9450-SSW

SoftScreen Workstation

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XYCOM
750 North Maple Road
Saline, Michigan 48176
(313)429-4971

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Address comments concerning this manual to:

xycom
Technical Publications Department
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9450-SSW SoftScreen Workstation, 99582-001A

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1.1 PRODUCT OVERVIEW

The 9450-SoftScreen Workstation (9450-SSW) combines Xycom's SoftScreen runtime engine software with the power and versatility of an IBM PC/AT-compatible computer in a package that makes sense for the factory floor and other harsh environments. The system integrates a computer card cage, mass storage, video display, solid state memory, keypads, and power supply in a truly industrial form factor.

The 9450-SSW system includes a seven-slot passive backplane, an SVGA monitor, and data entry and function keypads. The front panel is sealed to NEMA 4/NEMA 12 standards, and the CRT is protected with an impact-resistant Lexan shield. The open-architecture design accepts any IBM PC, XT, or AT compatible cards.

The system comes with an 80X86 CPU installed (configuration determined upon order). The processor board combines all the functions of an IBM PC/AT-compatible computer on a single, industrially-hardened circuit board. SoftScreen is embedded on Xycom's 9000-RAD RADAR board, so the system boots up into SoftScreen.

The system's "works in a module" design allows easy access to the boards, switches, and power supply. The module is easily removed by loosening three thumb screws and sliding it out.

The 9450-SSW offers the following standard features:

- 80X86 CPU
- Seven-slot PC/AT passive backplane (four full length, two ½ length and one ¾ length AT slots)
- 14-inch high-resolution SVGA color monitor
- 32 data-entry and 20 function keys
- MS DOS
- Slide-out computer module
- 150-watt power supply
- IBM PC/AT/XT compatibility
- External printer port
- External COM1, COM2, COM3, and COM4 ports
- Rugged front panel sealed to meet both NEMA 4/NEMA 12 specifications when panel-mounted, and EIA 19-inch standard when rack-mounted
- Solid state memory board with bootable ROMs for the SoftScreen Runtime System

Optional items are also available with the 9450-SSW:

- Touch Screen
- 4100-SSD Solid state drive emulator
- 4100-KB2 external full-stroke keyboard
- 8000-KB5 panel-mount 104-key keyboard
- 8000-KB6 panel-mount numeric keyboard
- 8000-KB7 stand-alone 104-key QWERTY NEMA 4 sealed keyboard
- 8000-KB8 stand-alone numeric NEMA 4 sealed keyboard with 42 function keys

1.2 UNPACKING THE SYSTEM

When you remove the 9450-SSW from its shipping carton, verify that you have the parts listed below. It is a good idea to save the box and inner wrapping in case you need to reship the unit.

- 9450-SSW unit
- Documentation kit, which includes:
  -Power cable
  -Diagnostic software diskette
  -16 nuts
  -9450-SSW user manual
  -Business reply card

If you ordered the system with a touch screen installed, you will also receive a touch screen driver diskette, and manual.

1.3 SYSTEM COMPONENTS

This section describes the components found on the 9450-SSW.

1.3.1 Front Panel

The 9450-SSW comes equipped with a NEMA 4/NEMA12 sealed front panel. The panel protects the system's interior when the system is properly panel mounted. See Section 2.6 for rack- and panel-mounting instructions. Figure 1-1 illustrates the front panel features of the 9450-SSW.

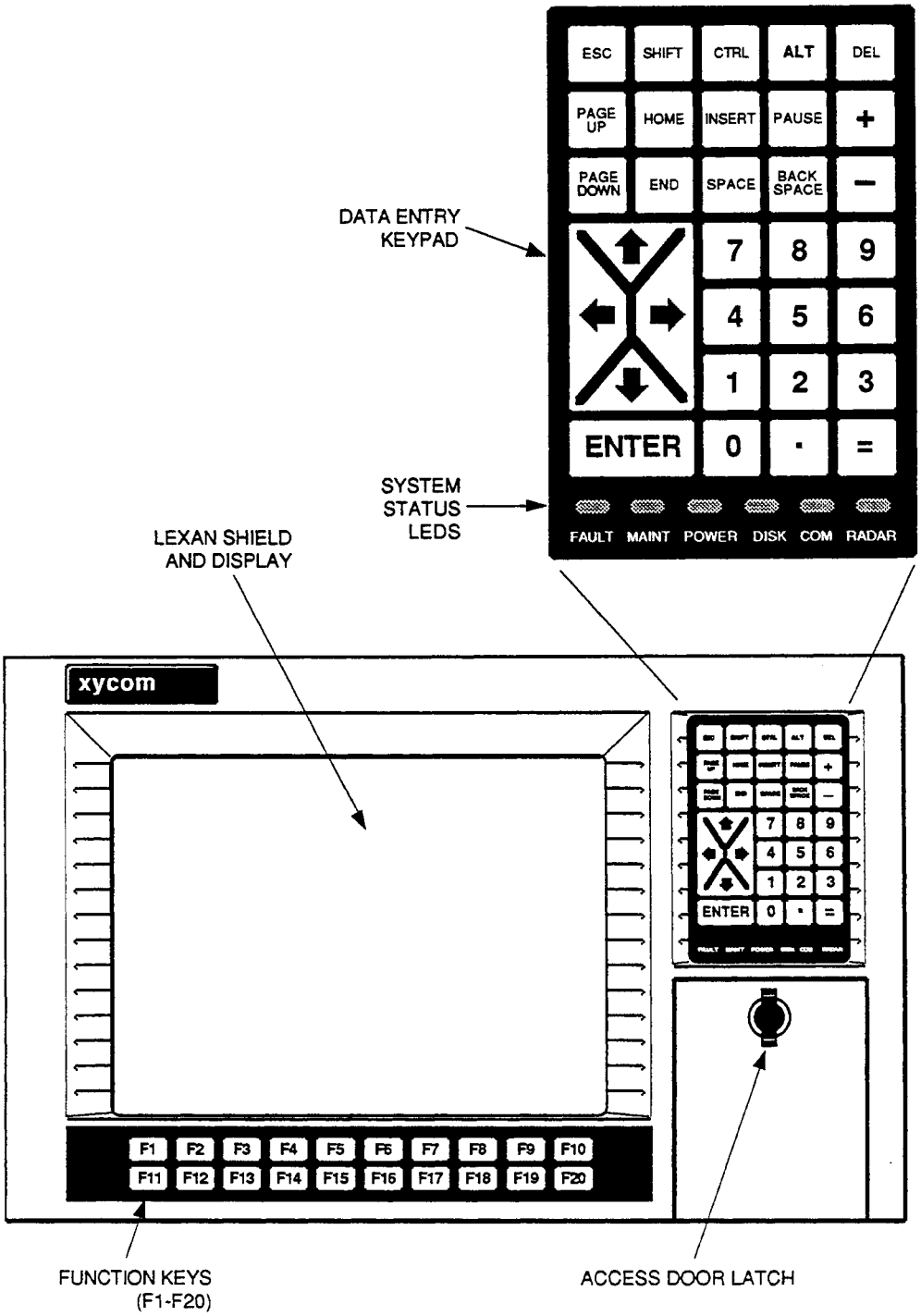


Figure 1-1. 9450-SSW Front Panel

Monitor Protected from breakage by an impact-resistant Lexan shield, the 14" monitor supports a high-resolution SVGA color. If a touch screen is installed, the Lexan shield will be replaced by safety glass backed touch panel.

Function Keys These 20 keys—located directly below the monitor—provide the user with easy access to routines configured in the SoftScreen application.

Access Door Located below the data entry keypad, this door accesses the keyboard port. The keyboard port allows a PC/AT keyboard to be interfaced with the system.

Touch Screen Xycom's touch screen—an optional feature configured in the SoftScreen application—is based on resistive membrane technology and consists of two thin sheets of polycarbonate with transparent, conductive coatings on the facing sides. Finger or stylus pressure causes the outer sheet to make electrical contact with the inner sheet. Xycom's touch screen complies with complete environmental specifications and remains operational even after two million touches.

Data Entry Keypad This 32-key numeric keypad includes 15 data entry keys; the up, down, left, and right arrows; and numbers 0-9. All keys on the keypad are programmable and the top 15 are relegendable.

System Status LEDs During power-up, the CPU board checks its hardware configuration against the configuration information stored in the CMOS memory. If the power-up self-test (POST) is successful, the MAINT and FAULT LEDs will be off.

Table 1-1. System Status LEDs

Fault	Maint	Power	Radar	Condition
off	off	off	off	No power
off	off	on	off	System in reset prior to post
off	on	on	off	Running POST
on	off	on	off	Failed POST
off	off	on	off	Passed POST (RADAR off)
off	off	on	on	Passed POST (RADAR on)
off	on	on	on	RADAR Maintenance
on	off	on	on	RADAR Fault

1.3.2 **Back Panel**

Figure 1-2 illustrates the features of the back panel components of the 9450-SSW.

