain relief for the keyboard cables connected to the rear of the monitor. To mount these clamps, follow the steps described below.

1. Turn off power to the monitor and your computer.
2. If there is a cable connected to the Keyboard In port, place the half-clamp over that cable and align the half-clamp so that its hole is aligned with the hole immediately beneath and between the Keyboard In and Keyboard Out ports.
3. If there is a cable connected to the Keyboard Out port, place the half-clamp over that cable and align the half-clamp so that its hole is aligned with the hole immediately beneath and between the Keyboard In and Keyboard Out ports.

   If you have cables connected to both the Keyboard In and Keyboard Out ports, the half-clamps should overlap, as shown in Figure Chapter 3 -9.
4. Fasten the clamp(s) using the #6-32 screw provided.
5. Restore power to the monitor and your computer.

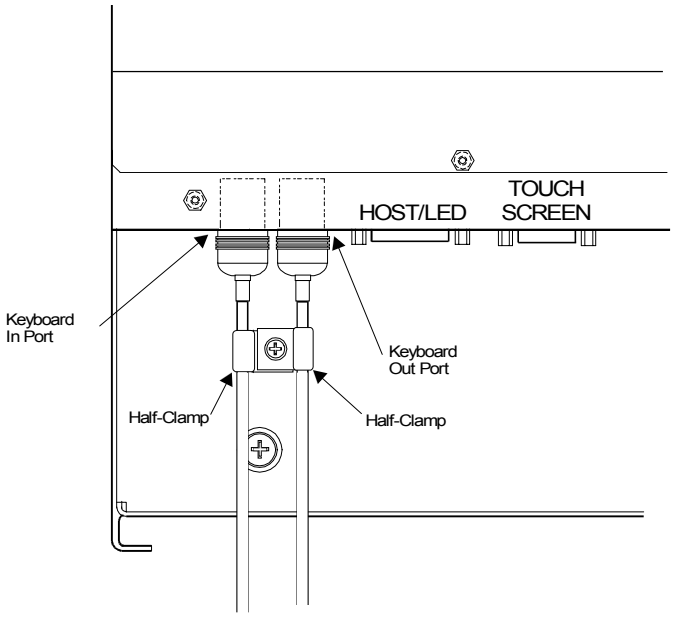

Figure Chapter 3 -9. Installing the Keyboard Cable Half-Clamp(s)

Installing Operating Systems

If you want to install a new operating system or re-install a current operating system, refer to the operating system's manual for instructions.

Note

If the Windows NT™ operating system was preloaded on your system, and you do not have a CD-ROM drive installed, you may have to purchase and install an internal CD-ROM driver or an external parallel port CD-ROM drive in order to re-install Windows NT. This is because Windows NT only ships on CD-ROM.

Installing Drivers

This section describes how to install the drivers associated with the 9457.

Video Drivers

Video drivers are found on the disk included with the documentation kit. Refer to the README file on this disk for information on installing the video drivers.

Mouse Drivers

The mouse driver software for the built-in industrial mouse will be installed on systems using Windows 95 or Windows NT. If your system uses Windows NT, OS/2, or MS-

DOS, you will have to install the mouse driver software. Refer to your mouse driver manual for installation information.

Touch Screen Drivers

If you have purchased the 9457 with the optional touch screen, the touch screen driver software will be installed on systems using Windows 95. If your system uses Windows NT, OS/2, or MS-DOS, you will have to install the touch screen driver software. Refer to your touch screen driver manual for installation information.

CD-ROM Drivers

If you ordered a CD-ROM drive as an option on your system, you will receive a CD-ROM driver disk. However, the required driver for the operating system you have selected has already been installed. If you change operating systems and need help loading the required CD-ROM driver, contact Xycom technical support at 1-800-289-9266 x450.

Miscellaneous Drivers

Refer to your operating system and peripheral manuals for information on installing drivers related to these items.

Note

If you had the Windows NT operating system preloaded on your system and do not have a CD-ROM drive installed, you may have to purchase and install an internal CD-ROM drive or an external parallel port CD-ROM drive in order to install Windows NT drivers. This is because Windows NT only ships on CD-ROM.

General Installation and Mounting Considerations

Once you have found a location for the 9457, install it in the enclosure according to the manufacturer's instructions. Consider the following points and precautions before placing the 9457 inside an enclosure:

- Select an enclosure that will allow access to the computer module for maintenance.
- Account for the module's depth as well as cabling when choosing the depth of the enclosure
- Mount the 9457 in an upright position.
- Install the unit to ensure that it does not cause a hazard from uneven mechanical loading.
- Place the 9457 at a comfortable working level.
- Consider the locations of accessories such as AC power outlets and light sources (interior lighting and windows) for installation and maintenance convenience.

- Prevent condensation by installing a thermostat-controlled heater or air conditioner, if needed.
- Avoid obstructing the air flow to allow for maximum cooling.
- Place any fans or blowers close to the heat generating devices. If using a fan, make sure that outside air is not brought inside the enclosure unless a fabric or other reliable filter is also used. This filtration prevents conductive particles or other harmful contaminants from entering the enclosure.
- Do not select a location near equipment that generates excessive electromagnetic interference (EMI) or radio frequency interface (RFI) (equipment such as high power welding machines, induction heating equipment, and large motor starters).
- Place incoming power lines (such as isolation or constant voltage transformers, local power disconnects, and surge suppressors) away from the 9457. The proper location of incoming line devices keeps power wire runs as short as possible, and minimizes electrical noise transmitted to the 9457.
- Make sure the location does not exceed the 9457's temperature specifications.
- Avoid overloading the supply circuit. The 9457 is rated at 115/230 VAC at 6.3 Amps.
- Mount the monitor unit to allow for easy access to its rear components if you anticipate making frequent adjustments to the display.

Note

The display may be affected by geomagnetic fields. Some typical effects of magnetic fields are color impurity (blotchy colors), distorted screens, etc. In some cases, purity problems may be correctable by turning off the unit for 30 minutes and reapplying power. In other cases degaussing may be required. Contact Xycom's Technical Support Department for further information at 1-800-289-9266, x 450.

System Power

It is a good idea to use isolation transformers on the incoming AC power line to the 9457. An isolation transformer is especially desirable in cases in which heavy equipment is likely to introduce noise onto the AC line. The isolation transformer can also serve as a step-down transformer to reduce the incoming line voltage to a desired level. The transformer should have a sufficient power rating (units of volt-amperes) to supply the load adequately.

Proper grounding is essential to all safe electrical installations. Refer to the relevant national, state/provincial and local electrical codes, which provide data such as the size and types of conductors, color codes and connections necessary for safe grounding of electrical components. The code specifies that a grounding path must be permanent (no solder), continuous, and able to safely conduct the ground-fault current in the system with minimal impedance. The following practices should be observed:

- Separate ground wires from power wires at the point of entry to the enclosure. To minimize the ground wire length within the enclosure, locate the ground reference point near the point of entry for the plant power supply.

- All electrical racks or chassis and machine elements should be grounded to a central ground bus, normally located near the point of entry for the plant power supply of the enclosure. Paint and other nonconductive material should be scraped away from the area where a chassis makes contact with the enclosure. In addition to the ground connection made through the mounting bolt or stud, a one-inch metal braid or size #8 AWG wire can be used to connect between each chassis and the enclosure at the mounting bolt or stud.
- The enclosure should be properly grounded to the ground bus. Make sure a good electrical connection is made at the point of contact with the enclosure.
- The machine ground should be connected to the enclosure and to earth ground.

Excessive Heat

The 9457 is designed to withstand temperatures from 0º to 50º C (32º to 122º F) and is cooled by two fans which draw a vertical column of air upward over the surface of the components. To keep the temperature within this range, the cooling air at the base of the system must not exceed 50º C. Proper spacing must also be allocated between internal components installed in the enclosure.

When the air temperature is higher than 50º C in the enclosure, use of a fan or air conditioner is required to maintain the operating temperature below the maximum rated limit.

Excessive Noise

Electrical noise can cause temporary malfunctions due to operating errors, which can result in hazardous machine operation in certain applications. Noise may be present only at certain times, may appear at widely-spread intervals, or in some cases may exist continuously.

