4820 SurePoint Solution

Planning, Installation and Service Guide

January 14, 2005

GA27-4231-06

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Note
Before using this information and the product it supports, be sure to read the Appendix D, “Safety information,” and the general information under Appendix C, “Notices.”

Seventh Edition (February 2004)

This edition applies to the IBM 4820 SurePoint Solution and to all subsequent releases and modifications until otherwise indicated in new editions.

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About this guide

This guide provides information on installing and servicing the IBM 4820 SurePoint Solution and is organized as follows:

- Chapter 1, "Introducing the IBM 4820 SurePoint Solution," describes all models and available options for the 4820 SurePoint™ Solution.
- Chapter 2, "Installing the IBM 4820," on page 2-1 provides the installation steps for the display and the features.
- Chapter 3, "Maintaining the IBM 4820," on page 3-1 describes common maintenance procedures for all models of the 4820.
- Chapter 4, "Troubleshooting common problems," provides information on resolving common problems.
- Appendix A, "Field-replaceable units" provides the field replaceable unit (FRU) part numbers for the 4820.
- Appendix B, "Mounting surface templates" are necessary when installing the distributed pedestal and the free-standing pedestal.

Throughout this guide, the following numeric terms refer to the IBM product name:

4820 4820 SurePoint Solution

4694 4694 Point of Sale Terminal

4840 IBM 4840 SurePOS™ 500 Series

4800 4840 SurePOS 700 Series

Who should read this guide

Personnel responsible for installing, maintaining, and using the IBM 4820 SurePoint Solution should read this guide. Some chapters provide information that is intended for trained technical personnel.

Related publications

The following IBM publications, drivers, and service diskette information are available from the IBM Retail Store Solutions Web site at: www.ibm.com/solutions/retail/store/. From the store page, click **Support**.

- *IBM 4820 SurePoint Solution: System Reference*, SA27-4249
- *IBM 4694 Point-of-Sale Terminals: Installation and Operation Manual*, SA27-4005
- *IBM 4694 Point-of-Sale Terminals: Hardware Service Manual*, SY27-0364
- *IBM SurePOS 700 Series Installation and Operations Guide*, GA27-4223
- *IBM SurePOS 500 Series Installation and Operations Guide*, GA27-4254
- *IBM SurePOS 300 Series Installation and Service Guide*, GA27-4309
- *IBM SurePOS 720, 740, and 780 Planning, Installation and Operation Guide*, GA27-4328
- *IBM SurePOS 720, 740, and 780 Hardware Service Guide*, SA27-4329
- *IBM SurePOS 700 Series: Options and I/O Devices Service Guide*, SY27-0392

Driver and service diskette information

Under SurePOS Peripherals, click **IBM SurePoint Solution** to go to the IBM 4820 SurePoint System Support page, where you can download the following software:

- 4694/4695/ISA Service/Diagnostic Diskette, Version 5.33 or later
- 4820 Touch Drivers for SurePOS 700 Series, which includes the Elo TouchSystems SmartSet software
- 4820 USB-attached Model 2xN/5xN POS Device Service Diskette
- 4820 RS-232-attached Model 2xN/5xN POS Device Service Diskette

Under Peripheral Drivers, click the links to go to the Peripheral Driver Guide page, where you can download the following software:

- POSS for Windows®
- OLE for POS (OPOS)
- JavaPOS™
- POSS for DOS

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- Fill out one of the forms at the back of this book and return it by mail or by giving it to an IBM representative.

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Between major revisions of this guide we may make minor technical updates. The latest softcopy version of this guide is available on the Publications Web page: www.ibm.com/solutions/retail/store/. Click **Support**, then **Publications**.

Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use the 4800 SurePOS terminals successfully. The following is a high-level list of the accessibility features:

- All controls are located on the front of the machine, in easy reach.
- Industry-standard serial and USB ports allow alternative I/O devices.
- Manuals are available in .PDF format and can be downloaded from the Web. See "Related publications" on page ix for the Web address.
- To assist users with color-vision deficiencies, the power LED blinks as well as changes color when in low-power mode.
- Displays are driven at 60 Hz to eliminate problems caused by screen flicker.

Summary of Changes

December 2004

Corrections to part numbers

February 2004

This edition reorganizes the guide and provides information about the 4820 SurePoint Solution Models 2WN, 2GN, 5WN, and 5GN. This edition also combines *System Reference* information, since a separate publication is no longer maintained.

October 2003

This edition adds information about the features of Models 4WT and 4GT of the 4820 SurePoint Solution.

July 2002

This edition adds information about Models 10D and 1FR of the 4820 SurePoint Solution.

January 2002

This edition adds information about the integrated touch pedestal available for the 4694 Point of Sale terminal.

September 2000

This edition adds information about the features of Models 42D, 42T, 4FD, and 4FT of the 4820 SurePoint Solution:

- RS-232 (EIA 232) connectivity
- Free-standing pedestal

February 2000

This edition adds information about the features of Models 48D and 48T of the 4820 SurePoint Solution:

- Universal Serial bus (USB) connectivity
- Audio capability
- Transition Minimized Differential Signaling (TMDS) digital video interface
- Digital Visual Interface (DVI)

Chapter 1. Introducing the IBM 4820 SurePoint Solution

The IBM 4820 SurePoint Solution (see Figure 1-1 on page 1-2) is a family of displays optimized for retail point of sale applications. Choices in touch technology, screen size, I/O device support, and connectivity enable a SurePoint solution for any POS environment.

Table 1-1 summarizes the models and features of the 4820 SurePoint Solution:

Table 1-1. 4820 SurePoint Solution models and features

Model	Screen size	Color	MSR	Keypad	Pointing device	Keylock	Touch driver	Host system
4820 Infrared Touch Screen Monitors								
4820-2GN	12 in. single bulb	Iron Gray	USB or RS-232[1]			Yes	Elo TouchSystems Universal	Supports all
4820-2WN		Pearl white						
4820-5GN	15 in.	Iron Gray						
4820-5WN		Pearl white						
4820-2GB	12 in. dual bulb	Iron Gray						
4820-2WB		Pearl white						
4820 Capacitive Touch Screen Monitors								
4820-42T	12 in.	Pearl white	RS-232	IBM PS/2®		No	3M TouchWare	PC
4820-46T	12 in.	Pearl white	RS-485	PS/2		Yes	POS suite	4694
4820-48T	12 in.	Pearl white	USB				3M TouchWare	4800; 4694-206
4820-4WT	12 in.	Pearl white	USB[1]			Yes	3M TouchWare	Supports all
4820-4GT	12 in.	Iron gray	USB[1]					
4820 Resistive Touch Screen Monitors								
4820-4FT	12 in.	Iron gray	RS-232	None		No	3M TouchWare	4810
4820-46R	12 in.	Pearl white	RS-485		PS/2	Yes	POS suite	4694
4820 Non-touch Screen Monitors								
4820-42D	12 in.	Pearl white	None		PS/2	No	None	Supports all
4820-4FD	12 in.	Iron gray	RS-232	None		No		4840 4810
4820-46D	12 in.	Pearl white	None		PS/2	Yes		4694
4820-48D	12 in.	Pearl white	USB			Yes		4800 4694–206
4820-10D	10 in.	Pearl white	None			No		Supports all
4820-1FR	10 in.	Iron gray	None			No		Supports all

[1]Options are selected by feature code.

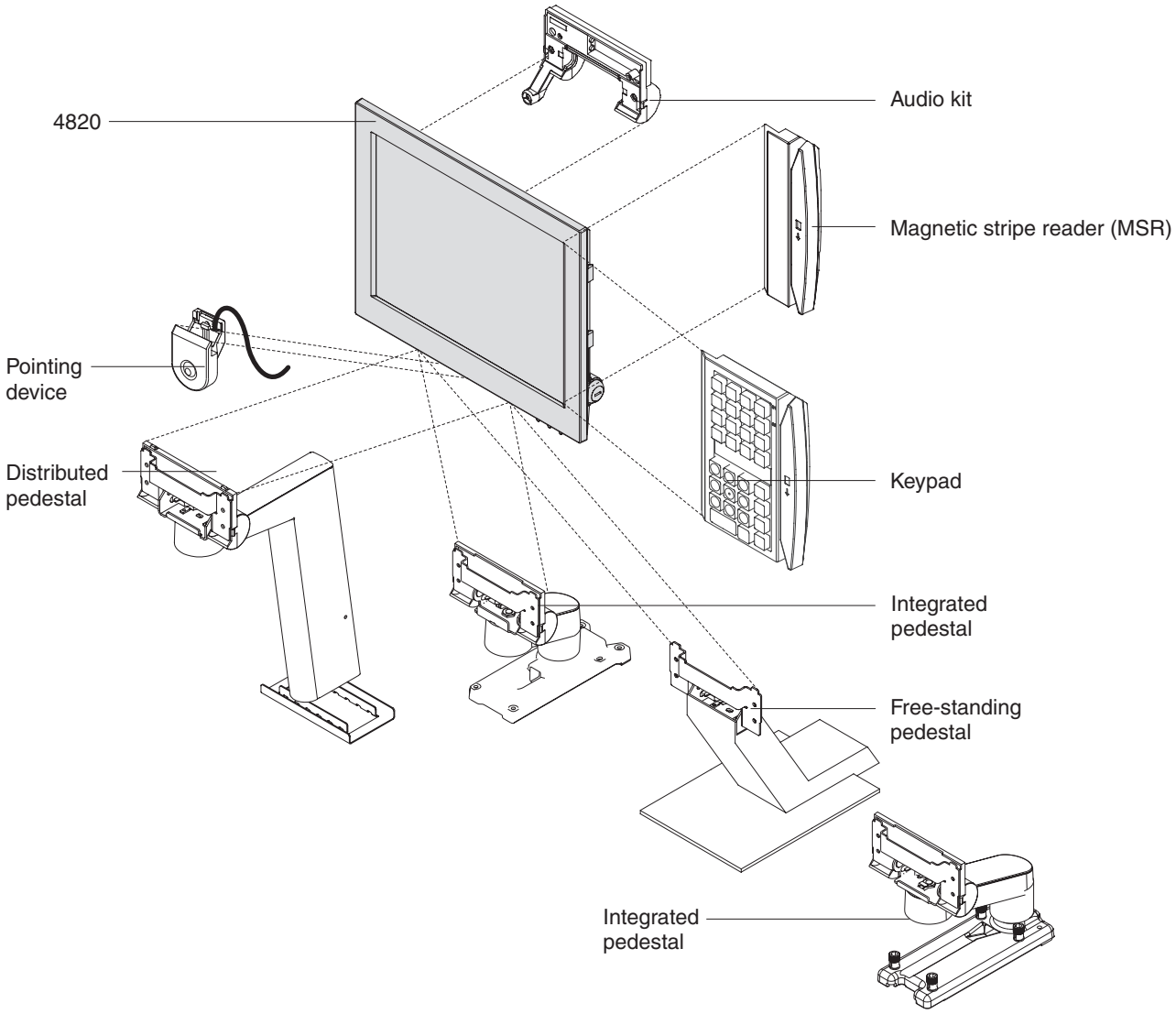


Figure 1-1. 4820 SurePoint Solution with features and available pedestals

Hardware options

Table 1-2. 4820 SurePoint Solution hardware options

Optional hardware	Description
12-in. and 15–in. models only:	
Keypad	• 32-key with ISO 3 track MSR, **or** • 32-key with JUCC MSR
Keyboard	• USB models allow USB keyboard attachment • RS-232 models accept a PS/2 keyboard for diagnostics when no system keyboard is available
MSR	ISO 3 track or JUCC
Pointing Device	• PS/2 mouse type • USB models
Security	Manager's keylock (469X) and factory-installed for 2xx and 5xx models.
Sound	Audio kit available (all models except 2xx and 5xx) that requires sound card with amplified output (speaker out). For example, Sound Blaster sound card PCI 16 or Yamaha sound card WF192XG Amplified audio kit available for models 2xx and 5xx
All Models:	
Mounting	• Integrated pedestal • Integrated touch pedestal – Short: 255 mm (10 in.) – Tall: 380 mm (15 in.) • Distributed pedestal – Short: 240 mm(9.38 in.) – Tall: 352 mm (13.80 in.) • Free-standing pedestal • VESA bracket (excluding models 2xx and 5xx)

Pedestal options

The pedestal options for the 4820 SurePoint Solution are integrated, free-standing, or distributed pedestal. See Figure 1-2.

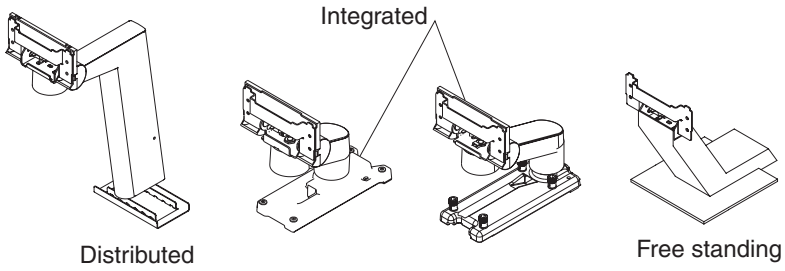


Figure 1-2. Pedestal types

Supported operating systems

Table 1-3. Supported operating systems. Supported = ✓; Not supported = ■

Model	Operating Systems								
	DOS	Windows® 95	Windows NT® 4.0	Windows 98	Windows 2000	Windows XP	Windows Java™ Virtual Machine (JVM)	4690	Linux
4820 Infrared Touch Screen Monitors									
4820-2GN	✓	■			✓	✓	✓ JavaPOS	Version 3, Release 3 with CSD 04H0	IBM Retail Environment or SUSE LINUX
4820-2WN									
4820-5GN									
4820-5WN									
4820-2WB									
4820-2GB									
4820 Capacitive Touch Screen Monitors									
4820-42T	✓	✓	✓	✓	✓	✓	✓	✓	■
4820-46T		✓	✓	✓	✓	✓	✓ JavaPOS	Version 2, Release 3	
4820-48T		■	✓	✓	✓	✓			
4820-4WT		✓	✓	✓	✓	✓			
4820-4GT		✓	✓	✓	✓	✓			
4820 Resistive Touch Screen Monitors									
4820-4FT	✓	✓	✓	✓	✓	✓	✓	✓	■
4820-46R		✓	✓	✓	✓	✓	✓ JavaPOS	Version 2, Release 2	
4820 Non-touch Screen Monitors									
4820-42D	✓	✓	✓	✓	✓	✓	✓	✓	■
4820-4FD		✓	✓	✓	✓	✓	✓	✓	
4820-46D		✓	✓	✓	✓	✓	✓ JavaPOS	Version 2, Release 3	
4820-48D		✓	✓	✓	✓	✓	✓		
4820-10D		✓	✓	✓	✓	✓	✓		
4820-1FR		✓	✓	✓	✓	✓	✓		

Views of the 4820 SurePoint Solution

This section shows examples of the various models of the 4820 SurePoint Solution.

12.1-inch and 15.0- inch models

Figure 1-3 is a front view of the 12.1-inch and 15.0 inch models of the 4820 SurePoint Solution. Note the location of the control buttons.

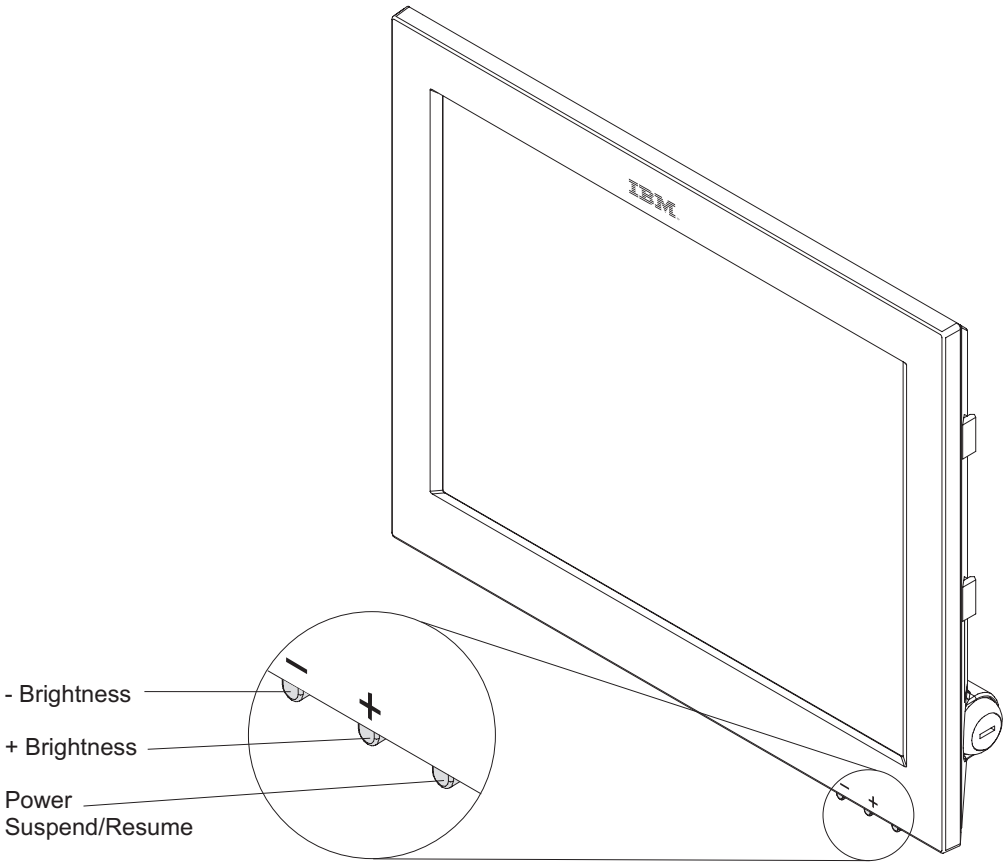


Figure 1-3. Front view of 4820

Figure 1-4 on page 1-7 is a rear view of the 12.1-inch and 15.0-inch models of the 4820 SurePoint Solution. This view shows the keypad, the locating tabs for the MSR, and the audio kit, connector, and connector cover. Note the location of the manager's keylock.

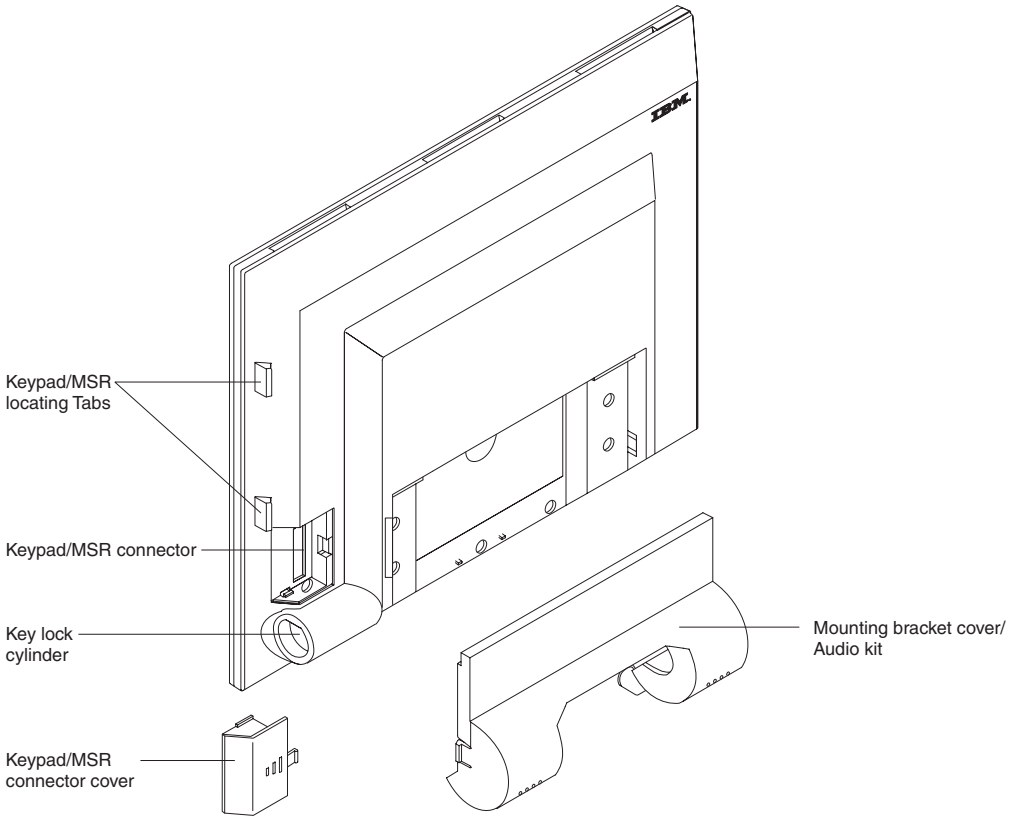


Figure 1-4. Rear view of 4820. Options shown may not be available on all models.

10.0 inch models

Figure 1-5 shows the front and rear views of the 10-inch models:

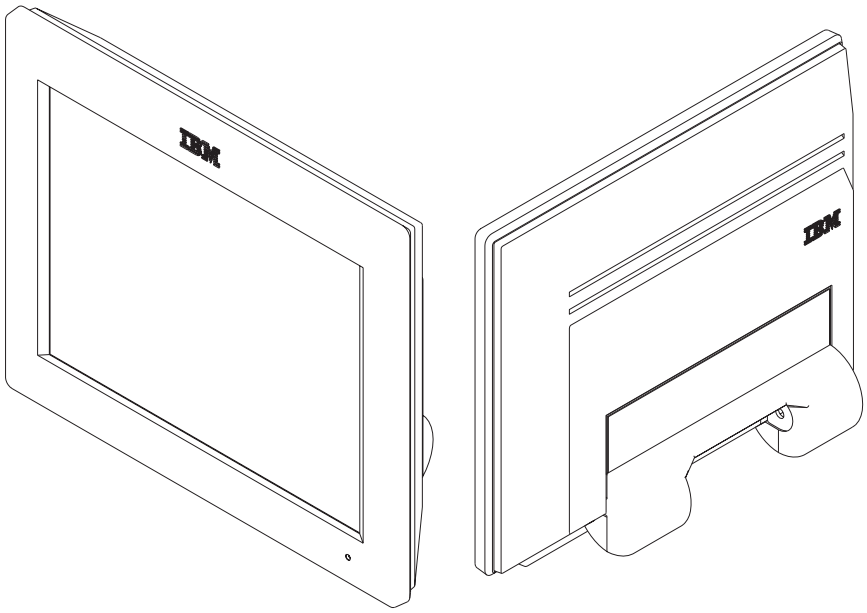


Figure 1-5. Views of 10-inch models

System software, touch drivers, and diagnostics

You can obtain the appropriate software for your 4820 SurePoint Solution from the IBM Retail Store Solutions Web site:www.ibm.com/solutions/retail/store/ (from the store page, click on **Support**).