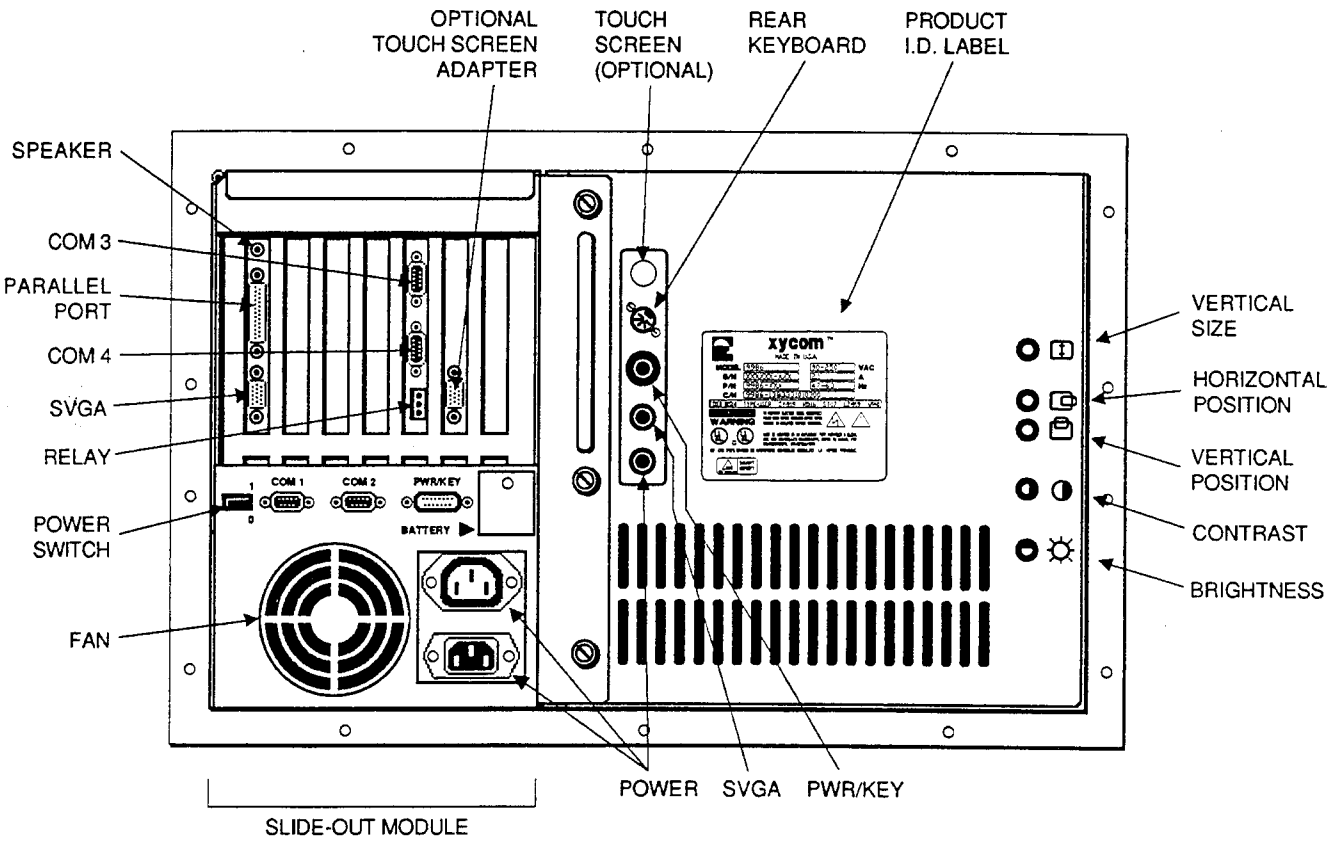


Figure 1-2. 9450-SSW Back Panel

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

Power Receptacle The power receptacle is located to the right of the On/Off switch. The upper power outlet is for the monitor and the lower power outlet is for the main power source. The plug and cord for the AC power and the monitor power must be securely positioned before turning power on.

Video Connector The 15-pin high density video cable is connected to the SVGA port on the CPU.

Video Controls The contrast and brightness controls are located on the right side of the unit. Turning the knobs left or right adjusts contrast or brightness on the monitor. The vertical size, horizontal position, and vertical position are located above the contrast and brightness controls. Turning the knobs left or right adjusts the vertical position, horizontal position, and vertical height.

Parallel Port The DB-25 female parallel port connector and is located on the CPU board for all configurations.

> **NOTE**
> The pinouts for connectors and ports are shown in Appendix C.

PWR/Key This 15-pin dual row DB connector provides the power, keyboard, and LED signals to the front keypad controller board.

COM Ports The COM ports are DB-9 male connectors. COM1 and COM2—located on rear housing—are RS-232C. COM3 and COM4—located on the 9000-RAD board—can be RS-232C or RS-485.

External Battery The 9450-SSW has an external battery located to the right of the PWR/Key connector. To replace the battery, use a screw driver to remove the battery bracket screw. Pull the bracket out. Disconnect the battery connector and remove the battery from the velcro hold-down. Replace it with a new battery and reconnect the battery cable. Slide the battery into unit. Replace and the tighten screw.

Rear Keyboard There is a PC/AT keyboard connector on the rear of the 9450-SSW. Both front and rear keyboards can be connected simultaneously.

Touch Screen (optional) The optional touch screen cable has a 9-pin DB connector which is attached to the connector on the touch screen adapter board located in Slot 5.

Relay The relay connector—located on the 9000-RAD board—is software enabled and disabled. This is configured in the SoftScreen application. It can also be optionally relaxed through the use of a switch when the watchdog timer expires. The relay contacts are isolated to 500V.

1.4 QUICK START-UP

> **NOTE**
> Xycom recommends you *at least* read this section and the appendices. This section gets your 9450-SSW 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.

To prepare the system for use, perform the steps listed on the following pages.

> **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.

> **WARNING**
> If the battery is disabled, when it is re-enabled the system must be powered up for a minimum of 30 seconds. Failure to follow this procedure may result in premature battery failure.

> **NOTE**
> If a touch screen has been factory installed, there is an AT adapter board plugged into the backplane in slot 5. Connect the 9-pin cable from the monitor side to the 9-pin connector in slot 5.

1. **Connect the video cable** to the 15-pin connector on the CPU board.

2. **Connect the PWR/Key 15-pin cable to the PWR/Key female receptacle** located above the power receptacle.

3. **Attach any other optional equipment**.

4. **Attach the monitor power cord** from the monitor to the power receptacle. Attach the power cord power receptacle to a properly grounded 115/230 VAC, 50/60 Hz outlet. Attach the power cord to the lower power receptacle

5. **Connect the 9-pin DB connector which is attached to the touch screen adapter board located in slot 5** (optional feature).

6. **Turn on power to the unit by pressing the On/Off switch in**. The system will boot up to the SoftScreen Runtime Engine window.

7. **Set the contrast and brightness controls** on the back panel to the desired levels.

8. **Download a SoftScreen application**. Refer to the SoftScreen Development System Manual for more information.

2.1 INTRODUCTION

This chapter discusses how to install options into the 9450-SSW. The figures on the next several pages show the internal and external components on the front and back panels of the unit to help you locate features relevant to installation.