Noise usually enters through input, output, and power supply lines and may be coupled into lines electrostatically through the capacitance between these lines and the noise signal carrier lines. This usually results from the presence of high voltage or long, closed-spaced conductors. When control lines are closely spaced with lines carrying large currents, the coupling of magnetic fields can also occur. Use shielded cables to help minimize noise. Potential noise generators include relays, solenoids, motors, and motor starters, especially when operated by hand contacts like push buttons or selector switches. In accordance with National Electric Code specifications, it is recommended that the high voltage and low voltage cabling be separated and dressed apart. In particular, the AC cables and switch wiring should not be in the same conduit with PLC communication cables.

Excessive Line Voltage

The power supply of the 9457 is built to sustain line fluctuations within ranges from 90-131 VAC or 182-264 VAC and still allow the system to function within its operating margin. As long as the incoming voltage is adequate, the power supply provides all the logic voltages necessary to support the processor, memory, and I/O.

In cases in which the installation is subject to unusual AC line variations, a constant voltage transformer can be used to prevent the system from shutting down too often. However, a first

step toward the solution of the line variations is to correct any possible feed problem in the distribution system. If this measure does not solve the problem, a constant voltage transformer must be used.

The constant voltage transformer stabilizes the input voltage to the 9457 by compensating for voltage changes at the primary in order to maintain a steady voltage at the secondary. When using a constant voltage transformer, check that the power rating is sufficient to supply the 9457.

Installing the System into a Panel

The 9457's rugged design allows it to be installed in most industrial environments. The 9457 is generally placed in a NEMA 4/4X/12 enclosure to protect against contaminants such as dust, moisture, etc. Metal enclosures also help minimize the effects of electromagnetic radiation that may be generated by nearby equipment.

The 9457 is designed to be installed in one of two basic ways. The most common and most compact configuration entails mounting the computer module directly beneath the monitor module in a panel installation. This configuration uses 18-inch (457 mm) cables between the computer module and the monitor module.

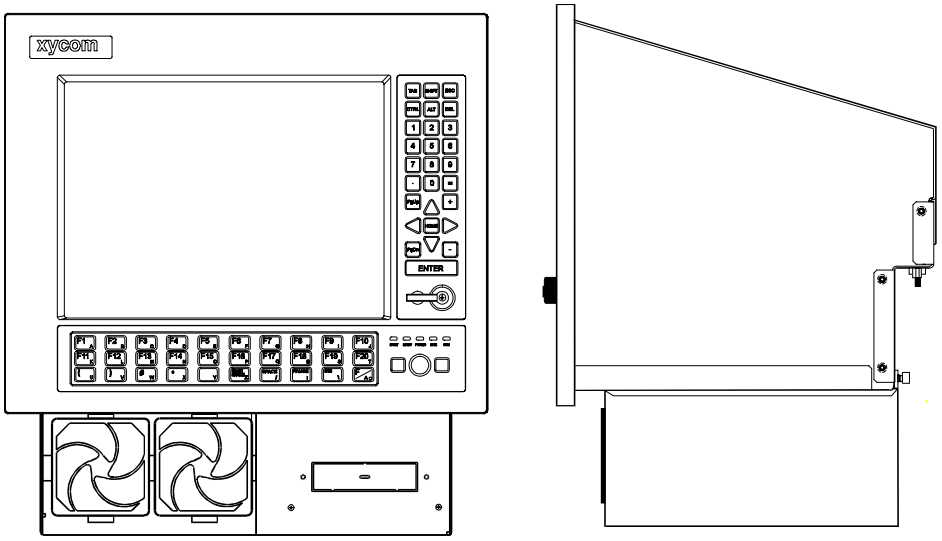

Figure Chapter 3 -10. 9457 Monitor And Computer Modules Mounted Together

In this configuration, the combined monitor and computer modules occupy a minimal amount of space.

The second configuration permits mounting the monitor module up to six feet (1.8 m) away from the computer module, using 72-inch (1.82 m) cables. The computer module may be mounted in any position relative to the monitor module, so long as it is mounted upright and is provided adequate ventilation. This requires installing the 9457-RMK Remote Mount Kit, as described earlier in this chapter.

The 9457 monitor module fits into a panel cut-out that has the following dimensions:

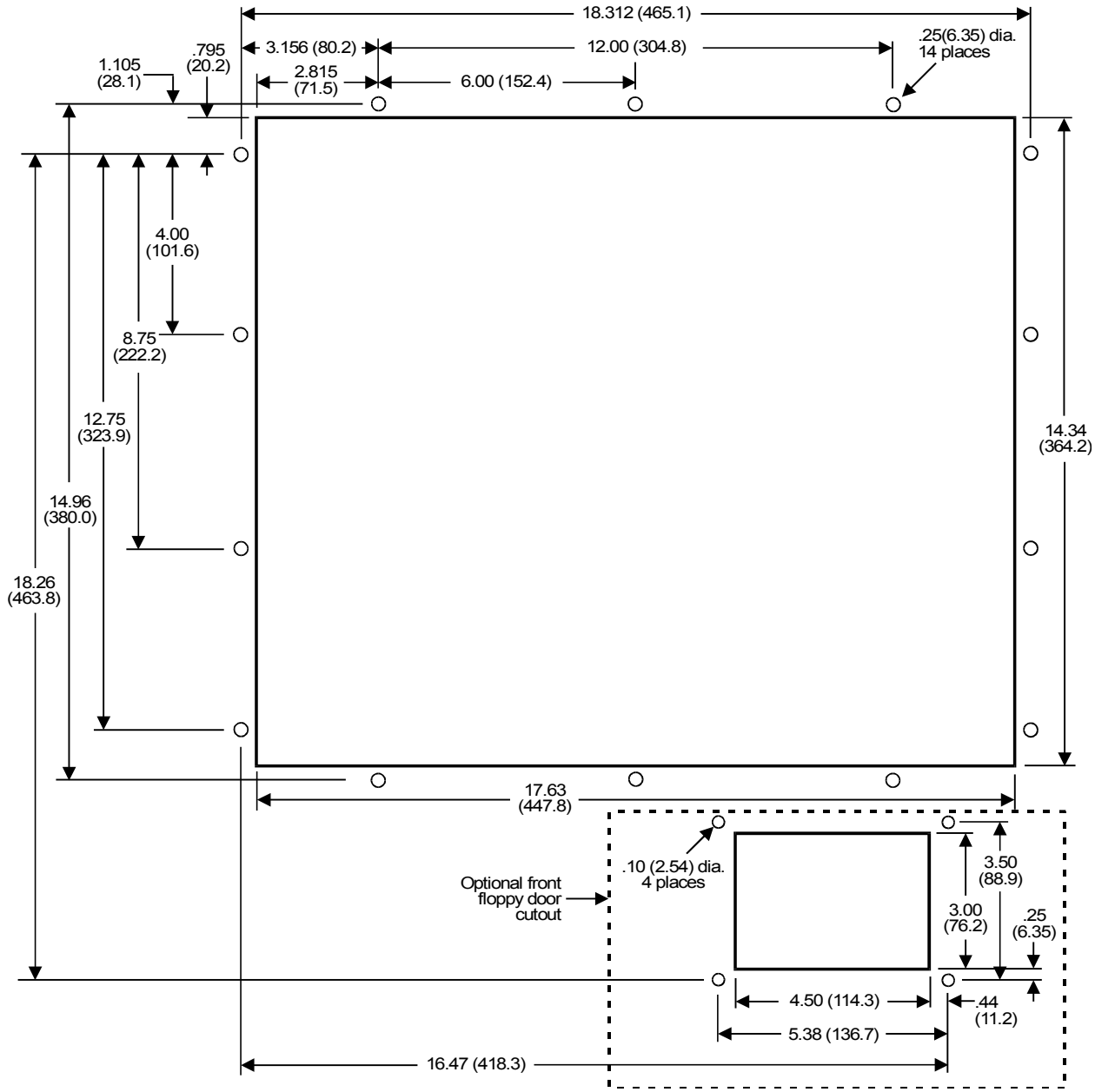

Figure Chapter 3 -11. 9457 Monitor Module Cutout Dimensions

When panel mounting the 9457, if you intend to mount the computer module beneath the monitor module, you must allow at least 6 inches (152.4 mm) additional clearance beneath the monitor module.

