



REAL-TIME AUTOMATED PERSONNEL IDENTIFICATION SYSTEM (RAPIDS) VERSION 6 HARDWARE GUIDE

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APPENDICES

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SECTION 1: RAPIDS SERVER

1.1 Server Description

The Real-time Automated Personnel Identification System (RAPIDS) Server consists of a central processing unit (CPU), color monitor, keyboard, mouse, surge suppressor, smart card reader/encoder, uninterruptible power supply (UPS), Ethernet switch, multiport serial board with adapter, and optional modems. Some Servers also have an optional laser printer for printing audit trail reports. The RAPIDS Server can support multiple RAPIDS Workstations connected to it. All Servers with two or more collocated (within 300 feet) Workstations have an Ethernet switch, which forms a local area network (LAN) with these Workstations. Local Workstations more than 300 feet away and Remote Workstations (in other buildings or at other sites) connect to the Server one of three ways: (1) via a base-provided Ethernet LAN that the Server also connects to, (2) via a base-provided Ethernet connection to the Defense Information Systems Network (DISN) wide area network (WAN), or (3) via dial-up modems and a dial-up telephone line.

The RAPIDS Server configurations are shown in Figure 1-1 for the Dell CPU models, Figure 1-2 for the Gateway E4600 CPU model, and Figure 1-3 for the Gateway E3600 CPU model, on the following pages. For communications with the Defense Enrollment Eligibility Reporting System (DEERS), Servers utilize Ethernet connectivity to the base LAN and then use the DISN WAN. Ethernet Servers have a connection from the Ethernet Switch to the base-provided Ethernet LAN for access to the DISN WAN.

Some RAPIDS administrative functions may be performed at the Server, such as running audit trail reports; however without an optional laser printer, these reports can only be archived to floppy disk or viewed on-line. Additionally, at the request of the DEERS/RAPIDS Assistance Center (DRAC), DEERS/RAPIDS Support Center-Europe (DRSC-E), Defense Manpower Data Center (DMDC) Support Office – Asia Pacific (DSO-A), or maintenance personnel, the site security manager (SSM) may be directed to shutdown and reboot the RAPIDS server during troubleshooting of system problems.

NOTE:

The server should not be shut down or rebooted without direction from the DRAC, DRSC-E, DSO-A, or maintenance personnel. To reboot the server requires a special single-use password that must first be unencrypted by the DRAC, DRSC-E, or DSO-A.