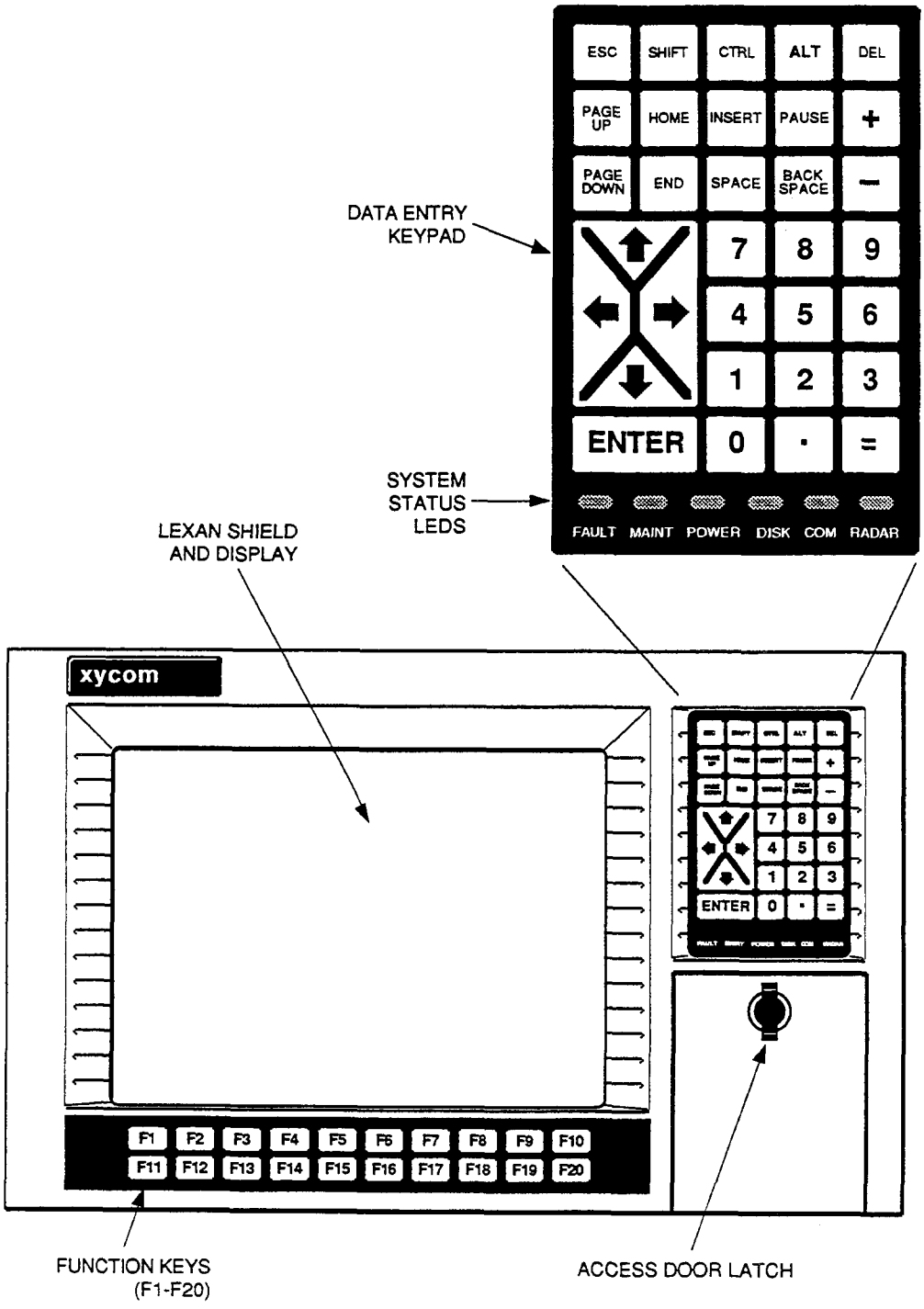


Figure 2-1. 9450-SSW Front Panel

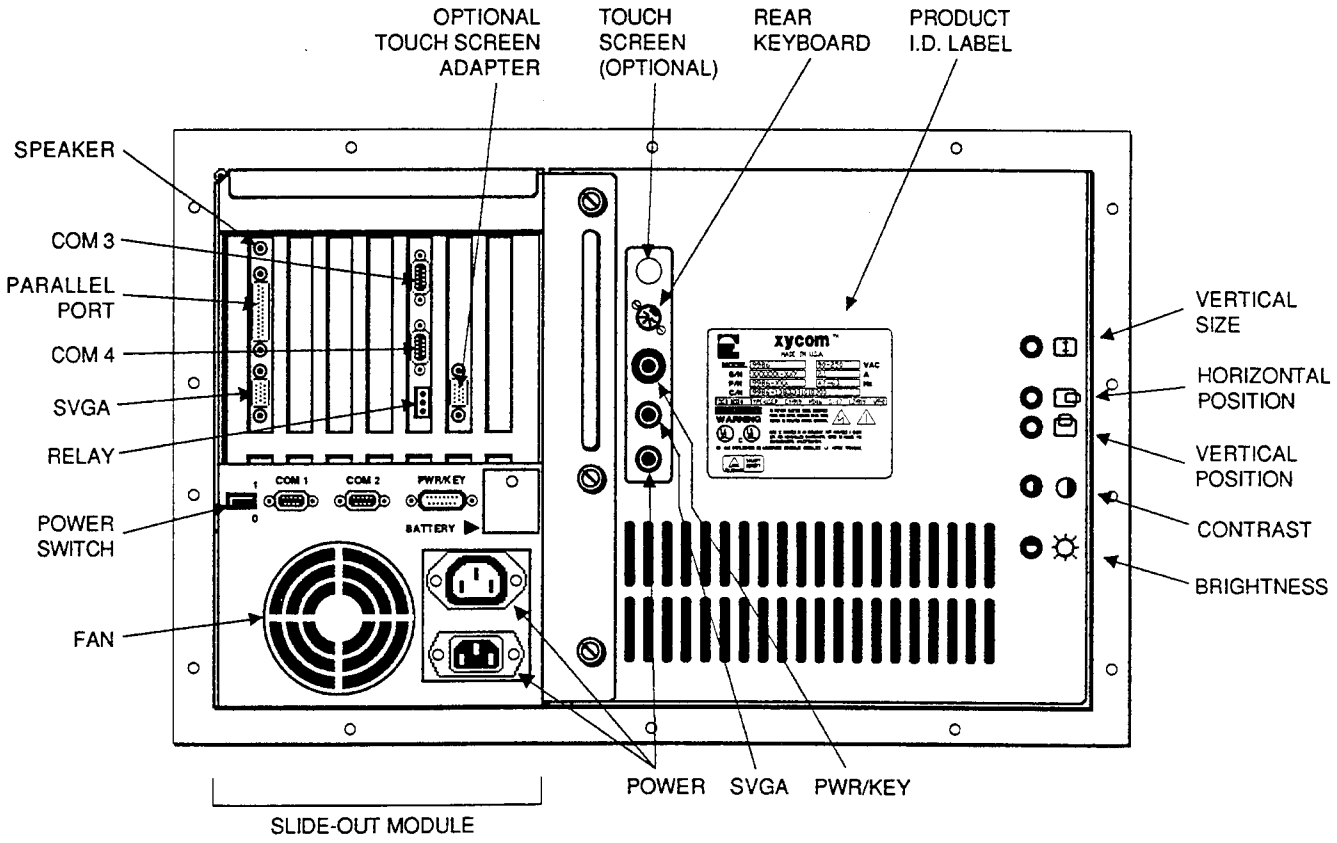


Figure 2-2. 9450-SSW Back Panel

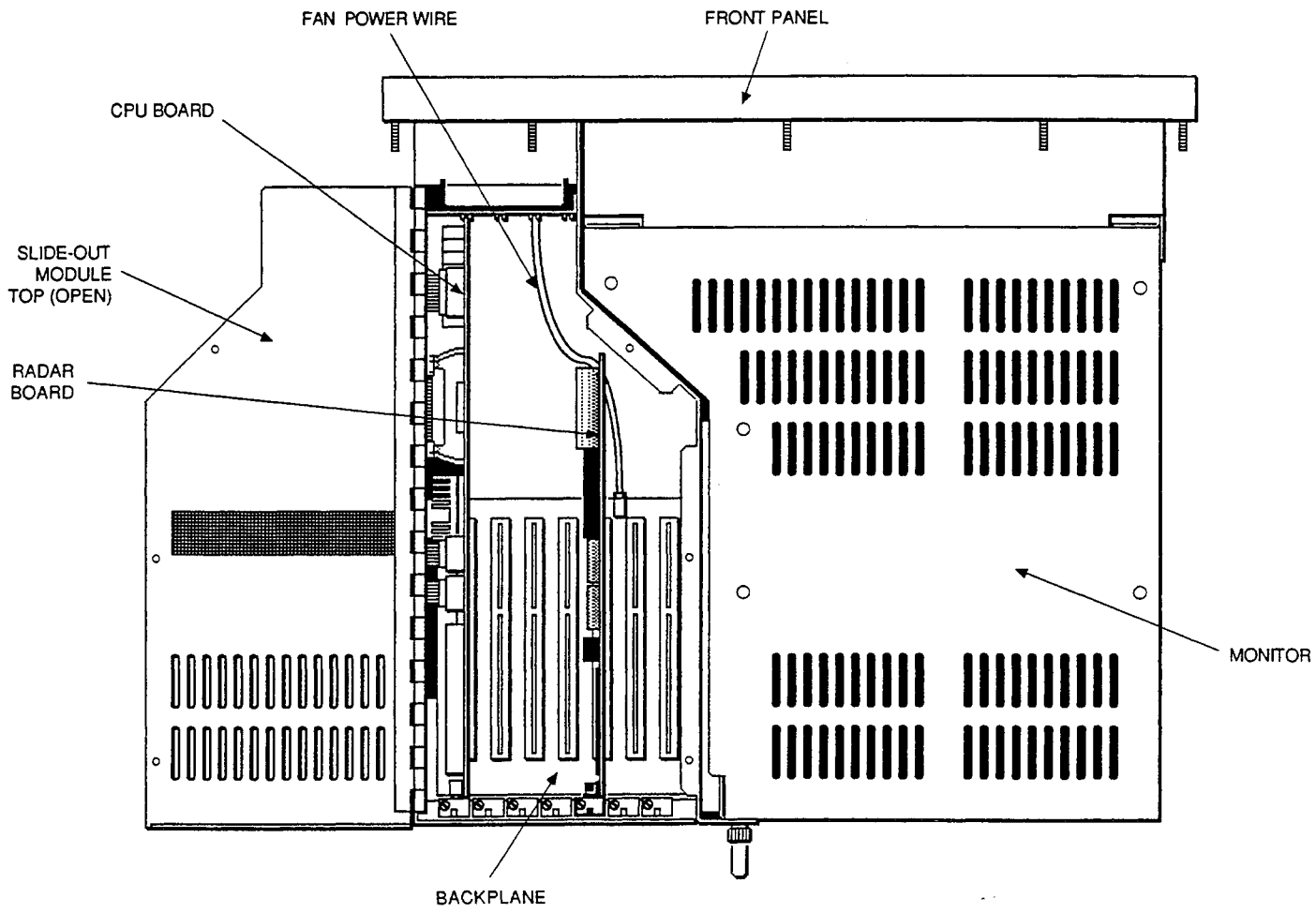


Figure 2-3. 9450-SSW Internal System Components

2.2 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. Connect the video cable to the 15-pin connector on the CPU board.

2. Connect the PWR/Key 15-pin cable to the PWR/Key female receptacle located above the power receptacle.

3. Attach any other optional equipment.

4. Attach the monitor power cord from the monitor to the power receptacle. Attach the power cord power receptacle to a properly grounded 115/230 VAC, 50/60 Hz outlet. Attach the power cord to the lower power receptacle

5. Connect the touch screen. See note below.

> **NOTE**
> If a touch screen has been factory installed, there is an AT adapter board plugged into the backplane in slot 5. Connect the 9-pin cable from the monitor side to the 9-pin connector in slot 5.

6. Turn on power to the unit by pressing in the on/off switch. The system will boot up to the SoftScreen Runtime Engine window.

7. Set the contrast and brightness controls on the back panel to the desired levels.

8. Download a SoftScreen application. Refer to the SoftScreen Development System Manual for more information.

2.3 INSTALLING/REMOVING THE SLIDE-OUT COMPUTER MODULE

The slide-out computer module allows access to the power supply. The PC add-in boards can be replaced by removing the three screws on the hinged top cover. To remove the slide-out computer module, follow the instructions in Section 2.3.1. To replace the slide-out computer module, follow the instructions in Section 2.3.2. Installing the slide-out computer module is shown in the figure below.