Environmental requirements

Table 1-4 shows the humidity and temperature limits for the 4820 SurePoint Solution.

Table 1-4. Environmental requirements

	Temperature (dry bulb)	Maximum temperature (wet bulb)	Relative humidity
Operating	0 to 40°C (32° to 104° F)	27° C (81° F)	8 to 80%
Storage	-20 to 60°C (-4° to 140° F)	29° C (84° F)	5 to 90 %

Ensure that the cooling vents are not blocked by papers, signs, or other items.

Power usage

Table 1-5 lists the power consumption for the 4820 SurePoint Solution.

When compared to a similar-size CRT, the 4820 SurePoint Solution consumes less power and dissipates less heat.

Table 1-5. Power usage values

Models	Power consumption (on and operating)
10-inch	12 W
12-inch single bulb	16 W
12-inch dual bulb	20 W
15-inch	23 W

All SurePoint models can be powered from the power supply, which accepts 100- to 240-V ac input. Those 4820 SurePoint models offering the RS-485 and USB communications interface can be powered from the POS terminal.

SurePoint models offering the USB communications interface can be powered from the POS terminal with these exceptions:

- 15-inch models require a power supply when attached to 4694 POS terminals.
- 12-inch dual bulb models require a power supply when attached to 4694 POS terminals if more than 2.5 watts of power is to be used for devices attached to the auxiliary USB ports.

SurePoint models offering the RS-232 communications interface can be connected to powered RS-232 ports on SurePOS 700 or 300 terminals. Hot plugging is not supported.

Spill resistance

The 4820 SurePoint Solution is designed to meet the following standards:

- National Electrical Manufacturers Association (NEMA) Type 5 rating per NEMA Standards Publication number 250–1991 Enclosures for Electrical Equipment
- IP 52 rating per IEC 529

Calling for service

When you call IBM for warranty information or service, be sure to have the following information available:

- Machine type/model
- Serial number

Locate this information either on the lower-right edge at the rear, or on the side of the machine.

Chapter 2. Installing the IBM 4820

This section describes procedures for setting up the 4820 SurePoint Solution. Unless otherwise indicated, these procedures apply to all models. Be sure to know your model number, and type of touch technology. See Table 1-1 on page 1-1.

Tailoring your installation

Because of the numerous 4820 Model types, pedestal types, and available options for the 4820, you must tailor your installation to fit your configuration. This section provides instructions by pedestal type, and by option. The recommended steps of installation are:

1. Select the pedestal type and route the cables. Refer to Figure 2-1 on page 2-2.

   Note: Cable routing is unique for each pedestal and system unit.
2. See to “Installing the options” on page 2-27 and install your optional hardware to the display in the following order:
   a. Keypad/MSR or MSR
   b. Pointing device
   c. Keylock barrel
3. Connect the cables to the 4820 SurePoint Solution.
4. Install the optional speaker kit (see “Attaching the audio kit” on page 2-32) or cable cover.
5. Connect the cables to your system unit.
6. Power on the system and the 4820 display. See to “Powering on” on page 2-34
7. Perform an auto adjust to obtain the optimal image. See “Adjusting the image” on page 2-35.
8. Attach optional button cover, (see “Installing the optional button cover” on page 2-46).
9. Install the appropriate touch driver for your 4820 Model number (see Table 1-1 on page 1-1). Touch drivers are available from the IBM Web site: www.ibm.com/solutions/retail/store. Then click on **Support**.

   Note: For multiple monitor installations (two monitors attached to a single host, or a 4820 attached to a 4840), any 2xx or 5xx model can run with any other touch model, however **both** drivers must be installed.
10. For Models 2xx and 5xx, run the optional IBM Advanced Touchscreen Configurator to enable the multiple monitor support, beep on touch, and the blocked beam monitor. See “Features of the IBM Advanced Touch Screen Configurator” on page 2-45 for additional information.

Identifying the pedestal type

Before you begin, decide if your 4820 SurePoint Solution requires an integrated, free-standing, or distributed pedestal. Note that your system type can dictate the mounting pedestal. For example, an IBM 4800 or IBM 4694 POS terminal requires the integrated touch pedestal for the 4820 SurePoint Solution.

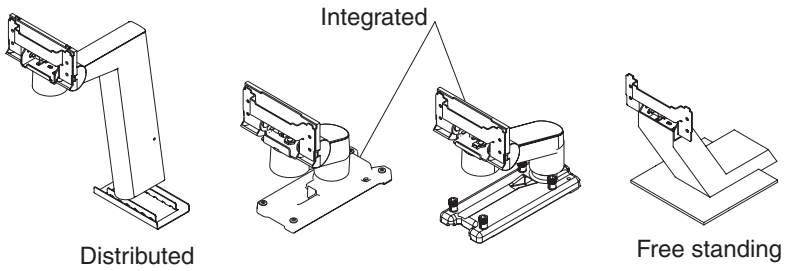


Figure 2-1. Pedestal types

Identifying the 4820 cables

This section identifies the RS-232 cables for the various models of the 4820 SurePoint Solution.

Touch with MSR/keypad: Models 2xx and 5xx

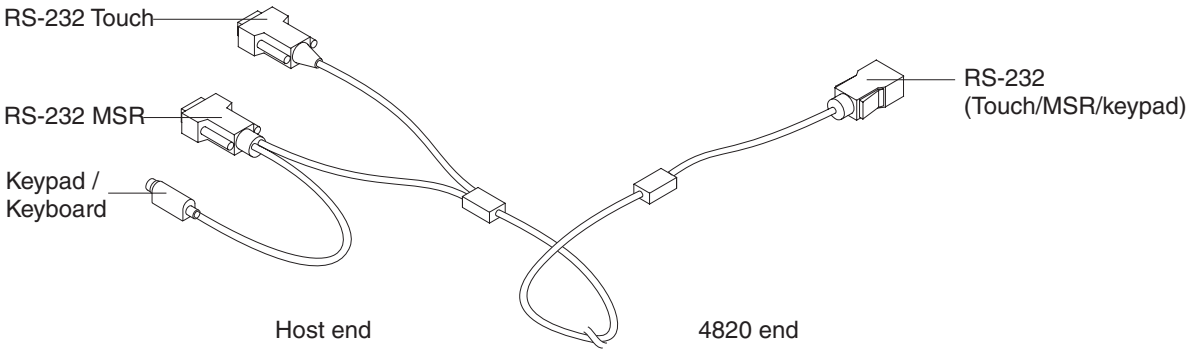


Figure 2-2. Connector cable for the RS-232 models

Touch with MSR

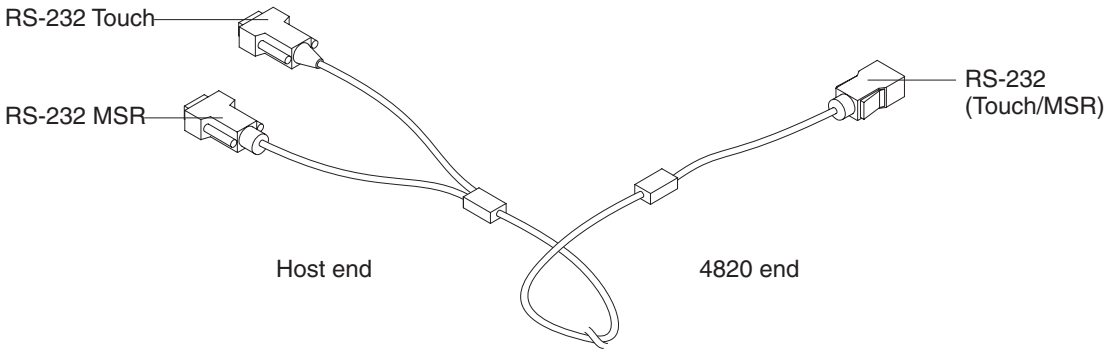


Figure 2-3. Infrared touch with MSR

Touch only

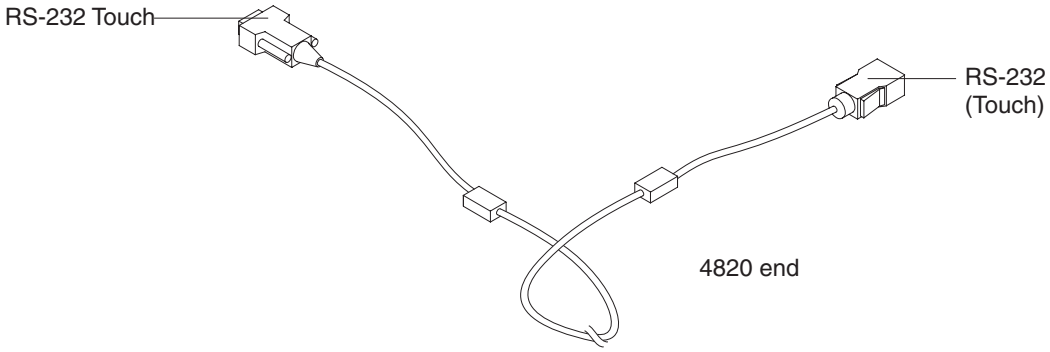


Figure 2-4. Touch only

Models with capacitive or resistive touch: Models 42T, 46T, 48T, 4WT, 4GT, 4FT, 46R

Keypad/MSR

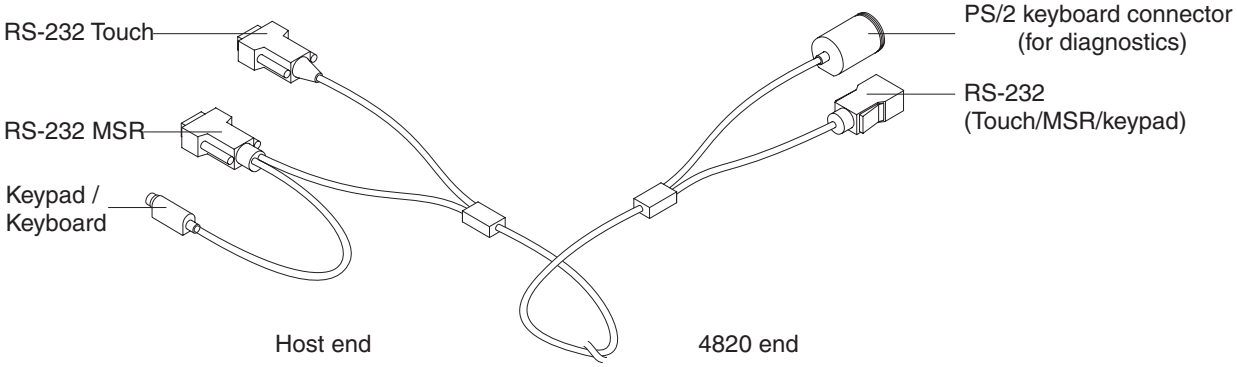


Figure 2-5. Connector cable for capacitive and resistive touch RS-232 models. The PS/2 pigtail connector allows you to connect a PS/2 keyboard and perform diagnostics.

Touch with MSR

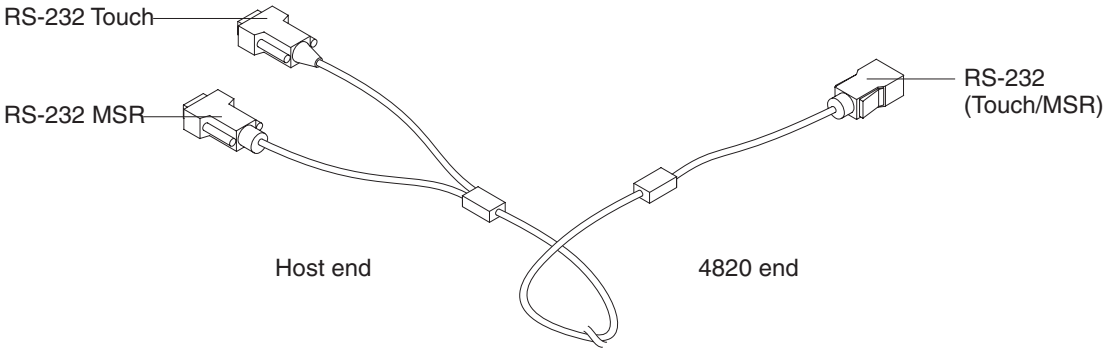


Figure 2-6. 4820-4FT model with MSR attached

Identifying the 4820 I/O ports

This section identifies the input/output ports of the various 4820 Models. See Figure 2-6 on page 2-4.

Note: This section does not show all possible configurations.

Models 2xx, 5xx

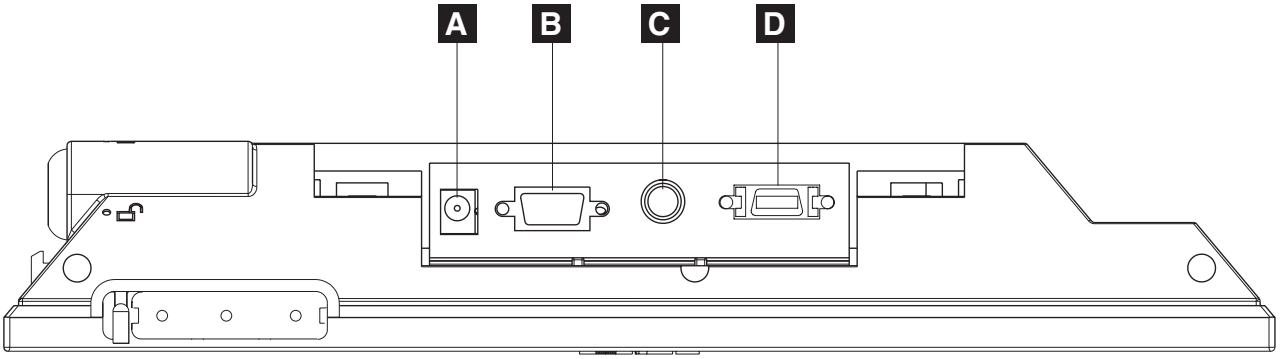


Figure 2-7. Model 2xx RS-232 I/O ports

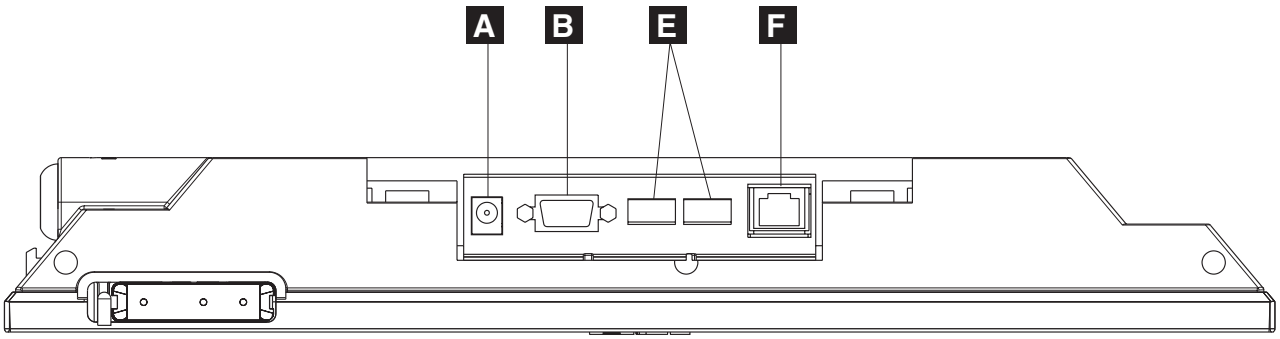


Figure 2-8. Model 5xx USB I/O ports

Models 42T, 4FT

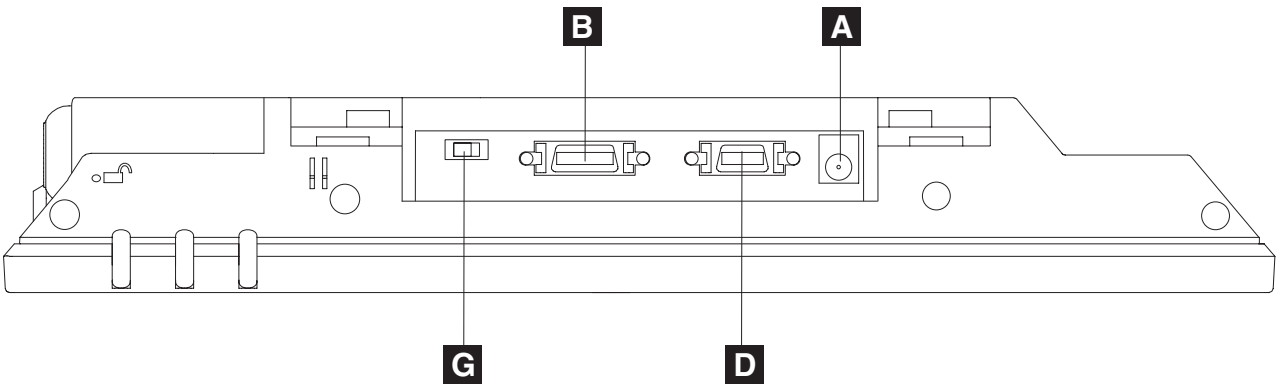


Figure 2-9. Models 42T, 4FT I/O ports

Models 46T, 46R with RS-485

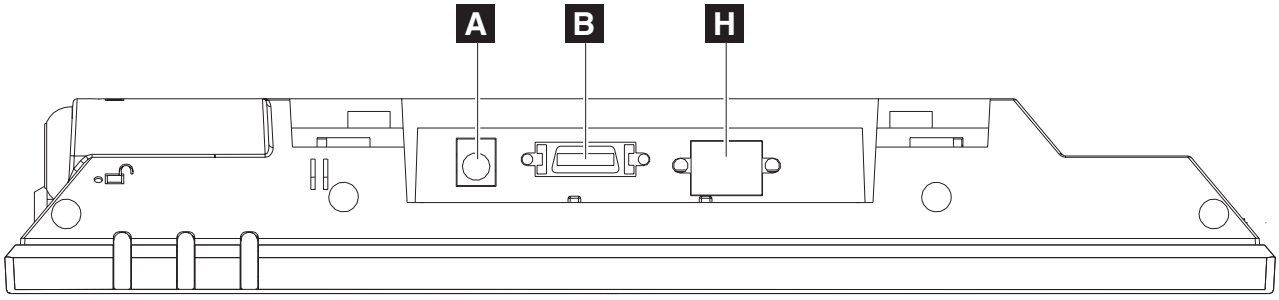


Figure 2-10. Models 46T, 46R I/O ports

Model 48T

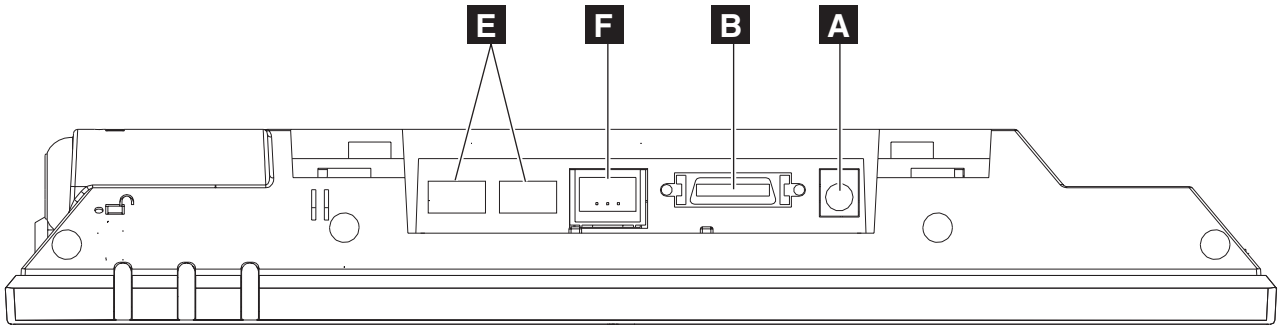


Figure 2-11. Model 48T I/O ports

Table 2-1. Connector definitions

A	12 V dc power	E	USB 1.1 (two units for external connections)
B	Video connector	F	USB 2.0
C	PS/2 keyboard port for diagnostics	G	Enable/disable audible beeper (Models 42T and 4FT)
D	RS-232 connector port	H	RS-485 (EIA 485) connector port

Identifying the icons

Icons located near the 4820 SurePoint Solution ports also identify the connection type. Table 2-2 lists these icons.

Table 2-2. Connector icons

Power	
Video	
RS-232 Touch/MSR USB	
USB out	
Enable audible beeper (Models 4FT, 42T only)	
Disable audible beeper (Models 4FT, 42T only)	
IBM PS/2® compatible keyboard	

Installing the pedestal

This section describes how to install the distributed, integrated, integrated touch and free-standing pedestal. Cable routing steps are included.

Distributed pedestal

Follow these instructions for installing the 4820 SurePoint Solution to the distributed pedestal:

Attaching the distributed pedestal to the counter

The distributed pedestal is available in short (238.2 mm/9.38 inches) and tall (350.6 mm/13.80 inches) versions. Both pedestals bolt to your counter; therefore, installation is the same. Figure 2-12 shows the mounting order for the tall pedestal.

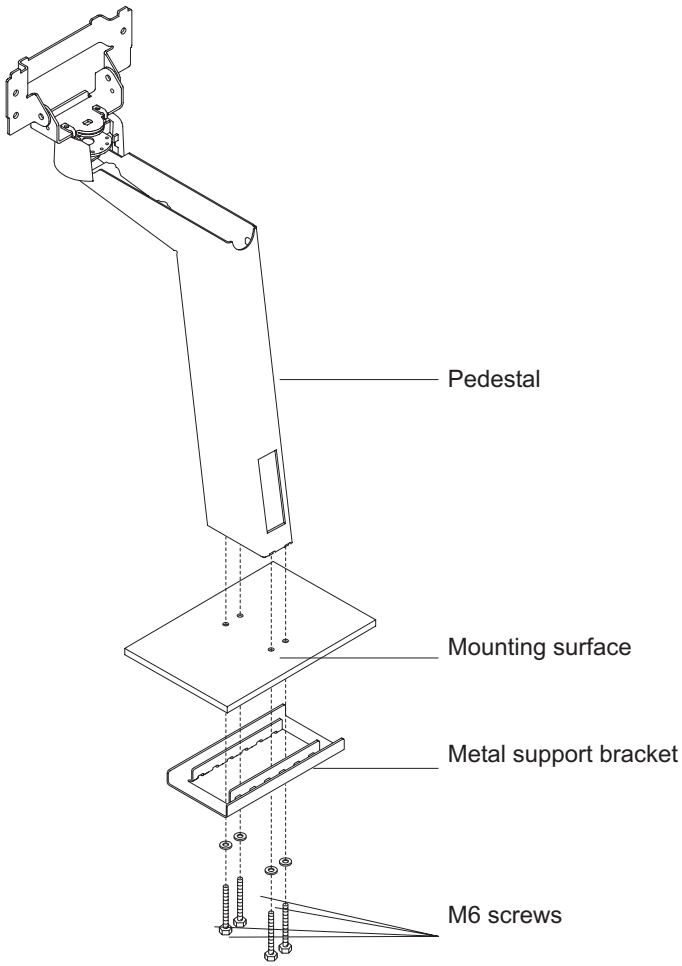


Figure 2-12. Mounting the distributed pedestal

Follow these steps to attach the distributed pedestal to the counter:

1. Using the template (see Figure B-1 on page B-1) as a guide, mark the screw hole locations for drilling through the counter. Use 8-mm bit or 5/16-in. bit to drill the four screw holes.