To mount the monitor module, follow the instructions below:

1. Locate a position for your 9457 that meets the unit's operating specifications. Refer to Appendix A and the previous sections in this chapter for these values.
2. Add the cutout (as shown in Figure Chapter 3 -11) to the enclosure. To provide a NEMA 4/4X/12 seal, the unit must be mounted in an approved enclosure with a 14 gauge (.075"/1.9mm minimum thickness) steel or (.125"/3.2 mm minimum thickness) aluminum front face.

   If you intend to install the front floppy door, cut and drill the panel to include the cutout for this door, shown as optional in Figure Chapter 3 -11.
3. Make sure the area around the cutout is clean and free from metal burrs.
4. Implement the proper grounding techniques. Establish a ground path from the 9457 chassis to the enclosure chassis.

> **Note**
>
> To make a proper ground, scrape paint off the inside of the enclosure panel around mounting stud holes (in at least two places) at opposing ends of the unit. This insures that a good electrical connection is made between the chassis and the grounded metal panel.

5. Install the monitor module into the cutout. Torque the 14 mounting nuts to 35 in/lbs (3.95 Nm).
6. Re-attach the computer module.
7. If you have mounted the floppy drive for access from the front of the computer module, and have purchased the 9457-FFK Front Floppy Kit, mount the floppy drive access door provided with the kit to the panel. Do this in the manner shown in Figure Chapter 3 -5. Torque the nuts provided with the door to 35 in/lb (3.95 Nm).

Mounting the Computer Module to the Monitor Module

The 9457 computer module is designed so that it may be slide-mounted underneath and hung from the monitor module, once the monitor module has been installed in a panel. To mount the computer module to the monitor module, perform the steps described below.

1. Mount the monitor module in a panel, as described above.
2. Verify that the top panel of the computer module is securely in place.
3. Line up the flanges at the top side edges of the computer module with the tracks on the lower side edges of the monitor module, as shown in Figure Chapter 3 -12, and slide the monitor module onto the computer module.
4. Thread the two thumbscrews on the brackets on the back of the computer module into the monitor module, then tighten them firmly.

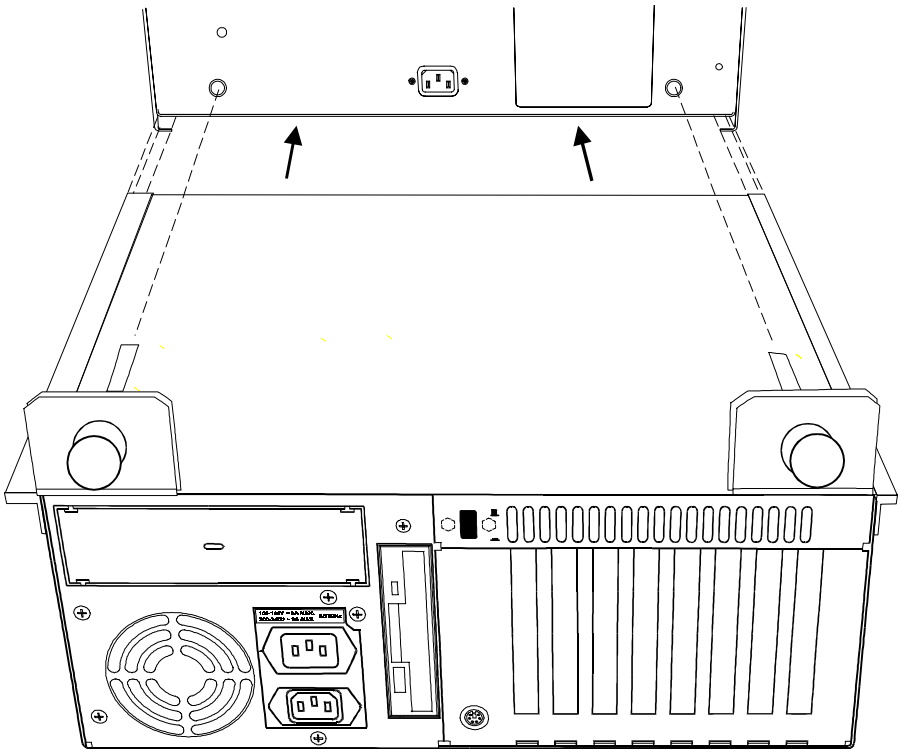

Figure Chapter 3 -12. Mounting the Computer Module to the Monitor Module

Removing the Computer Module

Follow the steps listed below to remove the computer module from the monitor module. It is not necessary to remove the monitor module from its mounting to remove the computer module.

1. Disconnect all power supplies from both the monitor and computer modules.
2. Disconnect the video, power, Host/LED, printer, touch screen and mouse cables. If you have connected an external keyboard to the computer module, disconnect that too.
3. Loosen the two thumb screws that attach the computer module to the monitor module back panel.
4. Grasping the sides of the computer module, pull straight back. The computer module should slide out easily.

> **Note**
>
> Place a hand underneath the computer module to support its weight.

5. Place the computer module on a flat, level surface.

Derating the Power Supply

On the average, the temperature within the 9457 is 7-10°C higher than that outside the enclosure. When the ambient (exterior) temperature reaches 42°C, the system's power supply will begin to derate at a rate of 3.25 watts per increase of 1°C. The 9457 is rated to work at temperatures up to 50°C. At 50°C, the power supply should be derated to 125 W of total power available for expansion cards with an AT5+ processor board installed. Refer to Table Chapter 3 -1 for more information.

Total current available for expansion cards after derating at 50°C ambient outside temperature (not to exceed 125 W):

Table Chapter 3 -1. Available Expansion Current

Voltage	Available Current
+5 VDC	16.90 A
+12 VDC	7.00 A
-12 VDC	0.48 A
-5 VDC	0.50 A

Chapter 4 – System Operation

Using the Keypads

Some configurations of the 9457 monitor module feature both a 30-key function/alpha keypad and a 28-key numeric and cursor control keypad. When the Host/LED cable is properly connected, these keypads may be used in the same fashion as you would use a conventional keyboard when running applications on the 9457.

The monitor module contains circuitry that allows you to use its built-in keypads, even when a keyboard is plugged into one of the keyboard ports on the monitor module.

Caution

Do not connect a keyboard to the keyboard port on the back of the 9457 computer module if the computer module is connected to the monitor module using the Host/LED cable. Doing so may cause the keyboard to function improperly.

The function keypad acts as both a function and an alphanumeric keypad. Initially, the keypad acts as function keys F1 through F20, and the punctuation and special function keys printed on the keys in white. To change the function keypad to an alphanumeric keypad, press the F/A key. When the keypad is set to alphanumeric mode, the LED on this key is lit. To toggle the keypad to act as function keys, press the F/A key again.

The 9457 allows you to reprogram the keypad. Refer to Chapter 5 for information on how to do this.

Using the Built-in Mouse

Some configurations of the 9457 monitor module feature a built-in serial mouse, located in the lower right corner of the front panel, beneath the system status LEDs. When the proper serial cable is connected from the mouse port on the back of the monitor module to a serial port on the computer module, the built-in mouse can be used in the same manner as you would use a conventional mouse when running applications on the 9457.

The built-in mouse consists of three basic parts:

Left Mouse Key This key serves the same function as the left button on a conventional mouse.

Mouse Dome This dome is used to move the mouse pointer around the screen. Press the edge of the dome that corresponds to the direction in which you wish to move the pointer.

Right Mouse Key This key serves the same function as the right button on a conventional mouse.

System Status LEDs

The 9457 monitor module features five status LEDs on its front panel, which you can use to monitor system operation. To use these LEDs, you must have installed the Host/LED cable between the monitor module and the computer module.

The System Status LEDs are

Fault Lights when an error is detected during the Power On Self-Test, as described below.

Maint Lights when the computer module has been used for a sufficient number of hours to require routine maintenance.

Power Lights when power is applied to the computer module.

Disk Lights when the computer module accesses the hard drive.

Com Lights when there is communication activity on one of the computer module's serial ports, including communication between the computer module and the built-in mouse or optional touch screen on the monitor module.