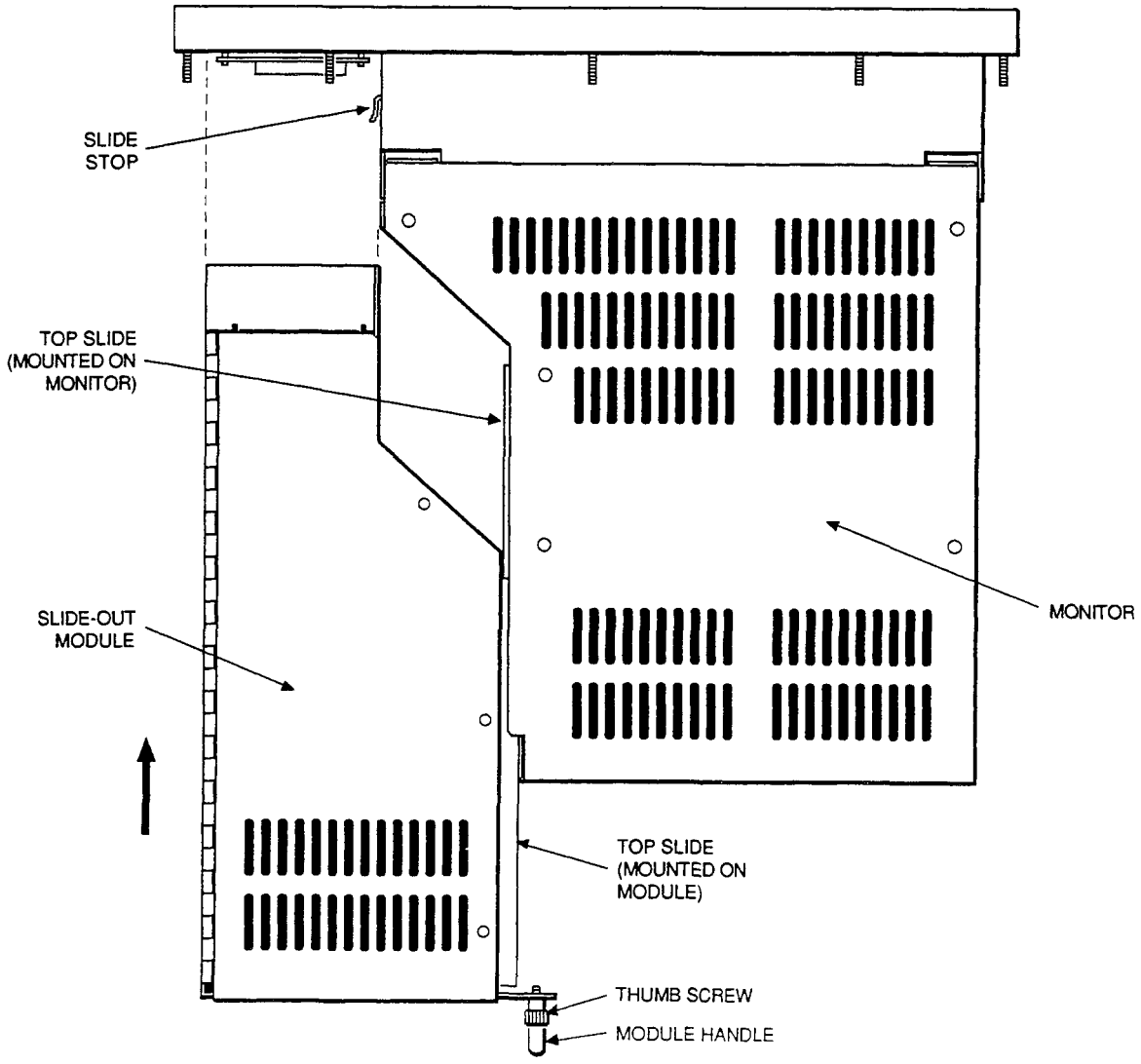


Figure 2-4. Installing the Slide-out Computer Module

2.3.1 Removing the Slide-out Computer Module

Follow steps one through four to remove your slide-out computer module. The figure below shows the removal of the slide-out computer module.

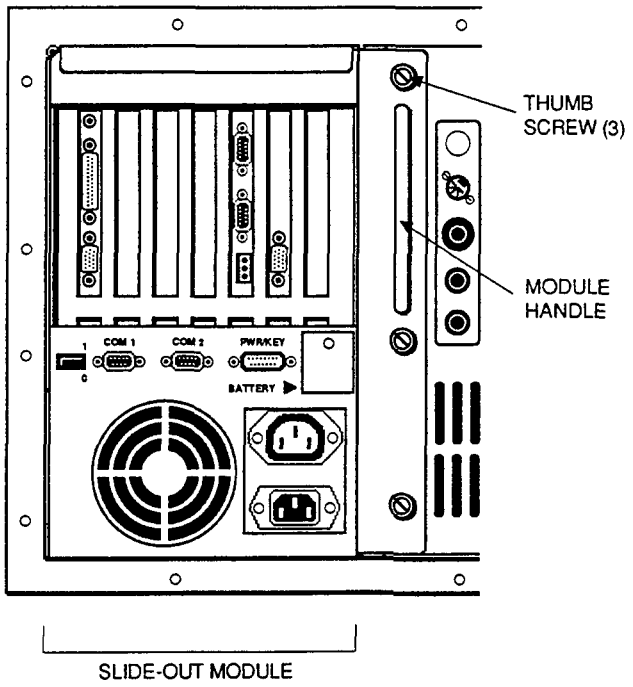


Figure 2-5. Removing the Slide-Out Computer Module

1. Disconnect cables (VGA, PWR/Key, Power, and optional touch screen).
2. Loosen the three thumb screws that attach the slide-out computer module to the 9450-SSW back panel.
3. Grasp the handle that protrudes from the back panel.
4. Pull straight back. The module should slide-out easily.

> **NOTE**
> Support the weight of the module when separating it from the chassis.

2.3.2 Replacing the Slide-out Computer Module

After you have finished installing options on your 9450-SSW, reconnect it to the front panel according to the instructions below:

1. Match the top and bottom guides on the module with the slider indentations on the side of the monitor module shell, as illustrated in Figure 2-4.

2. Push forward firmly until the top and bottom of the module are flush with the top and bottom of the front panel shell.

3. Tighten the three thumb screws removed earlier (see Figure 2-5).

4. Reconnect all cables (SVGA, PWR/Key, power, and optional touch screen).

2.4 INSTALLING INTERNAL HARDWARE OPTIONS

> **CAUTION**
> The unit **must be turned off** before installing internal hardware.

Internal hardware options may be installed through the hinged cover with the module in place. Certain mounting configurations require the slide-out computer module to be removed (refer to Section 2.3.1 for details).

2.4.1 Installation and Removal of the CPU Board

This section describes the steps required to install and remove the CPU board.

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

WARNING
If the battery is disabled, when it is re-enabled the system must be powered up for a minimum of 30 seconds. Failure to follow this procedure may result in premature battery failure.

CAUTION
Verify the positions of all jumpers and switches before installation. Check configurations with the lists and diagrams in this manual.

NOTE
Before connecting a ribbon cable to latched connectors, make sure the latches are pulled halfway down. When the cable connection is made, the latches snap up. When removing a cable connector, pull the latches down near the board. This ejects the connector so you can remove it easily.

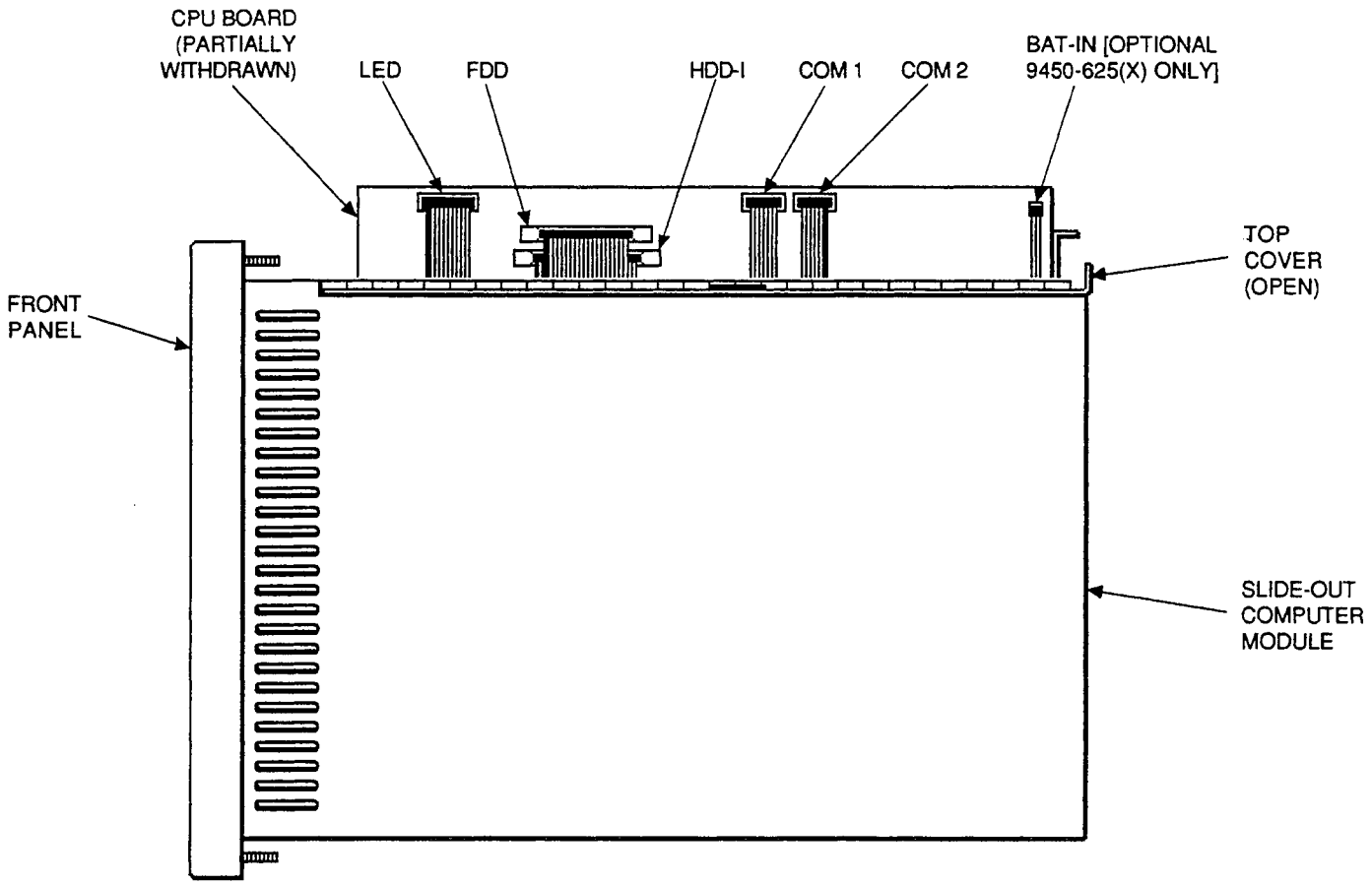


Figure 2-6. CPU Board/Connectors

Removing the CPU Board

1. Disconnect all power supplies

2. Remove the three screws that secure the top cover to the slide-out computer module. Certain mounting configurations require the slide-out computer module to be removed. (Refer to Section 2.3.1 for details.)

3. Remove and save the CPU board ORB screw.

4. Unseat the CPU board from the backplane. Pull the board upward far enough to unlatch and remove connectors (about one inch).

5. Remove cable connectors FDD, HDD-I, COM1, COM2, LED, and BAT-IN.

6. Now that the cables are disconnected, pull the CPU board out of the slide-out computer module.

Installing the CPU Board

1. Disconnect all power supplies

2. Remove the three screws that secure the top cover to the slide-out computer module. Certain mounting configurations require the slide-out computer module to be removed (refer to Section 2.3.1 for details).

3. Verify all jumper settings.

4. Hold cables FDD, HDD-I, COM1, COM2, and LED toward the side of the CPU module.

5. Place the 9450-SSW CPU card into slot 0 in the passive backplane. Push the card ¾ of the way down. Figure 2-5 shows slot 0.

6. Attach flat cables FDD, HDD-I, COM1, COM2, and LED to the respective connectors on the CPU board. Push down the card evenly until it firmly seats into the card edge connector.