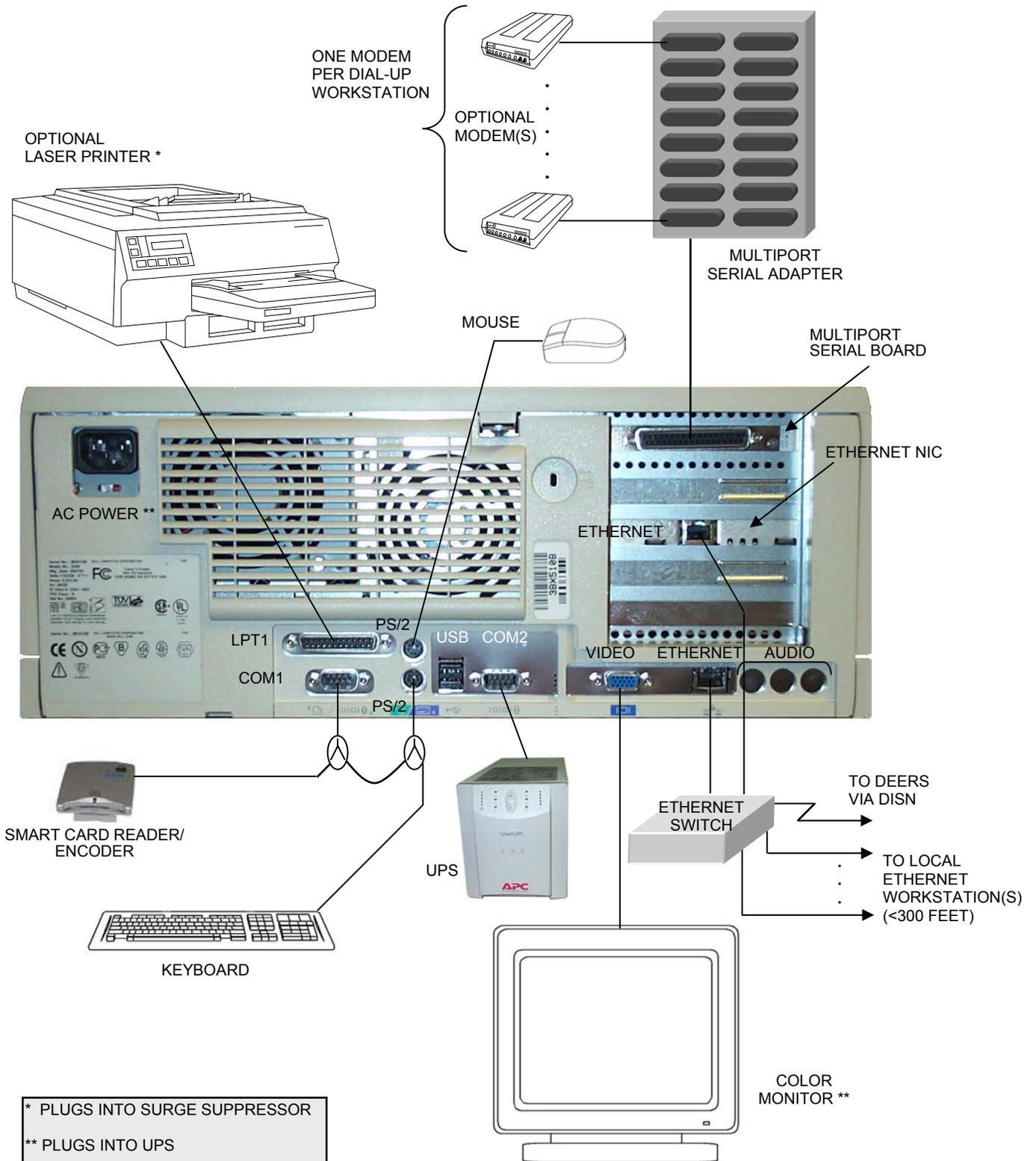


Figure 1-1: RAPIDS Server Configuration With Dell CPU Models

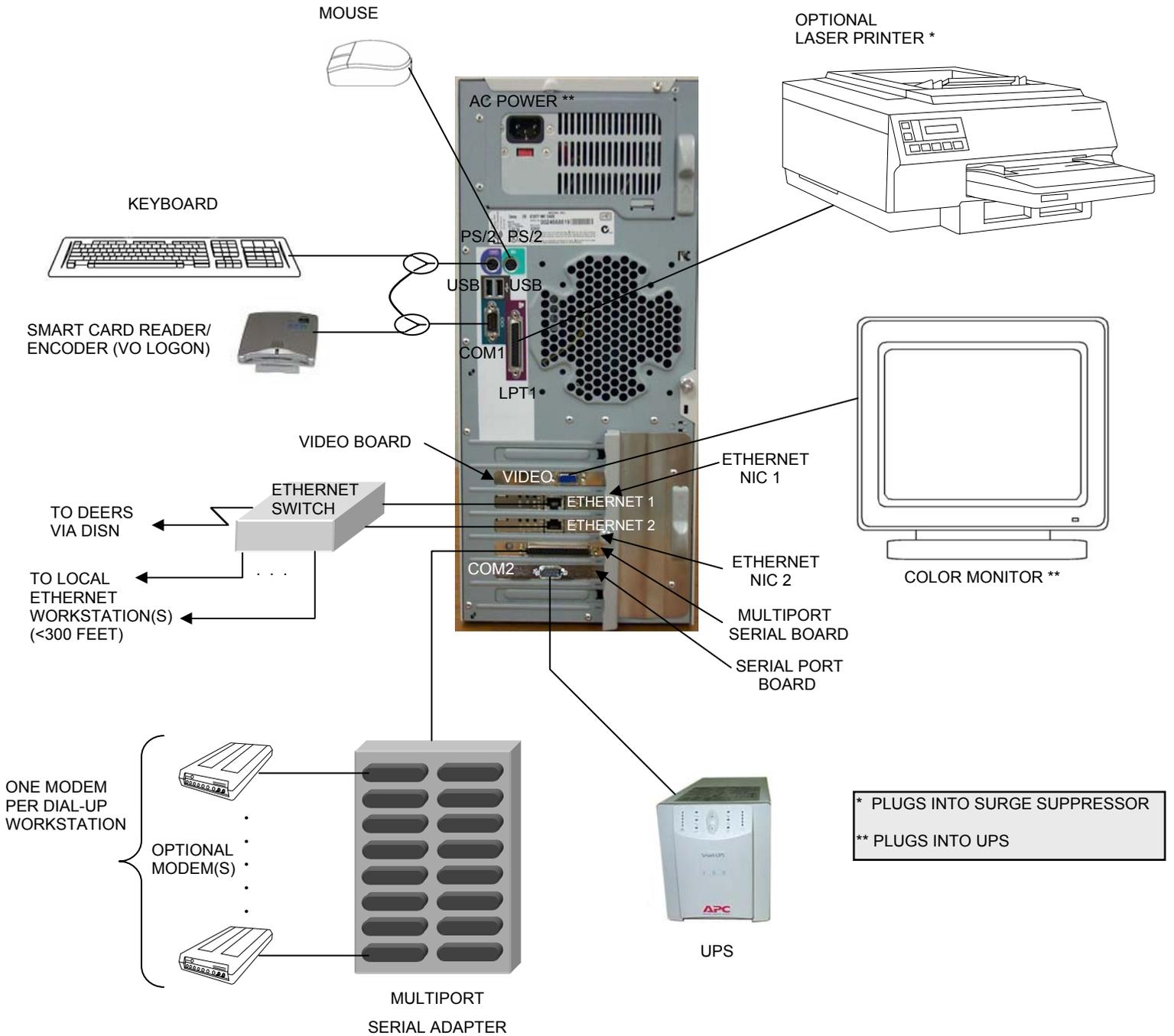


Figure 1-2: RAPIDS Server Configuration With Gateway E4600SE CPU

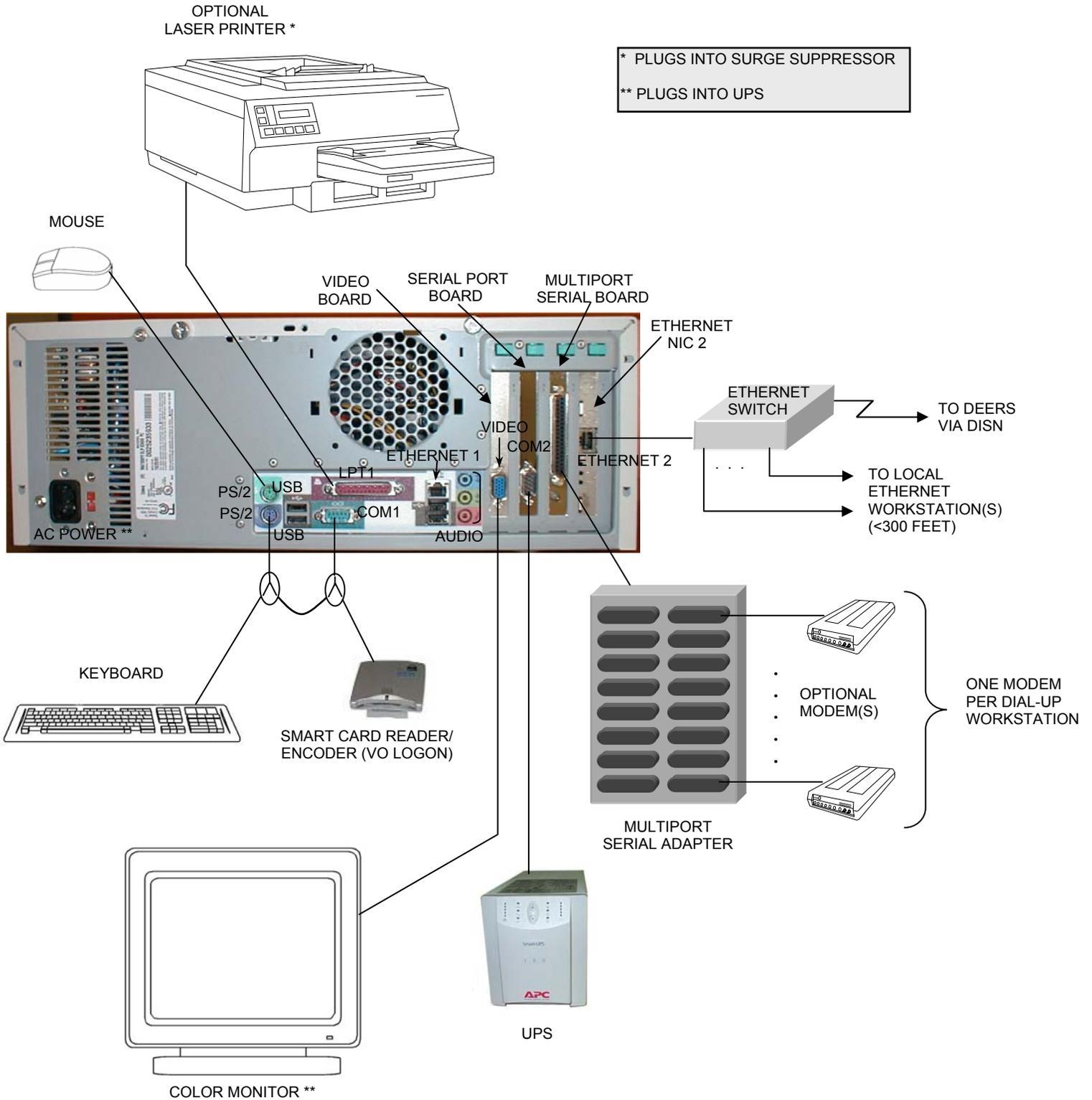


Figure 1-3: RAPIDS Server Configuration With Gateway E3600 CPU

1.2 Server Components

1.2.1 Desktop Central Processing Unit (CPU)

The CPU is the main part of the RAPIDS Server and each of the various models are shown in Figures 1-4, 1-5, 1-6, and 1-7, below. Servers will be one of the following models: Dell OptiPlex GX1 Pentium II 350 or 400 MHz, Dell OptiPlex GX1 Pentium III 500 MHz, Dell OptiPlex GX110 Pentium III 733 or 933 MHz, Dell OptiPlex GX200 Pentium III 933 MHz, Gateway E4600SE Pentium 4 1.6 or 1.8 GHz gigaHertz (GHz), or Gateway E3600 Pentium 4 1.7 GHz. The CPU houses the motherboard, floppy disk drive, two hard disk drives, power supply, compact disk-read only memory (CD-ROM) drive (Dell CPUs) or CD-ROM/digital video disk (DVD) drive (Gateway CPUs), Personal Computer Memory Card International Association (PCMCIA) adapter and slots (Dell CPUs only), multi-port serial board with adapter, video display adapter (on motherboard for Dell CPUs, separate board for Gateway CPUs), primary Ethernet adapter (on motherboard for Dell CPUs and Gateway E3600 CPU, separate board for Gateway E4600SE CPU), second Ethernet adapter (separate board), floppy and hard disk controllers (on motherboard), and slots for optional controller and input/output (I/O) devices. Since the Gateway CPUs only has one serial port, they have a PCI serial port board installed.

All Servers are configured with one of the following amounts of memory: 128 megabytes (MB) synchronous dynamic random access memory (SDRAM) (Dell GX1 Pentium II), 256 MB SDRAM (Dell GX1 Pentium III, GX110, and GX200 models), 512MB Rambus dynamic random access memory (RDRAM) (Gateway E4600SE), or 512MB SDRAM (Gateway E3600). The Dell OptiPlex PCs contain an integrated Accelerated Graphics Port (AGP)-enabled SVGA-standard video controller with 4 MB (Dell GX1 and GX110), or 16 MB (Dell GX200) of video RAM. The Gateway PCs contain an AGP SVGA-standard video board with either 16 MB (Gateway E4600SE) or 32MB (Gateway E3600) of video RAM.

The Server CPU's power plug should be plugged into one of the outlets on the back of the UPS. The **Power** button for the CPU is located on the front panel of the unit, as indicated in the figures below, and should be kept in the **On** position because it is powered **On** and **Off** at the UPS. When the CPU is receiving power, the **Power Indicator** will be lit green. Whenever the hard disk drive, floppy disk drive, or CD-ROM (Dell CPUs) or CD-ROM/DVD (Gateway CPUs) drive is being accessed, the **Hard Disk Access Indicator**, **Floppy Disk Drive Access Indicator**, **CD-ROM Access Indicator** (Dell CPUs), **CD-ROM/DVD Access Indicator** (Gateway CPUs) respectively, will flash **On**.

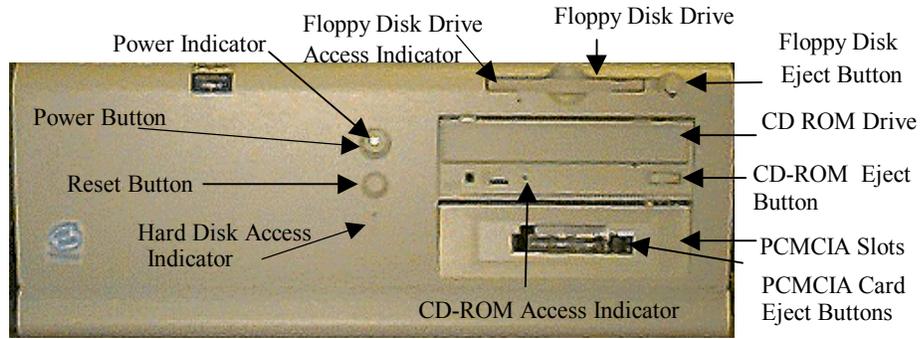


Figure 1-4: Front of Dell OptiPlex GX1 Server CPU

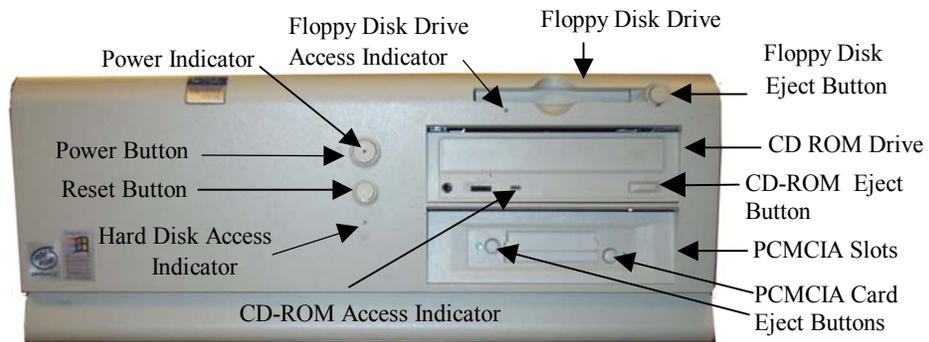


Figure 1-5: Front of Dell OptiPlex GX110 and GX200 Server CPU

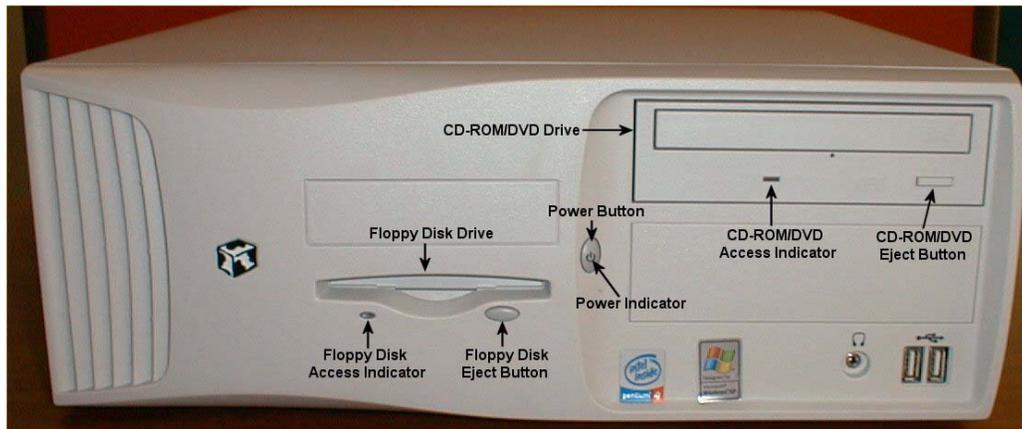


Figure 1-6: Front of Gateway E3600 Server CPU



Figure 1-7: Front of Gateway E4600SE Server CPU

1.2.2 Monitor, Keyboard, and Mouse

A 17" Super Video Graphics Array (SVGA) color monitor, enhanced 104-key keyboard, and two-button Personal System/2 (PS/2) mouse connect to the back of the Server CPU. These provide the user interface with the RAPIDS Server. The RAPIDS graphical user interface (GUI) takes advantage of the mouse for most functions.

The monitor's power plug should be plugged into one of the outlets on the back of the UPS. The **Power** switch on the monitor, which is located on the front in the lower-right corner, should be kept in the **On** position, since it will be turned **On** and **Off** at the UPS. When the monitor is receiving power, the **Power Indicator** on the front of the monitor will be lit green. If the monitor goes into its power save mode, then the **Power Indicator** will be lit orange. When the monitor is not receiving power or is turned **Off**, then the **Power Indicator** will not be lit.

The mouse is plugged into one of the **PS/2** ports on the back of the Server CPU, as shown in Figures 1-1 (Dell CPUs), 1-2 (Gateway E4600SE CPU), and 1-3 (Gateway E3600 CPU), above. The keyboard is plugged into one end of the smart card reader/encoder's special Y cable, which connects both devices to the other **PS/2** port on the back of the Server CPU, as shown in Figures 1-1 (Dell CPUs), 1-2 (Gateway E4600SE CPU), and 1-3 (Gateway E3600 CPU), above. The **PS/2** ports supply the power to these devices.

1.2.3 Hard Disk Drives

Each RAPIDS Server has two Ultra Direct Memory Access (DMA) hard disk drives containing the RAPIDS application software, Microsoft (MS) Windows NT Server operating system software, and other software used for RAPIDS. The Server's hard disks are also used to store off-line records sent by its RAPIDS Workstations during off-line mode and audit trail report data. All RAPIDS servers have two hard drives with the disk mirroring feature of MS Windows NT enabled, which provides a level of fault tolerance should a hard drive failure occur. Disk mirroring also eases maintenance for RAPIDS servers. Hence, a single hard drive failure will not bring the server down and the server's configuration is maintained throughout the replacement of the failed drive. The Dell GX1 350 MHz Server has two 6.4 GB hard drives. The Dell GX1 400 MHz Server has two 8.4 GB hard drives. The Dell GX1 500 MHz, Dell GX110, Dell GX200, and Gateway E4600SE 1.6 GHz Servers have two 20 GB hard drives. The Gateway E4600SE 1.8 GHz and Gateway E3600 Servers have two 40 GB hard drives.

1.2.4 Floppy Disk Drive

The RAPIDS Server has a 3.5" high density, 1.44 MB floppy disk drive, which is used for all RAPIDS application options that involve reading from and writing to a floppy disk. This includes archiving audit trail reports and loading software upgrades. Audit trail report archiving can be performed at the Server for all of the RAPIDS Workstations (local and remote) attached to that Server.

1.2.5 CD-ROM and CD-ROM/DVD Drives

Each Dell OptiPlex Server has an internal Enhanced Industry Device Electronics (EIDE), Advanced Technology Attachment Packet Interface (ATAPI)-compatible CD-ROM drive of the following speed: 14/32X in the GX1 350 and 400 MHz, 17/40X in the GX1, or 20/48X in both the GX110 and GX200 models. The Gateway E4600SE and E3600 Servers have an internal 16X CD-ROM/DVD drive. The CD-ROM or CD-ROM/DVD drive is used by RAPIDS for initial software installation and loading software upgrades. Additionally, it can be used to read RAPIDS documentation and manuals that are distributed via CD-ROM (Dell and Gateway CPUs) or DVD (Gateway CPUs only).

1.2.6 PCMCIA Slots

Only the Dell Server CPUs have PCMCIA slots. The PCMCIA slots on each Server can accept two Type II or one Type III PCMCIA cards at a time, but are not currently used by RAPIDS.

1.2.7 Multiport Serial Board and Adapter Box

A 16-port serial adapter box connects to the Computone multiport serial board in the RAPIDS Server CPU and is used to connect remote dial-up RAPIDS Workstations to the Server via a modem pair (one at Server and one at Workstation). The multiport serial board will be either a 16-bit industry standard architecture (ISA) board or 32-bit peripheral component interconnect (PCI) board that is installed in the Server CPU. Figures 1-1 (Dell CPUs), 1-2 (Gateway

E4600SE CPU), and 1-3 (Gateway E3600 CPU), above, show the location of the connector on this board at the back of the Server CPU and the separate 16-port serial adapter box, which is where modems connect to the Server.

1.2.8 Uninterruptible Power Supply (UPS)

The UPS provides protection for the Server CPU and monitor from power surges and spikes. The **Power** button on the front of the UPS should be used to power the Server's CPU and monitor **On** and **Off**. The UPS connects to the COM2 serial port on the back of the Server CPU, as shown in Figures 1-1 (Dell CPUs), 1-2 (Gateway E4600SE CPU), and 1-3 (Gateway E3600 CPU), above. Details on the various models of UPS can be found in Section 8.

WARNING:
Only one RAPIDS Server CPU and its monitor should be plugged into the UPS!

1.2.9 Surge Suppressor

The surge suppressor for the RAPIDS Server is used to protect all Server components, except the CPU and monitor, from surges and spikes in power. The Ethernet switch, optional laser printer, and any optional modems should be plugged into the surge suppressor. All components should be kept with their **Power** switches in the **On** position and the surge suppressor should be used to power them all **On** and **Off** at the same time. Details on the surge suppressor can be found in Section 9.