   Note: To route cables through the counter, drill two 2.2-mm (7/8-in.) holes through the counter. Trim the remaining material between the holes with a small saw or chisel.

2. Place the pedestal so that the mounting bolts align with the counter screw holes.
3. Use the enclosed M6 screws to secure the pedestal to the counter as shown in Figure 2-12 on page 2-8. The slots located in the metal support bracket allow you to position the pedestal for maximum stability.

Routing the cables for the distributed pedestal

1. Remove the trough cover from the distributed pedestal.

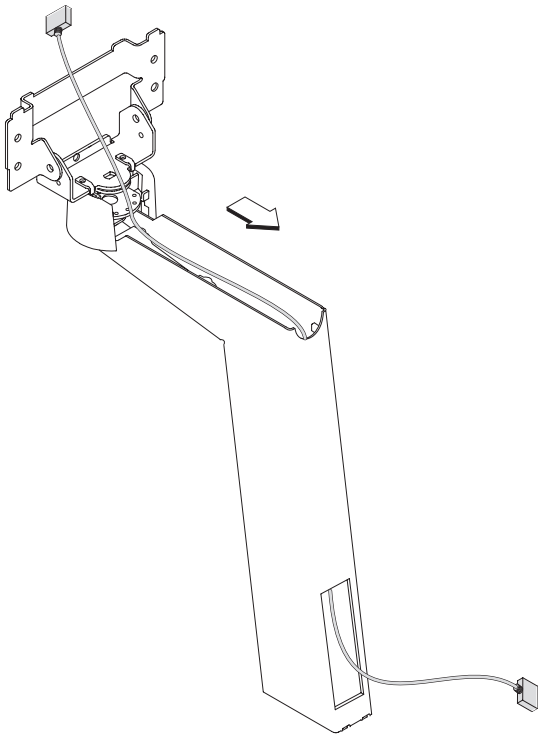


Figure 2-13. Video cable routing direction

2. As shown Figure 2-13, route the video cable down through the distributed pedestal and leave it unconnected.

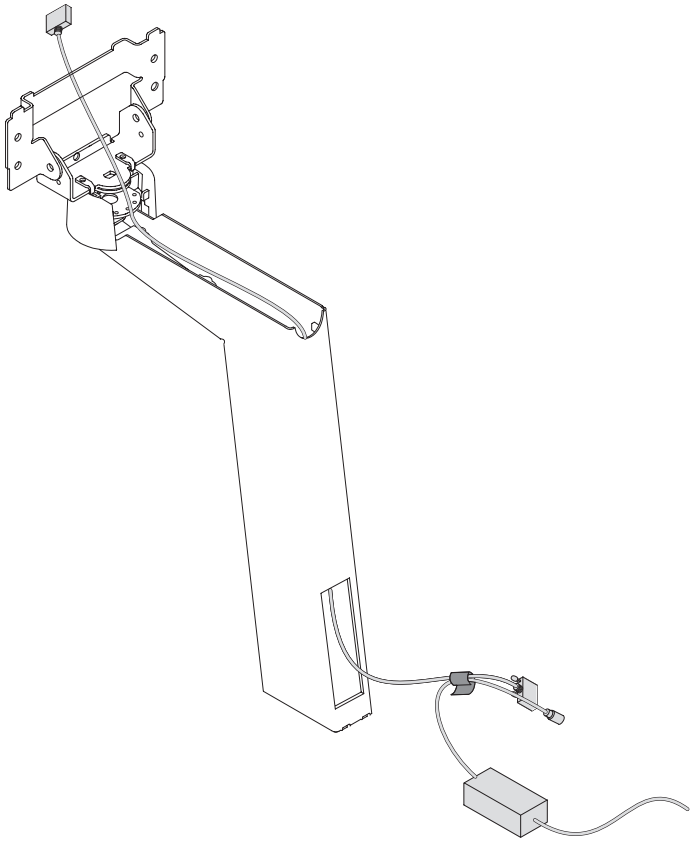


Figure 2-14. Using the velcro strip

3. As shown in Figure 2-14, use the velcro strip that is connected to the power cable and attach it to the video cable.

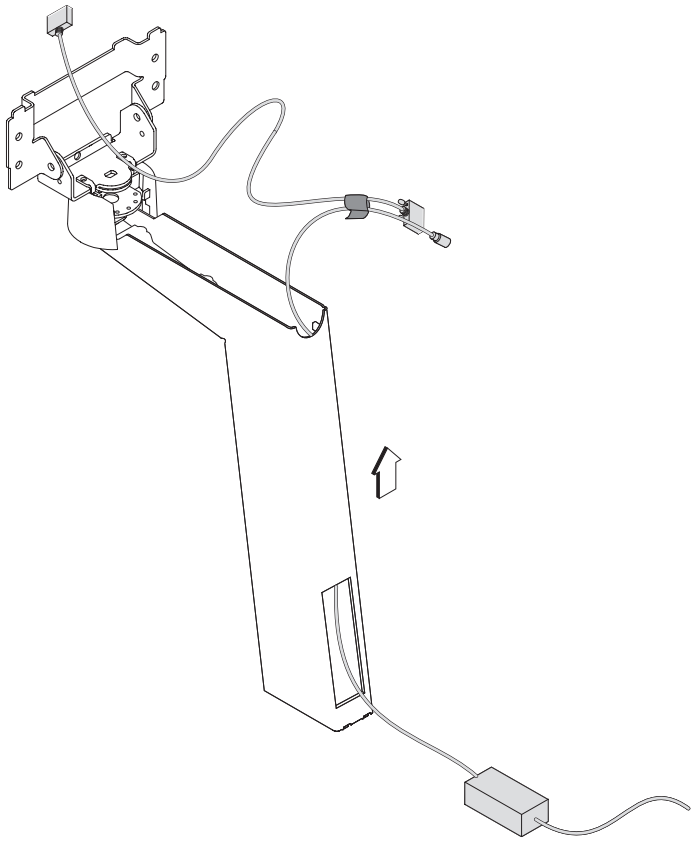


Figure 2-15. Routing the video and power cables

4. Pull the video and power cable attachment up through the distributed pedestal (see Figure 2-15).
5. Remove the velcro strip holding the video and power cable attachment together.
6. Reroute the video cable back down through the distributed pedestal.
7. Attach the cable to the appropriate port in the system unit.

   Note: Do not attach the video and power cables to the 4820 display.
8. Install you optional hardware. See "Installing the options" on page 2-27.

Mounting the 4820 SurePoint Solution to the distributed pedestal

Review the parts list shown in Figure 2-16 on page 2-12 and then follow the steps to attach the 4820 display to the distributed pedestal.

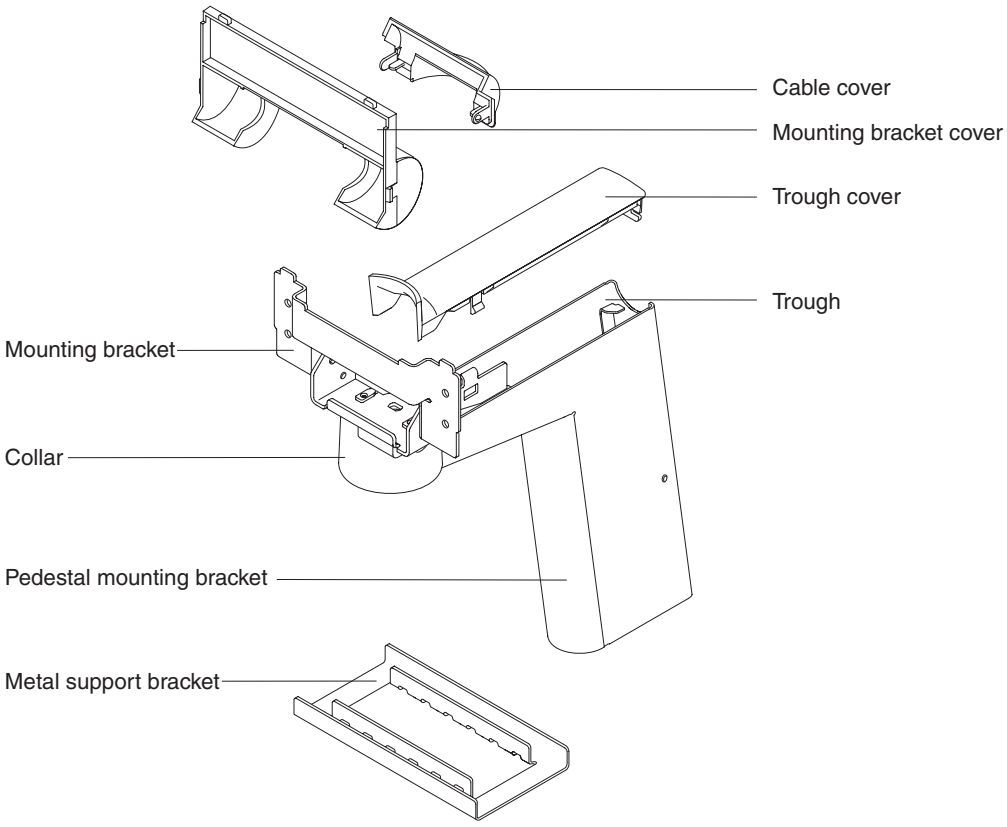


Figure 2-16. Distributed pedestal parts list shown with short pedestal

1. Ensure that the pedestal is secure.
2. Mount the 4820 onto the pedestal:
   a. Place the 4820 display on the distributed pedestal. Make sure that the metal tabs on the mounting bracket slide into the appropriate slots on the back of the 4820 display.
   b. Secure the 4820 to the mounting bracket using four screws.
3. Attach the power cable and video cable to the 4820 display.

   Note: Ensure that you have connected the cables to the system unit.
4. Install the mounting covers:

   Note: Install the optional audio kit at this time. See "Attaching the audio kit" on page 2-32.
   a. See **1** in Figure 2-17 on page 2-13. Attach the cable cover to the mounting bracket, snapping the tabs on the sides of the cover into the small holes on the sides of the bracket.
   b. See **2** . Attach the mounting bracket cover to the back of the display. Slide the tabs on the cover into the appropriate slots in the back of the display and snap into place.

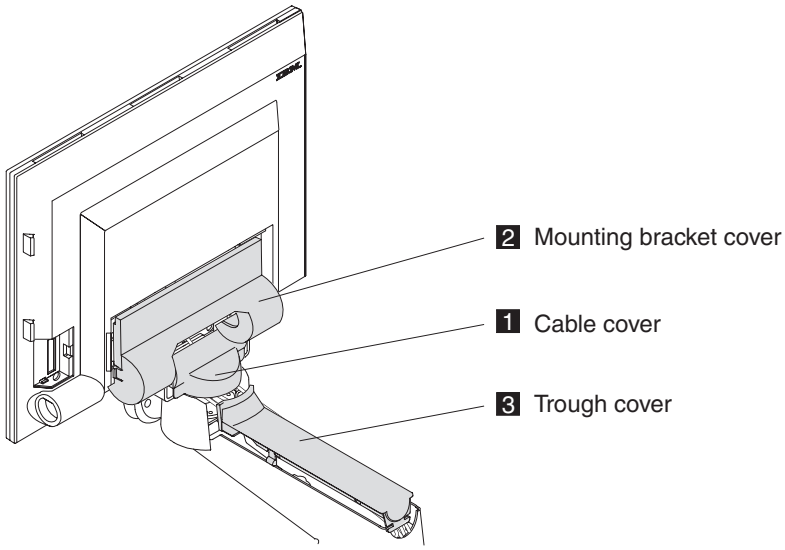


Figure 2-17. Distributed pedestal covers

c. Place and snap the trough cover (3) over the trough of the distributed pedestal.

5. Plug the power brick into an outlet.
6. Power on the system unit. See Table 1-5 on page 1-9.
7. Auto adjust your screen for maximum viewing. See "Adjusting the image" on page 2-35.

Free-standing pedestal

Follow these instructions for installing the 4820 SurePoint Solution to the free-standing pedestal:

Attaching the free-standing pedestal to the counter

Note: Attaching the free-standing pedestal to the counter is optional. Your pedestal may not require mounting.

Follow these steps to mount the 4820 SurePoint Solution to your counter.

1. Using the template (see Figure B-2 on page B-2) as a guide, mark the screw hole locations for drilling through the counter. Use 8-mm bit (5/16-in.) bit to drill the four screw holes.
2. Place the pedestal so that the mounting bolts align with the counter screw holes.
3. Use the enclosed M6 screws to secure the pedestal to the counter. The slots located in the metal support bracket allow you to position the pedestal for maximum stability.
4. See "Tailoring your installation" on page 2-1 and continue with your installation.

Mounting the 4820 to the free-standing pedestal

Review the parts diagram in Figure 2-18, and then follow the steps to attach the 4820 SurePoint Solution to the free-standing pedestal:

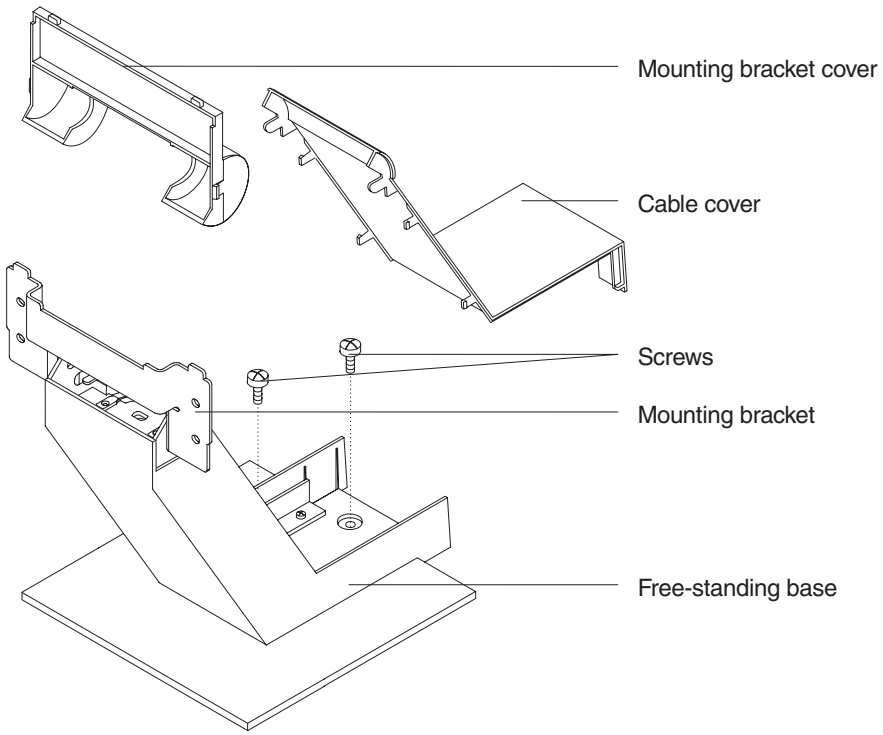


Figure 2-18. Pedestal (free-standing) parts list

1. If attaching the free-standing pedestal to the counter, ensure that the pedestal is secure.

2. Place the 4820 display on the free-standing pedestal. Make sure that the metal tabs on the mounting bracket slide into the appropriate slots on the back of the 4820 display.
3. Secure the 4820 to the mounting bracket by using four screws.
4. Connect and route the cables to the 4820:
   a. Place the cables in the cable trough.
   b. Connect to cables to the appropriate ports on the 4820.

Note: Ensure that you have attached the cables to the appropriate ports in the back of the system unit.

5. Install the covers.

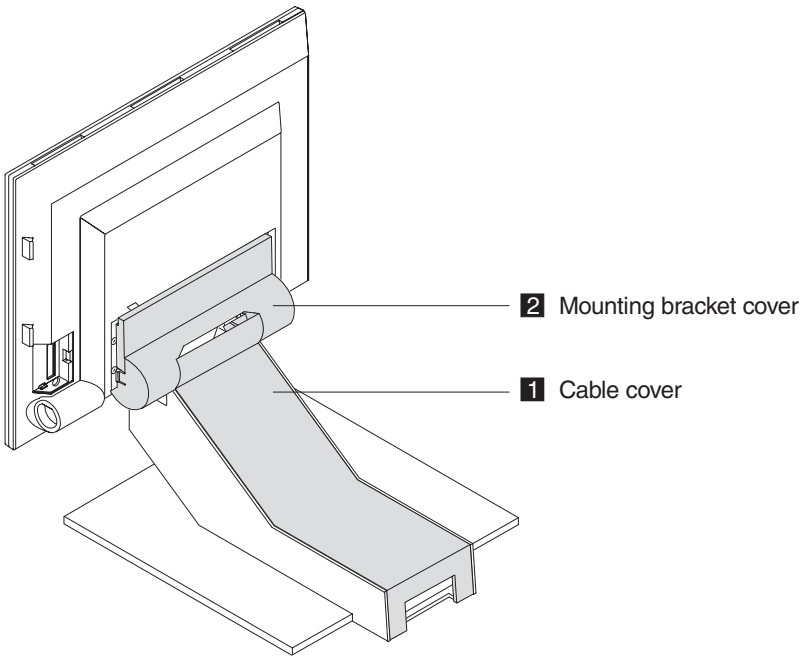


Figure 2-19. Placement of cable covers

   a. Attach the cable cover (1) to the mounting bracket (as shown in Figure 2-19), snapping the tabs on the sides of the cover into the small holes on the sides of the mounting bracket.
   b. Attach the mounting bracket cover (2) to the back of the display. Slide the tabs on the cover into the appropriate slots in the back of the display and snap into place.
6. Power On the system unit. See Table 1-5 on page 1-9.
7. Auto adjust your screen for maximum viewing. See "Adjusting the image" on page 2-35.

Integrated pedestal

See "Tailoring your installation" on page 2-1. These instructions provide steps for cable routing and mounting the 4820 SurePoint Solution to the integrated pedestal:

Routing the cables for the integrated pedestal

1. Attach the video cable to the appropriate port on the system unit.
2. Route the video cable and the power cable for the 4820 display through the opening of the system unit.
3. Separately route these cables up through the base of the integrated pedestal. See Figure 2-20.

Note: You may need to rotate the pedestal arm for the video cable connector to fit through the opening.

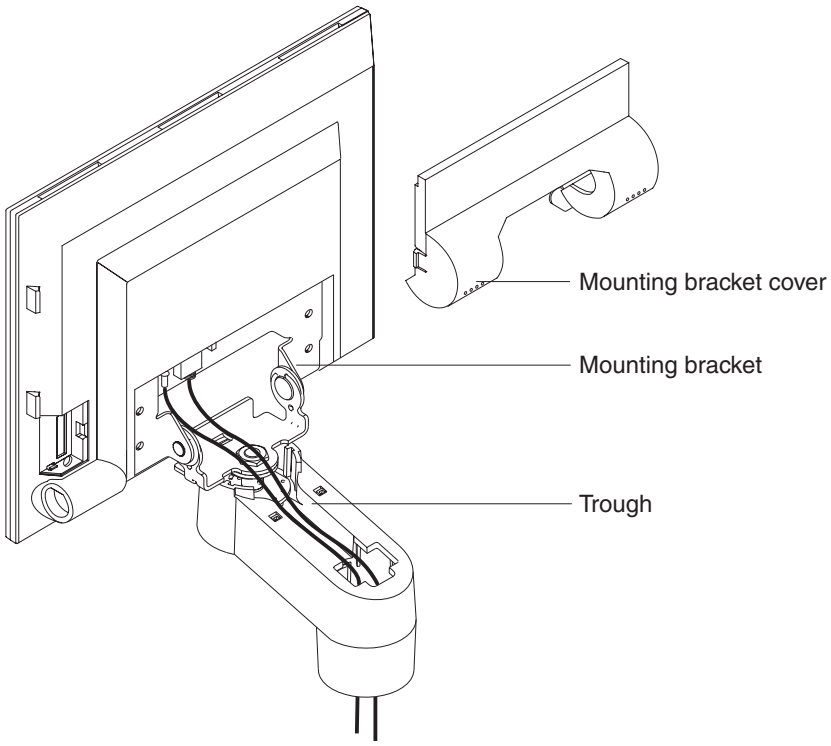


Figure 2-20. Routing the cables

Mounting the 4820 SurePoint Solution to the integrated pedestal

Figure 2-21 shows the parts of the integrated pedestal.

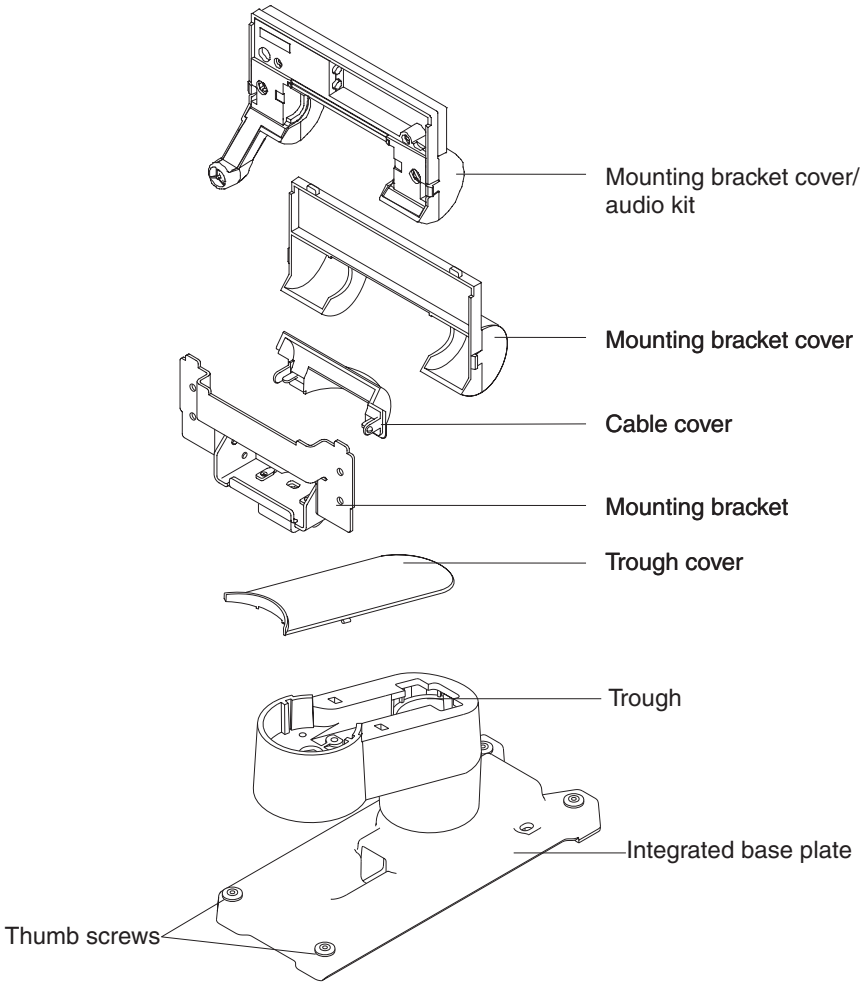


Figure 2-21. Integrated pedestal parts list

Follow these steps to attach the 4820 to the integrated pedestal:

1. Ensure that you have routed the cables.
2. Secure the pedestal to the system unit:
   a. Align the holes of the integrated base plate with the holes in the unit.
   b. Tighten the thumb screws securely.