During power-up, firmware on the processor board checks the hardware configuration against the configuration information stored in the CMOS memory. If the Power On Self-Test (POST) is successful, the Maint and Fault LEDs will be extinguished. The Maint, Fault and Power LEDs indicate the system's status as follows:

Table Chapter 4 -1. System Status LEDs

Fault	Maint	Power	Condition
Off	Off	Off	No power
Off	Off	On	System in reset prior to POST
Off	On	On	Running POST
On	Off	On	Failed POST
Off	Off	On	Passed POST

Adjusting the Monitor

As shipped, the monitor module supports display of a number of common video formats. These formats correspond to those output by video circuitry on the AT5+ processor board. Their parameters are described in Appendix A of this manual.

The settings on the monitor module are adjusted using the menu-driven On-Screen Display mode. This mode allows you to adjust the display area width, horizontal phase, display area height, and display area shape characteristics, as well as the input source, sync polarity, and horizontal and vertical frequencies.

To adjust the monitor, follow these steps:

1. Press the On-Screen Display mode button (☰), located on the rear of the monitor module. The On-Screen Display menu will appear on the screen, with five icons corresponding to the five display adjustment buttons located on the back panel of the monitor module. These icons are arranged from left to right in the order that the buttons would appear if you could see them through the face of the monitor. A button may serve different purposes on different menus, as indicated by the icons associated with that menu. The button closest to the center of the monitor module, the Degauss button (⌀), uniformly acts as the Escape button on all menus.
2. The menu features four options, as described below. Press the buttons corresponding to the direction you wish to move the highlight bar across the menu.
3. When you have made the desired adjustments, press the Degauss button (⌀) to store the new settings.

On-Screen Display Mode Options

The four options available from the menu that appears when you select On-Screen Display mode are as follows:

Geometry

This option allows you to adjust display width, horizontal phase, height, vertical shift, pincushioning, keystoning and bowing. These are adjusted using a series of icons and bar graphs.

Horizontal Width	Press the buttons corresponding to the arrows pointing left and right to adjust the width of the display area on the screen.
Horizontal Centering	Press the buttons corresponding to the arrows pointing left and right to adjust the horizontal position of the display area on the screen.
Vertical Height	Press the buttons correspond to the arrows pointing up and down to adjust the height of the display area on the screen.

Vertical Centering	Press the buttons corresponding to the arrows pointing up and down to adjust the vertical position of the display area on the screen.

The Geometry2 option displays a menu of four icons that corresponding to attributes of the display area on the screen. These are

Bowing	Press the buttons corresponding to the minus (-) and plus (+) signs to adjust the amount that the edges of the display area bow to the left or right on the screen.
Keystoning	Press the buttons corresponding to the minus (-) and plus (+) signs to adjust the amount that the display area on the screen tapers from the top to the bottom.
Parallelogram	Press the buttons corresponding to the minus (-) and plus (+) signs to adjust the amount that the corners at the left and right edges of the screen are skewed from each other.
Pincushioning	Press the buttons corresponding to the minus (-) and plus (+) signs to adjust the degree to which the display area bulges both vertically and horizontally on the screen.

Color

This option allows you to adjust color temperature and the baseline color levels of the monitor module.

Color Temperature	Press the buttons corresponding to the minus (-) and plus (+) signs to select the temperature range setting you wish to use or that you wish to adjust. Your choices are 93K, 65K, or User.
Red Level	Press the buttons corresponding to the minus (-) and plus (+) signs to adjust the baseline amount of red that is mixed into the colors displayed on the screen.
Green Level	Press the buttons corresponding to the minus (-) and plus (+) signs to adjust the baseline amount of green that is mixed into the colors displayed on the screen.
Blue Level	Press the buttons corresponding to the minus (-) and plus (+) signs to adjust the baseline amount of blue that is mixed into the colors displayed on the screen.

Reset

This option restores the factory default settings. You will be prompted to confirm that you wish to reset. Press the button corresponding to "Y" to confirm, or the button corresponding to "Esc" (the Degauss button) to cancel the reset operation.

Note

Selecting the Reset option erases all custom settings you have saved in the monitor.

Special

This option provides access to several voltage level settings. In normal operation, you should not need to adjust these settings.

Caution

Do not adjust the settings on the Special menu, except under the instruction of a Xycom application engineer. Indiscriminately changing the values on this menu may result in damage to the monitor module or equipment connected to it.

Power Management Modes

The 9457 monitor module conserves energy by operating in the three modes listed below. It automatically switches between these modes based upon the presence of vertical or horizontal sync signals.

Normal Mode

This is the normal operating mode the monitor enters at start-up. The monitor remains in Normal mode so long as both vertical and horizontal sync signals are present.

Standby Mode

The screen is blanked immediately when the horizontal or vertical sync signal is removed from the monitor for more than five seconds. From standby mode, the monitor will instantaneously return to Normal mode upon restoration of the horizontal and vertical sync signals.

Suspend Mode

In this mode, the monitor consumes less than 30 Watts. The monitor enters Suspend mode, shutting down its internal horizontal timers, after it has been in Standby mode for five seconds. From Suspend mode, it may take up to three seconds for the monitor to return to Normal mode.

Degaussing the Monitor

Under normal operating conditions, the monitor should not require manual degaussing, since it is automatically degaussed each time the monitor is powered up. However, if you should wish to manually degauss the monitor, follow these steps:

1. Turn on the computer and operate both it and the monitor for at least 30 minutes.
2. Depress the Degauss button (), located on the rear panel. The monitor will degauss itself automatically.

Once you have degaussed the monitor, you will be unable to degauss it again until you have operated the monitor for 30 minutes.

Chapter 5 – Programmable Keypad Utility Program

A Keypad Utility Program circuit is integrated into the front panel of the 9457. This lets users redefine all keypad keys with new scan codes using utility software.

An external full-stroke PC/AT keyboard is used to access the utility. (You are unable to redefine this keyboard.)

> **Note**
>
> The keypad switch arrays are disabled while the Programmable Keyboard Interface Module (PKIM) utility is running.

Loading the Programmable Keypad Utility

You can run the PKIM utility from the disk or copy it onto your hard drive. To run the utility from the disk, change the directory to the appropriate drive and type `PKIM`. To load the utility onto your hard drive, create a subdirectory for the files, and copy all the files on the disk into that subdirectory. Enter the subdirectory and type `PKIM`.

Using the Programmable Keypad Utility

The PKIM utility uses a menu bar and pull-down menu system. All menu bars are displayed across the top of the screen. “Xycom PKIM Utility” and the current menu title are shown at the bottom of the screen (see Figure Chapter 5 -1).

A full-stroke keyboard is needed to enter keystrokes while recording a new key macro, editing an existing macro, and entering utility commands. All keys on the keypads are redefinable. While the utility is running, the keypads are disabled.

Dialog boxes appear for user prompts and to display error and user advice messages.

Two keys can be used to exit from the menus:

- `ESC` moves to the previous menu or out of the utility from the Main Menu.
- `F1` returns to the current menu headings in some of the menus where Exit can be chosen to exit this menu.

The keys specific to each menu are shown at the bottom of each screen.

Startup

This section describes the startup options for the utility.

PKIM `[/r | /t]` runs the full PKIM utility

/r equals reduced functionality. Some keyboard controllers will not allow the PKIM utility to have control. In this case, keycodes uploaded from the EEPROM cannot be translated correctly. Starting the utility with the /r switch removes the Upload option from the Main Menu. In this mode, editing must start with macros read in from a file since they cannot be read from EEPROM.

/t equals translate. Some systems initialize the keyboard to run in XT mode. In this case, the scan codes read in from the keyboard when in Teach mode will not be correct unless the utility is started with the /t switch.

Utility Batch Mode

Versions 2.2 and above of the utility include a mode for reprogramming keypads from a batch file. This feature is useful if you wish to reprogram many units with customized keypad macros without having to enter the full PKIM utility for each unit. Once the full utility has been used to create and save keypad macros, the files containing these macros can be included on a disk with the PKIM utility and then used to reprogram other units from a batch file.

PKIM filename - runs the PKIM utility batch mode where filename is the file containing the new keypad macros. The filename extension must be included.

Example:

```
PKIM newdef32.pkm
```

In a batch file, this will reprogram the default values for the numeric keypad.

You may also specify multiple macro filenames in the PKIM line.