1.2.10 Ethernet Switch

Any RAPIDS Server that has two or more collocated RAPIDS Workstations connected to it has an Ethernet switch, unless the base-provided Ethernet LAN drop infrastructure is utilized. A 10BaseT or 10/100BaseT Ethernet switch is connected to the two Ethernet ports on the back of a Server CPU, as shown in Figures 1-1 (Dell CPUs), 1-2 (Gateway E4600SE CPU), and 1-3 (Gateway E3600 CPU), above. The Server and all collocated RAPIDS Workstations (within 300 feet of the Server) are connected to ports on the Ethernet switch to form an Ethernet LAN. For the Server, the connection to the base Ethernet LAN connected to DISN is made to one of the ports on the Ethernet switch. If the Ethernet switch is located close enough to the RAPIDS Server, then its power plug should be plugged into the Server's surge suppressor. The Ethernet switch has no power switch, so as long as it has power, it is **On**. See Section 11 for more details on the Ethernet switch models.

1.2.11 Optional Modems

RAPIDS Servers that have remote dial-up Workstations connected via modem, will have a complementary dial-up modem at the Server for each Workstation connected via modem. Each modem is connected to a **serial** port on the multiport serial adapter box, which is connected to the multiport serial board installed in the Server CPU, as shown in Figures 1-1 (Dell CPUs), 1-2 (Gateway E4600SE CPU), and 1-3 (Gateway E3600 CPU), above. See Section 6 for more details on the dial-up modem models.

1.3 How to Use the RAPIDS Server

1.3.1 Powering On the RAPIDS Server

The RAPIDS Server is used by both local and remote RAPIDS Workstations, so it should be kept **On** at all times. If DRAC, DRSC-E, DSO-A, or maintenance personnel direct you to turn **Off** the Server see Subsection 1.3.2, below, then follow these steps to turn it back **On** and reboot the system.

Since the RAPIDS Server CPU and monitor are plugged into the UPS, you should use the UPS' **Power** button to turn these Server components **On**. Since the remaining RAPIDS Server components, such as modems and the Ethernet switch, are plugged into the surge suppressor, you should use the surge suppressor's **Power** button to turn **On** these Server system components. To do this, leave the **Power** switches of all Server components in the **On** position. First turn **On** the surge suppressor by pressing the **Power** button on the surge suppressor to the **On** or **1** position then turn **On** the UPS by pressing the **1/Test** button on the front of the UPS. The RAPIDS Server system will power up and the Windows NT Server operating system will boot up, automatically. During the system boot, several lines of configuration information will scroll across the monitor. The last message will prompt the SSM to press the **Ctrl+Alt+Delete** keys, simultaneously, to logon. The SSM will then enter their SSM Logon identification (ID) and Password (a special single-use password must first be unencrypted by the DRAC, DRSC-E, or DSO-A) at the "**Logon Information**" dialog box. This leaves the Server at the Windows NT Server desktop window. The RAPIDS application is then started automatically.

1.3.2 Powering Off the RAPIDS Server

If at the request of the DRAC, DRSC-E, DSO-A, or maintenance personnel, the site's SSM is directed to shutdown and reboot the RAPIDS server during troubleshooting of system problems use the following procedures to turn the Server **Off**.

NOTE:

The server should not be shut down or rebooted without direction from the DRAC, DRSC-E, DSO-A, or maintenance personnel. To reboot the server requires a special single-use password that must first be unencrypted by the DRAC, DRSC-E, or DSO-A.

When powering down the RAPIDS Server you must be considerate of any remote RAPIDS Workstations still connected to the Server. Prior to shutting down the Server, you should check with all Workstation users connected to the Server and make sure they are shut down first, if possible. When you shut down the Server, none of its RAPIDS Workstations will be able to logon or access the DEERS database. As a general rule, if you are a Server site, you should **NOT** power **Off** the Server CPU, modems, or the Ethernet switch, unless you are troubleshooting a communications problem in coordination with the DRAC, DRSC-E, DSO-A, or maintenance personnel.

NOTE:

The Server's monitor can be powered Off any time it is not in use, i.e., at night and on weekends, by pushing the Power switch on the monitor to the Off position.

To shut down the Server, from the Windows taskbar (at the bottom of the screen), click on the "Start" button and select "Shut Down" from the menu list. Then select "Shut down the computer?" and click on the "Yes" button, as shown in Figure 1-8, below. The Windows NT Server operating system on the RAPIDS Server will shut down properly. Once the screen displays a message box with "It is Now Safe to Turn Off Your Computer", you may then power Off the Server system, by pressing the Power switches on the UPS and surge suppressor to the Off or 0 position.

WARNING:

DO NOT attempt to power Off or unplug the Server CPU without performing the system shutdown procedures, above!

RAPIDS users should contact the DRAC, DRSC-E, DSO-A, or their DEERS/RAPIDS Field Service Representative if there are questions about shutting down the RAPIDS Server.



Figure 1-8: Windows NT Server Shut Down Dialog Box

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SECTION 2: RAPIDS WORKSTATION

2.1 Workstation Description

The RAPIDS Workstation consists of a CPU, color monitor, keyboard, mouse, surge suppressor, laser printer, digital camera, fingerprint scanner, bar code scanner, laminator, two smart card reader/encoders, polyvinyl chloride (PVC) card printer, universal serial bus (USB) port device, and personal identification number (PIN) pad. For communications to the RAPIDS Server, dial-up Workstations have an optional modem and interface cable. Ethernet Workstations have a connection either to the Ethernet Switch (if within 300 feet of their Server) or to the base-provided Ethernet LAN/WAN.

NOTE:

RAPIDS Workstations are referred to as “Remotes” when their RAPIDS Server is at another site. Connectivity to the RAPIDS Server must be available to run RAPIDS, with the exception of special hostless systems.

Each RAPIDS Workstation is connected to a RAPIDS Server via an Ethernet switch, base-provided Ethernet LAN, dial-up modem direct, dial-up modem via terminal server, or Ethernet/DISN WAN. The RAPIDS Workstation can be used to add, update, and delete DEERS records, perform DEERS eligibility checks, generate pre-filled Department of Defense (DD) Forms 1172, print blank DD Forms 1172-2, create Uniformed Services teslin ID cards, and create Common Access Cards (CACs, i.e., smart cards). The RAPIDS Workstation configurations are shown in Figure 2-1 for the Dell CPU models, Figure 2-2 for the Gateway E4600SE CPU, and Figure 2-3 for the Gateway E3600 CPU, on the following pages.

NOTE:

Whenever the RAPIDS Workstation is left unattended, the VO/SVO/SSM must remove their CAC from the smart card reader/encoder to lock the Workstation preventing access by unauthorized users. The workstation should be shut down at the end of each work day.