   Note: See "Integrated touch pedestal" on page 2-20.
3. Mount the 4820 onto the pedestal.
   a. Place the display on the pedestal mounting bracket. Make sure that the metal tabs on the pedestal slide into the appropriate slots on the back of the 4820 display.
   b. Secure the 4820 to the pedestal by using four screws.
   c. Attach the power and video cables to the 4820 display.

Note: Ensure that you have attached the cables to the appropriate ports in the back of the system unit.

4. Route the power cable and secure it to the mounting bracket with a cable tie as shown in Figure 2-22.

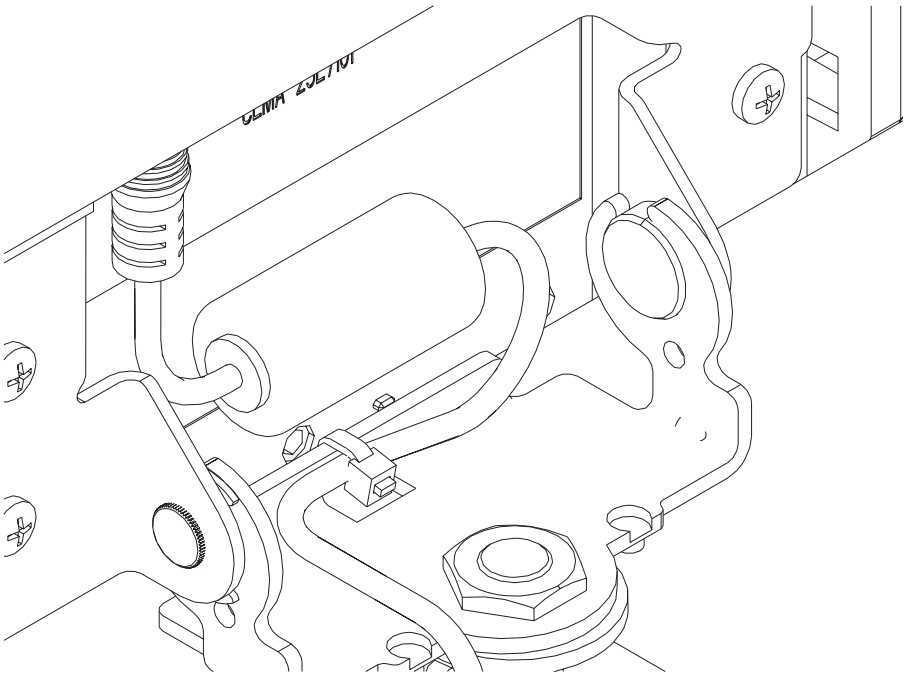


Figure 2-22. Routing the power cable

5. Install the covers.

   Note: Install the optional audio kit at this time. See "Attaching the audio kit" on page 2-32.

   a. Attach the cable cover to the mounting bracket, snapping the tabs on the sides of the cover into the small holes on the sides of the mounting bracket. See **1** in Figure 2-23 on page 2-19.

   b. Attach the mounting bracket cover (**2**) to the back of the display. Slide the tabs on the cover into the appropriate slots in the back of the display and snap into place.

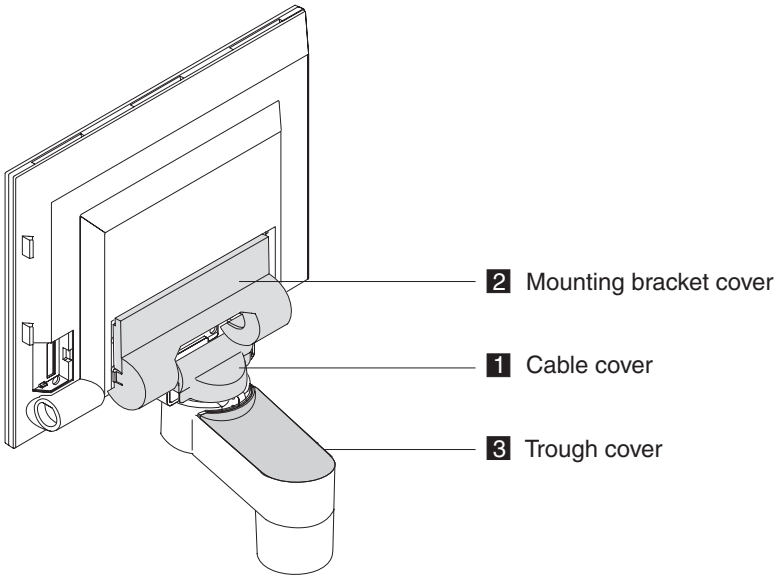


Figure 2-23. Integrated pedestal covers

c. Place and snap the trough cover (3) over the trough of the integrated pedestal.

6. Plug the power cord into an outlet and power On the system unit. See Table 1-5 on page 1-9.
7. Go to "Adjusting the image" on page 2-35 and auto adjust your screen for maximum viewing.

Integrated touch pedestal

See "Tailoring your installation" on page 2-1. This section describes how to install the integrated touch pedestal to the wide 4694 and 4800 (wide and narrow) POS terminals.

Mounting the 4820 to your system unit

Wide 4694 Point of Sale Models: Follow these steps when installing the integrated touch pedestal onto the wide 4694 models:

1. If applicable, remove the blank filler panel and printer.

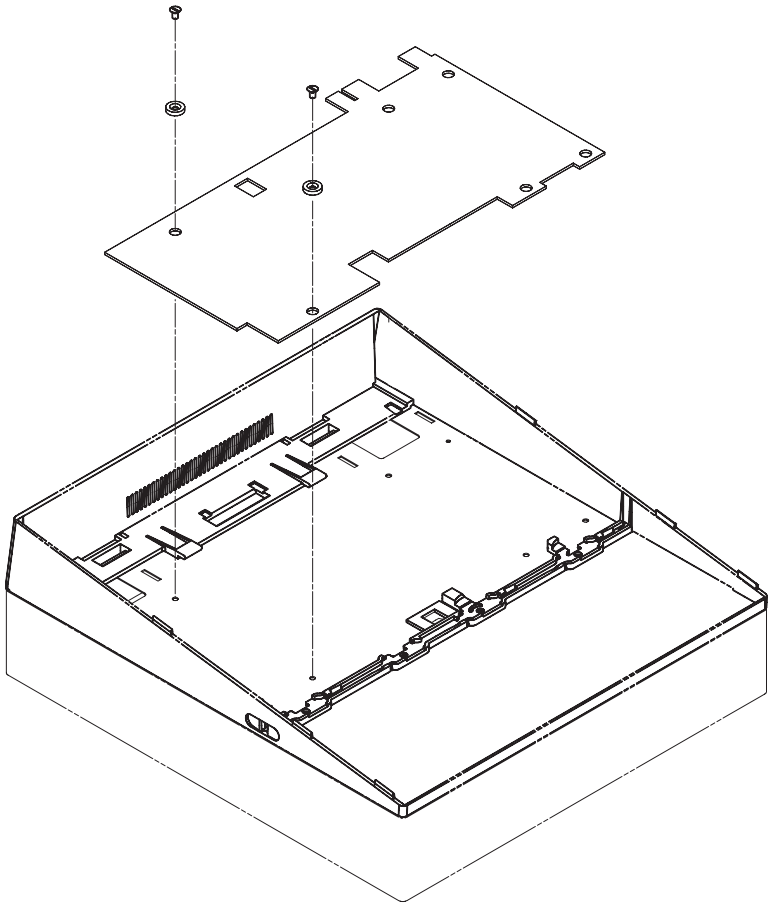


Figure 2-24. Inserting the stiffening plate

2. As shown in Figure 2-24, place the stiffening plate onto the 4694 aligning the holes in the plate with the holes in the unit.

   Note: Figure 2-24 illustrates the right-oriented placement of the arm. Rotate the plate over for a left-oriented placement.
3. Fasten the counter-sunk washers and screws to the stiffening plate.
4. Route the cables as described for your 4820 model.

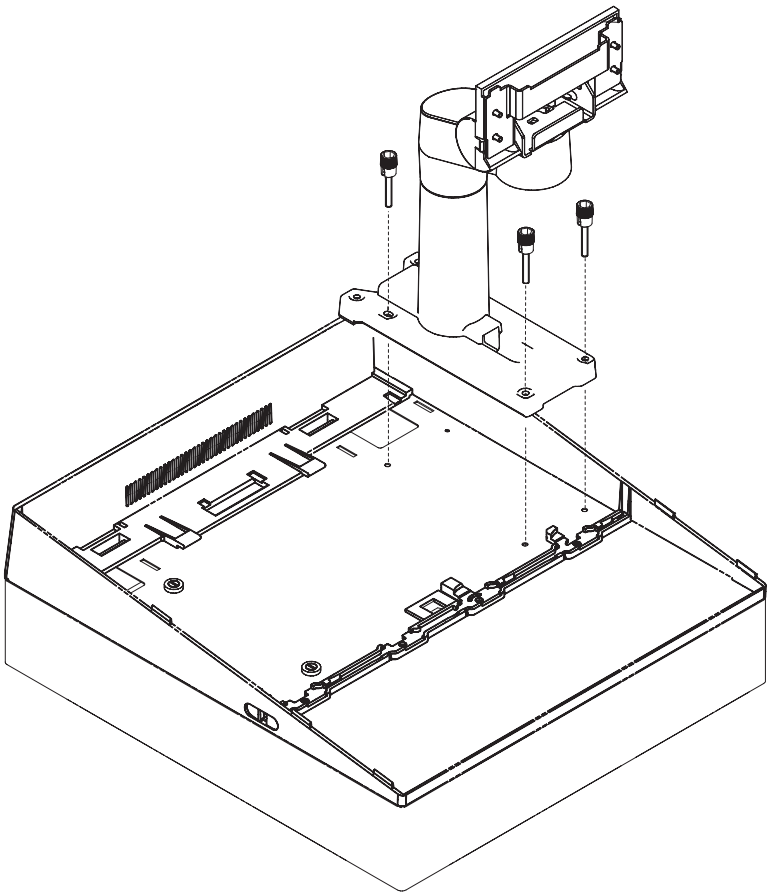


Figure 2-25. Securing the arm assembly to the 4694

5. Place the arm assembly on the stiffening plate as shown in Figure 2-25. Insert and tighten the three thumb screws as shown.

   Note: The left or right placement of the arm assembly depends upon your configuration.
6. Attach the 4820 to the pedestal.
7. Install the options. See "Installing the options" on page 2-27

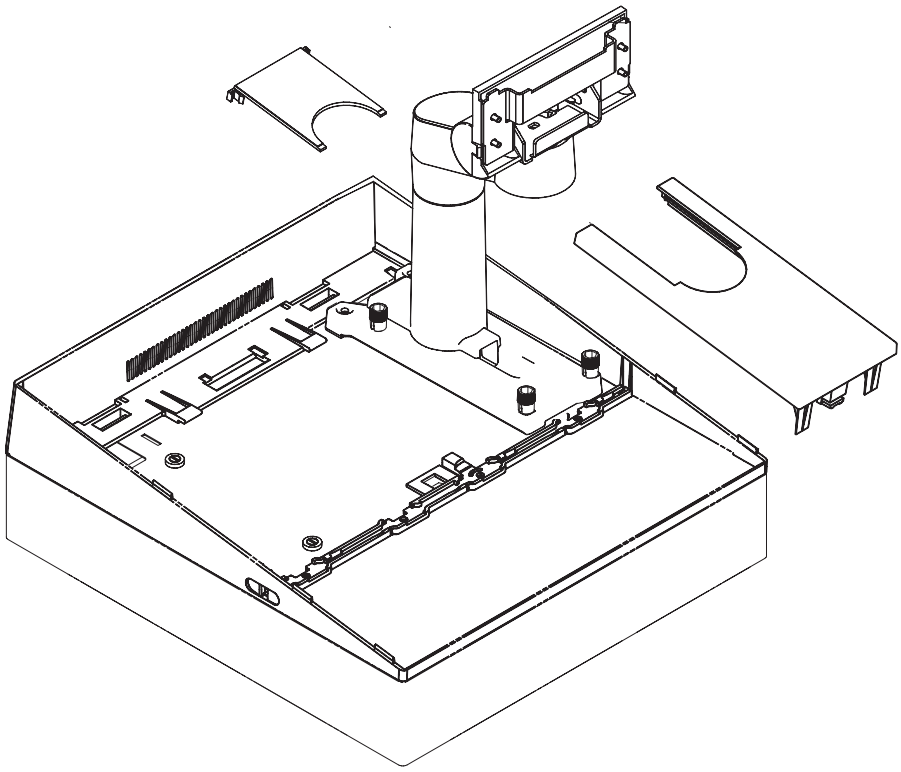


Figure 2-26. Attaching the filler panel covers

8. As shown in Figure 2-26, place the filler panel covers on the arm assembly.

SurePOS 720, 740, or 780 with integration tray: Follow these steps when installing the integrated touch pedestal onto a SurePOS 720, 740, or 780 with an integration tray:

1. Remove the rubber plugs in the top cover of the system unit (if not already removed).
   a. See the *SurePOS 720, 740, and 780 Hardware Service Guide* to remove the integration tray and top cover.
   b. From the inside of the top cover, push the rubber plugs out of the plastic.
   c. Reinstall the top cover and the integration tray.
2. Route the cables as described for your 4820 model.

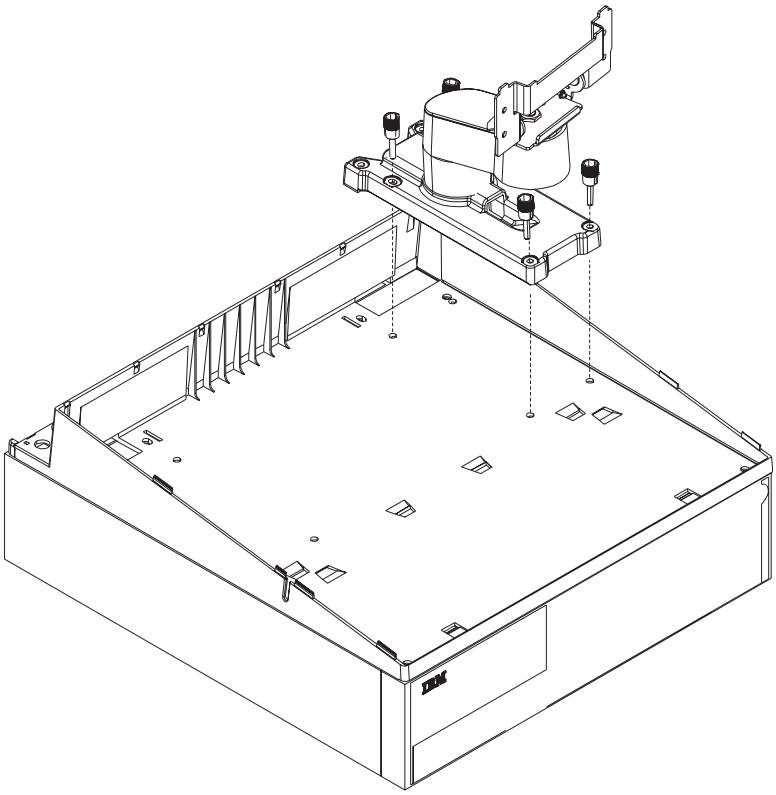


Figure 2-27. Securing the arm assembly to SurePOS 720, 740, 780

3. Place the arm assembly on the slant tray as shown in Figure 2-27. Insert and tighten the four thumb screws as shown.

   Note: The left or right placement of the arm assembly depends upon your configuration.
4. Attach the 4820 to the pedestal.
5. As shown in Figure 2-28 on page 2-24, place the filler panel covers on the arm assembly.

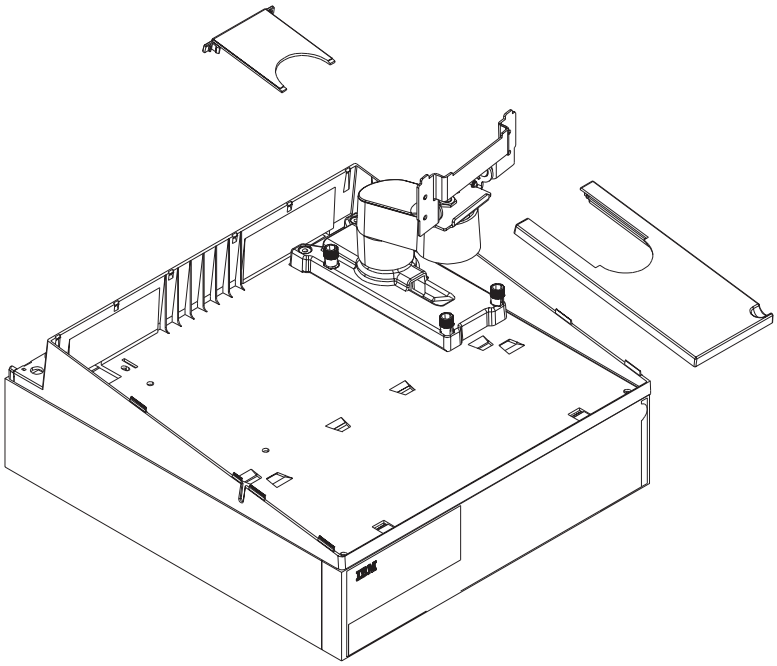


Figure 2-28. Attaching the filler panel covers

6. See "Tailoring your installation" on page 2-1 and continue with your installation.

SurePOS 720, 740, or 780 directly on system unit: Follow these steps when installing the integrated touch pedestal onto a SurePOS 720, 740, or 780 without an integration tray:

1. Remove the rubber plugs in the top cover of the system unit (if not already removed).
   a. See the *SurePOS 720, 740, and 780 Hardware Service Guide* to remove the top cover.
   b. From the inside of the top cover, push the rubber plugs out of the plastic.
   c. Reinstall the top cover.
2. Install the arm assembly in the box filler panel.
3. Route the cables as described for your 4820 model.
4. Place the arm assembly on the system unit as shown in Figure 2-29 on page 2-25. Insert and tighten the four thumb screws as shown.

   Note: The left or right placement of the arm assembly depends upon your configuration.

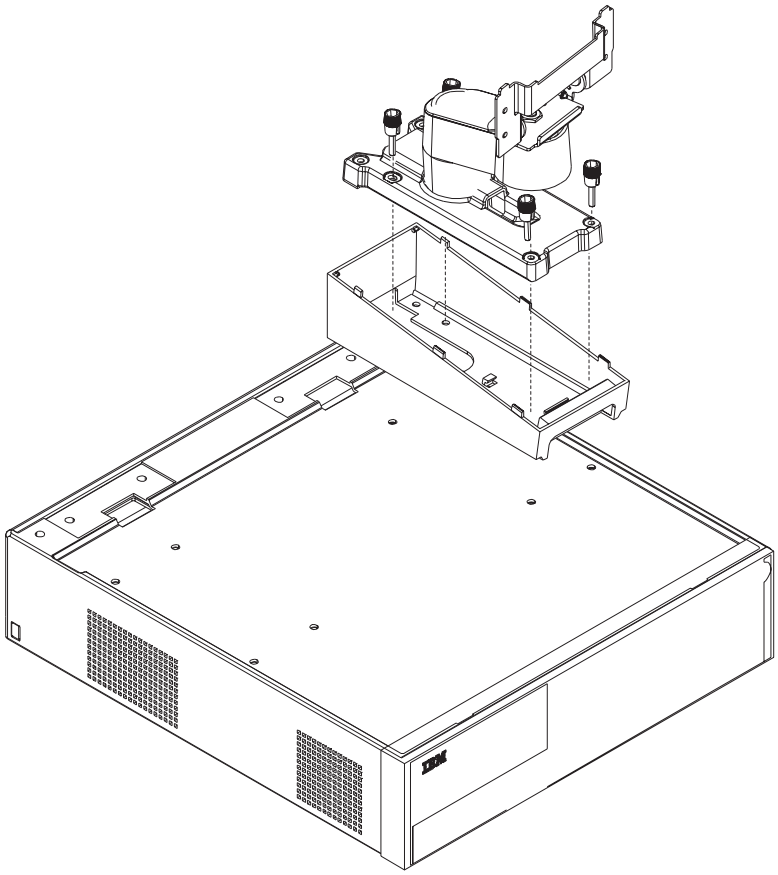


Figure 2-29. Securing the arm assembly to the SurePOS 720, 740, 780

5. Install your options. See "Installing the options" on page 2-27.
6. Attach the 4820 to the pedestal.
7. As shown in Figure 2-30 on page 2-26, place the filler panel covers on the arm assembly.