7. Connect the battery cable connector BAT-IN to the CPU board. (This cable is optional.)

8. Secure the ORB with one screw at the top.

9. Close the top cover and replace and tighten the three screws. If the slide-out computer module in the 9450-SSW was removed in Step 2, see Section 2.3.2 for re-installation details.

10. Connect all power sources previously disconnected.

The 9450-SSW CPU is now ready for operation.

2.4.2 Installing the 9000-RAD Card

Before installing the 9000-RAD into the 9450-SSW, jumpers and switches must be set for your particular configuration. See the SoftScreen PC/AT Engine Manual for more information.

After the 9000-RAD card is properly configured, it can be installed into the 9450-SSW card cage as follows:

1. Unplug the 9450-SSW from the AC wall outlet.

2. Remove the three screws on the top cover and open. Certain mounting configurations require the slide-out computer module to be removed (refer to Section 2.3.1 for details).

3. If present, remove the blank ORB from the slot that the 9000-RAD will occupy. Save the screw.

4. Slide the RADAR card into an open slot in the backplane. Push down on the card evenly until it firmly seats into the card cage connectors.

> **NOTE**
> **DO NOT** force the boards or apply uneven pressure.

5. Secure the RADAR ORB to the host system by replacing and tightening the screw that was removed in Step 3.

6. Close the top cover and replace and tighten the three screws. If the slide-out computer module in the 9450-SSW was removed in Step 2, see Section 2.3.2 for re-installation details.

2.4.3 Installing the 4100-SSD Card

Before installing the 4100-SSD (Solid State Disk) board into the 9450-SSW, jumpers and switches must be set for your particular configuration. See your 4100-SSD manual for more information.

After the 4100-SSD is properly configured, it can be installed into the 9450-SSW card cage as follows:

1. Unplug the 9450-SSW from the AC wall outlet.

2. Remove the three screws on the top cover and open. Certain mounting configurations require the slide-out computer module to be removed (refer to Section 2.3.1 for details).

3. Verify all jumper and switch settings. Refer to the 4100-SSD manual for the correct settings.

4. If present, remove the blank ORB from the slot (1, 2, or 3) that the 4100-SSD card will occupy. Save the screw.

5. Slide the SSD card into an open slot in the backplane. Push down on the card evenly until it firmly seats into the card cage connectors.

> **NOTE**
> **DO NOT** force the boards or apply uneven pressure.

6. Secure the SSD ORB to the host system by replacing the screw that was removed in Step 4.

7. Close the top cover and replace and tighten the three screws. If the slide-out computer module in the 9450-SSW was removed in Step 2, see Section 2.3.2 for re-installation details.

2.4.4 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 in your CPU board manual.

1. Unplug the 9450-SSW from the AC wall outlet.

2. Remove the three screws on the top cover and open. Certain mounting configurations require the slide-out computer module to be removed (refer to Section 2.3.1 for details).

3. If present, remove the blank ORB from the slot that the PC board will occupy. Save the screw.

4. 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.

5. Secure the board by replacing and tightening the screw that was removed in Step 3.

6. Close the top cover and replace and tighten the three screws. If the slide-out computer module in the 9450-SSW was removed in Step 2, see Section 2.3.2 for re-installation.

2.5 INSTALLING KEYBOARDS

Four keyboards are available for the 9450-SSW: the 8000-KB5, 8000-KB6, 8000-KB7, and 8000-KB8. The features of each keyboard are listed below:

8000-KB5	A rack- or panel-mounted NEMA 4 104-key QWERTY keyboard with PC/AT interface
8000-KB6	A rack- or panel-mounted NEMA 4 numeric keyboard with 52 function keys
8000-KB7	A stand-alone 104-key QWERTY NEMA 4 keyboard.
8000-KB8	A stand-alone numeric NEMA 4 keyboard with 42 function keys

The 8000-KB5 and 8000-KB6 are installed in the same manner (dimensions are shown in Figures 2-7 and 2-8). Mount them according to the cutout in Appendix B. Once the keyboard is mounted, connect the keyboard cable to the keyboard port on the back panel of the unit. The stand-alone 8000-KB7 and 8000-KB8 keyboards each use a standard keyboard connector.

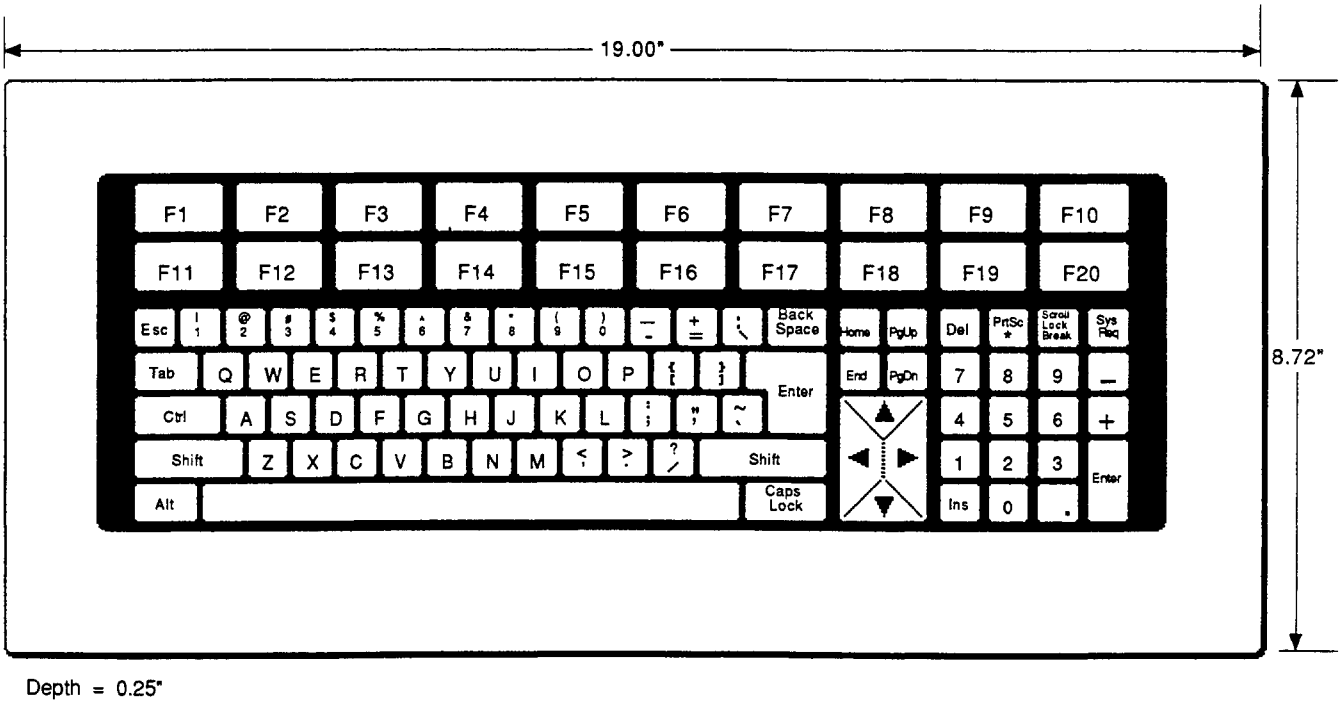
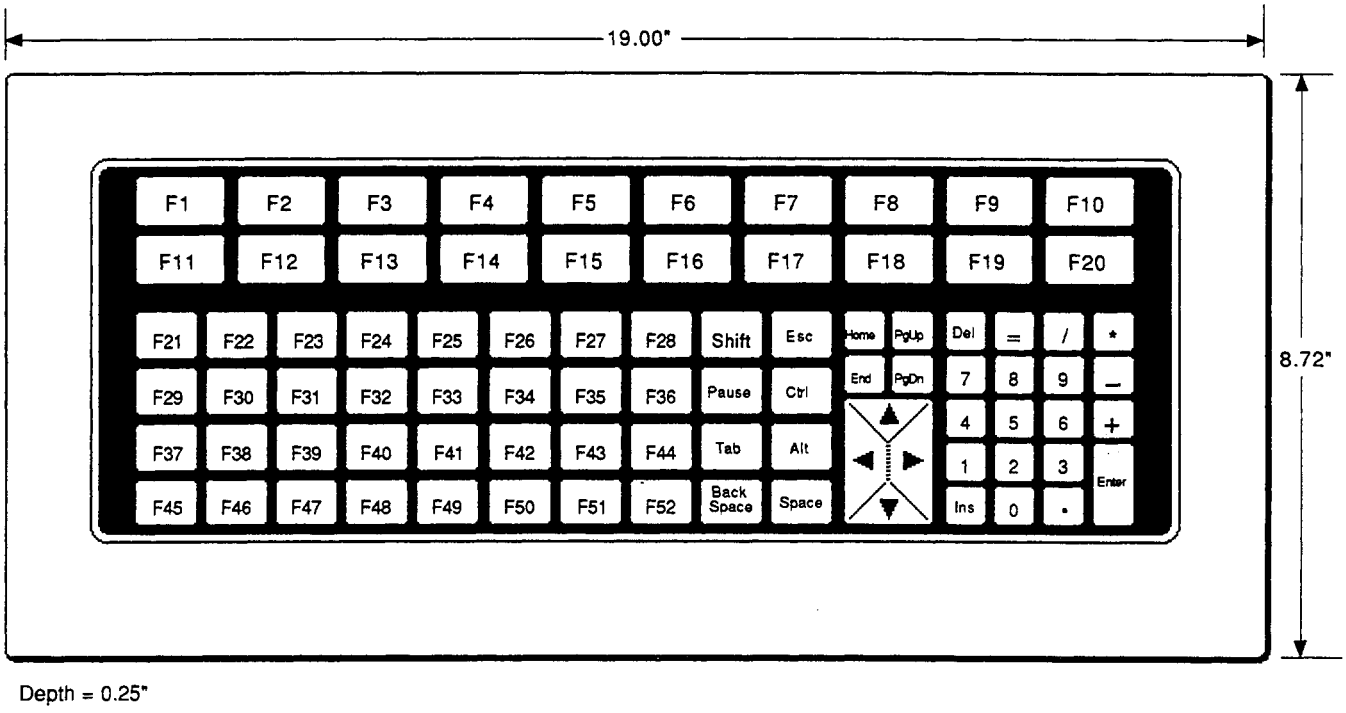


Figure 2-7. 8000-KB5 Keyboard with Dimensions



Depth = 0.25"

Figure 2-8. 8000-KB6 Keyboard with Dimensions

2.6 INSTALLING THE SYSTEM INTO A RACK OR PANEL

The 9450-SSW's rugged design allows it to be installed in most industrial environments. The 9450-SSW is generally placed in a NEMA 4/12 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. Follow the guidelines below for installing your 9450-SSW.