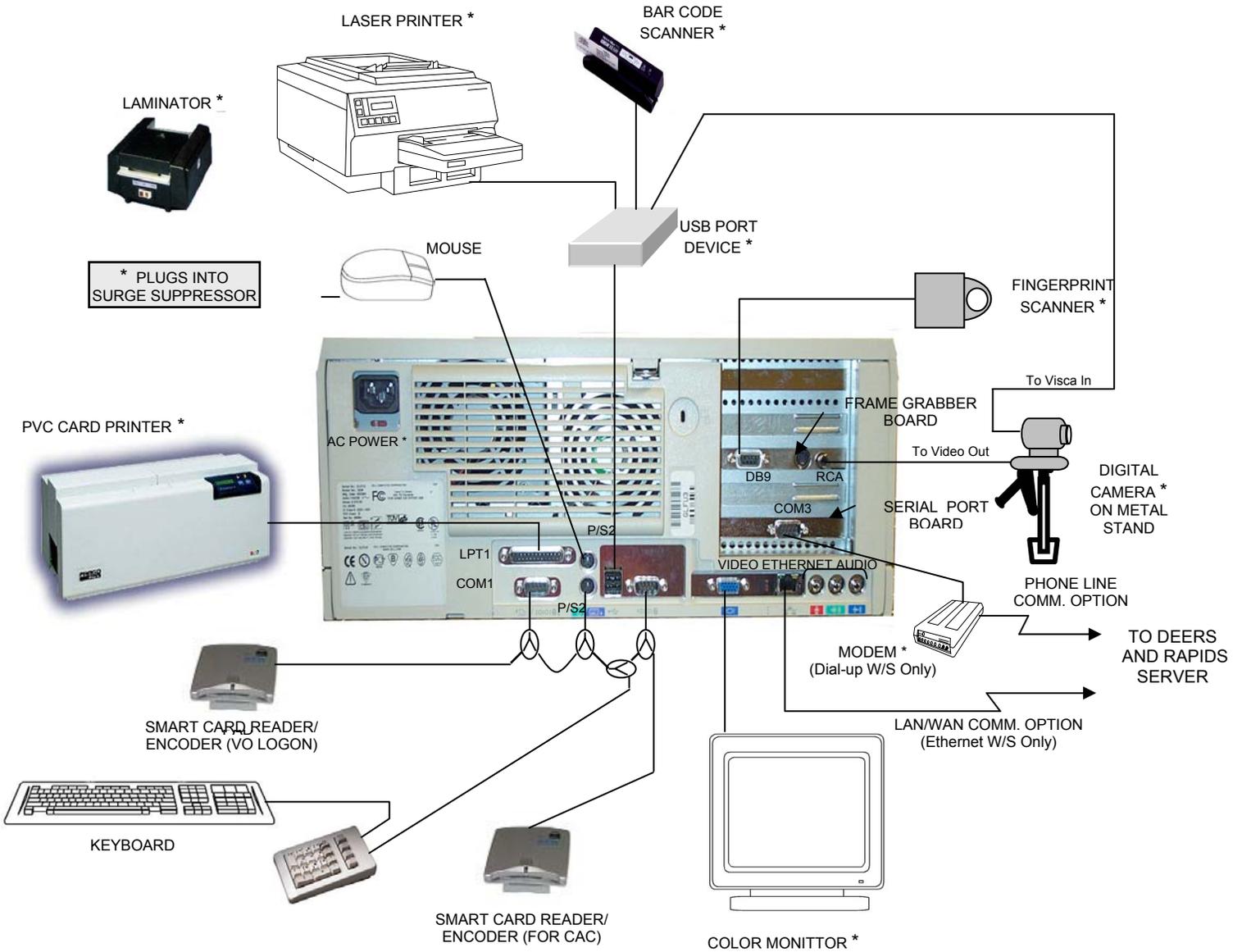


Figure 2-1: RAPIDS Workstation Configuration With Dell CPU Models

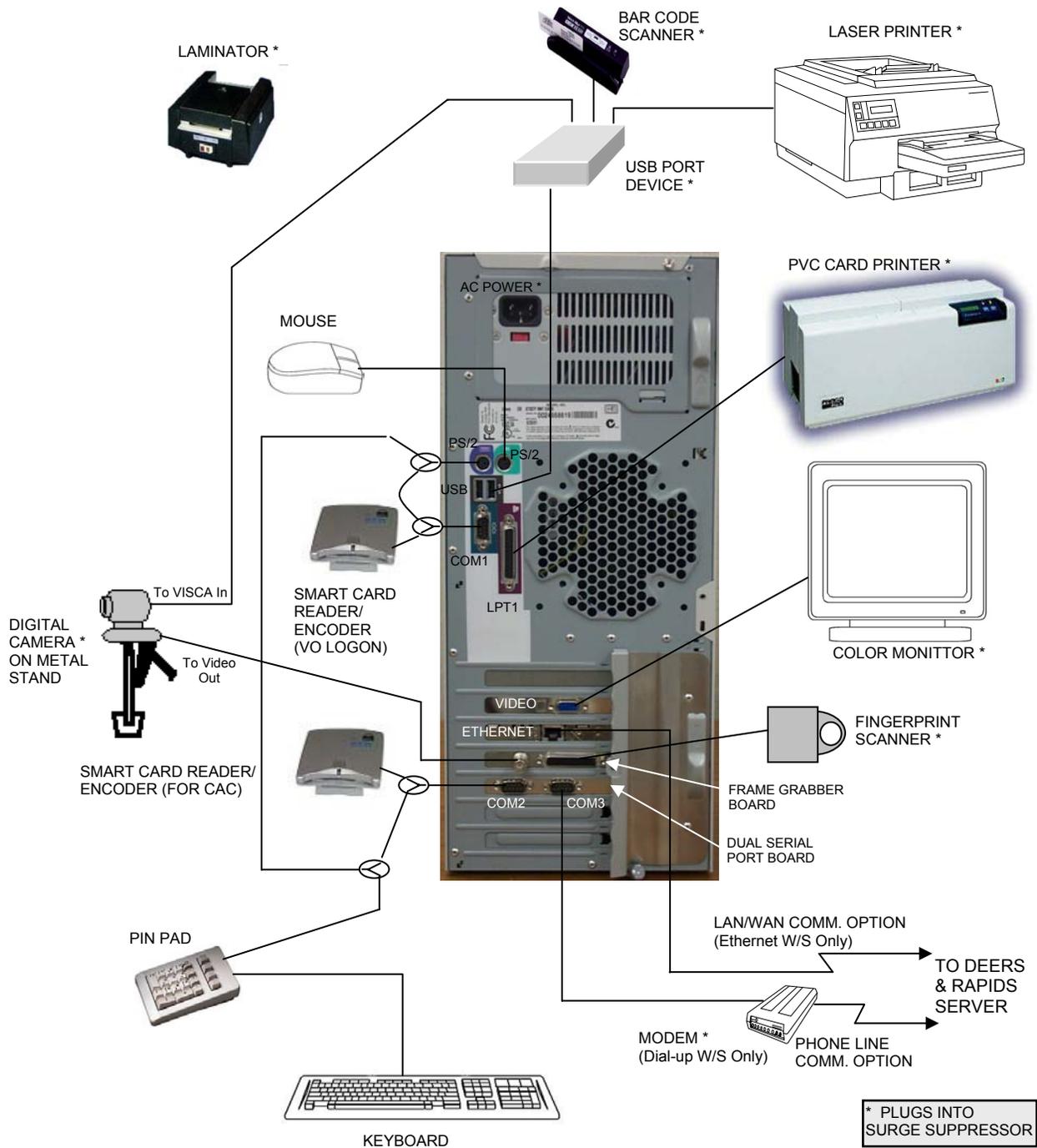


Figure 2-2: RAPIDS Workstation Configuration With Gateway E4600SE CPU

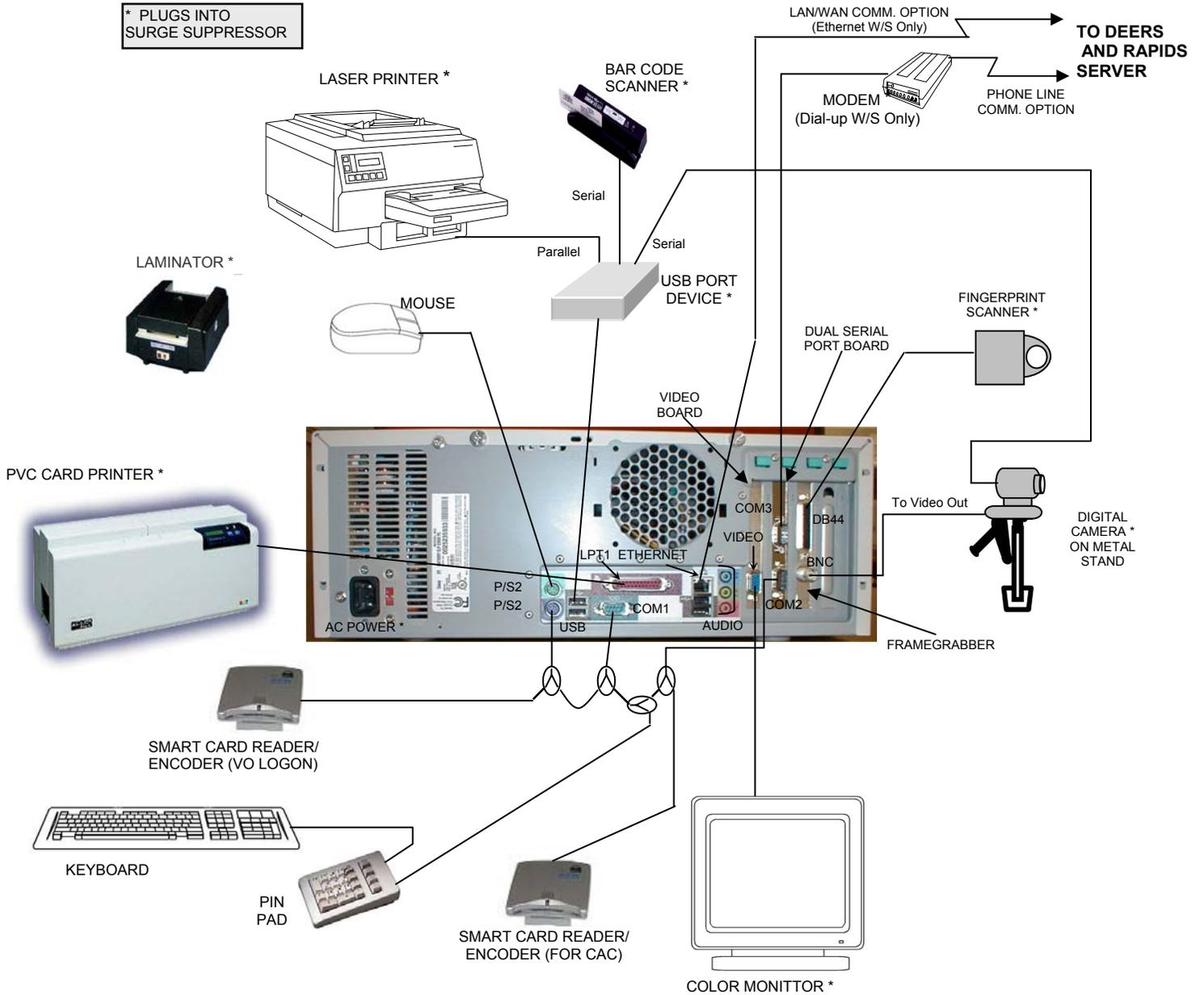


Figure 2-3: RAPIDS Workstation Configuration With Gateway E3600 CPU

2.2 Workstation Components

2.2.1 Desktop CPUs

The CPU is the main part of the RAPIDS Workstation and each of the various models are shown in Figures 2-4, 2-5, 2-6 and 2-7, below and on the following page. Workstations will be one of the following models: Dell OptiPlex GX1 Pentium II 350 or 400 MHz, Dell OptiPlex GX1 Pentium III 500 MHz, Dell OptiPlex GX110 Pentium III 733 or 933 MHz, Dell OptiPlex GX200 Pentium III 933MHz, Gateway E4600SE Pentium 4 1.6 or 1.6 GHz, or Gateway E3600 Pentium 4 1.7 GHz. The CPU houses the motherboard, floppy disk drive, hard disk drive, power supply, CD-ROM drive (Dell CPUs) or CD-ROM/DVD drive (Gateway CPUs), PCMCIA adapter and slots (Dell CPUs only), video display adapter (on motherboard for Dell CPUs, separate board for Gateway CPUs), Ethernet adapter (on motherboard for Dell, separate board for Gateway), floppy and hard disk controllers (on motherboard), and slots for optional controller and input/output (I/O) devices. All RAPIDS Workstations have a 32-bit PCI framegrabber board installed in the CPU for interfacing with the digital camera and the fingerprint scanner. Dell workstations using a dial-up connection to their Server also have a 16-bit ISA or 32-bit PCI serial port board installed in the Workstation CPU, to provide an additional serial port for connecting a modem for communications with their Server. All Dell GX110 and GX200 Workstations include a 32-bit PCI serial port board to provide an additional serial port, so that all can support Workstations using a dial-up connection to their Server. Since the Gateway CPUs only have one serial port on the motherboard, they have a PCI dual serial port board installed to provide two additional serial ports, so that all can support Workstations using a dial-up connection to their Server.

All Workstations are configured with one of the following amounts of memory: 64 MB SDRAM (Dell GX1 Pentium II models), 128 MB SDRAM (Dell GX1 Pentium III, GX110, and GX200 models), 256MB RDRAM (Gateway E4600SE), or 256MB SDRAM (Gateway 3600). The Dell OptiPlex PCs contain an integrated AGP-enabled SVGA-standard video controller with 4 MB (Dell GX1 Pentium II models and GX110), 8 MB (Dell GX1 Pentium III model), 16 MB (Dell GX200) of video RAM. The Gateway PCs contain an AGP SVGA-standard video board with either 16 MB (Gateway E4600SE) or 32MB (Gateway E3600) of video RAM.

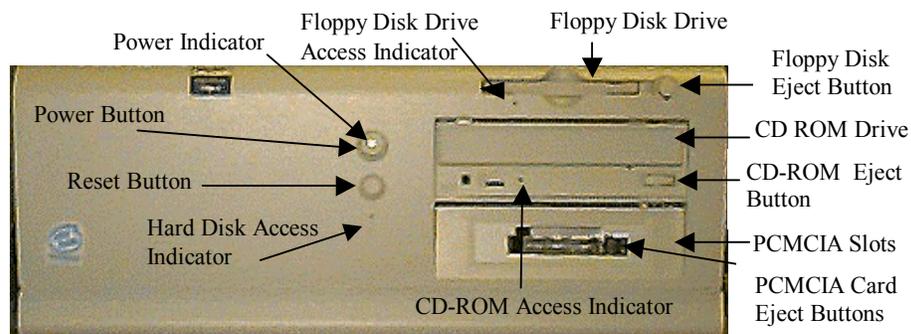


Figure 2-4: Dell OptiPlex GX1 Workstation CPU

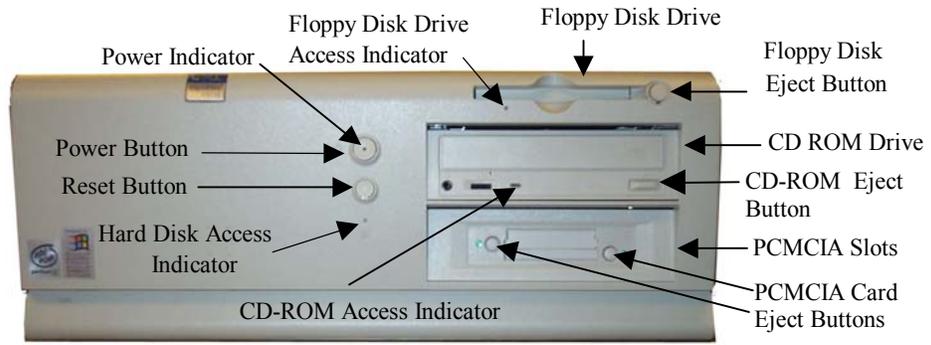


Figure 2-5: Dell OptiPlex GX110 and GX200 Workstation CPU



Figure 2-6: Front of Gateway E4600SE Workstation CPU

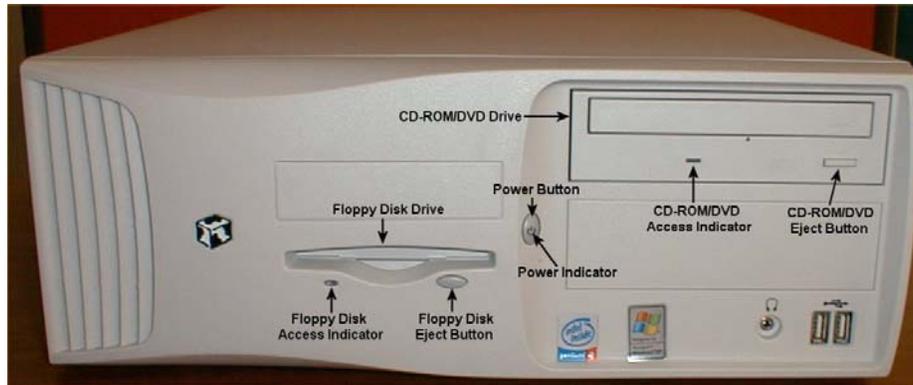


Figure 2-7: Front of Gateway E3600 Workstation CPU

The Workstation CPU's power cord should be plugged into an outlet on the surge suppressor. The **Power** button for the CPU is located on the front panel of the unit, to the left of the CD-ROM drive, and should be kept in the **On** position because it is powered **On** and **Off** at the surge suppressor. When the CPU is receiving power, the **Power Indicator** will be lit green. Whenever the hard disk drive, floppy disk drive, or CD-ROM (Dell CPUs) or CD-ROM/DVD (Gateway CPUs) drive is being accessed, the **Hard Disk Access Indicator**, **Floppy Disk Drive Access Indicator**, **CD-ROM Access Indicator** (Dell CPUs), **CD-ROM/DVD Access Indicator** (Gateway CPUs) respectively, will flash **On**.

2.2.2 Monitor, Keyboard, and Mouse

A 17" Super Video Graphics Array (SVGA) color monitor, enhanced 104-key keyboard, and two-button PS/2 mouse connect to the back of the Workstation CPU. These provide the user interface with the RAPIDS Workstation. The RAPIDS graphical user interface (GUI) takes advantage of the mouse for most functions.

The monitor's power plug should be plugged into one of the outlets on the surge suppressor. The **Power** switch on the monitor, which is located on the front in the lower-right corner, should be kept in the **On** position, since it will be turned **On** and **Off** at the surge suppressor. When the monitor is receiving power, the **Power Indicator** on the front of the monitor will be lit green. If the monitor goes into its power save mode, then the **Power Indicator** will be lit orange. When the monitor is not receiving power or is turned **Off**, then the **Power Indicator** will not be lit.