Example:

```
PKIM newdef32.pkm 20funcff.pkm
```

This will reprogram both the numeric and the function key keypads.

Main Menu

The Main Menu provides six selections: `Exit, Files, Macros, Upload, Download,` and `Utilities.` The Main Menu is shown in Figure Chapter 5 -1.

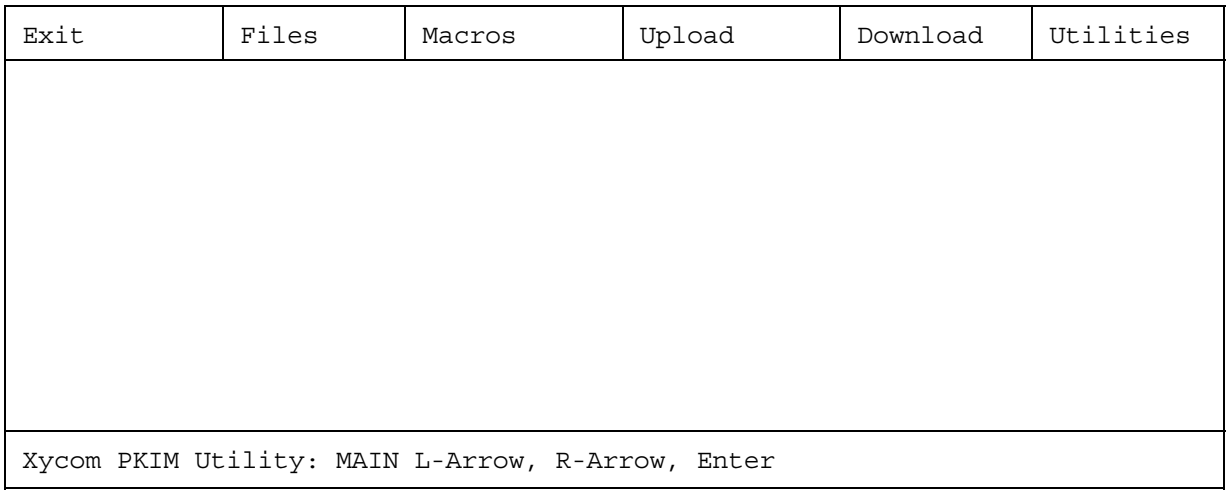

Figure Chapter 5 -1. Main Menu

Each of the Main Menu selections is described in separate sections below.

Exit

Exit closes open files and exits the utility. ESC can also be used for this purpose and for exiting the other menus.

Files Menu

Files containing keypad macro sets (a macro for each key) may be saved on disk and loaded into memory to view, edit, or download to the PKIM. Some of these files may be included in the utility package for use in reconfiguring the keypads for different software packages and as templates for defining completely new keypad macro sets.

When you choose `Files`, a pull-down menu is displayed that provides the following choices: `Open, Close, Save, Save As, Delete,` and `Exit`.

Open

Opens a file that contains a macro set for one of the keypads and loads the contents into memory. Any macro set in memory is overwritten. Once loaded, the macro set is available to edit, view, teach, and/or download to the PKIM.

Close

Clears the macro set from memory and closes the file from which they came.

Save

Copies the macro set from memory back into its original file. The original file contents are overwritten.

Save As

Creates a new file under the specified name and copies the macro set from memory into it. For example, to define different sets of codes, save each set under a different name and download the one you wish to use.

Delete

Deletes a file.

Exit

Returns to the Main Menu.

Macros Menu

When you select Macros, a menu bar displays four choices: `Exit, View, Teach,` and `Edit`.

> **Note**
>
> You must have a macro file in memory before the Macros Menu is available. To load a macro file, either Open a file or Upload a file.

Exit

Returns to the Main Menu.

View

Allows viewing the macro for the selected key without having to worry about an accidental change to the macro. When View is chosen, the Exit option and the state of the click (clicks are not supported on the 9457) are displayed on the menu bar and a graphic representation of the chosen keypad is shown. Select EXIT from the View Menu to return to the Macros Menu.

To select a key to view, use the arrow keys to position the cursor on the desired key and press ENTER.

The macro is displayed as two lines—ASCII and code. The ASCII line displays each keycode as the keys it represents on the full stroke keyboard. Special labels are used for certain keys (e.g., Spc for space bar, UAr for up arrow, and bk for the break code prefix). The code line is displayed in either Hex or decimal, as explained below. There is a one-

to-one correspondence between the ASCII and code lines to help you interpret the code line.

The menu bar displayed while viewing the macro offers two options: Exit and Hex/Decimal.

Exit

Returns to View menu.

Hex/Decimal

Toggles between displaying the macro in hex or decimal format. Default is Hex. When Hex is chosen, keycodes are displayed as they are in memory—hexadecimal value scan codes. When Decimal is chosen, keycodes are displayed as the decimal equivalent of the hex codes.

For example, the macro *abc* would be displayed as 1C F0 1C 32 F0 32 21 F0 21 in hex, and 28 240 28 50 240 50 33 240 33 in decimal.

Teach

Allows you to record up to 105 key strokes in a macro. When Teach is selected, a graphic representation of the keypad currently in memory is displayed. Menu bar choices are Exit, ASCII/Hex/Decimal, and Click ON/OFF.

Exit

Returns to Macros menu.

ASCII/Hex/Decimal

Chooses the format to display the keystrokes as they are entered. Default is ASCII.

Click

Not supported on the 9457.

ON/OFF

To select a key to define, use the arrow keys to position the cursor on the desired key and press ENTER. After a key is selected, the utility records every key stroke on the external full stroke keyboard into a macro to be assigned to the chosen key. As the keys are entered they are displayed using the chosen format. ESC is used to stop recording and return to the Teach Menu, so it is not a recordable key. However, ESC can be included in a macro by using the editor.

> **Note**
>
> The changes made to the macros in the Teach Menu are not programmed until you select Download.

Edit

Displays a graphic representation of the keypad in memory and a menu bar displaying Exit and Click ON/OFF.

Exit

Returns to the Macros Menu.

Click

Not supported on the 9457.

ON/OFF

To select a key to edit, use the arrow keys to position the cursor on the desired key and press ENTER.

In edit mode, the macro is displayed as two lines. The top line (the edit line) displays the macro in either hex or decimal format and is the line in which the actual editing takes place. The bottom line (the ASCII line) displays the macro in ASCII format and is not user configurable. This line helps keep track of which part of the macro you are editing, and will be updated by the utility as editing takes place.

For example:

edit line->	12	75	F0	75	F0	12	1C	F0	1C	12	22	F0	22	F0	12	0
ASCII line->	sh	8	bk	8	bk	sh	a	bk	a	sh	X	bk	X	bk	sh	EOM

The insert, delete, and cursor control keys are active for editing.

When a key is selected, the menu bar displays the following choices: `Exit, Cut, Copy, Paste, Codes, Hex/Decimal,` and `I/O (Insert/Overtype)`. The macro for the chosen key is also displayed.

Cut

Deletes a sequence of scan codes from the macro. To select a section to cut:

1. Place the cursor on the first character to cut.
2. Press F1 and select CUT.
3. Press ENTER. Cut should still be highlighted, but the cursor will appear on the Edit line. Move the cursor on the last character to cut and press ENTER.

4. The last character of every macro is the end of the macro (EOM) and cannot be deleted.

Copy

Copies a sequence of scan codes from the macro into memory. To select the section to copy:

1. Place the cursor on the first character to copy. Press F1 and select Copy.
2. Press ENTER. Copy should still be highlighted, but the cursor will appear on the Edit line.
3. Move the cursor on the last character to copy and press ENTER.

The copied item does not appear on the screen until you select Paste.

Paste

Inserts a sequence of scan codes (which were saved in memory using Copy) into the macro. To paste a sequence of scan codes that were previously copied, position the cursor where you want the text to appear and then press F1. Select Paste and then press ENTER.

Codes

Displays a table of keys and their scan codes in Hex. See Codes section in this chapter for a complete code listing.

Hex/Decimal

Toggles between displaying the scan codes in Hex and Decimal formats.

Insert

Toggles between insert and overtype mode.