2.6.1 Mounting Considerations

Once you have found a location for the 9450-SSW, install it in the enclosure according to the manufacturer's instructions. Consider the following points and precautions before placing the 9450-SSW inside an enclosure:

- Select an enclosure that will allow access to the 9450-SSW ports and slide-out computer module.
- Account for the unit's depth, as well as cabling, when choosing the depth of the enclosure.
- Mount the 9450-SSW in an upright position.
- Place the 9450-SSW at a comfortable working level.
- Consider locations of accessories such as AC power outlets and lighting (interior lighting and windows) for installation and maintenance convenience.
- If condensation is expected, install a thermostat-controlled heater or air conditioner
- To allow for maximum cooling, avoid obstructing the air flow.
- 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 used. This filtration prevents conductive particles or other harmful contaminants from entering the enclosure.
- Do not select a location near equipment (such as high power welding machines, induction heating equipment, and large motor starters) that generates excessive electromagnetic interference (EMI) or radio frequency interference (RFI).

- Place incoming power lines (such as isolation or constant voltage transformers, local power disconnects, and surge suppressors) away from the 9450-SSW. The proper location of incoming line devices keeps power wire runs as short as possible, and minimizes electrical noise transmitted to the 9450-SSW.

- Make sure the location does not exceed the 9450-SSW's temperature specifications.

> **NOTE**
> The displays may be affected by Geomagnetic fields. Typical effects of magnetic fields are purity (blotchy colors), distorted screens, etc. In some cases, purity problems may be corrected by turning off the unit for 30 minutes and then reapplying power. In other cases a degaussing wand may be needed. Contact Xycom's Customer Service Department for further information.

2.6.2 System Power

It is always a good idea to use isolation transformers on the incoming AC power line to the 9450-SSW. 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 National Electric Code (NEC), article 250, which provides 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.

- Ground all electrical racks or chassis and machine elements 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.

- Properly ground the enclosure to the ground bus. Make sure a good electrical connection is made at the point of contact with the enclosure.

- Connect the machine ground to the enclosure and to earth ground.

2.6.3 Excessive Heat

The 9450-SSW is designed to withstand temperatures form 0° to 50°C and is cooled by convection, in which a vertical column of air is drawn in an upward direction over the surface of the components. To keep the temperature in range, the cooling air at the base of the system must not exceed 50°C. Proper spacing must also be allocated between internal components installed in the enclosure.

When the air temperature is higher than 50°C in the enclosure, use a fan or air conditioner.

2.6.4 Excessive Noise

Electrical noise is seldom responsible for damaging components, unless extremely high energy or high voltage levels are present. However, 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 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 the PLC communication cables.

2.6.5 Excessive Line Voltage

The power supply section of the 9450-SSW is built to sustain line fluctuations of 90-131 VAC or 182-226 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 correction does not solve the problem, a constant voltage transformer must be used.

The constant voltage transformer stabilizes the input voltage to the 9450-SSW by compensating for voltage changes at the primary to maintain a steady voltage at the secondary. When using a constant voltage transformer, check that the power rating is sufficient to supply the 9450-SSW.

2.6.6 **Mounting the 9450-SSW**

Once the conditions in the preceding sections have been met, mount the 9450-SSW by following the instructions below:

1. Locate a position for your 9450-SSW that meets the specifications required (see previous sections and Appendix A).

2. Add the cutout (as shown in Appendix B, Figure B-6) to the enclosure.

3. Make sure the area around the cutout is clean and free from metal burrs.

4. Make sure the 9450-SSW enclosure is grounded to the enclosure.

5. Detach the slide-out computer module (see Section 2.3.1).

6. Install the monitor portion of the unit into the cutout.

7. Reattach the slide-out computer module (see Section 2.3.2).

8. Tighten the 14 #10 nuts to 27 inch pounds.

2.7 DERATING THE POWER SUPPLY

The power supply is 200 watts derated to 150 watts of power at 50°C. Refer to Table 2-1 for more information.

Table 2-1. 9450-SSW Derating Example

	+5 VDC	+12 VDC	-12 VDC	-5 VDC
Total Current Available Before Derating (not to exceed 150 W)	20 A	8 A	0.50 A	0.50 A
9450-SSW Configured Current Required:				
AT4SLC+/AT4+	2.60/3.75 A	.05 A	.05 A	0
SRAM	0.25 A	0	0	0
Touch screen controller (serial)	0.25 A	0	0	0
Fan	0	0.26 A	0	0
Keyboard	0.40 A	0	0	0
9000-RAD card	0.80 A	0.23 A	0	0
Total (maximum)	**4.30/5.45A**	**0.99 A**	**0.05 A**	**0**
9450-SSW Expansion Current Available	14.55/15.70 A	7.01 A	0.45 A	0.50 A

Example: 9450-SSW w/AT4SLC+

4.07A x 5V = 21.50 watts
0.72A x 12V = 11.88 watts
.05A x 12V = 0.60 watts

33.98 watts total

150w - 33.98w = 116.02 watts

116 watts available for expansion cards

3.1 PREVENTIVE MAINTENANCE

The 9450-SSW is designed to withstand the harsh environment of the factory floor. Routine maintenance can help keep your 9450-SSW 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 9450-SSW down time.

Some preventive measures are listed below:

- **Remove dust and dirt from PC components**. If dust builds up on heat sinks and circuitry, an obstruction of 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.

- **Remove unnecessary articles**, like drawings or manuals, from the unit. They could obstruct air flow and create hot spots, which cause the system to malfunction.

- **Do not move noise generating equipment near the 9450-SSW**.

- **Stock spare parts** to minimize down time resulting from part failure. The spare parts stocked should be five percent of the number of each unit used. CPU cards should have one spare 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 module may need to be stocked.

- **When replacing a module, make sure it is the correct type**. If the new module solves the problem, but the failure reoccurs, check for inductive loads that may be generating voltage and current spikes and may require external suppression.

3.2 EXTERNAL BATTERY REPLACEMENT

The 9450-SSW has an external battery located on the back panel. To replace the battery, use a screw driver to remove the battery bracket screw. Pull the bracket out. Disconnect the battery connector and remove the battery from the velcro hold-down. Replace it with a new battery (refer to the spare parts list for battery part number) and reconnect the battery cable. Slide the battery into the unit. Replace and tighten the screw.

CAUTION

DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Bei falschem Umgang mit odor falschem Einbau einer Lithium-Batterie kann eine Explosion entstehen, bel der in der Nahe befindliche Personen schwere Verietzungen erieiden konnen. Versuchen Sie nicht, Lithium-Batterien wieder aufzuiaden, kurzzuschliessen oder zu ottnen, und werfen Sie sie nicht in den Mull oder in ein Feuer. Wechsein Sie sie nur gegen gensu den gleichen Typ aus. Zur entsorgung mussan Sie Lithium-Batterien an ihren Handler zuruckgeben.

3.3 SPARE PARTS LIST

Use the part numbers specified below when reordering parts for your 9450-SSW unit.

Table 3-1. Spare Parts List

Description	**Xycom Part Number**
9000-RAD card	99384-002
Blank ORB	91824-001
CPU AT4SLC+, 0 Mbytes AT4SX, 0 Mbytes AT4DX, 0 Mbytes AT4DX2, 0 Mbytes	 99142-025 99298-133 99298-233 99298-266
DRAM 4 Mbytes x 9 1 Mbytes x 9	 98749-001 98012-001
External battery, Lithium 3.6V	98782-001
Keyboard Interface Module	99213-001
Lexan shield	94157-001
Power cord	88760-001
Power Supply	99377-001
Touch screen controller	99410-001

3.4 PRODUCT REPAIR PROGRAM/RETURNING A UNIT TO XYCOM

Xycom's Product Repair Service restores equipment to normal operating condition and implements engineering changes that enhance operating specifications. Products returned to Xycom will be tested with standard Xycom test diagnostics. Contact the Product Repair & Customization (PR&C) department at 1800-289-9266.

Perform the following steps to prepare the unit for shipment:

1. Obtain an RMA number for the unit by calling your local Product Repair Department or Xycom repair center. Have the following information ready:
   - Company name and shipping and billing address
   - Type of service desired: product repair or product exchange
   - Product model number, part number, quantity, serial number(s), and warranty status
   - Failure mode and failure systems
   - Purchase order number or repair order number

2. You will then receive an RMA number. This number must appear on the outside of the shipping container and on the purchase order.

3. To prepare the 9450-SSW for shipment, make sure the front panel assembly is properly attached to the unit and the slide-out computer module is secured by all three fasteners.