The mouse is plugged into one of the **PS/2** ports on the back of the Workstation CPU, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above. The keyboard is plugged into the back of the PIN Pad, which is connected to one end of the second (for CAC) smart card reader/encoder's special Y cable, which connects these devices to the other **PS/2** port on the back of the Workstation CPU, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above. The **PS/2** ports supply the power to these devices.

2.2.3 Hard Disk Drive

The RAPIDS Workstation has an Ultra DMA hard disk drive containing the RAPIDS application software, Windows NT Workstation operating system software, and other software used for RAPIDS. Dell Pentium III model and Gateway Workstations all have one 20 GB hard drive. The Dell GX1 Pentium II Workstation has one 4.3 GB hard drive. The Dell GX1 Pentium III, Dell GX110, Dell GX200, and Gateway E4600SE 1.6 GHz Workstations have a 20 GB hard drive. The Gateway E4600SE 1.6 GHz and Gateway E3600 Workstations have a 40 GB hard drive.

2.2.4 Floppy Disk Drive

The RAPIDS Workstation has a 3.5" high density, 1.44 MB floppy disk drive, which is used for all RAPIDS application options that involve reading from and writing to a floppy disk. This includes archiving audit trail reports and loading software upgrades.

2.2.5 CD-ROM and CD-ROM/DVD Drives

Each Dell OptiPlex Workstation has an internal EIDE, ATAPI-compatible CD-ROM drive of the following speed: 14/32X in the GX1 350 and 400 MHz, 17/40X in the GX1 500 MHz, or 20/48X in both the GX110 and GX200 models. The Gateway E4600SE and E3600 Workstations have an internal 16X CD-ROM/DVD drive. The CD-ROM or CD-ROM/DVD drive is used by RAPIDS for initial software installation and loading software upgrades. Additionally, it can be used to read RAPIDS documentation and manuals that are distributed via CD-ROM (Dell and Gateway CPUs) or DVD (Gateway CPUs only).

2.2.6 PCMCIA Slots

Only the Dell Workstation CPUs have PCMCIA slots. The PCMCIA slots on each Workstation can accept two Type II or one Type III PCMCIA cards at a time, but are not currently used by RAPIDS.

2.2.7 Surge Suppressors

Two surge suppressors for the RAPIDS Workstation are used to protect all Workstation components from surges and spikes in power. The CPU, monitor, laser printer, digital camera, fingerprint scanner, bar code scanner, laminator, PVC card printer, USB port device, and optional modem (if present) should be plugged into the surge suppressor. All components should be kept with their **Power** switches in the **On** position and the surge suppressor should be used to power them all **On** and **Off** at the same time. Details on the various types of surge suppressors can be found in Section 9.

NOTE:

The RAPIDS surge suppressors are for RAPIDS equipment only. No other equipment should be plugged into these surge suppressors.

2.2.8 Digital Camera

Each RAPIDS Workstations is equipped with a digital camera for capturing photographs of ID card recipients when issuing the Uniformed Services teslin ID cards and CACs. The digital camera's power plug should be plugged into one of the outlets on one of the Workstation's two surge suppressors. There are two versions of framegrabber boards, the Meteor PPB (see Figure 2-1, above) and the Meteor II (see Figures 2-2 and 2-3, above). The digital camera is connected to the Workstation at the **RCA video** port of the Meteor PPB framegrabber board at the back of the Workstation CPU and to the **Port 1** serial port on the back of the USB port device, as shown in Figure 2-1 (Dell CPUs), above. The digital camera is connected to the Workstation at the **BNC video** port of the Meteor II framegrabber board at the back of the Workstation CPU using a BNC-to-RCA adapter and to the **Port 1** serial port on the back of the USB port device, as shown in Figures 2-2 (Gateway E4600SE CPU) and 2-3 (Gateway E3600 CPU), above. See Section 3 for more details on the digital camera.

2.2.9 Laser Printer

Each RAPIDS Workstation is equipped with a laser printer for printing the Uniformed Services teslin ID cards, pre-filled DD Forms 1172, blank DD Forms 1172-2, and CAC recipient information brochures. The laser printer's power plug should be plugged into one of the outlets on one of the Workstation's two surge suppressors. The laser printer is connected to the Workstation via the **Parallel Printer 1** port at the back of the USB port device, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above. See Section 4 for more details on the various types of laser printers.

2.2.10 Fingerprint Scanner

Each RAPIDS Workstation is equipped with a fingerprint scanner for capturing fingerprints from personnel in an annuitant status during the issuance of the Uniformed Services teslin ID cards, from all CAC recipients, from the Verifying Official (VO)/Super Verifying Official (SVO)/SSM during logon, and from CAC holders during a PIN reset. The fingerprint scanner's power plug should be plugged into one of the outlets on one of the Workstation's two surge suppressors. There are two versions of framegrabber boards, the Meteor PPB and the Meteor II. The fingerprint scanner is connected to the Workstation at the **DB9** port of the Meteor PPB framegrabber board at the back of the Workstation CPU, as shown in Figure 2-1 (Dell CPUs), above. The fingerprint scanner is connected to the Workstation at the **DB44** port of the Meteor II framegrabber board at the back of the Workstation CPU, as shown in Figures 2-2 (Gateway E4600SE CPU) and 2-3 (Gateway E3600 CPU), above. See Section 7 for more details on the fingerprint scanner.

2.2.11 Laminator

Each RAPIDS Workstation is equipped with a laminator to apply the holographic laminate to the Uniformed Services teslin ID cards printed by the laser printer. The laminator's power plug should be plugged into one of the outlets on one of the Workstation's two surge suppressors. The laminator is not connected to the Workstation, as shown in Figures 2-1 (Dell CPUs), 2-2

(Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above. See Section 5 for more details on the various types of laminators.

2.2.12 Bar Code Scanner/Decoder

Each RAPIDS Workstation is equipped with a Code 39 bar code scanner/decoder for reading the Code 39 (one-dimensional) bar code on the back of the Uniformed Services teslin ID cards and CACs. Some sites may optionally have a Code 39/Portable Data File 417 (PDF417) bar code scanner/decoder for reading both the Code 39 (one-dimensional) and PDF417 (two-dimensional) bar codes on the back of the Uniformed Services teslin ID cards and CACs. A bar code scanner/decoder with a power plug should be plugged into one of the outlets on one of the Workstation's two surge suppressors. The bar code scanner/decoder is connected to the **Port 2** serial port on the back of the USB port device, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above. See Section 10 for more details on the various types of bar code scanners/decoders.

2.2.13 USB Port Device

Each RAPIDS Workstation is equipped with a USB port device, which provides two additional serial ports and a parallel port to connect peripherals to the RAPIDS Workstation. It also provides four additional USB ports, but these are unused by RAPIDS. The USB port device's power plug should be plugged into one of the outlets on one of the Workstation's two surge suppressors. The USB port device is connected to the top **USB** port at the back of the Workstation CPU, Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above. See Section 12 for more details on the USB port device.

2.2.14 PVC Card Printer

Each RAPIDS Workstation is equipped with a PVC card printer for printing the Uniformed Services CACs. The PVC card printer's power plug should be plugged into one of the outlets on one of the Workstation's two surge suppressors. The PVC card printer is connected to the Workstation at the **LPT1** parallel port at the back of the Workstation CPU, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above. See Section 13 for more details on the PVC card printer.

2.2.15 Smart Card Reader/Encoders

Each RAPIDS Workstation is equipped with two smart card reader/encoders for reading and encoding the chip on the Uniformed Services CACs (smart cards).

The first smart card reader/encoder is connected to the **COM1** serial port at the back of the Workstation CPU. It also shares a **PS/2** port for power at the back of the Workstation CPU with the second smart card reader/encoder, keyboard, and PIN Pad with special Y cables, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above. The first smart card reader/encoder is used to read data from the chip on the VO/SVO/SSM's CAC to logon to RAPIDS and while running the RAPIDS application.

The second smart card reader/encoder is connected to the **COM2** serial port at the back of the Workstation CPU. It also shares a **PS/2** port for power at the back of the Workstation CPU with the first smart card reader/encoder, keyboard, and PIN Pad with special Y cables, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above. The second smart card reader/encoder is used to read data from and encoded data on the chip for the customer's CAC being produced or updated.

The **PS/2** port supplies the power to the two smart card reader/encoders. See Section 14 for more details on the smart card reader/encoders.

2.2.16 PIN Pad

Each RAPIDS Workstation is equipped with a PIN pad for allowing CAC recipients to enter a PIN for their CAC during creation or update. The PIN pad is connected to one end of the second smart card reader/encoder's (for CAC) special Y cable, which connects these devices to a **PS/2** port on the back of the Server CPU, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above. The **PS/2** port supplies the power to the PIN pad. See Section 15 for more details on PIN pad.

2.2.17 Optional Modem

Remote RAPIDS Workstations that communicate with their RAPIDS Server via modem, will have a dial-up modem and telephone line at the Workstation and require one at the Server. The modem is connected to the Workstation at the **COM3** serial port of the serial port board at the back of the Workstation CPU, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above. See Section 6 for more details on the dial-up modems.

2.3 How to Use the RAPIDS Workstation

2.3.1 Powering On the RAPIDS Workstation

Since the RAPIDS Workstation and all of its peripherals are plugged into the two surge suppressors, you should use the surge suppressors' **Power** buttons to turn the RAPIDS Workstation and peripherals **On**. To do this, leave the **Power** switches on the Workstation and peripherals in the **On** or **1** position. Press the **Power** button on each surge suppressor to the **On** position. The RAPIDS Workstation system will power up and the Windows NT Workstation operating system will boot, automatically. During the system boot, several lines of configuration information will scroll across the monitor. The last message will prompt the VO/SVO/SSM to press the **Ctrl+Alt+Delete** keys, simultaneously, to logon. The VO/SVO/SSM should follow the below steps to complete logon to the RAPIDS Workstation:

- a. Insert his/her CAC into the VO Logon smart card reader/encoder and press the **Ctrl+Alt+Delete** keys, simultaneously.
- b. Enter his/her PIN from either the keyboard or PIN pad at the "**Logon Information**" dialog box.

NOTE:

If using the PIN pad or the numeric keypad keys on the right side of the keyboard, be sure that NUM LOCK is activated (indicator light on NUM LOCK key will be lit green.)

- c. If not already selected [to establish the connection with your RAPIDS server], select the RAPIDS Server's domain from the pull-down list. If you are a dial-up site, it may be necessary to also check the "**Logon Using Dial-up Networking**" check box. You then use the mouse to click on the "**OK**" button to connect to your RAPIDS Server. In addition, if you connect to your RAPIDS Server via a central dial-up/terminal server you will need to enter your Logon ID and Password provided to you by that system administrator. See the RAPIDS Training Guide, Appendix J for details.
- d. The RAPIDS application should start automatically. If the RAPIDS screen (with the 6.x version number) does not appear, double-click the **RAPIDS** icon to start the application.
- e. The application will display the RAPIDS logo. The VO/SVO/SSM will then be prompted to verify his/her fingerprint with the one stored on DEERS. It is possible that the user may receive a "**Client Authentication**" dialog box, if so simply verify that the VO/SVO/SSM's name is displayed and press "**OK**".
- f. When the logon procedure is completed, the "**RAPIDS Message of the Day**" is displayed.

2.3.2 Powering Off the RAPIDS Workstation

Before you power **Off** the Workstation CPU, if you are not currently logged in at the Workstation, you must logon following the procedure in Subsection 2.3.1, above.

If you were already logged in and the RAPIDS application is running, exit RAPIDS by selecting "**File**" from the menu bar and "**Exit**" from the drop down list. The communication connection with your RAPIDS Server is automatically terminated when you exit the RAPIDS application. From the Windows Taskbar (at the bottom of the screen) click on the "**Start**" button and select "**Shut Down**" from the list. Then select "**Shut down the computer?**" and click on the "**Yes**" button, as shown in Figure 2-8, on the next page. The Workstation's Windows NT operating system will shut down properly. Once the screen displays the message "**It is Now Safe to Turn Off Your Computer**", you may then power **Off** the Workstation system, by pressing the **Power** switch on the surge suppressors to the **Off** or **0** position. Remove your CAC from the VO Logon smart card reader/encoder.

WARNING:

DO NOT attempt to power Off or unplug the Workstation CPU without performing the system shutdown procedures described above.

RAPIDS users should contact the DRAC, DRSC-E, DSO-A, or DEERS/RAPIDS Field Service Representative if there are questions about shutting down the RAPIDS Workstation.



Figure 2-8: Windows NT Workstation Shut Down Dialog Box

2.3.3 Troubleshooting Workstation and Logon Problems

2.3.3.1 VO/SVO Certificate Registration and NT Logon Account Setup

Before the RAPIDS VO/SVO can logon, the SSM should ensure that each VO/SVO registers the certificates on their VO/SVO CAC on each RAPIDS Workstation they will use and that the SVO has set the NT Logon Account on the RAPIDS server for each VO/SVO. If certificates are not registered, RAPIDS will display a blank “**Client Authentication**” dialog box when opening the RAPIDS application. See the RAPIDS Training Guide for instructions how to register certificates with the RAPIDS Workstation and then contact the DRAC, DRSC-E, or DSO-A, as applicable, to have them assist you to logon as the System Administrator and set the NT Logon Account on the RAPIDS server for each VO/SVO. Before the VO/SVO can issue/create CACs, the SSM, with his/her CAC in the VO logon smart card reader/encoder, must set up the user role for each VO/SVO by checking the box to add Local Registration Authority (LRA) privileges to the VO/SVO CAC and encoding the VO/SVO CAC in the CAC recipient smart card reader/encoder).