Upload Menu

Use the Upload Menu to choose which keypad macro information to load. Choices in this menu are Function keypad, Numeric keypad, Keyboard, PKIM version, and Exit.

Function Keypad

Commands the PKIM to send its entire macro set for the function key keypad.

Numeric Keypad

Commands the PKIM to send its entire macro set for the numeric key keypad.

Keyboard

Commands the PKIM to send its entire macro set for the switch array keyboard. (The 9457 does not support the ability to reprogram switch array keyboards. You may choose to upload a keyboard, but the keys will not be defined.)

PKIM Version

Commands the PKIM to send its firmware revision number.

Exit

Returns to the Main Menu.

Note

Only one macro set may reside in memory at one time. Also, Upload is not available if the utility is started with the /r switch

A checksum will be calculated during transmission and an error message displays if an error occurs.

Download Menu

Note

Any macro set previously programmed is overwritten when you select Download.

Download sends the set of keypad macros to the PKIM. The macro set must reside in memory before it can be downloaded. A checksum is calculated during transmission and an error message displays if an error occurs.

As the macro is sent, PKIM programs its EEPROM with the new macros which become the new key definitions for the selected keypad.

Utilities Menu

When Utilities is selected, a menu bar displays four choices: `Func Lock ON`, `Func Lock OFF`, `Clear EEPROM`, and `Exit`.

Func Lock ON

Turns on the function key interlock feature. The function key interlock disables all function keys as long as one function key is pressed (only one function key can be activated at one time).

Func Lock OFF

Turns off the function key interlock feature, allowing multiple function key presses.

Clear EEPROM

Erases the EEPROM memory. This clears the entire keypad macro set, the contrast setting, the backlight timeout setting, and the function key interlock setting. After using this feature, the unit should be turned off and then on. This will initialize the EEPROM with the default settings.

Exit

Returns to the Main Menu.

Codes

Special PKIM codes replace the standard IBM scan codes for 101-key keyboard enhanced keys in macros that use these keys. The special scan codes are listed in Table Chapter 5 -1:

Table Chapter 5 -1. Special PKIM Scan Codes

Code	Meaning
E2	Insert
E3	Home
E4	Page Up
E5	Delete
E6	End
E7	Page Down
E8	Up Arrow
E9	Left Arrow
EA	Right Arrow
EB	Down Arrow
EC	Forward Slash
ED	Print Screens/Sys Rq
EE	Pause/Break

Table 5-2 lists the default keypad keycodes produced by the PKIM utility.

Table Chapter 5 -2. Default Keypad Keycodes

Key	Function Key Press	Function Key Release	Alpha Key Press	Alpha Key Release
F1/A	05	F0 05	1C	F0 1C
F2/B	06	F0 06	32	F0 32
F3/C	04	F0 04	21	F0 21
F4/D	0C	F0 0C	23	F0 23
F5/E	03	F0 03	24	F0 24
F6/F	0B	F0 0B	2B	F0 2B
F7/G	83	F0 83	34	F0 34
F8/H	0A	F0 0A	33	F0 33
F9/I	01	F0 01	43	F0 43
F10/J	09	F0 09	3B	F0 3B
F11/K	78	F0 78	42	F0 42
F12/L	07	F0 07	4B	F0 4B
F13/M	12 04	F0 04 F0 12	3A	F0 3A
F14/N	12 0C	F0 0C F0 12	31	F0 31
F15/O	12 03	F0 03 F0 12	44	F0 44
F16/P	12 0B	F0 0B F0 12	4D	F0 4D
F17/Q	12 83	F0 83 F0 12	15	F0 15
F18/R	12 0A	F0 0A F0 12	2D	F0 2D
F19/S	12 01	F0 01 F0 12	1B	F0 1B
F20/T	12 09	F0 09 F0 12	2C	F0 2C
(/U	12 46	F0 46 F0 12	3C	F0 3C
)/V	12 45	F0 45 F0 12	2A	F0 2A
#/W	12 26	F0 26 F0 12	1D	F0 1D
*/X	12 3E	F0 3E F0 12	22	F0 22
END/Y	E0 69	E0 F0 69	35	F0 35
BACK SPACE/Z	66	F0 66	1A	F0 1A
SPACE//	29	F0 29	E0 4A	E0 F0 4A
PAUSE/:	E1 14 77 E1 F0 14 F0 77		12 4C	F0 4C F0 12
INS/\	E0 70	E0 F0 70	5D	F0 5D
F/A				
TAB	0D	F0 0D	0D	F0 0D
SHIFT	12	F0 12	12	F0 12
ESC	76	F0 76	76	F0 76
CTRL	14	F0 14	14	F0 14
ALT	11	F0 11	11	F0 11
DEL	E0 71	E0 F0 71	E0 71	E0 F0 71
1	16	F0 16	16	F0 16
2	1E	F0 1E	1E	F0 1E
3	26	F0 26	26	F0 26
4	25	F0 25	25	F0 25
5	2E	F0 2E	2E	F0 2E
6	36	F0 36	36	F0 36
7	3D	F0 3D	3D	F0 3D
8	3E	F0 3E	3E	F0 3E
9	46	F0 46	46	F0 46
0	45	F0 45	45	F0 45
.	49	F0 49	49	F0 49
=	55	F0 55	55	F0 55
PgUp	E0 7D	E0 F0 7D	E0 7D	E0 F0 7D
+	79	F0 79	79	F0 79
PgDn	E0 7A	E0 F0 7A	E0 7A	E0 F0 7A
-	7B	F0 7B	7B	F0 7B
ENTER	5A	F0 5A	5A	F0 5A
“Cursor-Up”	E0 75	E0 F0 75	E0 75	E0 F0 75
“Cursor-Down”	E0 72	E0 F0 72	E0 72	E0 F0 72
“Cursor-Left”	E0 6B	E0 F0 6B	E0 6B	E0 F0 6B
“Cursor-Right”	E0 74	E0 F0 74	E0 74	E0 F0 74
HOME	E0 6C	E0 F0 6C	E0 6C	E0 F0 6C

Chapter 6 – Maintenance

Preventive Maintenance

The 9457 was designed to withstand the harsh environment of the factory floor. Routine maintenance can help keep your 9457 in good operating condition. Preventive maintenance consists of several basic procedures and checks that will greatly reduce the chances of system malfunction. Preventive maintenance should be scheduled along with the regular equipment maintenance to minimize 9457 down time.

Some preventive measures are listed below.

- Clean or change the fan filters periodically to ensure that the air circulating in the unit is clean. Filter maintenance should not be put off until the scheduled maintenance, but should be performed periodically, depending on the amount of dust in the area.
- Remove dust and dirt from PC components. If dust builds up on heat sinks and circuitry, the resulting reduction in heat dissipation could cause the unit to malfunction. If dust reaches the electronic boards, a short circuit could occur.
- Check the connections to I/O modules, especially in environments where shock could loosen the connections. Check to see that all plugs, sockets, terminal strips, and module connections are solid.
- Do not move noise-generating equipment too near the 9457.
- Stock spare parts to minimize down time resulting from part failure. The spare parts stocked should be 10 percent of the number of each unit used. There should be one spare CPU card each, regardless of the number of CPUs used. Each power supply should have a back-up. In certain applications where immediate operation of a failed system is required, an entire spare unit may need to be stocked. See the spare parts list in Table Chapter 6 -5.
- When replacing a module, make sure it is the correct type. If the new module solves the problem, but the failure re-occurs, check for inductive loads that may be generating voltage and current spikes that may require external suppression.

Care of the 9457 Cabinet

Caution

Never clean the 9457 while power is on. Disconnect the monitor power cord before cleaning. Avoid spraying liquids into the ventilation slots.

Do not use screen cleaning products that are abrasive or are designed to leave a coating or residue, such as “anti-static screen coatings.” These products may damage the anti-reflective treatment on the screen face.

Never use petroleum-based or abrasive cleaners.

To clean the exterior of the 9457, dampen a soft cloth with a mild cleaning solution, such as dishwashing detergent. After cleaning, rinse the cloth thoroughly, wring dry, and then wipe cleaned surfaces to remove any residual detergent.

Use a non-residue cleaner such as a mild window-cleaning solution to clean the monitor screen. Take care not to scratch or mar the anti-reflective treatment on the screen.