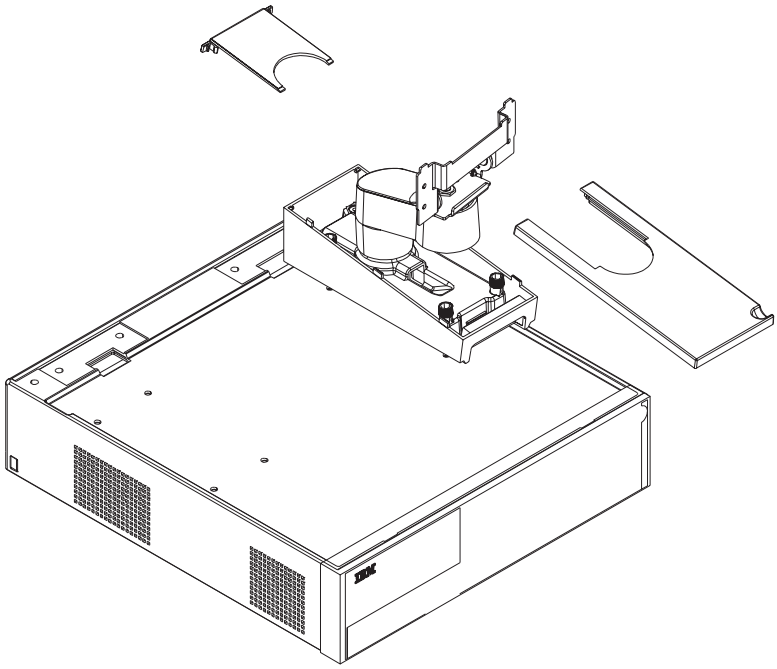


Figure 2-30. Securing the arm assembly to the SurePOS 720, 740, 780

8. See "Tailoring your installation" on page 2-1 and continue with your installation.

VESA bracket instructions

Note: The VESA bracket mounting option is not available for Models 5xx.

IBM provides a mounting bracket that complies with the Video Electronic Standards Association (VESA) FPMPMI (Flat Panel Monitor Physical Mounting Interface). This standard requires the bracket to have four screw holes on a 75-mm (2.9-in.) square grid.

Follow these steps to attach the 4820 to the VESA bracket:

1. Connect the cables (keypad/MSR/touch, video, power) to the appropriate ports on the back of the 4820.
2. Install the options on your 4820. See "Installing the options" on page 2-27
3. Attach the VESA bracket to the 4820 by using four screws.
4. Attach the VESA bracket to a VESA-compliant mounting arm according to the instructions that are shipped with the product.
5. See "Tailoring your installation" on page 2-1 and continue with your installation.

Installing the options

This section describes how to install all available options and the routing order. Some options are not available for your 4820 Model number. It is your responsibility to know if your model accepts the described option. For model information and options, see Table 1-1 on page 1-1.

Depending on your selected options, IBM recommends that you follow this order when installing them:

1. Manager's keylock

   Note: This feature must be factory-installed for models 2xx and 5xx.
2. Keypad, or MSR – attaches *either* the MSR *or* the keypad with MSR to the 4820 SurePoint Solution
3. MSR
4. Pointing device
5. Audio kit

   Note: Install the audio kit when you install the covers.

Installing the manager's keylock

The empty lock cylinder (see Figure 1-4 on page 1-7) of the 4820 SurePoint Solution contains a slot that matches the lock's insert. Your objective is to adjust this slot so that the lock will fit snugly into the cylinder. Follow these steps:

1. To install the manager's keylock, look into the empty lock cylinder to determine the orientation of the slot.
2. Insert the aligner into the empty lock cylinder so that the aligner's slot orientation matches the cylinder's slot orientation (see Figure 2-31).

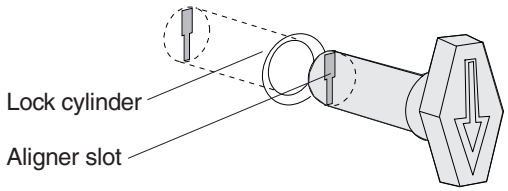


Figure 2-31. Aligner placement

3. Turn the aligner so that the arrow on the aligner is pointing downward, as shown in Figure 2-31.
4. Remove the aligner.
5. Remove the keys that accompany the lock insert.
6. Place the brass installation and removal key fully into the lock insert.
7. Hold the lock and brass key so that the key is in the same orientation as shown in Figure 2-32 on page 2-28.

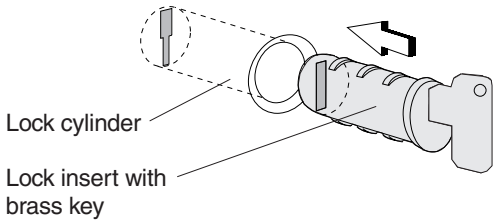


Figure 2-32. Lock insert and brass key

8. Push the lock insert and brass key fully into the empty lock cylinder.
9. Hold the lock insert in place with your finger and remove the brass key.
10. Test the lock to ensure that it operates correctly with the keys.
11. Continue with the install as described in "Attaching the MSR/keypad."

Attaching the MSR/keypad

Follow these steps to attach the MSR/keypad to the 4820 SurePoint Solution:

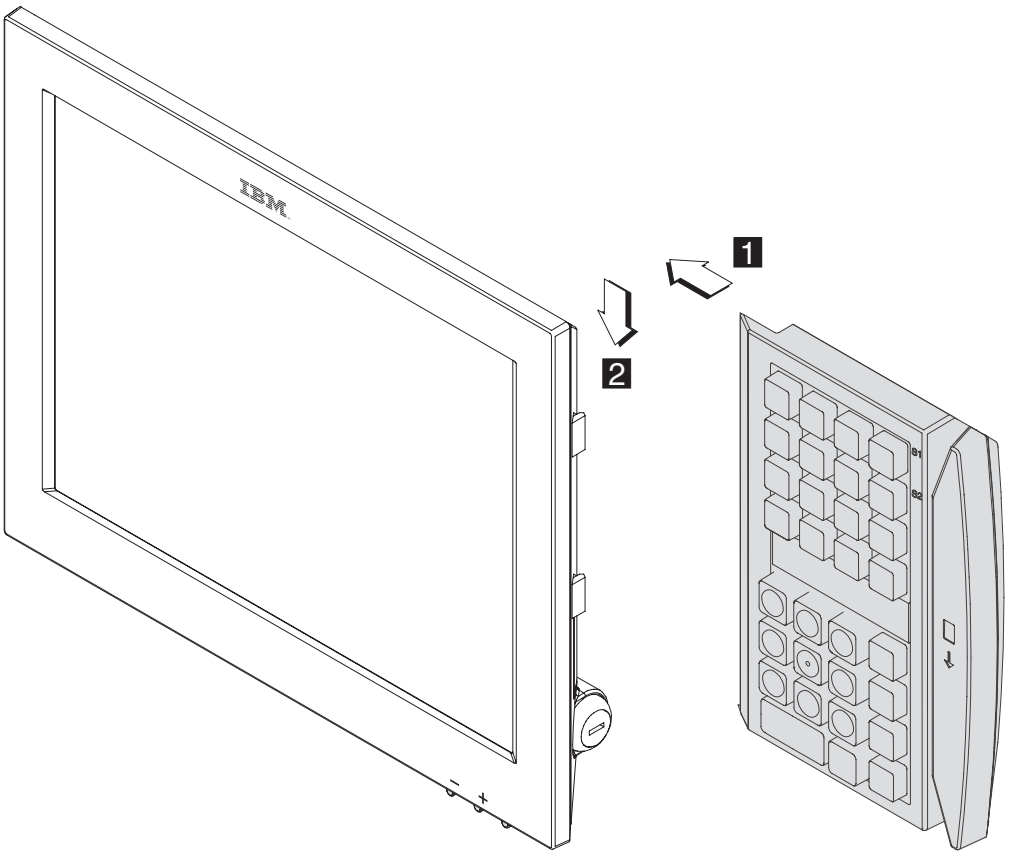


Figure 2-33. 4820 SurePoint Solution with attached keypad/MSR

1. Remove the MSR/keypad connector cover from the rear of the 4820 by pulling upward on the cover. Discard this connector cover.
2. See Figure 2-33.
   - **Models 2xx and 5xx:** Align the MSR/keypad (**1**) such that the connectors are slightly above their matching slots on the 4820. Slide the MSR/keypad downward (**2**) until it snaps into place.

- **All other models:** Align the MSR/keypad with the edge (1) of the 4820 so that the top edge of the 4820 aligns with the top of the keypad. Slide the keypad unit downward (2) until it snaps into place.

3. Attach the keypad cable to the MSR/keypad connector.

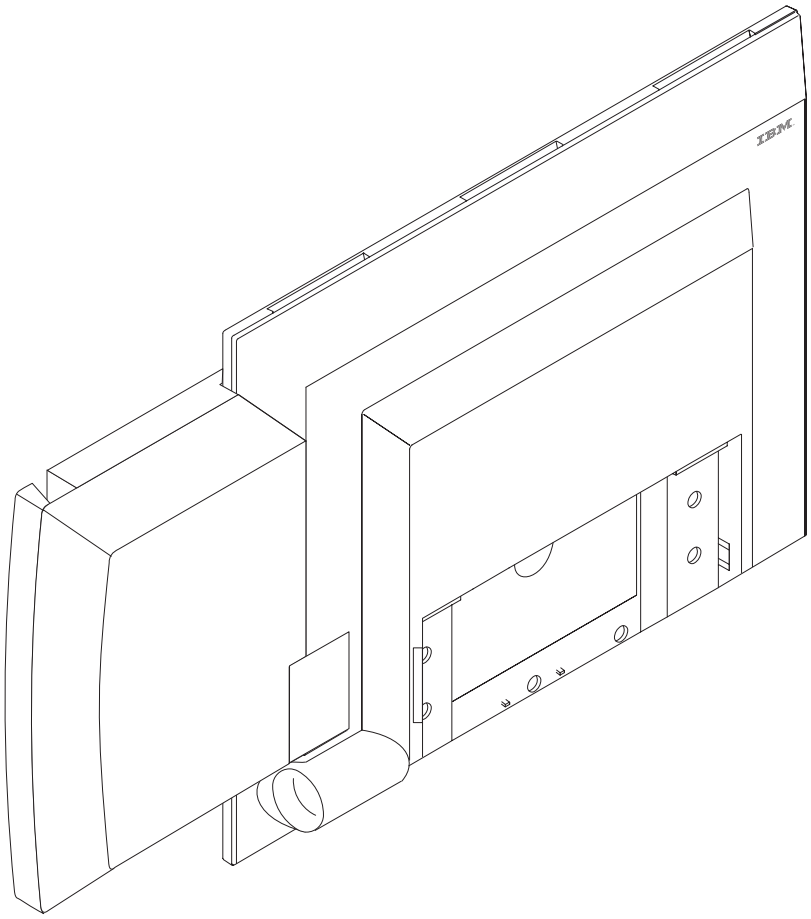


Figure 2-34. Rear view of attached keypad

4. Install the replacement connector cover that shipped with the keypad.
5. Continue with the installation of your next option.

Attaching the MSR

Follow these steps to attach the magnetic stripe reader (MSR) to the 4820 SurePoint Solution:

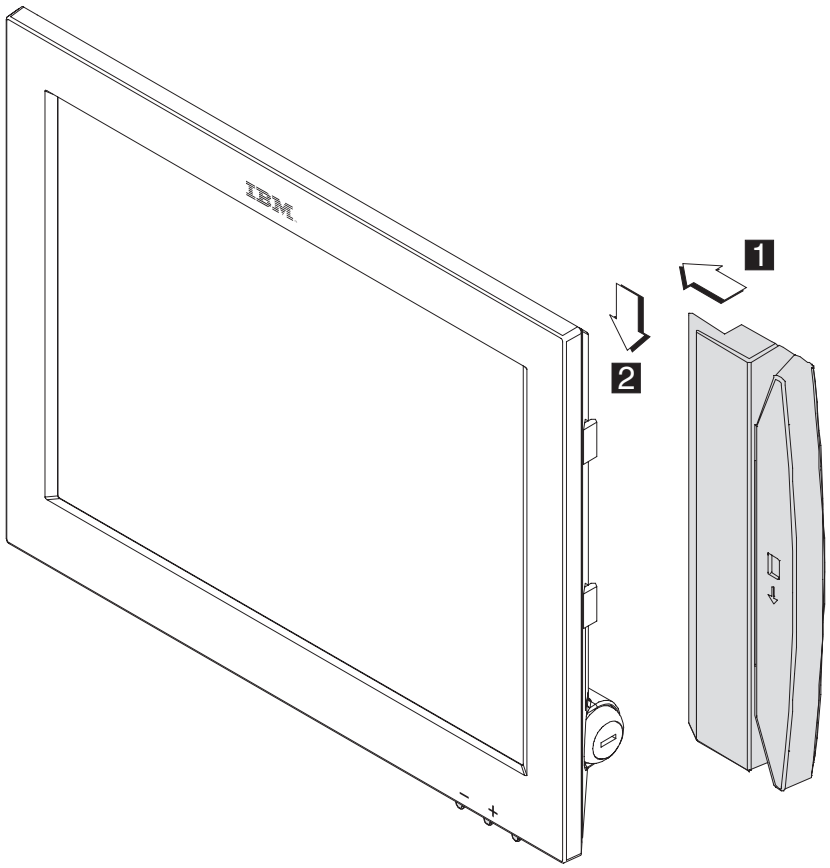


Figure 2-35. 4820 SurePoint Solution with MSR

1. Remove the MSR/keypad connector cover from the rear of the 4820 by pulling on the cover. Discard this connector cover.
2. See Figure 2-35.
   - **Models 2xx and 5xx:** Align the MSR (1) such that the connectors are slightly above their matching slots on the 4820. Slide the MSR downward (2) until it snaps into place.
   - **All other models:** Align the MSR with the edge (1) of the 4820 so that the top edge of the 4820 aligns with the top of the keypad. Slide the keypad unit downward (2) until it snaps into place.
3. Attach the MSR cable to the MSR connector.
4. Install the new connector cover that shipped with the MSR.
5. Continue with the installation by attaching the pointing device.

Attaching the pointing device

Note: The following steps assume that you align the 4820 and the pointing device as shown in Figure 2-37 on page 2-32.

Follow these steps to attach the pointing device to the 4820 SurePoint Solution:

1. Before you begin, locate the tabs for the pointing device on the rear of the 4820 (see Figure 2-36).

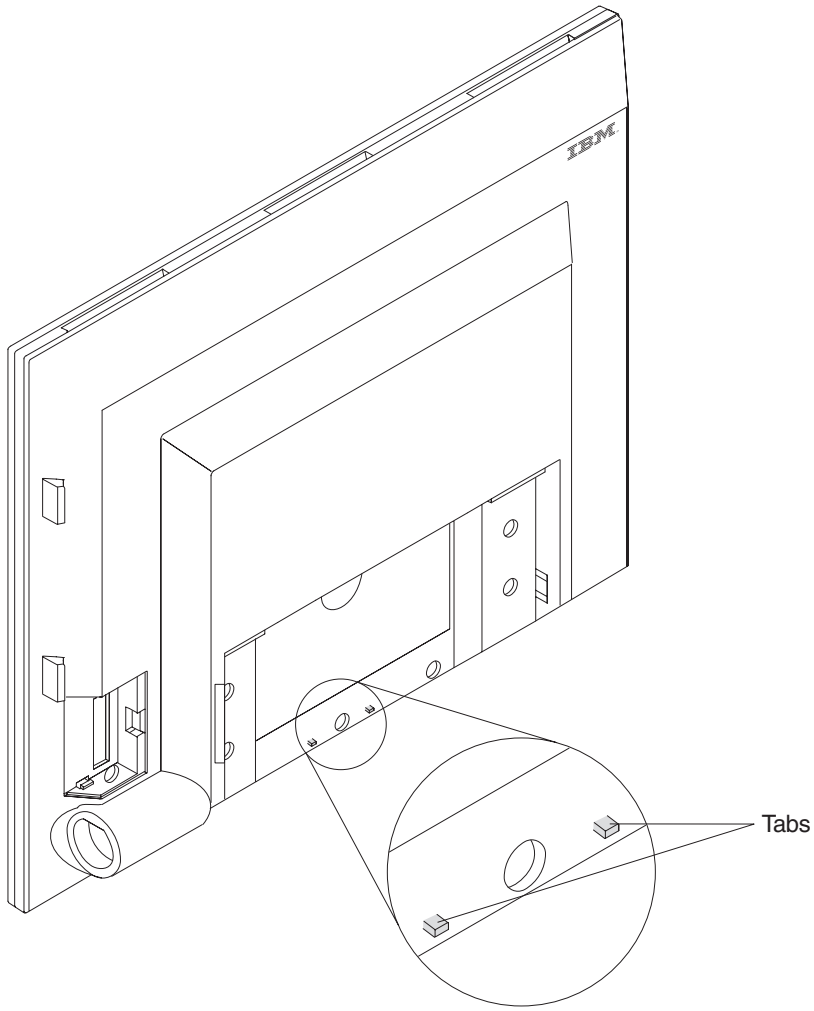


Figure 2-36. Tabs for attaching the pointing device

2. Align the pointing device slightly right of center of the 4820 SurePoint Solution (see **1** in Figure 2-37 on page 2-32).

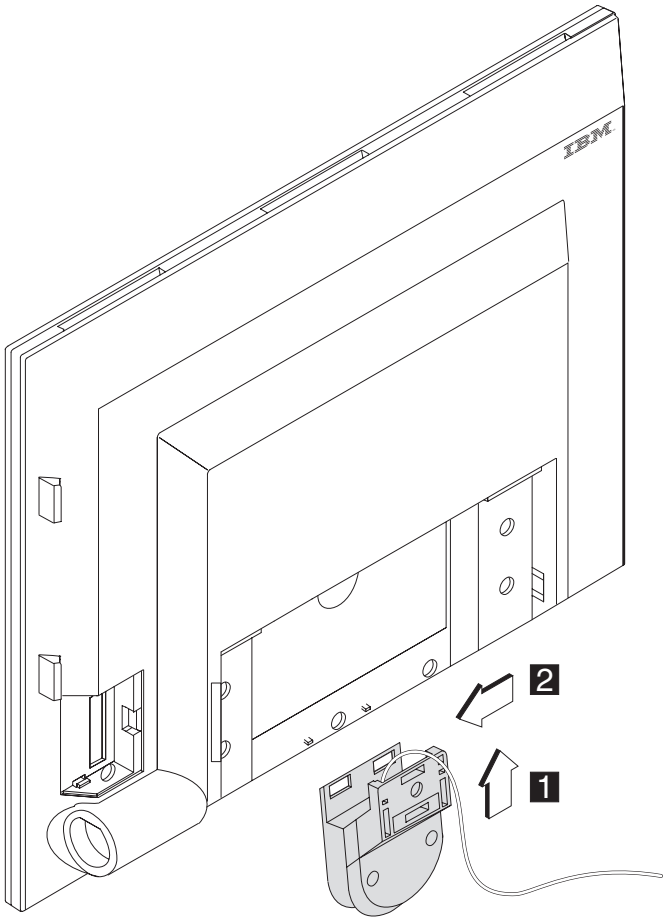


Figure 2-37. 4820 SurePoint Solution with optional pointing device

3. Slide the pointer to the left (2) until it snaps into place.
4. Install the mounting screw into the rear of the 4820.
5. For certain models, connect the pointing device cable to the pointing device port that is located on your system unit.
6. Continue with the installation.

Attaching the audio kit

Notes:

1. Models 2xx and 5xx do not support an audio kit.
2. The optional audio kit is a replacement for the mounting cover of the 4820 SurePoint Solution. If this is an initial installation of the 4820 SurePoint Solution, install the audio kit when you install the covers.
3. A sound card with amplified output (speaker out) must be installed on your system unit before attaching the audio kit. Sound Blaster sound card PCI 16 and Yamaha sound card WF192XG are examples.

Routing the cables

For an efficient and uncomplicated install, IBM recommends that you route the cables in the following order:

1. Video
2. Power
3. Audio cables
4. Touch/keypad/MSR cable
5. Pointing device (with attached cable)

Routing the pointing device cable (integrated and distributed)

Note: Route the pointing device cable before attaching the 4820 display to the mounting bracket.

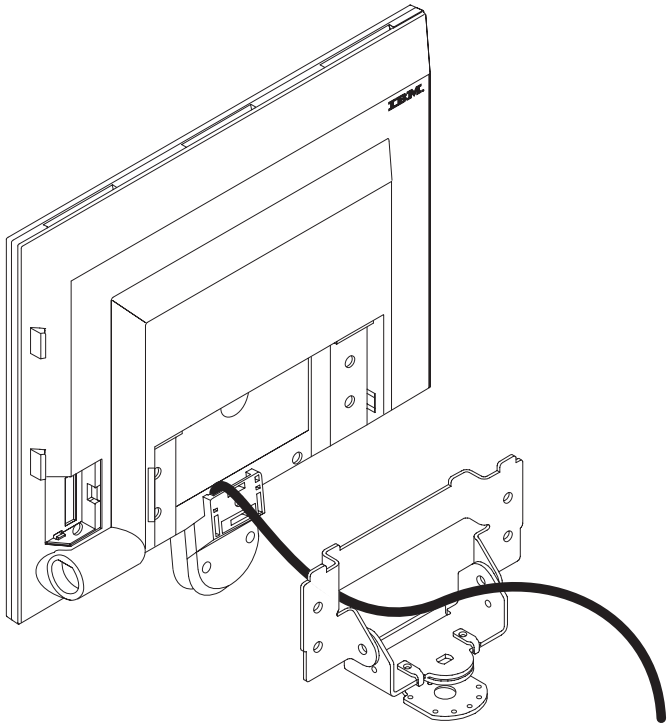


Figure 2-38. Path of pointing device cable

1. See Figure 2-38 and route the pointing device cable through the middle opening of the mounting bracket and into the trough, down through the pedestal.
2. Attach the cable to the mouse port of the 4694.

Attaching and routing the RS-485 touch/keypad/MSR cable (integrated, distributed, and free-standing pedestals)

1. Connect the RS-485 touch/keypad/MSR cable to the appropriate port in the back of the display.

   Notes:

   a. Do not route the cable through the middle opening of the mounting bracket.

   b. The RS-485 model of the 4820 SurePoint Solution can connect to port 4 or 9 of the system unit. See the system documentation to identify the correct port for your system.

2. Follow the instructions for your pedestal type:

   - **Distributed pedestal:**
     a. Route the cable through the distributed pedestal
     b. Attach the cable to the system.
   - **Integrated pedestal:**
     a. Route the cable down through the pedestal.
     b. Attach it to the appropriate port.

Routing the audio cables:

1. Attach the audio cables to the sound card ports on the system unit.
2. Route the audio cables.
3. Separately route these cables up through the base of the integrated pedestal.
4. Attach the cables to the audio kit, if applicable.

Powering on

1. Plug the power adapter into the 4820.

   Note: Those 4820 SurePoint models offering the RS-485 and USB communications interface are powered from the Point of Sale terminal.

2. Plug the power adapter into an electrical outlet. The 4820 power light-emitting diode (LED) will initially appear green.
3. Power On the system and the 4820.
4. If the 4820 is powered on before the system, the message, *No Video/Low Power Mode*, is momentarily displayed on the screen.

Adjusting the image

This section describes how to adjust the image and adjust the touch screen.