2.3.3.2 Common Workstation and Logon Problems

If the RAPIDS VO/SVO has been successfully registered and a Windows NT account has been created, then follow the steps below to try to resolve additional Workstation and logon problems:

- a. If you have a blank screen, ensure that the **Power** switch on the Workstation CPU and monitor are both in the **On** position. If the switches are both in the **On** position, then check to see if the **Power Indicator** is lit green on the front of the CPU and the **Power Indicator** on the front (lower right) of the monitor is lit green. If these indicators are not lit, then check that the surge suppressor they are plugged into has its **Power Switch** in the **On** position and its **Power Indicator** is lit. If these are fine, then check for any loose cable connections at the back of the Workstation CPU and monitor.
- b. If what your typing is not showing up on the screen, ensure that the **Power** switch on the Workstation CPU is in the **On** position and that the **Power Indicator** is lit green on the front of the CPU. If the indicator is not lit, then check that the surge

- suppressor that it is plugged into has its **Power Switch** in the **On** position and its **Power Indicator** is lit. If these are fine, then check for any loose cable connections at the back of the Workstation CPU, check that the keyboard cable is securely connected to the back of the PIN pad, and check that all cables between the PIN pad, two smart card reader/encoders, and the bottom **PS/2** port at the back of the Workstation CPU are securely connected.
- c. If the mouse cursor (arrow) does not move on the screen when you move the mouse, ensure that the **Power** switch on the Workstation CPU is in the **On** position and that the **Power Indicator** is lit green on the front of the CPU. If the indicator is not lit, then check that the surge suppressor that it is plugged into has its **Power Switch** in the **On** position and that its **Power Indicator** is lit. If these are fine, then check for any loose cable connections at the back of the Workstation CPU and check that the mouse cable is securely connected to the top **PS/2** port at the back of the Workstation CPU.
 - d. If you are getting an error regarding logging on or about your fingerprint, verify that your VO/SVO/SSM's CAC is inserted into the VO logon smart card reader/encoder vs. the CAC encoding smart card reader/encoder. If this is fine, then check that you are placing the correct finger on the fingerprint scanner for verification (it must be the same one used when your VO/SVO/SSM's CAC was created. Also check to make sure that the fingerprint scanner's **Power Switch** is in the **On** position (Identicator model only), that the platen where you place your finger is glowing red, that the surge suppressor it's plugged into is **On**, and check for loose cables between the fingerprint scanner and the surge suppressor and framegrabber board (back of Workstation CPU).
 - e. If the RAPIDS Workstation loses the connection with the Certificate Authority (CA) issuance portal, then the RAPIDS application will ask the VO/SVO/SSM to re-enter his/her numeric PIN. If there is CAC cardstock in the CAC recipient smart card encoder/reader, be sure to pull it out when you re-enter your PIN. The VO/SVO/SSM's CAC must be kept in the VO CAC smart card reader/encoder during this process. After receiving the confirmation message that credentials have been authenticated, place the CAC cardstock back into the CAC recipient smart card encoder/reader before continuing.
 - f. If you receive an error regarding a connection with the server, then perform the following checks based on your connection type:
 1. If collocated with the server and connected via the Ethernet switch, verify that the Server is up and running, verify whether other workstations can logon, and check that the Ethernet switch's **Power Indicator** is lit. If the Server is down, then you'll need to wait until the Server is up and running, so you can log back on. If these are all fine, then check the Ethernet cable connections at the back of the Workstation and at the Ethernet switch for this Workstation to ensure they are securely attached.
 2. If connected to your server via the base-provided LAN, then check the Ethernet cable connections at the back of the Workstation and at the wall plate for the base-provided LAN drop. If these are securely connected, call your base communications personnel to check that your LAN and your connection to the LAN are both operational. If they confirm these are operational, then

call the Server site to verify that the Server is up and running and whether other remote Ethernet Workstations can logon. If the Server is down, then request that the Server site notify you when the Server is back in operation, so you can log back on.

3. If connected to your server via a dial-up modem, then check that your modem is powered **On** and that the standard indicator lights are lit (see Section 6 for details). If not, then check that the surge suppressor the modem is plugged into is powered **On** and its **Power Indicator** is lit. If these are fine, then call the Server site to verify that the Server is up and running, whether other dial-up workstations can logon, and have them to check the modem at the Server for your Workstation to make sure it is powered **On** and that the standard indicator lights are lit. If the Server is down, then request that the Server site notify you when the Server is back in operation, so you can log back on.

If you still are having problems logging onto the RAPIDS Workstation then call the DRAC, DRSC-E, or DSO-A, as appropriate, for further assistance.

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SECTION 3: DIGITAL CAMERA

3.1 Digital Camera Description

The Sony EVI-D30 digital camera attached to the RAPIDS Workstation is used to photograph each ID card recipient during the ID card (teslin and CAC) production process. The camera system is comprised of three components: (1) the camera base assembly; (2) the camera head assembly; and (3) the camera stand with manual pan-and-tilt. Built into one unit are the camera assembly base (controls panning) and the head assembly (controls the lens zoom and camera tilting). The camera system has a **Power** switch on the back of the base assembly that must be in the **On** position for the camera to function. The camera's power cable is plugged into the surge suppressor and the camera's connector cables are plugged into the RAPIDS Workstation, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above, in order to transfer collected photograph images to the RAPIDS Workstation. A camera stand with a manual pan-and-tilt control handle is provided as an option to the computer controlled pan-and-tilt via the RAPIDS application software.

3.2 Digital Camera Components

3.2.1 Sony EVI-D30 Camera Base Assembly

The camera base assembly houses the camera controls. The camera base assembly (back shown in Figure 3-1, below) has the **Power** switch located in the upper right on the back of the base. To turn the camera **On**, press the **Power** switch to the right. Like the Workstation, it should be left in the **On** position so that the power is controlled by the surge suppressor. The position of the **Camera Number** switch on the back of the camera base assembly does not matter because it is only used with the **S VIDEO OUT** port, which RAPIDS does not use.

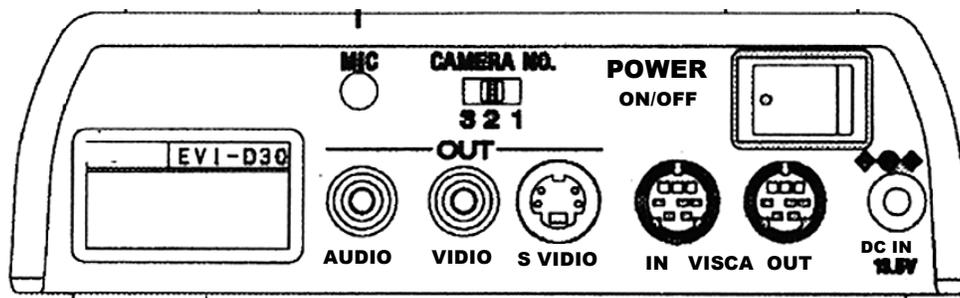


Figure 3-1: Sony EVI-D30 Digital Camera Base Assembly Back View

The front of the camera base assembly, shown in Figure 3-2, on the next page, has two indicators that show when the camera is operating. The **Power** indicator, located on the left front side, should be continuously illuminated green when power is being applied to the camera (i.e., it is plugged in to a power source) and the **Power** button is in the **On** position. The **Receive**

indicator, located just to the right of the **Power** indicator, will be illuminated green only when the camera is capturing a photograph during the teslin ID card/CAC production process.

3.2.2 Sony EVI-D30 Camera Head Assembly

The camera head assembly houses the actual camera. The camera head assembly is permanently mounted on top of the base assembly. The head assembly contains the camera with its lens and internal photographic components. Figure 3-2, below, shows the entire Sony camera, including both the camera head assembly and the camera base assembly.

NOTE:

Under no circumstances should the camera assembly be manually rotated or tilted while mounted on the base assembly. Doing so could result in damage to the pan-and-tilt motor. Use either the manual pan-and-tilt on the camera stand via its handle or computer control via the RAPIDS application.

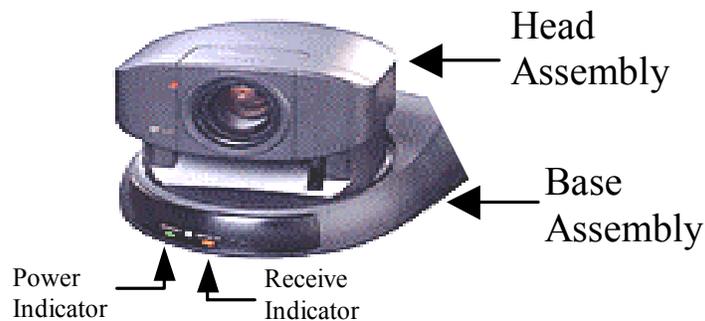


Figure 3-2: Sony EVI-D30 Digital Camera Front View

3.2.3 OER Camera Stand With Manual Pan-and-Tilt

Manufactured by OER, the camera stand is comprised of a tilt/swivel head assembly and weighted base plate assembly as shown in Figure 3-3, on the following page. The stand is designed to connect to the Sony camera via a spin up screw the on top of the head assembly, which secures the camera to the stand. On the back of the stand is a fixed directional handle, which can be used by end-users to swivel the camera as pan-and-tilt are required to obtain a good photograph of the teslin ID card/CAC recipient.

3.2.4 Connecting the Camera Stand to the Camera

The OER camera stand, shown in Figure 3-3, on the following page, has a standard threaded screw on top of the head assembly, which is used to screw into a threaded hole in the bottom of

the Sony camera base assembly. The handle on the stand is used to control large movements of pan-and-tilt for the camera.

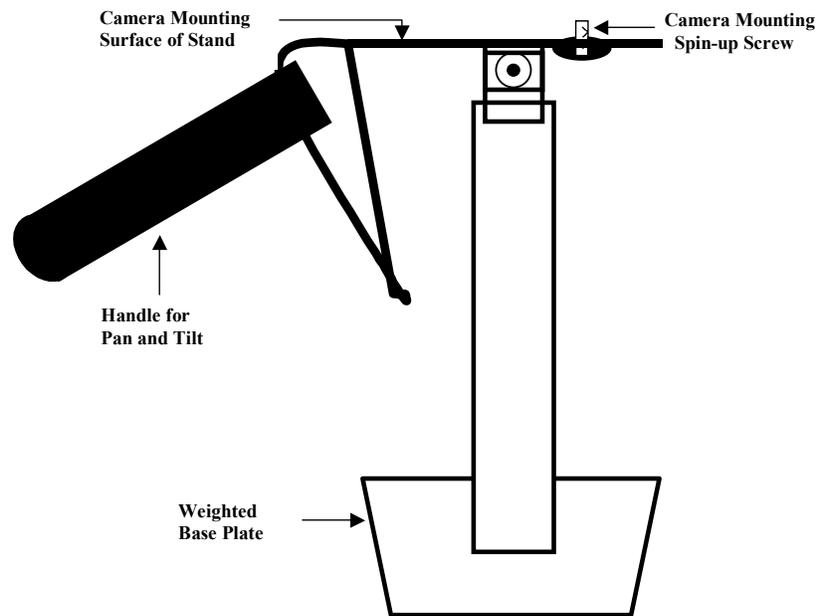


Figure 3-3: OER Camera Stand

3.3 Digital Camera Cables

There are three cables that are connected to the back of the camera in order for it to operate: (1) serial pan-and-tilt control, (2) video output, and (3) power.

The camera's serial pan- and-tilt control cable has an 8-pin mini-DIN male (round black) connector on one end that plugs into the **VISCA IN** (Video System Control Architecture Input) port on the back of the camera base assembly, as shown in Figure 3-1, above. The other end of this cable has a 9-pin D-SUB male (rectangular) connector that connects to **Serial Output Port 1** on the back of the USB port device (see Figure 12-1, below). All serial control functions for the camera, including pan-and-tilt, from the RAPIDS software application are processed through this cable.

There are two versions of Matrox framegrabber boards installed in RAPIDS Workstations to interface with the digital camera, the Meteor PPB (see Figure 2-1, above) and the Meteor II (see Figures 2-2 and 2-3, above). The camera's video output cable has two RCA (round black and round yellow) jacks on each end. At the back of the camera base assembly, the black connector on one end of the cable plugs into the **AUDIO OUT** port and the yellow connector on the same end plugs into the **VIDEO OUT** port, as shown in Figure 3-1, above. For the Meteor PPB board, the black connector on the other end connects to the **RCA Video** port of the framegrabber board at the back of the Workstation CPU, as shown in Figure 2-1 (Dell CPU), above. For the Meteor II board, the black connector on the other end connects to the **BNC Video** port of the framegrabber board via a BNC-to-RCA adapter at the back of the Workstation CPU, as shown in

Figures 2-2 (Gateway E4600SE CPU) and 2-3 (Gateway E3600 CPU), above. The yellow connector on the other end of the cable does not connect to anything.