Changing the Fan Filters

To change fan filters, remove the grilles and filters as illustrated in Figure Chapter 6 -1. Clean or replace the filters and snap the grilles back into position.

Caution

Do not operate the 9457 without either of the fan filters. Dust build-up could cause the unit to malfunction.

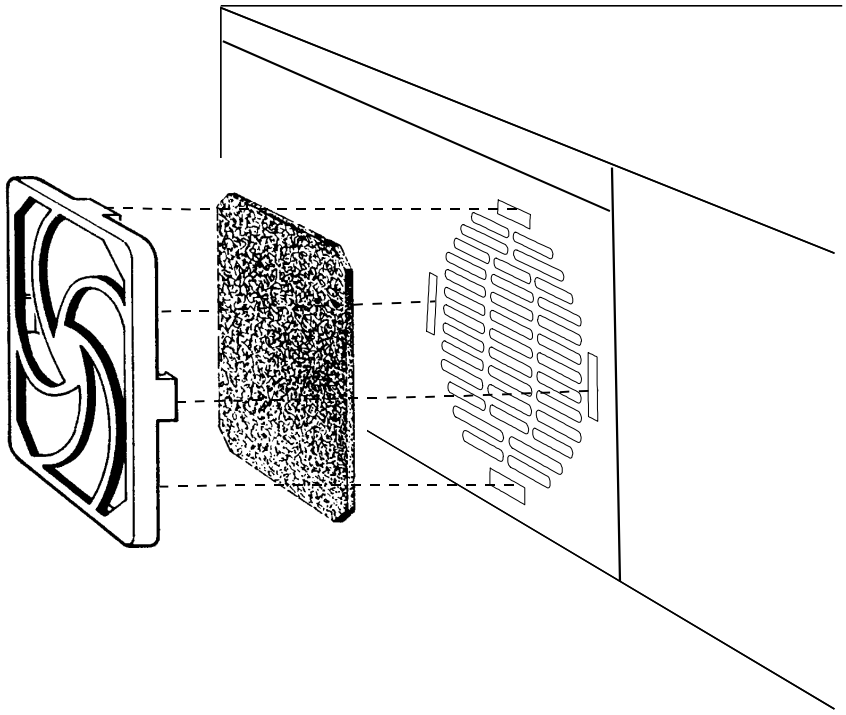

Figure Chapter 6 -1. Changing the Fan Filters

Chemical Compatibility

Certain combinations of chemical environments, temperature, and stress can adversely affect parts made from thermoplastic resin. For this reason, material which may come in contact with the 9457 unit should be carefully evaluated under end-use conditions for compatibility. Also, follow the use and compatibility recommendations of the material manufacturer. Table Chapter 6 -1 lists general chemical compatibility guidelines for the 9457.

Table Chapter 6 -1. 9457 Chemical Compatibility

Chemical Class	Effects
Acids	No effect under most common conditions of concentration and temperature.
Alcohols	Generally compatible at low concentration and room temperature. Higher concentrations and elevated temperatures result in etching and attack evidenced by decomposition.
Alkalis	Generally compatible at low concentration and room temperature. Higher concentrations and elevated temperatures result in etching and attack evidenced by decomposition.
Aliphatic Hydrocarbons	Generally compatible
Amines	Surface crystallization and chemical attack. Avoid.
Aromatic Hydrocarbons	Partial solvents and severe stress cracking agents. Avoid.
Detergents and Cleaners	Mild soap solutions are compatible. Strong alkaline materials should be avoided.

Chemical Class	Effects
Esters	Cause severe crystallization. Partial solvents. Avoid.
Greases and Oils	Pure petroleum types generally compatible. Many additives used with them are not compatible.
Halogenated Hydrocarbons	Solvents. Avoid.
Ketones	Causes severe crystallization and stress cracking. Partial solvents. Avoid.
Silicone Oil and Greases	Generally compatible up to 85ºC (185º F). Some contain aromatic hydrocarbons which should be avoided.

Compatible Lubricants

Table Chapter 6 -2 lists known compatible lubricants and the manufacturer's names. If you want to use a lubricant that is not listed, contact the appropriate manufacturer to determine if it is compatible.

Table Chapter 6 -2. 9457-Compatible Lubricants

Lubricants	Manufacturer
DC® 230 Molykote® 33	Dow Corning Midland, MI 48640 (800) 248-2345
Harmony® 68 Security® 68	Gulf Oil Petroleum Prod. Dept. Pittsburgh, PA 15230 (412) 655-6247
Lubriplate® Aero	Fisher Bros. Refinery 129 Lockwood Street Newark, NJ 07105
Martemp® 2500	E.F. Houghton & Co. 303 W. Lehigh Ave. Philadelphia, PA 19133 (215) 666-4000
Nyogel® 795A Rheolube® 368 Rheolube® 723G Rheolube® 788 Synthetic Oil® 181	Wm. J Nye P.O. Box G-927 New Bedford, MA 02742 (617) 966-6721
SF® 1147 Versilube® F-50	GE Silicone Products Waterford, NY 12188 (518) 237-3330
Terrestic ® 77	Exxon P.O. Box 2180 Houston, TX 77092 (713) 680-5712

Compatible Cleaning Agents

Table Chapter 6 -3 lists known compatible cleaning agents. If you want to use a cleaning agent that is not listed, contact the appropriate manufacturer for compatibility.

Table Chapter 6 -3. 9457-Compatible Cleaning Agents

Type	Agents
Aliphatics	Hexane, Heptane, White Kerosene Mineral Spirits, Petroleum Ethers (65º C boiling point)
Alcohols	Methyl, Isopropyl and Isobutyl, 1 + 3 Denatured Alcohol
Halogenated Hydrocarbons	Freons TF & TE
Detergents and Cleaners	Mild Soap and Water Solution, VM&P Naphtha Fantastik®, Windex®, Joy®, Top Job®, Mr. Clean®, Formula 409®

The above aliphatics, alcohols, and halogenated hydrocarbons should be used only for wiping or short-term immersion (less than 10 minutes). If parts are in complete immersion, care should be taken to remove all traces of solvent by forced-air drying or rinsing in hot water.

Non-compatible Cleaning Agents

The following cleaning agents are known to be detrimental to the 9457 unit.

Table Chapter 6 -4. 9457 Non-Compatible Cleaning Agents

Type	Agents
Bases	25% Ammonium Hydroxide, 10% Potassium Hydroxide, Sodium Hydroxide
Organic Solvents	Lacquer Thinner, Toluene, Methyl Cellosolve, Methylethylketone

Spare Parts List

Use the part numbers in Table Chapter 6 -5 if you need to order parts for your 9457 unit:

Table Chapter 6 -5. 9457 Spare Parts

Description	Part Number
CPU	
AT5+, 100 MHz, 0 Mbytes	101331-100
AT5+, 133 MHz, 0 Mbytes	101331-133
AT5+ Pentium, 200 MHz, 0 Mbytes	101331-200
Hard Drive	
850 Mbytes	109456-002
2.1 Gbytes	109456-004
Solid-State (Flash) Drive	
10 Mbytes	109469-004
20 Mbytes	109469-001
40 Mbytes	109469-002
60 Mbytes	109469-003
Floppy Drive, 3.5", 1.44 Mbyte	109443-001
EDO DRAM for AT5+ CPUs	
1 Mbyte × 32 (4 Mbytes)	104273
2 Mbytes × 32 (8 Mbytes)	104258
4 Mbytes × 32 (16 Mbytes)	104302
Host/LED Cable	
24"	108085-001
72"	109859-001
Video Cable	
18"	108114
72"	109861
Touch Screen/Mouse Cable	
18"	108098-001
72"	109874-001
Monitor Power Cable	
18"	95536-001
72"	80318-001
Remote Mount Kit	9457-RMK
19" Rack Filler panel	
Blank	9457-RFK
With Front Floppy Door Cutout	9457-RFC
Front Floppy Kit	9457-FFK

Product Repair

Xycom's Product Repair Department performs services to restore equipment to normal operating condition and to implement authorized engineering changes which enhance operating specifications. Products returned to Xycom will be tested using standard Xycom diagnostics. Contact the Product Repair Department for information on the turnaround time for the particular repair you require.