4. To speed processing, attach any failure information to the unit.

5. Place the unit securely in a heavy-duty box.

6. Mark the RMA number on the outside of the box as well as on your purchase order.

7. Send the unit to your local Xycom repair center.

A.1 SPECIFICATIONS

The specifications for the 9450-SSW are listed in the following tables:

Table A-1. 9450-SSW Hardware Specifications

Characteristic	**Specification**
Mechanical Height Width Depth Weight	 12.2" (310 mm) 19" (483 mm) 16.5" (419 mm) 59 lbs (26.7 kg)
Electrical	115/230 VAC 14 to 21% 50-60 Hz, 300 watts
Power Supply	150 Watts
Backplane	Seven-slot AT passive backplane (7 AT slots) 150 watts available to backplane/drives +5 V @ 20 A/ 12 V @ 8 A -5 V and -12 V: .5 A total
Mounting	EIA Standard 19" rack or panel
Monitor Compatibility CRT Size Resolution Dot trio pitch	 SVGA 14" 640 x 480, 800 x 600, 1024 x 768 (interlaced) 0.28 mm

Table A-2. 9450-SSW Environmental Specifications

Characteristic	**Specification**
Temperature	
Operating	0° to 50°C (32° to 122°F)
Non-operating	-40° to 60°C (-40° to 140°F)
Humidity	
Operating	10 to 80% RH, non-condensing
Altitude	
Operating	Sea level to 10,000 feet (3048 m)
Non-operating	Sea level to 40,000 feet (12192 m)

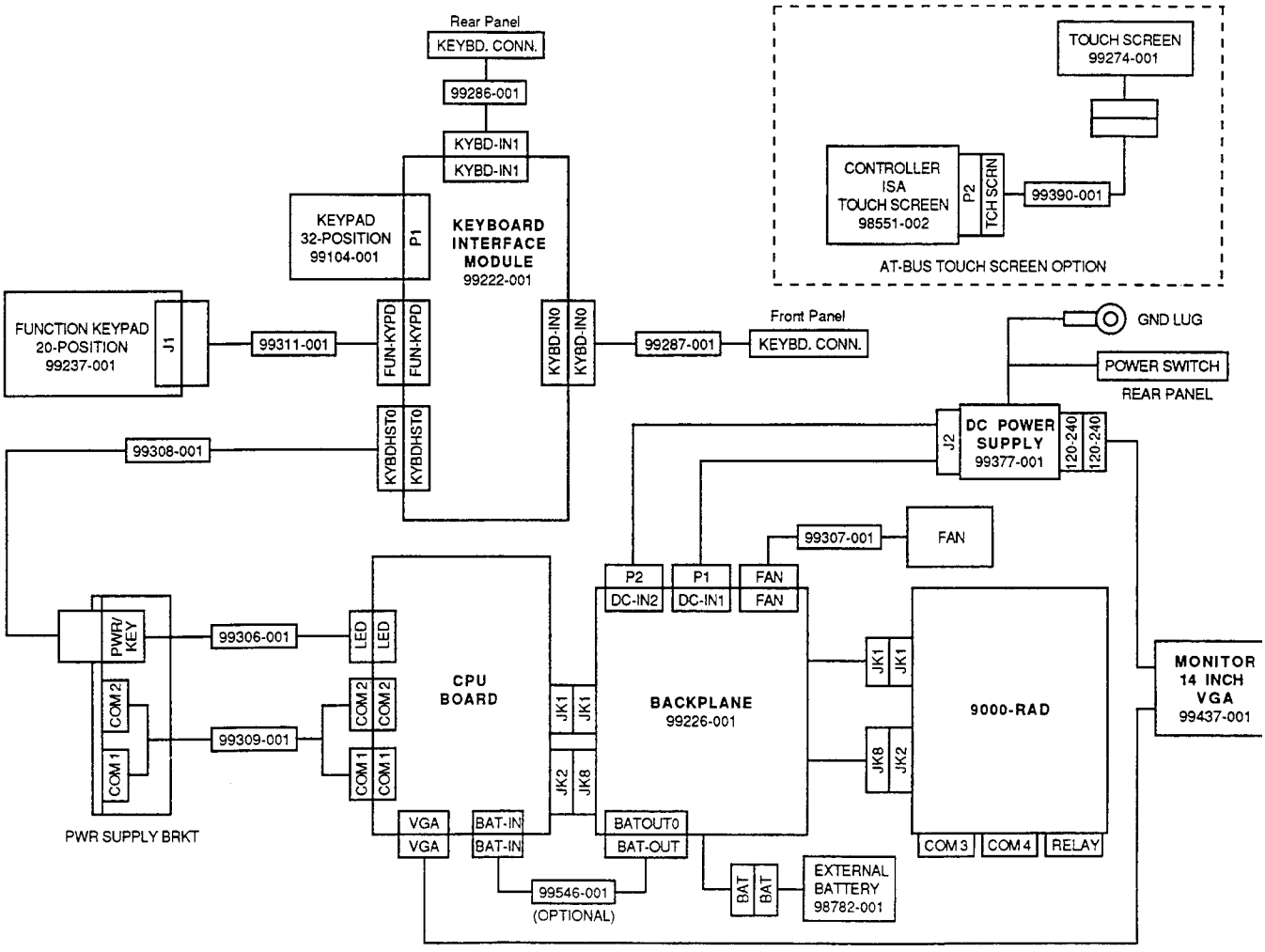


Figure B-1. System Block Diagram

NOTE	
Material:	.010 thick Aluminum with .090 thick domes. Epoxy resin in the front side and 3M #468 adhesive on the back side.

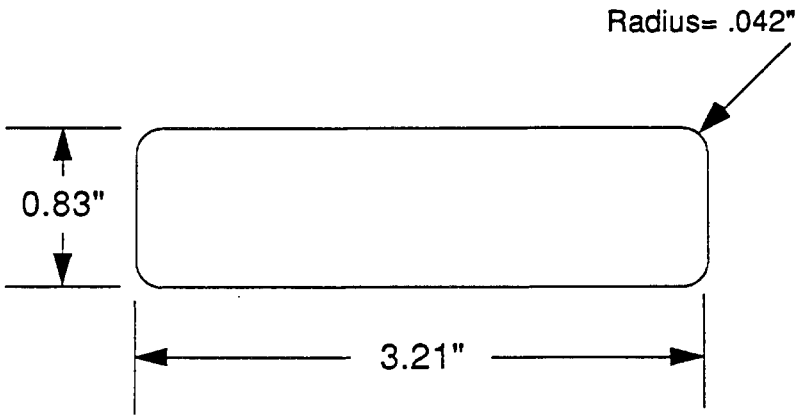
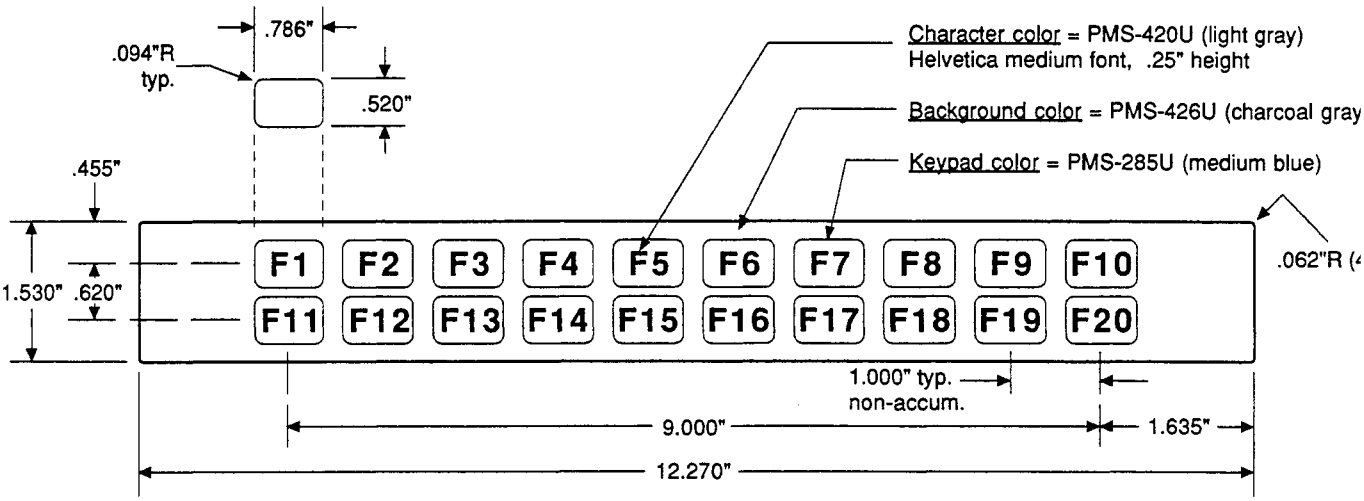


Figure B-2. 9450-SSW Logo Dimensions

NOTE

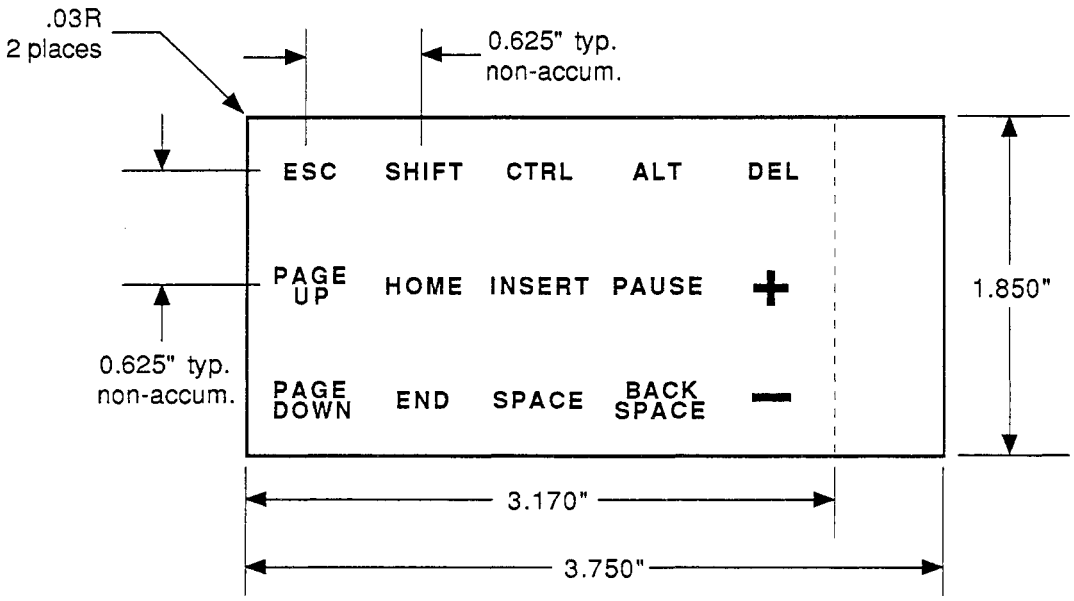
Material: .010 thick textured polyester overlay resin on the front side and 3M #467 adhesive on the back side.



Material: .010" overlay (8 mil TEXTURED POLYESTER AUTOTEX V8)
(2 mil 3M #467 adhesive)

Figure B-3. 9450-SSW 20 Function Key Overlay

NOTE	
Material:	.007 thick polyester with factory clear hardcoat on the front side and UV velvet on the back side.



Notes:

Material: .007" thick polyester with factory clear hardcoat on top side.

Crease insert approximately at the dotted line. Then bend downward to approximately 90°. Crease must not be so sharp as to fracture part.