Models 1xx and 4xx

Using the OSD menu

The on-screen display (OSD) menu allows you to adjust the display settings such as contrast, brightness, clock phase, and image position.

To open the OSD menu, press and hold the minus (–) and plus (+) buttons at the same time. The following menu appears:

```
Auto Adjust
Manual Adjust
Brightness
Contrast
Information
Reset
_____________________________
(+) Select
(-) Scroll
(+&-) Exit
```

Auto Adjust
Automatically adjusts the video settings. Use this option when you install the display and at any time the video mode is changed, or the 4820 is moved to another host system.

Manual Adjust
Allows you to modify the clock, phase, and image position.

Brightness
Allows you to modify the display's brightness setting.

Contrast
Allows you to modify the contrast setting.

Information
Provides the current screen resolution, the horizontal, and the refresh signal frequencies.

Reset Presents Yes or No dialog box that allows you to reset the menu settings to the default values.

Exiting the OSD Menu: To exit the OSD menu, press the minus (–) and plus (+) buttons at the same time. The system saves your values.

Exiting through time-out: The OSD menu times-out after approximately 20 seconds of inaction. The system does not save any of your values.

Using Manual Adjust: Normally, you do not need to use Manual Adjust because Auto Adjust sets the parameters at the optimum value. However, Manual Adjust allows you to fine-tune the display timings.

Using the 4820 Video Quality Test Pattern program

This section does not apply to the Models 1FR and 1FD.

The 4820 Video Quality Test Pattern program provides additional support when the display image is unsatisfactory.

When to use: Use this file only if you *cannot* obtain satisfactory results using the Auto Adjust and Manual Adjust features of the OSD menu. You can use Auto Adjust frequently because it automatically fine tunes your settings based on your PC's video signal.

DOS users: To run the 4820 Video Quality Test Pattern program for DOS users, follow these steps:

1. Download the *4820Patt.exe* program from the support Web site: www.ibm.com/solutions/retail/store, then click **Support**, and create a diskette. This file generates a special image pattern.
2. Boot the system by using the diskette, or from a DOS command prompt (**full screen**), run the *DOS_PAT.exe*. A 640 x 480 text pattern appears.
3. Press the (–) and plus (+) buttons to open the OSD menu.
4. Select **Auto Adjust**.
5. After adjustment is complete, press any key on the keyboard. A 720 x 400 text pattern appears.
6. Select **Auto Adjust**.
7. When complete, press the minus (–) and plus (+) buttons at the same time to exit the OSD menu and save your adjustments.

   Notes:

   a. If the screen flickers, repeat the steps 3 through 7, or select **Manual Adjust**.

   b. Press any key to exit a special image pattern.

Windows users: To run the 4820 Video Quality Test Pattern program for Windows users, follow these steps:

1. Download the 4820Patt.exe program from the support Web site (www.ibm.com/solutions/retail/store, then click **Support**) and build a diskette. This program generates a special image pattern.
2. From the command prompt, run the win_pat.exe. A text pattern is displayed.
3. When the special image pattern is displayed, press the (–) and plus (+) buttons to open the OSD menu.
4. Select **Auto Adjust**.
5. When complete, press the minus (–) and plus (+) buttons at the same time to exit the OSD menu.

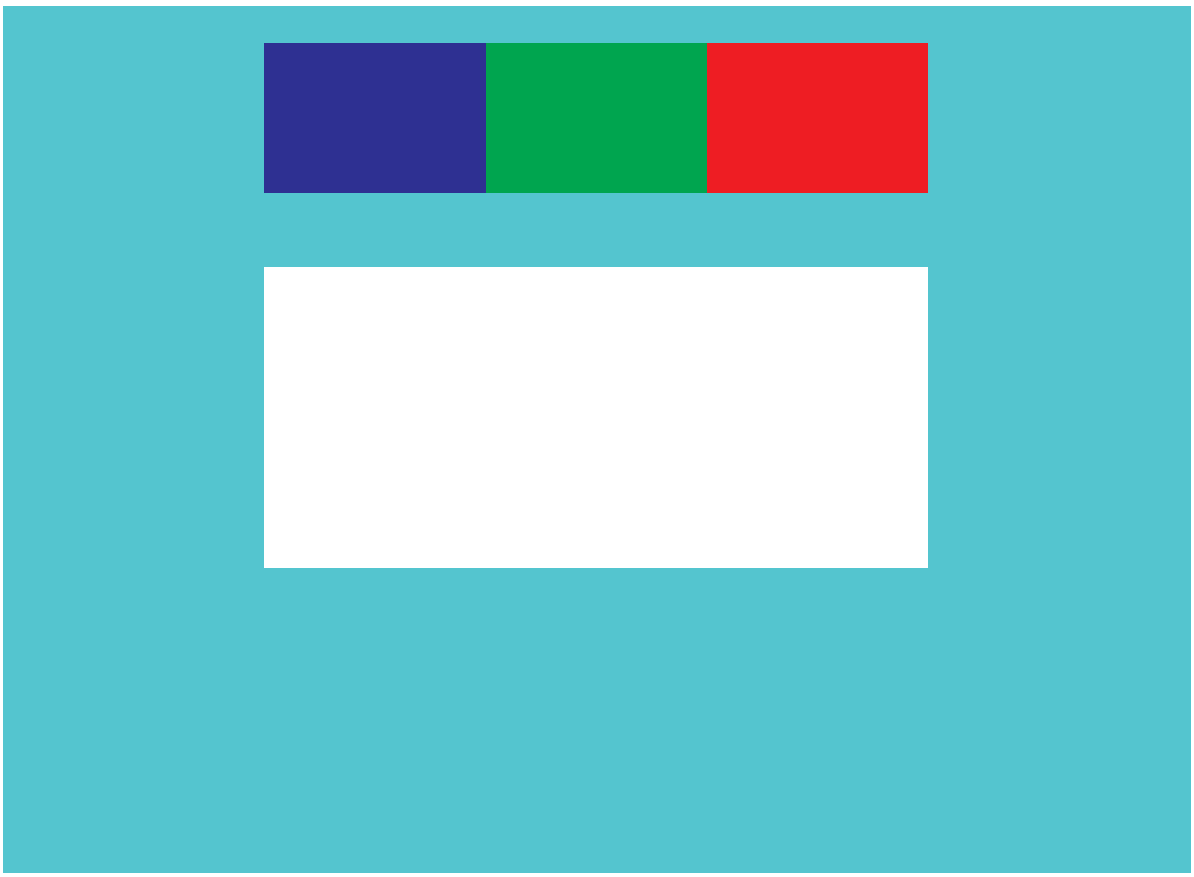


Figure 2-39. Pattern display using the 4820 Video Quality Test Pattern program

Configuring and calibrating the touch screen

This section describes how to configure and calibrate the touch screen. For information on your model type, refer to Table 1-1 on page 1-1.

Models 42T, 46T, 48T, 4WT, 4GT, 4FT, 46R

This section applies only the 4820 models with the capacitive and resistive touch technology.

When to adjust

You should also configure and calibrate your touch screen when:

- You initially install the touch software
- The cursor does not accurately follow your finger movement
- You change the video resolution or video mode
- You adjust the touch screen controller frequency using the Stabilize Cursor function
- You enable or disable the Filtering option

Using the Touch Screen Utility

Note: Examples shown in this section can vary depending upon your operating system.

The touch display calibration tool allows you to calibrate the touch display. After installing and opening the tool, the system prompts you to calibrate the display, see Figure 2-40.

Figure 2-40. Example of initial installation window

If you select to calibrate, you can select from various tabs, such as Calibration, Click Settings, and Hardware, as shown in Figure 2-41 on page 2-40.

Figure 2-41. Example of calibrate window

The Calibrate tab allows you to calibrate the display; the Click Settings tab allows you to set the touch click settings; the Hardware tab lets you restore the hardware default settings.

Figure 2-42. Example of the hardware window

Thereafter, whenever you change the screen resolution, a dialog box (Figure 2-43) appears.

Figure 2-43. Example of the reminder to calibrate

IBM POS Device Diagnostics tool

The IBM POS Device Diagnostics is a diagnostics tool that allows you to test the 4820 when it is attached to the SurePOS 700 Series system unit. This tool installs as part of the POSS for Microsoft® Windows® software.

This section describes how to calibrate the touch screen with 3M TouchWare.

Understanding the touch and when to calibrate

Note: During calibration, the lift-off position of your touch, and not the touchdown position, determines the calibration point. If you do not position your touch correctly on the screen, you can slide your finger to the center of the target. Hold your finger as still as possible after you reach the calibration position. Do not use any swiping motion during lift-off.

The calibration process:

- Defines the dimensions and center of the touch screen's active area
- Aligns the active area to the underlying image.

Calibrate your touch screen when:

- You initially install the 3M TouchWare software
- The cursor does not accurately follow your finger movement
- You change the video resolution or video mode
- You adjust the touch screen controller frequency using the Stabilize Cursor function
- You enable or disable the Filtering option

Steps to calibrate

Follow these steps to calibrate the 4820 SurePoint Solution:

1. Allow the 4820 SurePoint Solution to warm up at least one-half hour before you begin calibration.
2. Open the touch screen Properties dialog box. Select the Calibrate tab.
3. Click **Calibrate**. A calibration target appears in the lower left corner of the screen.
4. Touch the touch screen and position your fingertip to completely cover the target. Hold your touch for at least three seconds.
5. Lift your finger off of the screen when you accurately touch the target.
6. Touch the touch screen and position your fingertip to completely cover the next target. Hold your touch for at least three seconds.
7. Lift your finger off of the screen. The program saves the new calibration values and displays a dialog box.
8. Test the calibration.

Testing the calibration

1. Touch random points on the screen and check that the cursor is located underneath your finger.
2. Drag your finger across the screen. Check that the cursor accurately follows your movements.
3. Touch each corner and along each edge of the screen. Check that the cursor reaches the full image area and that you can touch and activate all icons and menus across the entire screen
4. If any part of the test fails, calibrate the touch screen again.

Customizing the touch response mode

The touch response mode defines how your touch emulates the functions of a mouse. For example, you can define a touch to produce a button down (pressing a mouse button) or button up (releasing the mouse button). Touch modes also define how your touch produces a mouse click and double click. The SmartSet software allows the following touch modes:

Desktop (default)
The system moves the cursor to the touch point, but does not generate a **button down** as long as you continue to slide your finger around the screen. When you pause and hold your finger steady, the system generates a mouse **button down**. You can now slide your finger around the screen. When you lift your finger, the system generates a **button up**.

Drawing
The system moves the cursor to the touch point and immediately generates a **button down**. You can slide your finger around the screen with the button held down. When you lift your finger, the system generates a **button up**.

Button
The system moves the cursor to the touch point and generates a button down and up (a click). To drag, slide your finger around the screen (button down). The system generates a **button up** after your lift your finger.

Click The system moves the cursor to the touch point and immediately generates a button down and up (a click). Click mode does not generate a second button down, does not support drag, and does not generate a mouse event on finger lift-off.

Lift-off
The system moves the cursor to the touch point, but does not generate a mouse button down. You can slide your finger around the screen and your movements are followed; however, the system generates mouse move events only. Lifting your finger off of the screen generates a mouse button down. The system then waits for a system-defined time delay, and generates a **button up**. The system does not support drag in this mode; however, lift-off mode is useful for applications that require greater accuracy.

Touchdown
The system moves the cursor to the touch point, generates a **button down**, waits for a system-defined time delay, and generates a **button up**. The system does not generate a mouse event on finger lift-off. The system does not support drag in this mode.

Table 2-3 describes how to click, double-click, and drag with the touch modes.

Table 2-3. Summary of touch response modes

Touch mode	How to click	How to double-click	How to drag
Desktop	Touch the object and lift your finger.	Touch twice in quick succession in the same place.	Touch the object, pause briefly, and slide your finger.
Drawing			
Button	Touch the object		Not supported
Click			
Lift-off			

Table 2-3. Summary of touch response modes (continued)

Touch mode	How to click	How to double-click	How to drag
Touch-down	Touch the object. Provides a pause for user to receive visual feedback that a button was pressed and released.	Touch twice in quick succession in the same place.	Not supported

Selecting a touch mode: Use the **Touch Settings** tab or the **Special** tab to select a touch mode. Some touch modes require you to select options on both tabs.

Configuring the touch sound

You can configure your touch screen so that the system produces a beep when you touch the screen, or when you remove your touch. To enable or disable the touch sound:

- Select the **Touch Settings** tab to access the Touch Sound option.
- Click **Beep** to cycle through the choices:
  - **Beep on** touchdown produces a beep when you touch the screen
  - **Beep on** lift-off produces a beep when you lift your finger off the screen.
  - **Beep off** produces no sounds when you touch the screen. This is the default setting.

Customizing the touch sound: If you enable the touch sound, you can customize both frequency or pitch, and duration. To customize the touch sound:

- Select the Special tab to access the Custom Touch Sound options.
- Click the right and left arrows to change the frequency, or pitch, and duration of the touch sound. The range of settings is as follows:
  - Frequency: 200 to 5000 Hz in 10 Hz increments; the default is 1500 Hz
  - Duration: 50 to 600 ms in 10 ms increments; the default is 200 ms

Other adjustments to the touch display

This section provides a summary of the other SmartSet software features. For additional information, see the on-line help of the program.

Adjusting the double-click settings: You can adjust the speed and area values of the double-click. The speed defines how quickly you must touch the screen twice for the system to interpret your actions as a double-click. The area defines the space in which you must touch twice for the system to interpret your actions as a double-click. Changing these settings for the touch screen affects the mouse double-click settings, too.

Changing the cursor display and position: After calibration, the cursor appears directly beneath your finger when you touch the screen. Options on the **Cursor** tab allow you to set the following preferences:

Cursor Visibility
Specifies whether to show or hide the cursor

Cursor Vertical Offset
Defines the vertically distance between your touch and the position of the cursor on the screen

Edge Adjustment
Adjusts the cursor position as your finger approaches the left or right side of the screen

Stabilizing a jittery cursor: The **Stabilize Cursor** option adjusts the operating frequency of your touch screen to ensure that the cursor follows your touch smoothly and accurately. Normally, you will not need to stabilize the cursor of the touch screen. However, if you experience problems with a jittery cursor or ragged lines, use the **Stabilize Cursor** option.

Using the Filtering option: The **Filtering** option allows you to select additional filtering to eliminate the interference that is produced in ungrounded 50/60 Hz touch systems. This option is intended only for use in ungrounded systems. The default setting of Filtering is *disabled*. If erratic touch problems occur, you should enable Filtering.

Models 2xx, 5xx

This section applies to the infrared-touch technology available in Models 2xx and 5xx.

Features of the IBM Advanced Touch Screen Configurator

The IBM Advanced Touch Screen Configurator program is available from the support web site and provides additional features for your touch software. The *readme.htm* file provides complete installation and user instructions. The program includes the following features:

Blocked beam monitor
This feature detects an object that is continuously touching the screen and blocking the beam monitor.

Beep on touch
This feature enables you to change the frequency, duration, and other properties of the beep on touch.

Dual monitor mapping configuration
This feature allows you to map a touch screen to a specific monitor.

Optimized configuration loader
This feature allows you to load the IBM Advanced Touch Screen Configurator to each of the attached touch screens.

Installing the optional button cover

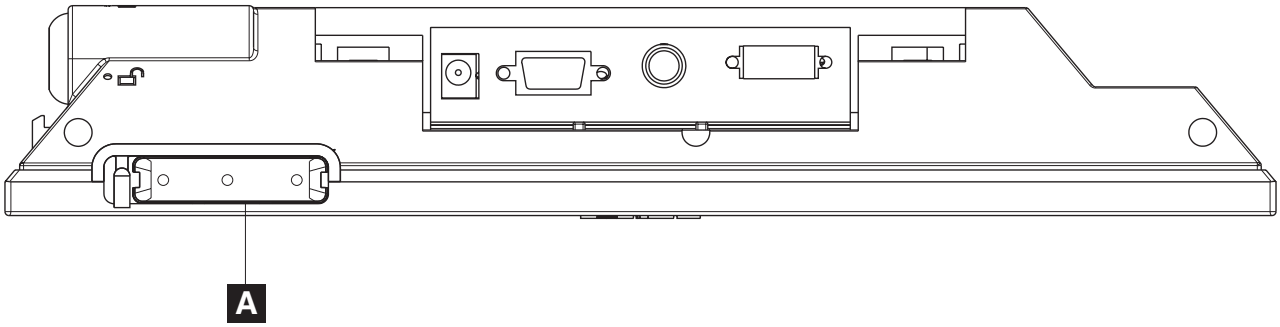


Figure 2-44. Location of optional button cover

Note: Because the button cover is somewhat difficult to remove, ensure that you have performed an auto adjust before completing this step.

To install the optional button cover, follow these steps:

1. Align the button cover with the buttons located on the bottom of the 4820 (**A** in Figure 2-44).
2. Press and snap button cover in place.
3. See "Tailoring your installation" on page 2-1 to complete your installation.

Chapter 3. Maintaining the IBM 4820

For all models
Information in this section is for all models of the 4820 SurePoint Solution.

Maximizing your comfort

Before you begin using your display, follow these tips to ensure that you are comfortable:

- Keep your head in a comfortable viewing position.
- Maintain a comfortable viewing distance.
- Position the display to avoid glare or reflection from overhead lighting or outside sources of light.
- Keep the screen clean from dust and dirt by regularly cleaning the surface with a soft, dry cloth.
- Set the brightness levels that allow you to see clearly.
- With your finger, press the touch screen only as hard as necessary for use. Do not pound on the touch screen.
- Do not use a pen to press the touch screen.

Note: Except for Models 2xx and 5xx, you cannot activate the touch sensors by any pointing aid except your finger.

Cleaning the touch screen

Keeping the touch screen free from dirt and dust allows the touch sensor to operate efficiently. Follow these guidelines:

Note: Before cleaning the touch screen, power off the 4820 SurePoint Solution.

- Use a soft, dry cloth with isopropyl alcohol or any non abrasive and non ammonia based cleaner.

  Attention: Do not apply cleaning solution directly to the screen. Always spray the cleaner on a clean cloth and then wipe the screen.
- Wipe gently across the surface.
- Allow a few minutes for the surface to dry before using.

Using the brightness controls

Pressing the plus (+) or the minus (–) button adjusts the screen brightness.

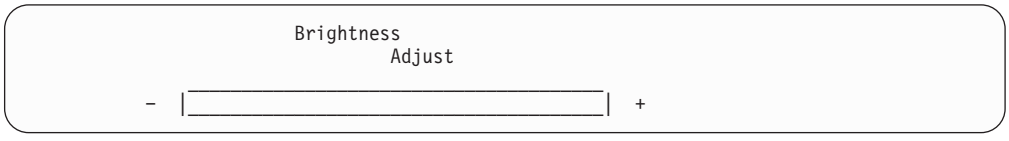


Figure 3-1. Brightness menu

As you press the plus button or the minus button, the menu displays the level of brightness. When you reach the desired level, stop pressing the keys. After approximately 5 seconds, the brightness menu disappears, and the system saves your values.

Chapter 4. Troubleshooting common problems

This section describes several common problems and explains what to do.

Note: Image problems can be 4694 system unit or SurePOS 700 Series system unit problems, also.

Models with capacitive and resistive touch technology

This section is for models with capacitive or resistive touch technology. See Table 1-1 on page 1-1 for your touch technology and model number.

Obtaining diagnostic and service information

Depending upon your model, you can obtain service and diagnostic information from the support Web site: www.ibm.com/solutions/retail/store. Then click **Support**.

Troubleshooting the 3M TouchWare

The service diskette contains 3M TouchWare calibration and touch diagnostics. This section describes how to use the diskette.

Correct connections for servicing RS-232 models

Before you begin, ensure your connections are as follows:

- RS-232 touch connects to COM 1
- RS-232 MSR connects to COM 2
- PS/2 pigtail is attached to a keyboard

The service software can correctly evaluate your 4820 display only with these connections.

Testing the MSR

1. Boot the system using the diagnostics diskette.
2. Select the **MSR Test.**
3. Using the MSR test card, swipe the reader. A message appears indicating if the swipe was successful.
4. If the test card indicates the swipe was not successful, repeat the previous step. If the swipe was again not successful, contact IBM support.

Touch screen controller information

The touch screen controller information window provides information about the type, firmware version, and status of your touch screen. Locate the controller by selecting the Hardware tab from the 3M TouchWare software.

Controller type

The Controller Type field displays the model name of your touch screen controller.

Firmware version

The Firmware Version field displays the revision number of the firmware in your TouchWare software controller.

Touch screen status

The Touch screen Status field provides valuable information about whether the touch screen hardware is operating properly. Table 4-1 lists the possible messages that are displayed in the Status field:

Table 4-1. Touch screen status messages

Message	Definition	Recommended action
OK	Touch screen found and operational	None
A/D Error	Touch screen hardware error	Replace unit
ASIC Error		
Hardware Error		
PWM		
NOVRAM Error	Checksum error in nonvolatile random access memory (NOVRAM), using defaults	
Random access memory (RAM) Error	Checksum error in read-only memory (ROM)	
Touch screen Not Found	TouchWare software was unable to communicate with the touch screen	Check that all cables for correctly connected.

Touch screen properties dialog box

Problem	Recommended action
You have touch, but cannot open the Touch screen Properties dialog box.	Only the touch screen USB driver was installed and the TouchWare software was not completely installed. Unplug your touch screen from the USB port and reinstall the TouchWare software.
The Touch Screen Properties dialog box always opens to the Hardware tab	The TouchWare software is unable to find or communicate with the touch screen controller. • Check the Controller Information box on the Hardware tab. If the **OK** message displays, contact technical support. • If the message **NOT FOUND** is displayed, review the cable connections.

Models with infrared touch technology

This section provides troubleshooting information for Models 2xx and 5xx, which use infrared touch technology.

All models

This section provides information pertinent to all 4820 models.

This table specifies the resolution by model number or touch technology type.