Preparing the Unit for Shipment

To ensure that the monitor is packed to minimize the chance of damage during shipment, follow the steps described below before shipping.

1. Obtain an RMA number for your unit by calling your local Product Repair Department, or the Xycom Repair Center at 1-800-289-9266. Have the following information on hand when you call:
   - Your company's name, and shipping and billing addresses
   - The type of service desired–product repair or product exchange
   - The product model number, part number, serial number, quantity, and warranty status
   - A thorough description of the product failure and the circumstances that led up to it
   - Purchase order or repair order number
2. To prepare the unit for shipment, make sure that all case panels are secured using all screws.
3. To speed processing of your repair, attach a written description of the failure to the unit.
4. Place the unit securely in its original packaging or an equivalent heavy-duty container.
5. Mark the RMA number on the outside of the shipping box, as well as on your purchase order.
6. Ship the unit to your local Xycom Repair Center.

Appendix A – Specifications

Environmental Specifications

Table Appendix A -1. 9457 Environmental Specifications

Temperature	
Operating	0° to 50° C (32° to 122° F)
Non-operating	-40° to 60° C (-40° to 140° F)
Humidity	
Operating	20% to 80% RH, non-condensing
Non-operating	20% to 90% RH, non-condensing
Altitude	
Operating	Sea level to 10,000 ft. (3048 m)
Non-operating	Sea level to 40,000 ft. (12192 m)
Shock*	
Operating	15 g peak acceleration (11 msec duration)
Non-operating	20 g peak acceleration (11 msec duration)
Vibration*	
Operating	5 to 2,000 Hz .006" (.15mm) peak-to-peak displacement 1.0 g (maximum) acceleration
Non-operating	5 to 2,000 Hz .015" (.38mm) peak-to-peak displacement 2.5 g (maximum) acceleration

***Note**

The shock and vibration specifications require that the solid state disk drive be installed. Also, CD-ROM and standard hard disk drives should *not* be used in applications where high levels of shock and vibration are present.

If a CD-ROM drive is installed, the shock and vibration specifications of this unit are limited to the shock and vibration specifications of the CD-ROM drive.

Note

Operating temperatures above 40° C (104° F) may adversely affect the purity of the colors displayed on the monitor.

Hardware Specifications

Table Appendix A -2. 9457 Hardware Specifications

9457 Computer Module	
Mechanical	
Height	5.9" (149.9 mm)
Width	16.0" (406.4 mm)
Depth	15.6" (396.25 mm)
Weight	30.0 lbs. (66.3 kg)
Electrical	115/230 VAC, auto-switching, 6.3 A, 50/60 Hz, 200 watts
Passive Backplane	2 PCI and 5 PC/AT ISA slots (2 PCI, 4 ISA available to user) 125 watts available to backplane and drives +5 VDC @ 16.9 A/+12 VDC @ 7.0 A -5 VDC @ 0.5 A/ -12 VDC @ 0.48 A *Not to exceed 125 Watts, total.*
Mounting	Under monitor module, or remote mounting

9457 Monitor Module	
Mechanical	
Height	15.72" (399.29 mm), “9U”
Width	17.38" (441.45 mm), main body 19.0" (482.6 mm), across front panel
Mounting Depth	17.5" (444.5 mm)
Depth	18.5" (469.9 mm)
Weight	61.0 lbs. (134.81 kg)
Electrical	110-240 VAC, auto-sensing, 50/60 Hz
Mounting	EIA standard panel mounting

9457 Computer and Monitor Modules (Combined)	
Mechanical	
Height	19.92" (505.97 mm), behind mounting panel
Width	17.38" (441.45 mm), main body
	19.0" (482.6 mm), across front panel
Mounting Depth	17.5" (444.5 mm)
Depth	18.5" (469.9 mm), overall
Weight	91.0 lbs. (198.9 kg)
Electrical	115/230 VAC, auto-switching, 50/60 Hz
Mounting	EIA standard panel mounting

Default Video Modes

The 9457 monitor module supports all display modes up to 1280 × 1024 at 60 Hz, non-interlaced, including most common video formats using a horizontal scan rate from 15 to 64 KHz and a vertical scan rate from 45 to 125 Hz. In almost all cases, the monitor will adjust to the incoming video signal automatically.

The most common formats are as follows:

Table Appendix A -3. 9457 Monitor Module Default Video Modes

Resolution	HF (KHz)	VF (Hz)	Interlacing
640 × 350	31.46	70.08	Non-Interlaced
640 × 400	31.46	70.08	Non-Interlaced
640 × 480	25.18	59.94	Non-Interlaced
800 × 600	48.08	72.19	Non-Interlaced
1024 × 768	60.02	75.03	Non-Interlaced
1280 × 1024	64.310	60.00	Non-Interlaced

For instructions on setting the monitor to support other modes, refer to *Adjusting the Monitor*, in Chapter 4 of this manual.

Appendix B – Pinouts

Keyboard Connectors

The 9457 has four standard PS/2-compatible keyboard connectors, one mounted on the back panel of the computer module, one mounted on the front of the monitor module, and two mounted on the back of the monitor module. For the specific locations, refer to the figures in Chapter 1.

All four connectors are wired identically, as shown in Figure Appendix B -1.

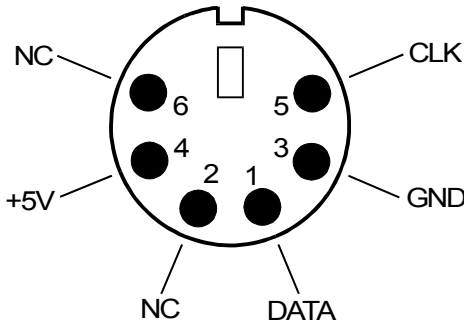

Figure Appendix B -1. Keyboard Pinout Diagram

Table Appendix B -1. Keyboard Connector Pinout

Pin	Signal
1	DATA
2	N/C
3	GND
4	+5 VDC
5	CLK
6	N/C

Warning

Do not connect a keyboard to the keyboard port on the back of the 9457 computer module if the computer module is connected to the monitor module using the Host/LED cable. Doing so may cause the keyboard to function improperly.

You may connect a keyboard to the front or back keyboard port on the monitor module when the Host/LED cable is connected between the monitor module and the computer

module. Only connect a keyboard to the keyboard port on the computer module if the computer and monitor modules are *not* connected using the Host/LED cable.

Serial Ports

The 9457 uses standard nine-pin DB-9M (male) connectors to facilitate interface to RS-232 compatible serial devices. These connectors are mounted on the rear panel of the 9457.

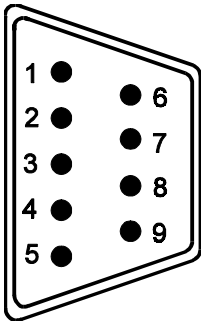

Figure Appendix B -2. Serial Port Pinout Diagram

Table Appendix B -2. RS-232 (Serial Port) Connector Pinout

Pin	Signal	Pin	Signal
1	DCD	6	DST
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND		

Host/LED Port

The monitor module may be connected to the computer module using a 15-pin cable between the Host/LED connectors on both modules. This cable carries the keyboard signals to the computer module from the monitor module's integrated keypads and any keyboard that is connected to the monitor module's keyboard ports. This cable also carries the signals used to light the system status LEDs on the front panel of the monitor module. This DB-15M (male) connector is mounted on the rear panel of the monitor module.

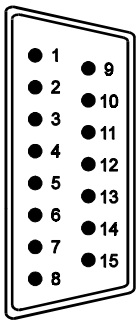

Figure Appendix B -3. Host/LED Port Pinout Diagram

Table Appendix B -3. Host/LED Port Connector Pinout (Monitor Module)

Pin	Signal	Pin	Signal
1	+5 VDC	9	MAINT LED
2	+5 VDC	10	CLK
3	+5 VDC	11	FAULT LED
4	+5 VDC	12	COM LED
5	GND	13	DISK LED
6	GND	14	N/C
7	GND	15	DATA
8	GND		

Note

When connecting the monitor module to the computer module, use *either* the supplied Host/LED cable *or* a cable between the monitor module's keyboard Out port and the computer module's Keyboard port (not included), *but not both*. Using both cables will cause the keyboard to operate improperly.

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