The camera's power cable has a mini-jack (round) connector on one end that plugs into the **Power** port, located on the back, bottom, right side of camera base assembly; and a 110 Volts (V) or 220 (as applicable) power adapter brick on the other end with the power plug, which should be plugged into an outlet on one of the Workstation's two surge suppressors. Cables should be firmly attached and touched only when so instructed by the DRAC, DRSC-E, DSO-A, or maintenance personnel.

3.4 How to Use the Digital Camera

3.4.1 Obtaining Good Photograph Quality

The following conditions should be met in order to obtain consistent picture quality:

- a. The ID card/CAC recipient should be positioned between 3 to 5 feet from the camera (optimal distance is 4 feet). The recipient should be looking straight into the camera lens when the picture is being taken.
- b. The height of the camera stand should be such that the camera lens is level with the ID card/CAC recipient's head. Typically, if the camera sits on a desk, the person should sit in a chair, or, if the camera sits on a counter, they should stand to be photographed.
- c. A white non-glare background or backdrop is required for optimal picture results. The backdrop should be positioned so that there is little or no space between it and the back of the person's head. Examples of good backdrops include: white or light-gray non-glare poster board placed on a wall, office divider, or easel; or white cloth backdrop without seams or wrinkles.
- d. Be careful not to position the person directly under a light source, since this causes harsh shadows. Rooms with well-balanced lighting (such as fluorescent lights) work best.



Figure 3-4: Sample Uniformed Services Active Duty Sponsor ID Card

e. A good ID card/CAC picture fills the entire white area of the teslin ID cardstock/photo area of the CAC cardstock with the face of the recipient and cuts off just below the shoulders as shown in Figure 3-4, above.

3.4.2 Taking a Photograph

The “**Create Card Navigator**” steps through the process of taking a photograph of the teslin ID card/CAC recipient. At the “**Modify Photo**” screen a live image from the camera will be displayed. For each teslin ID card/CAC recipient, the camera pan (left and right) adjustment, tilt (up and down) adjustment, and zoom can be modified at this time to obtain the best quality photograph by using the handle on the camera stand for large changes in pan-and-tilt and the control sliders on the screen via the mouse or keyboard for small adjustments to pan-and-tilt, zooming in or out, and turning on the backlight feature of the camera via the check box. After clicking on the “**Take Photo**” button, from the “**Modify Photo**” screen the user can adjust the brightness and contrast of the photograph taken prior to printing the teslin ID card/CAC. When ready to print the teslin ID card/CAC select “**Print**”.

3.5 Troubleshooting Digital Camera Problems

Most picture quality-related problems are attributable to poor camera setups. Follow the suggestions below to determine if the camera setup needs to be altered.

3.5.1 Adjusting the Quality of Poor Photographs

Occasionally, the photograph may appear washed out, too dark, or have a shadow on the teslin ID card/CAC recipient. The following actions can be used to adjust the picture quality under varying scenarios:

- a. Facial Features Appear Too Dark. The recipient should be at eye level with the camera lens and may need to be moved closer to the camera (3 feet is an effective distance). Pictures that are too dark can be lightened by clicking on the brightness and contrast control sliders in the RAPIDS “**Modify Photo**” screen, prior to selecting to “**OK**”.
- b. Photograph Appears Washed Out or Has White Splotches. The recipient should be at eye level with the camera lens and may need to be moved farther away from the camera (4.5 feet is an effective distance). Pictures that are too light can be darkened by clicking on the brightness and contrast control sliders in the RAPIDS “**Modify Photo**” screen, prior to selecting to “**OK**”.
- c. Glare From Glasses. Attempt to reduce the amount of glare from the glasses by asking the recipient to look slightly downward. The recipient may also choose to remove their glasses.
- d. Venetian Blind Appearance. For these horizontal light and dark bands that appear through the picture on the screen, print the ID card first to see if the lines print or not. Horizontal lines often do not print even though they appear on the screen. If the lines do print on the ID card, continue printing the back side of the card and then press **ENTER** to return to the “**Choose Family Member**” screen and select the same recipient again. Take the photograph again. If the

lines still appear, check the cables on the back of the camera and Workstation to ensure all cable connections are tight. If the lines continue to appear, contact the DRAC, DRSC-E, or DSO-A, as appropriate.

e. Picture Is Blurry. For blurred pictures, wait about five seconds between pictures, then ask the recipient to remain very still for the next picture. Ensure that the recipient is located at the recommended distance from the camera. If, after these recommendations are tried and the picture is still blurry every time, contact the DRAC, DRSC-E, or DSO-A, as appropriate.

To setup the camera initially to ensure the best quality photographs, the installer should have performed the following camera adjustment procedure; however, the VO/SVO/SSM can also perform this procedure, if necessary, if photographs are printing too dark. Since this is just a test of the photo capture and printing, **DO NOT** insert teslin ID cardstock into the printer's manual feed tray during this procedure, instead let the printer use the blank paper from the cassette paper tray. Use the following procedure to reset the camera picture quality:

1. Double click on the "DRConfig" icon from the Windows desktop or from the RAPIDS application "Options" menu and select "Devices" from the pull-down menu.
2. Select the "Camera" tab, ensuring that the camera is connected to the RAPIDS Workstation and is turned On.
3. Click on the "Run Test Program" button.
4. In the "Modify Photo" dialog box, turn off the back light check box.
5. Take a photo, and make sure that the brightness and contrast values are still zero after the photograph has been captured.
6. Click on "OK" in the "Modify Photo" dialog box to return to the "Camera" tab.
7. Note the settings for the "Photograph Printing Enhancements" and click on the "Print Test Photograph" button.
8. Modify the "Photograph Printing Enhancements" as follows: click on all check boxes that are checked to un-check them, make sure Gamma Brighten is set to "700", make sure Gamma Darken is set to "0", and make sure Sharpen is set to "1".
9. Click on the "Run Test Program" button again and in the "Modify Photo" dialog box, click on "OK" to accept the same photo.
10. On the "Camera" tab, click on the "Print Test Photograph" button again and compare this photograph with the original one. It should be better now.

3.5.2 Camera Problems

If the camera will not respond or if you are getting Error dialog boxes stating the device is not working, first ensure that the **Power** switch on the back of the camera base assembly is in the **On** position. If the switch is in the **On** position, then check to see if the **Power** and **Receive** indicators on the front of the camera are lit. The **Power Indicator** should be continuously lit when power is being applied to the camera. The **Receive Indicator** will be lit only when the camera is capturing a photograph during the teslin ID card/CAC production process. If these indicators are not lit, then check that the surge suppressor that the camera is plugged into has its **Power Switch** in the **On** position and that its **Power Indicator** is lit. If all of these are fine, then check for any loose cable connections at the back of the camera.

To fix a loose cable perform the following steps:

- a. Perform a proper shut down and power **Off** the Workstation and camera at the surge suppressor.
- b. Make sure the camera-to-Workstation cables (to Output Serial Port 1 on the USB port device and to the framegrabber board) are firmly connected at both ends.
- c. Make sure that the USB port device's power cable is plugged into an outlet on one of the Workstation's surge suppressors and the USB port device.
- d. Make sure the camera's power cable is securely plugged into an outlet on one of the Workstation's the surge suppressor and the back of the camera base assembly.
5. Power **On** the RAPIDS Workstation and camera by using the surge suppressor.

If the RAPIDS still produces an error message during teslin ID card/CAC production, and the error message persists, write down the complete error message and call the DRAC, DRSC-E, or DSO-A, as appropriate.

If the camera appears not to be functioning, and none of the troubleshooting steps above work, you should immediately call the DRAC or DRSC-E, or DSO-A, as appropriate, so that a maintenance call can be made to have the camera replaced or repaired by a maintenance technician.

3.6 Digital Camera Maintenance

Because the Sony EVI-D30 digital camera is a fully integrated unit comprised of components that represent the latest in imaging technology, maintenance is minimal. All that is required for regular maintenance is a periodic cleaning of the camera lens as discussed below.

3.6.1 Cleaning the Camera Lens

The camera lens is located in the front of the camera head assembly. Due to dust build up and fingerprints, the lens should be cleaned on a regular basis to avoid image degradation. Using a non-abrasive glass cleaner and a dust-free cloth or lens tissue, gently clean any dust or fingerprints from the lens, as necessary. However, personnel should try not to touch the lens with their fingers in the first place.

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SECTION 4: LASER PRINTERS

All RAPIDS Workstations and some RAPIDS Servers are equipped with a 600 x 600 dots per inch (dpi) laser printer, which is used to print the pre-filled or blank Uniformed Services Application for ID Card (DD Form 1172), blank Application for Common Access Card, DEERS Enrollment (DD Form 1172-2), and the various teslin Uniformed Services ID cards. There are several different versions of printers fielded for RAPIDS. Normal RAPIDS sites have a Brother HL-960 laser printer or one of the following Hewlett Packard (HP) LaserJet printers: 6Pxi, 5, 4000, 4050, or 4100. RAPIDS High-Volume sites that require a duplex printing capability have either an HP LaserJet 5 or Brother HL-960 laser printer with a duplexer attached. There are also a few Brother HL-1260 laser printers that were substituted for the HL-960 model by Brother when they had a shortage of HL-960 laser printers. The Brother HL-1260 is the same as the Brother HL-960, except that it prints at a faster speed.

4.1 Hewlett Packard (HP) LaserJet 6Pxi Printer

The HP LaserJet 6Pxi printer with 2 MB RAM, shown in Figure 4-1, below, is used at normal RAPIDS sites. The components of the printer are discussed in the subsections below.

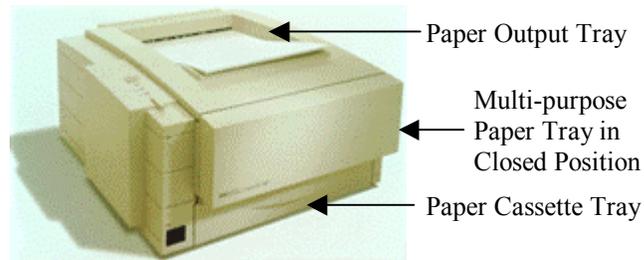


Figure 4-1: HP LaserJet 6Pxi Printer

4.1.1 HP LaserJet 6Pxi Description

a. Cassette Paper Tray. The cassette paper tray is the primary source for paper used to print the DD Forms 1172 and 1172-2, CAC brochures, and audit trail reports. It is located at the bottom of the printer (see Figure 4-1, above). It can hold up to 250 sheets of letter-size paper. This printer cannot accommodate tractor feed paper. To add paper, place your hand underneath the cassette tray and gently pull it straight out of the front of the printer. Place the paper in the cassette tray and press on the four corners of the paper stack to ensure that the paper rests flat in the cassette and fits under the metal holders at the corners of the tray. Slide the cassette tray back into the printer. Figure 4-2, on the following page, is an illustration of the cassette paper tray.

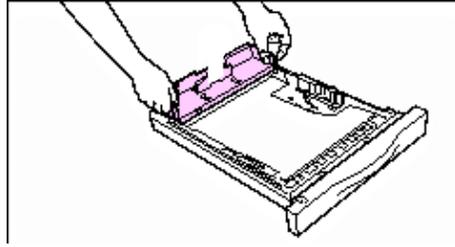


Figure 4-2: HP LaserJet 6Pxi Cassette Paper Tray

CAUTION!

Never remove the cassette paper tray while the printer is printing; it may cause a paper jam.

b. Multi-purpose Paper Tray. The multi-purpose paper tray is used for feeding teslin ID cardstock through the printer, and is located above the cassette paper tray (see Figure 4-1, on the previous page). To properly feed and accommodate the teslin ID cardstock, the multi-purpose paper tray must be opened and the paper guides set for the width of the teslin ID cardstock. Figure 4-3, below, is an illustration of the multi-purpose paper tray in the open position. To open the multi-purpose paper tray, grasp the top of the tray by the two finger tabs, on each side, and gently pull out and down, so that the multi-purpose tray drops down. The following steps should be performed after opening the multi-purpose paper tray, to initially set the paper guides (see Figure 4-3, below) to the width of the teslin ID cardstock:

1. Slide the right paper guide all the way to the right.
2. Pull out the plastic tray extender by grasping the center finger tab.
3. A sheet of teslin ID cardstock should be inserted (short-edge in and print-side up) flush against the left paper guide.
4. Slide the right paper guide to the left, until it lightly touches the teslin ID cardstock without bending it. Make sure that the teslin ID cardstock fits underneath the tab on the right paper guide.