Condition description	Resolution
The power indicator on the display is off	**Models 42x, 4Fx, 46x, 10D, 1FR** • Ensure that the 4820 is powered on by pressing the power button on the display (models 42x and 4Fx only). • Check the voltage of the power supply output (see "Testing the power supply" on page 4-6.) – If the voltage is correct, go to the next item. – If the dc voltage is not correct, verify that the power cord is plugged into a working ac outlet. – Then, verify that the power cord is properly plugged into the power brick. – If the voltage remains incorrect, replace the power supply. • Check that the power brick is properly plugged into the power port of the display. • Replace unit. **Models 48D, 48T** • Check the voltage output of the powered USB cable (see "Voltage for USB power" on page 4-6). – If the voltages are correct, replace the unit. – If the voltages are incorrect, remove the cable from the system unit, and verify that the voltage are correct at the system port. – The system unit requires servicing if the voltage at the port is not correct. • If the voltages are correct at the system unit port and wrong at the cable, replace the cable. • Check that the powered USB cable is properly connected to the 4820 SurePoint Solution. • Replace unit.
Power LED amber	**All Models:** • Low power mode. Communication is not yet established between host and 4820 • Check the video cable connections and replace the cables, if necessary. • Verify that the unit is powered on. • Check the standby or suspend mode of power management. • Replace the unit, if necessary.
Touch display not responding to touch	**All Models:** • Make sure that only a finger is used to touch the screen. **Note:** The sensor can only detect fingers. Do not use pens or pencils on the touch display. • Check to ensure that the keypad/MSR/touch cable is correctly attached to the 4820 display and to the system. • Run the service diagnostic diskette. • **Model 48T**, see "Using the Touch Screen Utility" on page 2-39 • Check the cable connections and replace the cables, if necessary. • Replace the 4820 display.

This table specifies the resolution by model number or touch technology type.

Condition description	Resolution
Totally blank display	**All Models:** • Check that the power indicator for the display is ON. If not, go to the first condition listed in this table. • Check that the system unit is ON. • Check the brightness controls. • If LED is orange (amber), go to the second condition listed in this table. • Check the cable connections, and replace the cables, if necessary. • Replace the 4820 display, if necessary.
	• **For Models 46x, 42x, and 4Fx,** run the service diskette.
Unsupported video mode message	Change to a supported mode.
No Video/low power mode message	Communication is not yet established between the host unit and the 4820. Ensure that the system unit is powered on. Check the video cabling between the 4820 display and the system unit.
Unacceptable image quality	**All models except Models 2xx, 5xx:** 1. Activate the **Auto-Adjust** option by pressing the (+) button (excluding models 48x). 2. Press the (+) and (-) buttons on the bottom of the display simultaneously to get a menu of options. 3. Select **Manual Adjust** by pressing the (-) button and then the (+) button. 4. Activate the Phase option by pressing the (+) button and adjust the phase by pressing the (+) and (-) buttons until you obtain the best display image. 5. To manually adjust the **Clock, Horizontal** and **Vertical**, repeat Step 3, then select your option by pressing the (-) button and then activate it by pressing the (+) button. Adjust by pressing the (+) and (-) buttons until you obtain the best display image. 6. Ensure that the video mode is set to 800 x 600 (if the application will run in this mode.) 7. Check the video cable connections, and replace the cables, if necessary. 8. Check if touch screen or protective screen is dirty. If necessary, clean the screen. Refer to *Cleaning the touch screen* in the operating chapter for your model.
	• **Models 46x, 42x, and 4Fx**, use the service diskette and run the display test for your host system. If the test is successful, the application software can be failing.
	• **For models 48D, 48T**, run the IBM POS Device Diagnostics, which came with the POSS for Windows installation. • Run the 4820 Video Quality Test Pattern program (excluding models 48x, 10D, 1FR).
	Models 2xx and 5xx: • Contact your IBM representative.

This table specifies the resolution by model number or touch technology type.

Condition description	Resolution
Magnetic stripe reader (MSR) malfunctioning	**All Models:** • Check that the cable is securely connected. • Make sure the MSR is securely attached to the display. • Run the MSR test using the service diskette. • Replace the MSR. • **For models 48D, 48T,** see the IBM POS Device Diagnostics, which came with the POSS for Windows installation.
Keypad malfunctioning	**All Models:** • Check that the cable is securely connected. • Make sure the keypad is securely attached to the display. • Run the keypad test using the service diskette. • Replace the keypad. • **For models 48D, 48T,** see the IBM POS Device Diagnostics, which came with the POSS for Windows installation.
Pointing device malfunctioning	**All Models:** • Make sure the pointing device is securely attached to the display. • Run the pointing device test using the service diskette, if available for your model. • Replace the pointing device. • **For models 48D, 48T,** see the IBM POS Device Diagnostics, which came with the POSS for Windows installation.
Capacitive and Resistive Touch Problems	
Condition description	**Resolution**
Touches are not accurate	• Check that the Cursor Vertical Offset and Edge Adjustment are turned off. • Select the **Calibrate** tab and calibrate the touch screen
Drawing lines are not straight and smooth	Select the **Cursor** tab and click **Stabilize Cursor**. Follow instructions displayed on the screen.
Double-click does not work	• Select the Touch Settings tab to adjust the double-click speed and area. – Set the Double-click speed in the slow to medium range. – Set the Double-click area in the medium to high range. Tap twice on the Test figure to test the double-click speed and area settings. If the Test figure begins to move (or stops moving), the touch screen recognized your touches as a double-click.
Cursor does not appear after starting Windows	Select the Cursor table and ensure that the Cursor Visibility is turned on. • Check the Windows Control Panel Mouse Properties page to ensure that touch screen Hidden Cursors is not selected.
Cursor is not located directly underneath your finger	• Select the **Cursor** tab and check that Cursor Vertical Offset and Edge Adjustment are turned off. • Select the **Touch screen Properties** dialog box and select the **Calibrate** tab. Follow the instructions for calibrating your touch screen.

This table specifies the resolution by model number or touch technology type.

Condition description	Resolution
Cursor does not reach out to edges of screen.	• Select the Cursor tab and check that Cursor Vertical Offset and Edge Adjustment are turned off. • Select the **Touch screen Properties** dialog box and select the **Calibrate** tab. Follow the instructions for calibrating your touch screen.
Cursor is jittery	Run the Stabilize Cursor option.
Cursor jumps or bounces suddenly across screen	You could be touching the screen in more than one spot at the same time. Be sure to point and touch with one finger only.
After calibration, the cursor does not appear under your finger tip when touching the screen.	Turn off the Cursor Vertical Offset and Edge Adjustment options on the cursor tab.

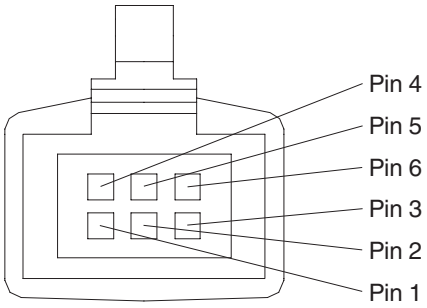
LED states

The 4820 SurePoint Solution has a dual-color LED: green or amber. The monitor's power management state determines the lighting of the LED. Green indicates full power usage, and amber indicates low power mode or no detected video signal.

Voltage for USB power

The powered USB cable should provide approximately 12 V dc to the 4820 SurePoint Solution. Table 4-2 describes the pins and provides an example of the USB cable.

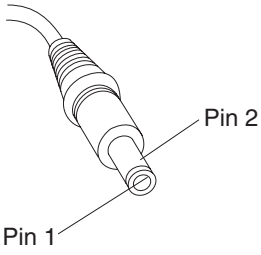
Table 4-2. USB power and voltage

Pin	DC voltage	Example
1	4.75 to 5.25 V	
2, 3	Data	
4, 5	Ground	
6	10.8 to 12.6 V	

Testing the power supply

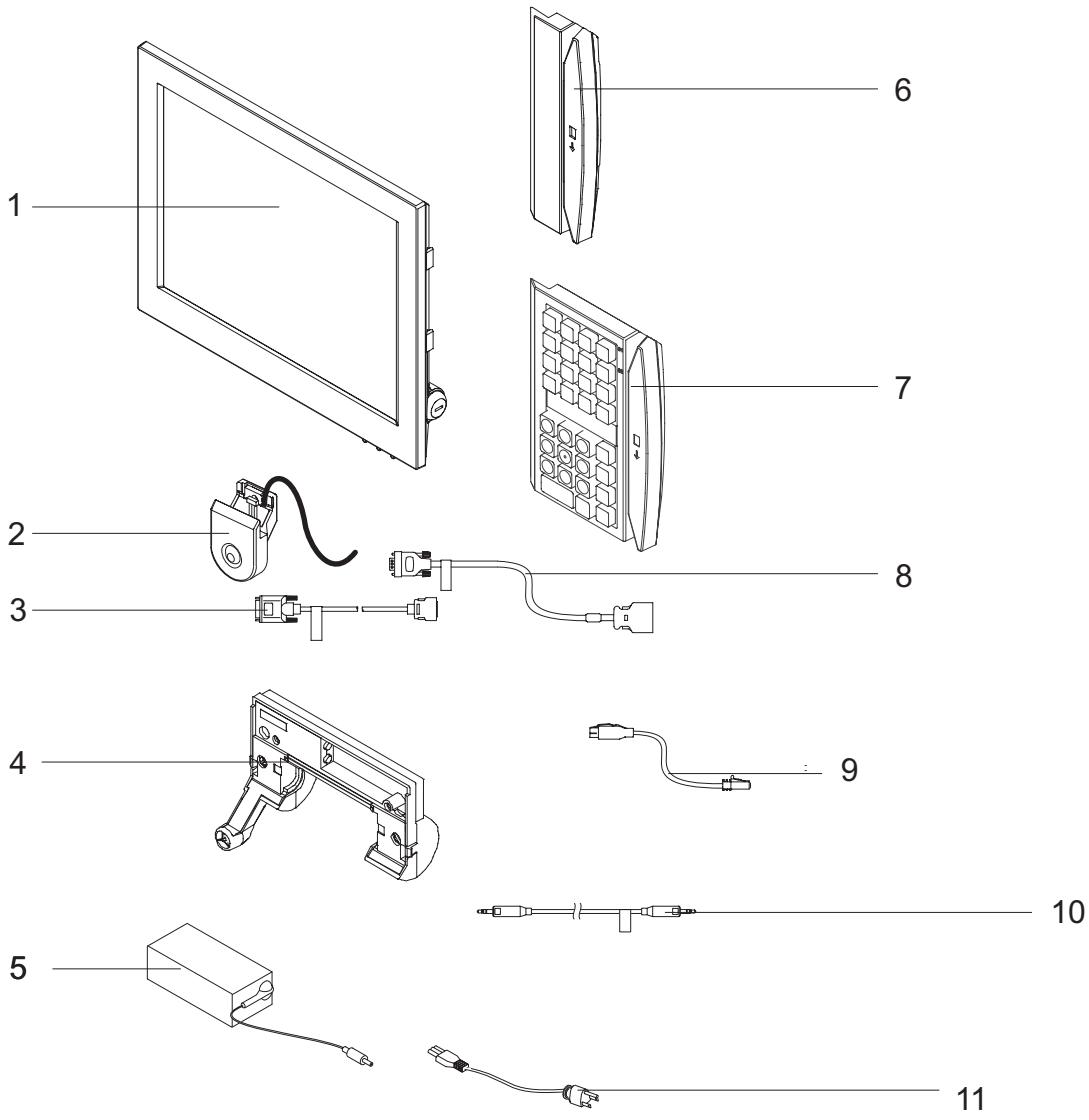
Should you experience power supply problems, you can test the pin voltage identified in Table 4-3.

Table 4-3. Power supply pin voltages

Pin	Voltage	Example
1	+14.5 to +17.0	
2	Ground	

Appendix A. Field-replaceable units

Assembly 1: 4820

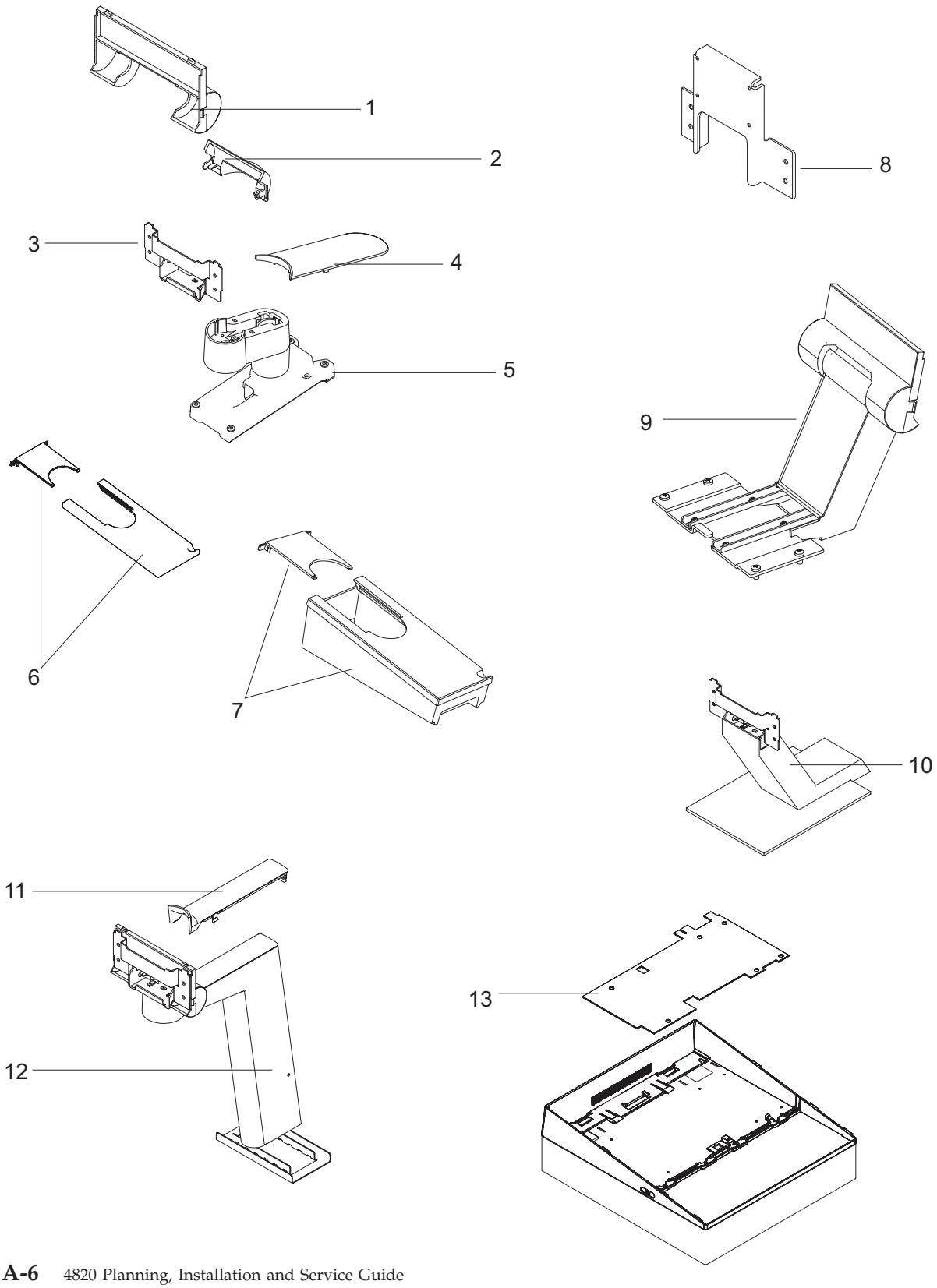


Asm–Index	Part Number	Units	Description
1–1	07K6091	1	4820, model 42D (display only), pearl white
–1	07K6101	1	4820, model 42T, pearl white
–1	10N1009	1	4820, model 42T, iron gray
–1	07K6131	1	4820, model 4FD (display only), iron gray
–1	07K6111	1	4820, model 4FT, iron gray
–1	47L8698	1	4820, model 46D (display only), pearl white
–1	07K6118	1	4820, model 46T, pearl white
–1	10N1097	1	4820, model 46T, iron gray
–1	07K6122	1	4820, model 46R, pearl white
–1	47L8700	1	4820, model 48D (display only), pearl white
–1	47L8701	1	4820, model 48T, pearl white
–1	66P0400	1	4820, model 10D, pearl white
–1	66P0401	1	4820, model 1FR, iron gray
–1	14J0612	1	4820, model 4WT, pearl white
–1	14J0615	1	4820, model 4WT (with I/O support)
–1	14J0618	1	4820, model 4GT, iron gray
–1	14J0621	1	4820, model 4GT (with I/O support), iron gray
–1	14J0842	1	4820, model 2WN (USB), pearl white
–1	14J0848	1	4820, model 2WN (USB with I/O support), pearl white
–1	14J0854	1	4820, model 2WN (RS-232), pearl white
–1	14J0860	1	4820, model 2WN (RS-232 with I/O support), pearl white
–1	14J0845	1	4820, model 2GN (USB), iron gray
–1	14J0851	1	4820, model 2GN (USB with I/O support), iron gray
–1	14J0857	1	4820, model 2GN (RS-232), iron gray
–1	14J0863	1	4820, model 2GN (RS-232 with I/O support), iron gray
–1	07K6085	1	4820, model 2GB (USB), iron gray
–1	07K6086	1	4820, model 2GB (USB with I/O support), iron gray
–1	07K6088	1	4820, model 2GB (RS-232), iron gray
–1	07K6089	1	4820, model 2GB (RS-232 with I/O support), iron gray
–1	46L5457	1	4820, model 2WB (USB), pearl white
–1	07K6063	1	4820, model 2WB (USB with I/O support), pearl white
–1	07K6064	1	4820, model 2WB (RS-232), pearl white
–1	07K6065	1	4820, model 2WB (RS-232 with I/O support), pearl white
–1	14J0866	1	4820, model 5WN (USB), pearl white
–1	14J0868	1	4820, model 5WN (USB with I/O support), pearl white
–1	14J0870	1	4820, model 5WN (RS-232), pearl white
–1	14J0872	1	4820, model 5WN (RS-232 with I/O support), pearl white
–1	14J0867	1	4820, model 5GN (USB), iron gray
–1	14J0869	1	4820, model 5GN (USB with I/O support), iron gray
–1	14J0871	1	4820, model 5GN (RS-232), iron gray
–1	14J0873	1	4820, model 5GN (RS-232 with I/O support), iron gray
–2	29R0854	1	Pointing device, PS/2 interface, pearl white
–2	29R0853	1	Pointing device, USB interface, pearl white
–3	25L7093	1	Cable, digital video 0.8 m (models 48D/48T only)
–3	07K5152	1	Cable, digital video 1.8 m (models 48D/48T only)
–3	25L7092	1	Cable, digital video 3.8 m (models 48D/48T only)
–4	25L7049	1	Speaker kit, pearl white
–5	10N0951	1	Power brick, universal (models 4xx only) **Replaces p/n 02K6555**
–5	66P0405	1	Power brick, universal (models 10D, 1FR)
–6	29R0855	1	MSR, 3-track, pearl white
–6	29R0856	1	MSR, 3-track, iron gray
–6	07K6137	1	MSR, JUCC, iron gray
–6	47L7230	1	MSR, JUCC, pearl white

Asm–Index	Part Number	Units	Description
–7	00P1405	1	Keypad/3-track MSR, pearl white
–7	00P1408	1	Keypad/JUCC MSR, pearl white
–7	29R0852	1	Keypad/3-track MSR, iron gray
–8	47L8747	1	Cable, analog video 0.8 m (models 42D, 42T, 4FD, 4FT, 46D, 46T, 4WT, 4GT only)
–8	25L7095	1	Cable, analog video 1.8 m (models 42D, 42T, 4FD, 4FT, 46D, 46T, 4WT, 4GT only)
–8	25L7094	1	Cable, analog video 3.8 m (models 42D, 42T, 4FD, 4FT, 46D, 46T, 4WT, 4GT only)
–9	95F3192	1	Cable, RS-485 Touch/MSR/Keypad, 0.8 m (models 46D/46T only)
–9	48G9020	1	Cable, RS-485 Touch/MSR/Keypad, 1.8 m (models 46D/46T only)
–9	95F3191	1	Cable, RS-485 Touch/MSR/Keypad, 3.8 m (models 46D/46T only)
–9	07K6154	1	Cable, RS-232 Touch/MSR, PS/2 Keypad, 1.8 m (model 42T only)
–9	07K6092	1	Cable, RS-232 Touch/MSR, PS/2 Keypad, 3.8 m (model 42T only)
–9	07K6156	1	Cable, RS-232 Touch/MSR, 1.8 m (model 4FT only)
–9	10J0860	1	Cable, RS-232 Touch/MSR, 3.8m (model 4FT only)
–9	01L1636	1	Cable, USB, 0.8 m (models 48D, 48T, 4WT, 4GT only)
–9	07K5153	1	Cable, USB, 1.8 m (models 48D, 48T, 4WT, 4GT only)
–9	01L1637	1	Cable, USB, 3.8 m (models 48D, 48T, 4WT, 4GT only)
–9	14J1052	1	Cable, Video, 0.8 m Analog
–9	14J1108	1	Cable, Video, 1.8 m Analog
–9	14J1054	1	Cable, Video, 3.8 m Analog
–9	66P0406	1	Cable, Video, 1.0 m VGA-VGA (models 10D, 1FR only)
–9	66P0407	1	Cable, Video, 2.6 m VGA-VGA (models 10D, 1FR only)
–9	66P0408	1	Cable, Video, 1.0 mVGA-DVI (models 10D, 1FR only)
–9	66P0409	1	Cable, Video, 3.8 m VGA-DVI (models 10D, 1FR only)
–9	14J0932	1	Cable, standard USB, 1.8 m
–9	47L8705	1	Cable, standard USB, 3.8 m
–9	99J9355	1	Cable, analog VGA to DVI, 0.3 m
–			**Models 2xx and 5xx:**
–	14J0980	1	Cable, RS-232, Touch only, 0.8 m
–	14J0979	1	Cable, RS-232, Touch only, 1.8 m
–	14J0978	1	Cable, RS-232, Touch only, 3.8 m
–	14J0972	1	Cable, RS-232, Touch and MSR, 0.8 m
–	14J0971	1	Cable, RS-232, Touch and MSR, 1.8 m
–	14J0970	1	Cable, RS-232, Touch and MSR, 3.8 m
–	14J0976	1	Cable, RS-232, Touch, Keypad/MSR, 0.8 m
–	14J0975	1	Cable, RS-232, Touch, Keypad/MSR, 1.8 m
–	14J0974	1	Cable, RS-232, Touch, Keypad/MSR, 3.8 m
–	14J1142	1	Speaker Kit, Cable Assembly for SurePOS 700, (1.8 m)
–	14J1143	1	Speaker Kit, Cable Assembly for SurePOS 700, (3.8 m)
–	29R0933	1	Speaker/Microphone Kit, Factory, Pearl White
–10	07K4039	1	Speaker kit attachment cables (set of 2) Speaker and Microphone (1.8 m)
–10	07K4040	1	Speaker kit attachment cables (set of 2) Speaker and Microphone (3.8 m)
–			Power cords for models 4xx:
–11	76H3516	1	• Power cord, US
–11	76H3514	1	• Power cord, Argentina/Australia/New Zealand
–11	76H3518	1	• Power cord, Austria/Belgium/France/Germany
–11	76H3520	1	• Power cord, Denmark
–11	76H3522	1	• Power cord, South Africa
–11	76H3526	1	• Power cord, Japan
–11	76H3528	1	• Power cord, Switzerland
–11	76H3530	1	• Power cord, Chile/Ethiopia
–11	76H3535	1	• Power cord, Korea
–11	76H3532	1	• Power cord, Israel
–11	76H3524	1	• Power cord, UK/Hong Kong