Figure B-4. 9450-SSW 15-Key Insert

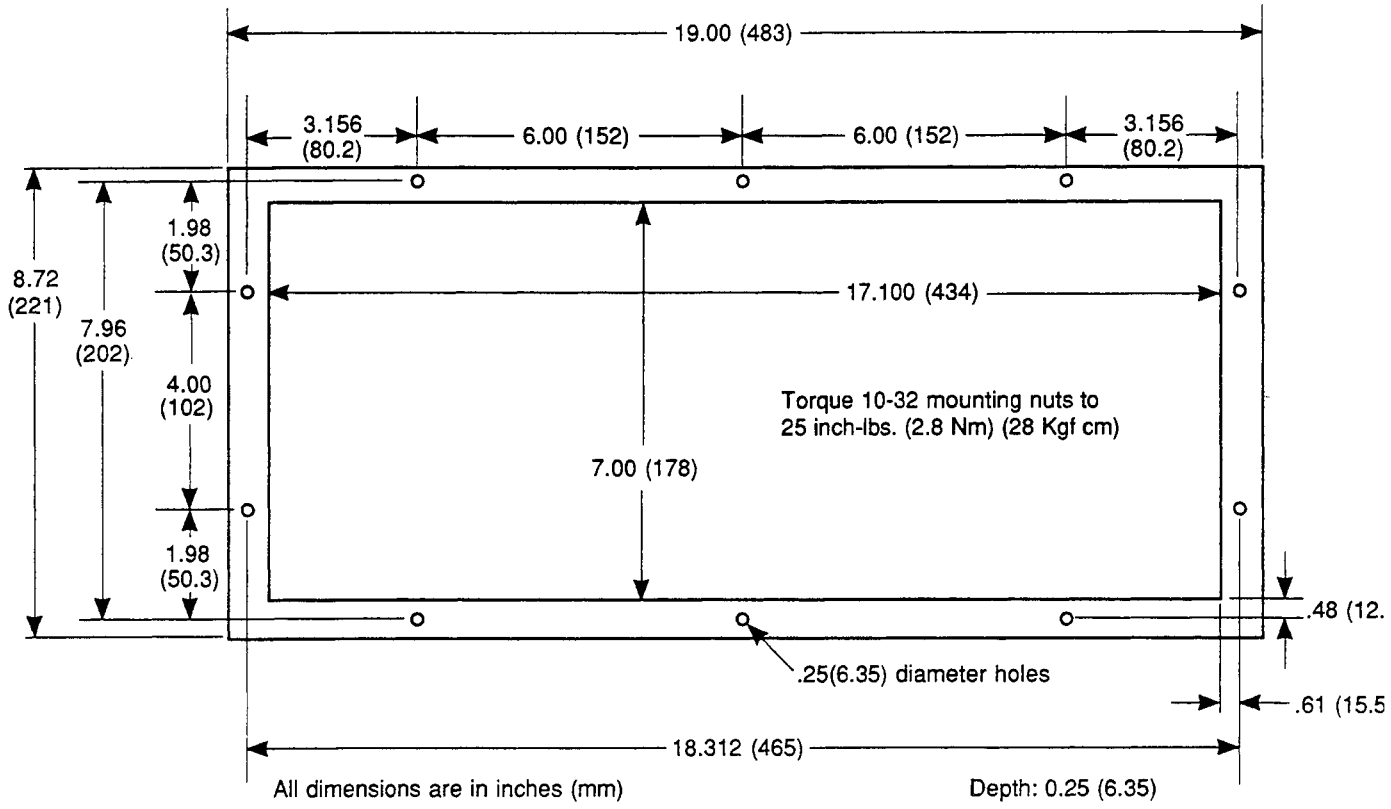


Figure B-5. 8000-KB5 and 8000-KB6 Keyboard Cutout Dimensions

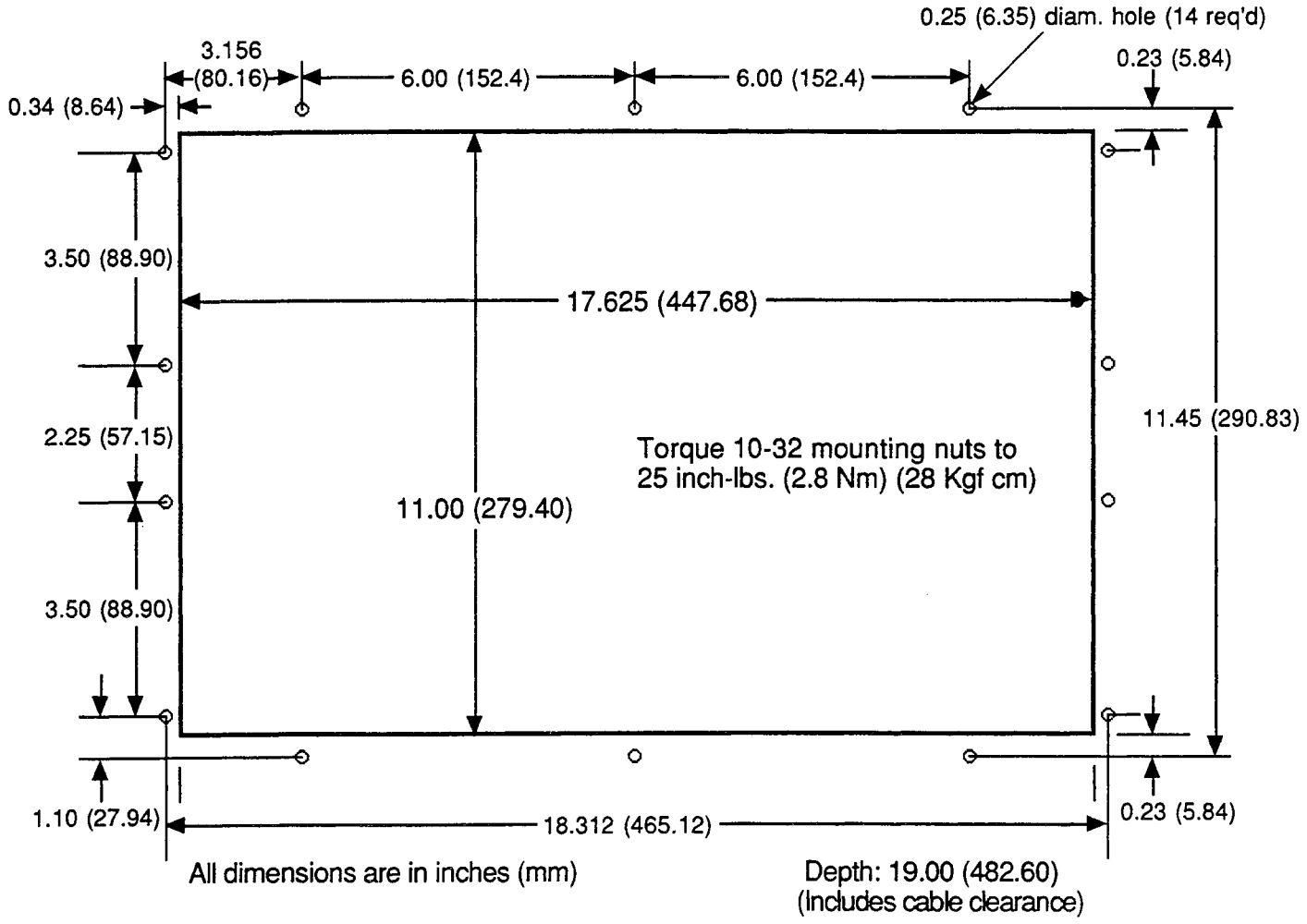


Figure B-6. 9450-SSW System Cutout Dimensions

This appendix describes the pinouts for the COM, SVGA, and parallel port connectors.

C.1 SERIAL PORT CONNECTORS

The COM1 and COM2 serial ports are standard DB-9 connectors located on the I/O side of the unit on the CPU board.

Table C-1. COM1/COM2 Serial Port Pinouts

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

The COM3 and COM4 serial ports are located on the I/O side of the unit on the 9000-RAD board.

Table C-2. COM3/COM4 Serial Port Pinouts

Pin	RS-232C	RS-485
1	DCD	TXD-
2	RXD	TXD+
3	TXD	RTS-
4	DTR	RTS+
5	GND	GND
6	DSR	RXD-
7	RTS	RXD+
8	CTS	CTS+
9	RI	CTS-

C.2 SVGA CONNECTOR

The SVGA is a 15-pin connector located on the CPU board. Refer to the CPU manual for more information.

Table C-3. SVGA Pinouts

Pin	Signal	Pin	Signal
1	RED	9	KEY
2	GREEN	10	GND
3	BLUE	11	ID0
4	ID2	12	ID1
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	RSVD
8	GND		

C.3 PARALLEL PORT CONNECTOR (LPT1)

The parallel port connector, LPT1, is a 25-pin female connector located on the CPU board.

Table C-4. Parallel Port Pinouts

Pin	Signal	Pin	Signal
1	STROBE	14	AUTOFEED
2	PD0	15	PERROR
3	PD1	16	INIT
4	PD2	17	SELIN
5	PD3	18	GND
6	PD4	19	GND
7	PD5	20	GND
8	PD6	21	GND
9	PD7	22	GND
10	PACK	23	GND
11	PBUSY	24	GND
12	PE	25	GND
13	SELECT		

C.4 KEYBOARD CONNECTORS

Two standard five-pin keyboard connectors are available on the 9450-SSW. Figure C-1 illustrates the location of the pins.

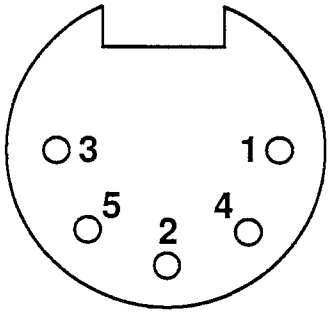


Figure C-1. Keyboard Connector Pin Location (Front View)

Table C-5. Keyboard Pin/Signal

Pin	Signal
1	Clock
2	Data
3	NC
4	GND
5	+SVDC

C.5 SPEAKER JACK

The speaker jack is a subminiature phone jack located on the CPU board. Refer to the CPU manual for more information.

Table C-6. Speaker Jack Pin/Signal

Pin	Signal
Tip	Sources Current
Sleeve	GND

Numerical

A

B

C

D

E

F

H

I

K

L

M

N

O

P

R

S

S *(continued)*

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