Asm–Index	Part Number	Units	Description
–			Power cords (1.8M) for models 1xx:
–11	6952301		• Power cord, US/Canada
–11	36L8879		• Power cord, LA
–11	13F9939		• Power cord, AP
–11	34G0231		• Power cord, AP
–11	13F9978		• Power cord, Europe and Korea
–11	14F0050		• Power cord, EMEA
–11	14F0014		• Power cord, EMEA
–11	13F9978		• Power cord, EMEA
–11	13F9996		• Power cord, EMEA
–11	14F0086		• Power cord, EMEA
–11	14F0032		• Power cord, EMEA, AP
–11	14F0068		• Power cord, EMEA, LA
–			Not shown:
–	47L7261	1	• Cable, pointing device extension, PS/2 interface (for p/n 47L8770)
–	4783922	1	• Lock installation kit
–	4783923	1	• Non-operating lock insert (plug)
–	33G3352	1	• Tumbler, lock combination 1
–	33G3353	1	• Tumbler, lock combination 2
–	33G3354	1	• Tumbler, lock combination 3
–	33G3355	1	• Tumbler, lock combination 4
–	33G3356	1	• Tumbler, lock combination 5
–	33G3357	1	• Tumbler, lock combination 6
–	33G3358	1	• Tumbler, lock combination 7
–	33G3359	1	• Tumbler, lock combination 8
–	33G3360	1	• Tumbler, lock combination 9
–	33G3361	1	• Tumbler, lock combination 10

Assembly 2: 4820 mounting hardware



Asm–Index	Part Number	Units	Description
2–1	66P0402	1	Hinge cover, pearl white
–1	66P0403	1	Hinge cover, iron gray
–2	43P8624	1	Cable cover, pearl white
–2	10N1206	1	Cable cover, iron gray
–3	47L8732	1	Hinge assembly
–4	43P8586	1	Arm cover, pearl white
–4	10N1205	1	Arm cover, iron gray
–5	25L7025	1	Integrated mount, 4694 (all except models 154, 254)
–5	07K5148	1	Integrated mount, 4694, DBCS models 154, 254
–5	07K5158	1	Integrated mount, 4800 models 73x, 75x
–5	57P4329	1	Integrated mount, tall, pearl white
–5	42P8077	1	Integrated mount, short, pearl white
–5	10N1209	1	Integrated mount, tall, iron gray, 4800 models 720, 740, 780
–5	10N1203	1	Integrated mount, short, iron gray, 4800 models 720, 740, 780
–6	57P4338	1	Filler panel kit, wide 4694
–6	57P4336	1	Filler panel kit, wide 4800, pearl white
–6	10N1309	1	Filler panel kit, wide 4800, iron gray
–7	57P4337	1	Filler panel kit, narrow 4800, pearl white/storm gray
–7	10N1317	1	Filler panel kit, narrow 4800, iron gray
–8	25L7028	1	VESA mount, pearl white
–8	14J1044	1	VESA mount, iron gray
–9	47P6405	1	SurePoint stand for SurePOS 500/600, iron gray
–10	07K6080	1	Freestanding pedestal (distributed), pearl white
–10	07K6120	1	Freestanding pedestal (distributed), iron gray
–11	47L8741	1	Pole cover, litho gray, 4694
–11	47L8742	1	Pole cover, storm gray, 4800
–12	07K4036	1	Distributed mount, 352 mm, tall, storm gray
–12	07K4037	1	Distributed mount, 240 mm, short, storm gray
–12	25L7036	1	Distributed mount, 352 mm, tall, litho gray
–12	25L7037	1	Distributed mount, 240 mm, short, litho gray
–	14J1355	1	Distributed Mount, SurePoint stand, SurePOS 4840 Models 533/543/565
–	47P6405	1	Distributed Mount, SurePOS Models 500/600
–13	43P8607	1	Stiffening plate, wide 4694
–			Not shown:
–	10N1348	1	• Hold down screws, 4800 models 720, 740, 780 with slant tray
–	10N1349	1	• Hold down screws, 4800 models 720, 740, 780 without slant tray
–	57P4332	1	• Hold down screws, wide 4694
–	57P4334	1	• Attaching hardware, stiffening plate, wide 4694
–	66P0404	1	• Button cover, iron gray, model 1FR

Appendix B. Mounting surface templates

Use the template in Figure B-1 as a guide for mounting the distributed pedestal assembly.

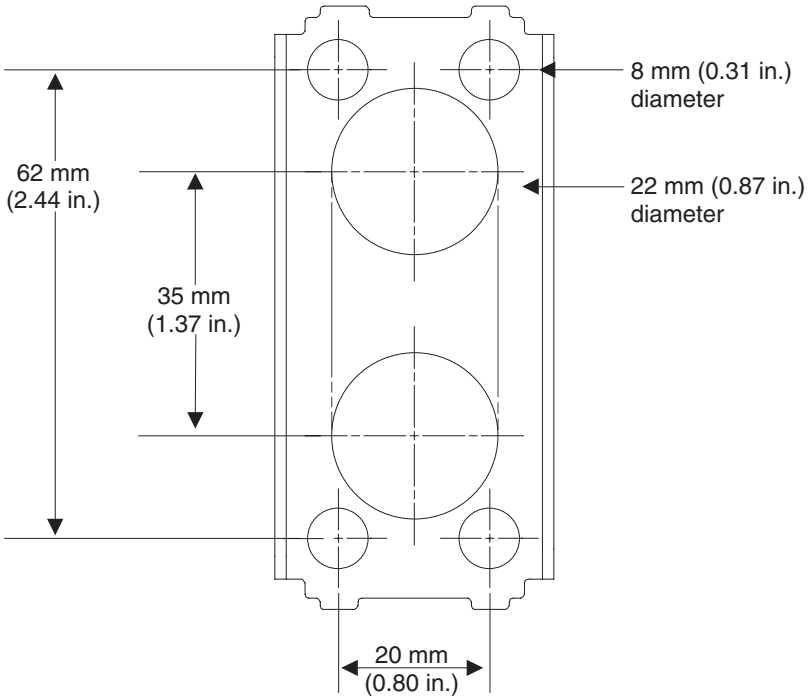


Figure B-1. Distributed pedestal mounting template

Use the template in Figure B-2 as a guide for mounting the free-standing pedestal.

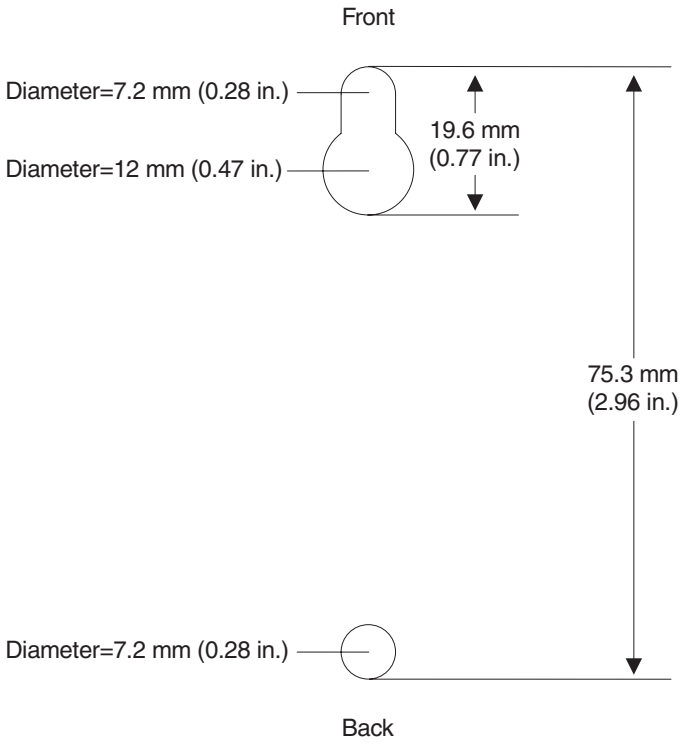


Figure B-2. Free-standing pedestal mounting template

Mounting dimensions—Models 10D, 1FR

Figure B-3 on page B-3 is provided for mounting Models 10D and 1FR.

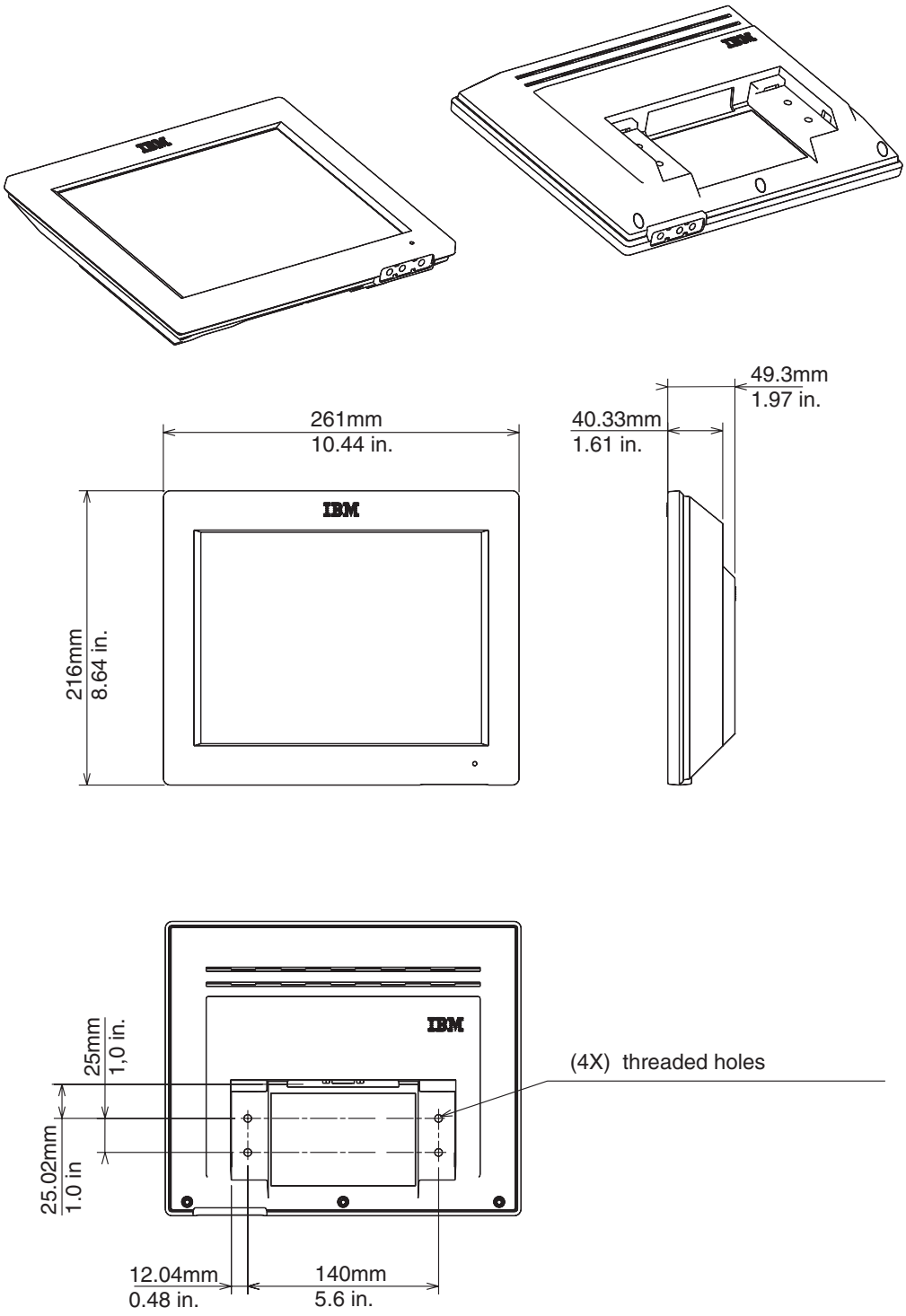


Figure B-3. Mounting dimensions

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Federal communications commission (FCC) statement

This equipment has been tested and found to comply with the 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.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada class A emission compliance statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité aux normes d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

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This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

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.

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Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) vom 30. August 1995 (bzw. der EMC EG Richlinie 89/336).

Dieses Gerät ist berechtigt. in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Konformitätserklärung nach Paragraph 5 des EMVG ist die IBM Deutschland Informationssysteme GmbH, 70548 Stuttgart.

Informationen in Hinsicht EMVG Paragraph 3 Abs. (2) 2:

Das Gerät erfüllt die Schutzanforderungen nach EN 50082–1 und EN 55022 Klasse A.

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:

"Warnung: dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maβnahmen durchzuführen und dafür aufzukommen."

EN 50082–1 Hinweis:

"Wird dieses Gerät in einer industriellen Umgebung betrieben (wie in EN 50082–2 festgelegt), dann kann es dabei eventuell gestört werden. In solch einem Fall ist der Abstand bzw. die Abschirmung zu der industriellen Störquelle zu vergrößern."

Anmerkung:

Um die Einhaltung des EMVG sicherzustellen, sind die Geräte, wie in den IBM Handbüchern angegeben, zu installieren und zu betreiben.

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Japanese power line harmonics compliance statement

高調波ガイドライン適合品

高調波ガイドライン適合品

Japanese Voluntary Control Council for Interference (VCCI) statement

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Taiwanese class A warning statement

警告使用者:
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Electrostatic discharge (ESD)

Attention: ESD damage can occur when there is a difference in charge between the part, the product, and the service person. No damage will occur if the service person and the part being installed are at the same charge level.

ESD Damage Prevention

Anytime a service action involves physical contact with logic cards, modules, back-panel pins, or other ESD sensitive (ESDS) parts, the service person must be connected to an ESD common ground point on the product through the ESD wrist strap and cord.

The ESD ground clip can be attached to any frame ground, ground braid, green wire ground, or the round ground prong on the AC power plug. Coax or connector outside shells can also be used.

Handling Removed Cards

Logic cards removed from a product should be placed in ESD protective containers. No other object should be allowed inside the ESD container with the logic card. Attach tags or reports that must accompany the card to the outside of the container.

End of life disposal

IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of programs and services to assist equipment owners in recycling their IT products. Information about these product recycling offerings can be found on IBM's internet site at the following URL.

htttp://www.ibm.com/ibm/environment/products/prp.shtml

Disposal of IT products should be in accordance with local ordinances and regulations.

Mercury-added statement

The fluorescent lamp in the liquid crystal display contains mercury. Dispose of it as required by local ordinances and regulations.

Taiwanese battery recycling statement

Waste batteries, please recycle.

廢電池請回收

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Appendix D. Safety information

Danger:
Before you begin to install this product, read the safety information in *IBM Safety Information — Read This First*, GA27-4004. This booklet describes safe procedures for cabling and plugging in electrical equipment.

Gevaar:
Voordat u begint met de installatie van dit produkt, moet u eerst de veiligheidsinstructies lezen in de brochure *Veiligheidsinstructies—Lees dit eerst*, GA27-4004. Hierin wordt beschreven hoe u electrische apparatuur op een veilige manier moet bekabelen en aansluiten.

Perigo:
Antes de começar a instalar este produto, leia as informações de segurança contidas em *Informações Sobre Seguranaça—Leia Isto Primeiro*, GA27-4004. Esse folheto descreve procedimentos de segurança para a instalação de cabos e conexões em equipamentos elétricos.

Fare!
Før du installerer dette produkt, skal du læse sikkerhedsforskrifterne i *Sikkerhedsforskrifter—Læs dette først* GA27-4004. Vejledningen beskriver den fremgangsmåde, du skal bruge ved tilslutning af kabler og udstyr.

Gevaar

Voordat u begint met het installeren van dit produkt, dient u eerst de veiligheidsrichtlijnen te lezen die zijn vermeld in de publikatie *IBM Safety Information — Read This First*, GA27-4004. In dit boekje vindt u veilige procedures voor het aansluiten van elektrische appratuur.

VAARA

Ennen kuin aloitat tämän tuotteen asennuksen, lue julkaisussa *Turvaohjeet—Luetämä ensin*, GA27-4004, olevat turvaohjeet. Tässä kirjasessa on ohjeet siitä, miten sähkölaitteet kaapeloidaan ja kytketään turvallisesti.

Danger

Avant d'installer le présent produit, consultez le livret *Informations pour la sécurité–Lisez-moi d'abord*, GA27-4004, qui décrit les procédures à respecter pour effectuer les opérations de câblage et brancher les équipements électriques en toute sécurité.

Vorsicht

Bevor mit der Installation des Produktes begonnen wird, die Sicherheitshinweise in *Sicherheitsinformationen—Bitte zuerst lesen,* IBM Form GA27-4004. Diese Veröffentlichung beschreibt die Sicherheitsvorkehrungen für das Verkabeln und Anschlieβen elektrischer Geräte.

Vigyázat

Mielôtt megkezdi a berendezés üzembe helyezését, olvassa el a *IBM Safety Information — Read This First*, GA27-4004 könyvecskében leírt biztonsági információkat. Ez a könyv leírja, milyen biztonsági intézkedéseket kell megtenni az elektromos berendezés huzalozásakor illetve csatlakoztatásakor.

Pericolo

prima di iniziare l'installazione di questo prodotto, leggere le informazioni relative alla sicurezza riportate nell'opuscolo *Informazioni di sicurezza—Prime informazioni da leggere* in cui sono descritte le procedure per il cablaggio ed il collegamento di apparecchiature elettriche.

Fare

Før du begynner å installere dette produktet, må du lese sikkerhetsinformasjonen i *Sikkerhetsinformasjon—Les dette først,* GA27-4004 som beskriver sikkerhetsrutinene for kabling og tilkobling av elektrisk utstyr.

Perigo

Antes de iniciar a instalação deste produto, leia as informações de segurança *Informações de Segurança—Leia Primeiro,* GA27-4004. Este documento descreve como efectuar, de um modo seguro, as ligações eléctricas dos equipamentos.

Peligro

Antes de empezar a instalar este producto, lea la información de seguridad en *Información de Seguridad—Lea Esto Primero*, GA27-4004. Este documento describe los procedimientos de sequridad para cablear y enchufar equipos eléctricos.

Varning—livsfara

Innan du börjar installera den här produkten bör du läsa säkerhetsinformationen i dikumentet *Säkerhetsföreskrifter—Läs detta först*, GA27-4004. Där beskrivs hur du på ett säkert sätt ansluter elektrisk utrustning.

危險：安裝本產品之前， 請先閱讀
"IBM Safety Information--Read
This First" GA27-4004 手冊中所提
供的安全注意事項。 這本手冊將會說明
使用電器設備的纜線及電源的安全程序。

Opasnost: Prije nego sto počnete sa instalacijom produkta,
pročitajte naputak o pravilima o sigurnom rukovanju u
Upozorenje: Pravila o sigurnom rukovanju - Prvo pročitaj ovo,
GA27-4004. Ovaj privitak opisuje sigurnosne postupke za
priključrivanje kabela i priključivanje na električno napajanje.

Upozornění: než zahájíte instalaci tohoto produktu, přečtěte si
nejprve bezpečnostní informace v pokynech „ Bezpečnostní
informace“ č. GA27-4004. Tato brožurka popisuje bezpečnostní
opatření pro kabeláž a zapojení elektrického zařízení.

Κίνδυνος: Πριν ξεκινήσετε την εγκατάσταση αυτού του προϊόντος,
διαβάστε τις πληροφορίες ασφάλειας στο φυλλάδιο *IBM Safety
Information-Read this first,* GA27-4004. Στο φυλλάδιο αυτό
περιγράφονται οι ασφαλείς διαδικασίες για την καλωδίωση των
ηλεκτρικών συσκευών και τη σύνδεσή τους στην πρίζα.

危険： 導入作業を開始する前に、安全に関する
小冊子 GA27-4004 の「最初にお読みください」
(Read This First)の項をお読みください。
この小冊子は、電気機器の安全な配線と接続の
手順について説明しています。

위험: 이 제품을 설치하기 전에 반드시
"주의: 안전 정보-시작하기 전에"
(GA27-4004) 에 있는 안전 정보를
읽으십시오.

סכנה: לפני שמתחילים בהתקנת מוצר זה, יש לקרוא את הוראות הבטיחות בחוברת
Caution: Safety Information - Read This First, GA27-4004
חוברת זו מתארת את הוראות הבטיחות לחיבור הכבלים ולחיבור לחשמל של ציוד חשמלי.

خطـــر: قبـــل عمـــلية بـــدء تركيـــب هذا المنتـــج، قم بقراءة معلومـــات
الحمـــاية الموجودة في التحذيـــر: معلومـــات الحمـــاية – Read This First،
GA27-4004 . يقـــوم هذا الكتيـــب بوصـــف اجـــراءات الآمـــان
لتوصـــيل الأدوات الكـــهربائية بالكـــابلات والمقبـــس الكـــهربائـــي.

ОПАСНОСТ
Пред да почнете да го инсталирате овој продукт, прочитајте ја информацијата за безбедност:
"Предупредување: Информација за безбедност: Прочитајте го прво ова", GA27-4004.
Оваа брошура опишува безбедносни процедури за каблирање и вклучување на електрична опрема.

Uwaga:
Przed rozpoczęciem instalacji produktu należy zapoznać się z instrukcją:
"IBM Safety Information - Read This First", GA27-4004.
Zawiera ona warunki bezpieczeństwa przy podłączaniu do sieci elektrycznej i eksploatacji.

ОСТОРОЖНО: Прежде чем инсталлировать этот продукт, прочтите Инструкцию по технике безопасности в документе "Внимание: Инструкция по технике безопасности -- Прочесть в первую очередь", GA27-4004. В этой брошюре описаны безопасные способы каблирования и подключения электрического оборудования.

Nebezpečenstvo: Pred inštaláciou výrobku si prečítajte bezpečnosté predpisy v
Výstraha: Bezpeč osté predpisy - Prečítaj ako prvé, GA27-4004. V tejto brožúrke sú opísané bezpečnosté postupy pre pripojenie elektrických zariadení.

Pozor: Preden zaènete z instalacijo tega produkta preberite poglavje: 'Opozorilo: Informacije o varnem rokovanju-preberi pred uporabo," GA27-4004. To poglavje opisuje pravilne postopke za kabliranje,

危險：

開始安裝此產品之前，請先閱讀安全資訊。

注意：

請先閱讀 - 安全資訊 GA27-4004

此冊子說明插接電器設備之電纜線的安全程序。

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