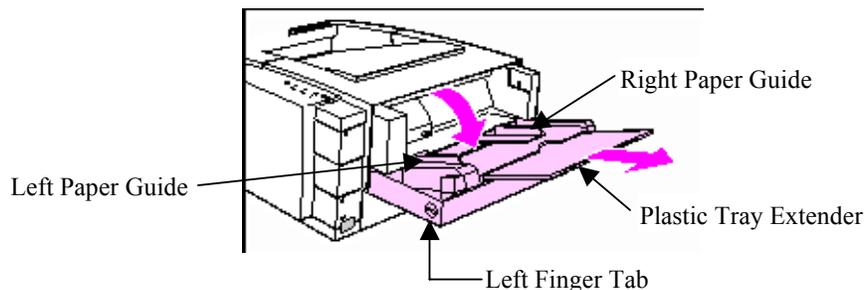


Figure 4-3: HP LaserJet 6Pxi Multi-purpose Paper Tray in Open Position

c. **Toner Cartridge.** The toner cartridge supplies the ink for the printer and is located under the top cover of the laser printer. It is the site's responsibility to procure new toner cartridges as required. There are two options for toner cartridges for the HP LaserJet 6Pxi: part number C3903A (4,000 pages) or C3903F (Asia only, 4,000 pages). To change the toner cartridge, follow the directions in Subsection 4.1.4, below.

d. **Control Panel.** The control panel is located at the top front left corner of the printer. The **Job Cancel** and **Go** buttons and the **Ready**, **Error**, **Data**, **Tray 1 Status** (multi-purpose tray), and **Tray 2 Empty** (cassette paper tray) indicator lights are important to the operation of the printer and RAPIDS. Figure 4-4, below, shows where each of these indicators and buttons are located on the printer. The **Job Cancel** button should be used if needed to cancel a job that the printer is currently printing. The **Go** button can be used to resume printing when the printer is paused or un-printed data is still in the printer's memory buffer, to print a demo page when in the ready state (**Ready** indicator illuminated), and to clear some printer errors.

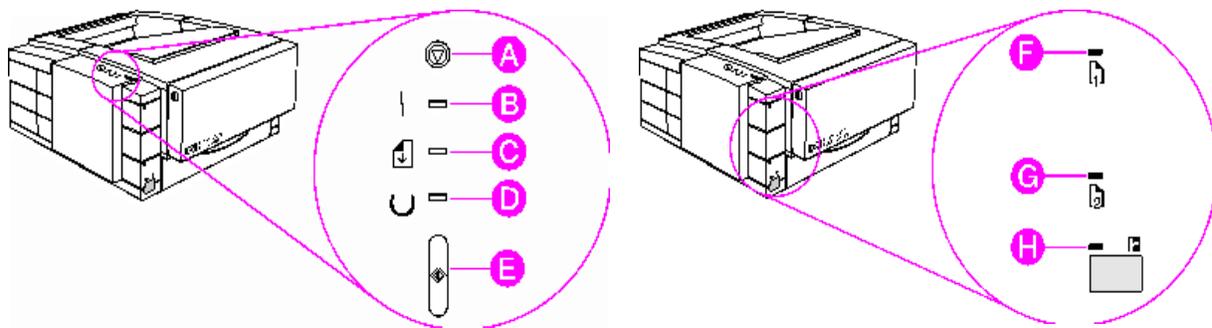


Figure 4-4: HP LaserJet 6Pxi Control Panel Buttons and Indicators

The table below lists all the indicators and buttons on the HP LaserJet 6Pxi printer, as shown in Figure 4-4, above.

Table 4-1. Location of HP LaserJet 6Pxi Control Panel Buttons and Indicators

Buttons and Indicators		Location
A	Job Cancel Button	front-left on top of printer
B	Error Indicator	front-left on top of printer
C	Data Indicator	front-left on top of printer
D	Ready Indicator	front-left on top of printer
E	Go Button	front-left on top of printer
F	Tray 1 Status Indicator	top-left on front of printer
G	Tray 2 Empty Indicator	middle-left on front of printer
H	IR Status Indicator	bottom-left on front of printer (unused)
not shown	Power On/Off Button	square on right side of printer near rear
not shown	Top Cover Release Button	round on right side of printer near front

e. Cables. The cables to the printer are connected at the back of the printer, on both sides. The power cord is on the left side of the back of the printer, inside a compartment with a latched door that pulls open to the left and front. The other end of the power cord should be plugged into the surge suppressor that came with the Workstation or Server that the printer is connected to. The data connectors are on the right side of the back of the printer, inside a compartment with a latched door that pulls open to the right and front. The data cable should be connected to the large **Parallel** port connector (in the middle) on the back of the printer and the other end for Workstations to the **Parallel** port on the USB port device (see Figures 2-1, 2-2, and 2-3, above), or for Servers to the **LPT1** port on the back of the Server CPU (see Figures 1-1, 1-2, and 1-3 above).

For a more detailed explanation of the printer's functions, please consult the HP LaserJet 6P/6MP Printer User's Manual.

4.1.2 How to Use the HP LaserJet 6Pxi

a. Powering On the HP LaserJet 6Pxi. The printer will be plugged into the surge suppressor of the RAPIDS Workstation or Server that it is connected to and will be turned **On** and **Off** at the surge suppressor. When the surge suppressor is **On**, the printer should be **On**. The **Power** button (square) is located on the right side of the printer toward the rear and bottom and should be kept in the **On** position, unless you need to power off just the printer, such as, when changing the toner cartridge. To turn **On** the printer depress the **Power** button (it should become indented compared to the side of the printer). To turn **Off** the printer depress the **Power** button (it should pop out and become flush with the side of the printer). Upon power **On**, the printer will initially perform a warm-up and a self test. The printer is ready to print an ID card or DD Form 1172 when the **Ready** indicator is illuminated green.

b. Printing a DD Form 1172/1172-2. The tractor-fed, preprinted DD Form 1172 is **NOT** to be used with the HP LaserJet 6Pxi printer. The HP LaserJet 6Pxi will automatically print a DD Form 1172 (blank or populated by DEERS data) or blank DD Form 1172-2, from the RAPIDS application software. Use the following procedures to print a pre-filled DD Form 1172:

1. Ensure that plain white paper is loaded in the cassette paper tray. The **Tray 2 Empty** indicator should not be lit.
2. Ensure that the printer's **Ready** indicator is illuminated green.
3. Use the "**Create DD Form 1172 Navigator**" of the RAPIDS application software to create the DD Form 1172. See the RAPIDS Training Guide for details.
4. From the "**Preview DD Form 1172**" screen, click on "**Print**" to send the form to the printer.
5. The **Data** indicator will be blinking while the printer is processing the print job.

Use the following procedures to print a blank DD Form 1172 or DD Form 1172-2:

1. Ensure that plain white paper is loaded in the cassette paper tray. The **Tray 2 Empty** indicator should not be lit.
2. Ensure that the printer's **Ready** indicator is illuminated green.
3. Use the "**File|Print|Blank DD Form 1172**" or "**File|Print|Blank DD Form 1172-2 CAC**" menu selection from the RAPIDS application software to print the blank

DD Form 1172 or 1172-2, respectively. See the RAPIDS Training Guide for details.

4. The **Data** indicator will be blinking while the printer is processing the print job.
 - c. Printing a Teslin ID Card. The HP LaserJet 6Pxi will automatically print a teslin ID card populated by DEERS data, as part of the RAPIDS application software. Use the following procedures to print a teslin ID card:
 1. Load a sheet of teslin ID cardstock (use correct color/form number for the type of ID card to be printed) into the multi-purpose paper tray with the colored side up and the edge of the cardstock with the arrow labeled “top” pointing into the printer. The teslin ID cardstock should be inserted between the two paper guides, that have been adjusted for the teslin ID cardstock (see Subsection 4.1.1.b, above for paper guide adjustment procedures). Make sure that the teslin ID cardstock fits underneath the tab on the right paper guide. The **Tray 1 Status** indicator should not be lit.
 2. Ensure that the printer’s **Ready** indicator is illuminated green.
 3. Use the “**Create Card Navigator**” of the RAPIDS application software to create the teslin ID card. See the RAPIDS Training Guide for details.
 4. From the “**Create Card Summary**” screen, click on “**Print**” to send the teslin ID card to the printer.
 5. The **Data** indicator will be blinking orange while the printer is processing the print job.
 6. After the front side of the teslin ID card is printed, the cardstock will come out of the top output paper tray of the printer. You must flip the ID cardstock over (colored-side down) and reload it into the multi-purpose tray to print the back side of the teslin ID card.

NOTE:

Do not leave the printer unattended between printing the front and the back sides of the ID card, because the back of the ID card will end up being printed on plain paper from the cassette paper tray if the ID cardstock is not reloaded into the multi-purpose tray within one minute from the front side being printed.

- d. Printing a CAC Brochure. A CAC brochure must be provided to each CAC recipient, outlining their responsibilities for safeguarding and using their CAC. To print a CAC brochure:
 1. Ensure that plain white paper is loaded in the cassette paper tray. The **Tray 2 Empty** indicator should not be lit.
 2. Ensure that the printer’s **Ready** indicator is illuminated green.
 3. Use the “**Tools|Configuration**” menu selection from the RAPIDS application software and select the CAC tab. Next, select the check box “**Print CAC Brochure**” and click “**OK**”. See the RAPIDS Training Guide for details.
 4. The **Data** indicator will be blinking while the printer is processing the print job.
- e. Printing a Self Test Page. For troubleshooting purposes it may sometimes be useful to print a Self Test Page from the HP 6Pxi LaserJet printer. To print a Self Test Page, briefly press the **Go** and **Job Cancel** buttons at the same time when the printer is in the ready state (**Ready** indicator is illuminated green). The HP LaserJet 6Pxi will print out a test page.

4.1.3 Troubleshooting HP LaserJet 6Pxi Problems

The following problems may be noticed via indicator lights on your printer; use the following steps to resolve common problems:

a. Out of Paper. The **Tray 1 Status** (manual feed tray) indicator will be lit orange when this tray is out of paper (ID cardstock) and a print job was sent to the manual feed tray (ID card print). The **Tray 1 Status** (manual feed tray) indicator will blink while the printer is waiting for you to put the cardstock back into the manual feed tray to print the back of the ID card. This is normal. The **Tray 2 Empty** (cassette paper tray) indicator will be lit orange when this tray is out of paper (plain letter-size paper) and a print job was sent to this tray (DD Form 1172 print). Once the paper or ID cardstock are in place, the respective indicator light should go out and the print job should proceed normally.

b. Toner Low or Out. If the DD Forms 1172/1172-2 and teslin ID cards seem to be getting lighter, it means that the toner cartridge is running out of toner. When this occurs, initially, the user can get the last of the toner out of the cartridge by removing it from the printer and gently rocking it front-to-back and shaking it from left-to-right a few times without tipping it on its sides. This action will disperse the remaining toner in the cartridge and maximize use of the remaining toner before replacing the cartridge is necessary. However, if the print quality is no longer acceptable after doing this, then the toner cartridge should be replaced. See Subsection 4.1.4, below, for details on how to replace the toner cartridge.

c. Printer Not Responding. If the printer does not print your job, or the RAPIDS application displays a message that the printer is not responding, then perform the following steps.

1. Ensure that the printer's **Ready** indicator is illuminated green. If not, check that the data cable is securely connected at the back of the printer and to the LPT1 port on the back of the Workstation or Server CPU.
2. If none of the printer's indicators are lit:
 - (a) Check that the power cord is all the way in at the surge suppressor and the back of the printer,
 - (b) Check that the **Power** button is in the **On** (pushed in) position, and
 - (c) Check that the surge suppressor is turned **On** (**Power** indicator should be illuminated and **Power** button should be in the **On** position).
3. If the **Error** indicator is illuminated orange, use the "Problem Solving" Section of the HP LaserJet 6P/6MP Printer User's Manual to attempt to resolve the problem.
4. If you cannot resolve the problem then contact the DRAC, DRSC-E, or DSO-A, as applicable for further assistance.

d. Paper Jam. Consult the HP LaserJet 6P/6MP Printer User's Manual for assistance with clearing paper jams. For additional assistance, RAPIDS users should contact the DRAC, DRSC-E, or DSO-A, as applicable.

NOTE:

If a teslin cardstock feeding error occurs, remove the cardstock from the multi-purpose paper tray (note the cardstock lot number). Open and close the printer lid or reset the printer. Load another piece of cardstock (preferably from a different lot number) to print the ID card. If you continue to have problems, call the DRAC, DRSC-E, or DSO-A, as appropriate.

e. Print Quality Problems. Consult the HP LaserJet 6P/6MP Printer User's Manual about print quality problems. For additional assistance, RAPIDS users should contact the DRAC, DRSC-E, or DSO-A, as applicable.

4.1.4 Changing the HP LaserJet 6Pxi Toner Cartridge

There are two options for toner cartridges for the HP LaserJet 6Pxi: part number C3903A (4,000 pages) or C3903F (Asia only, 4,000 pages).

NOTE:

It is recommended that new replacement toner cartridges be used, because refurbished toner cartridges sometimes leak and get toner all over the inside of the printer and may not produce readable bar codes.

The following steps should be followed to replace the toner cartridge in the HP LaserJet 6Pxi printer:

- a. Turn **Off** the printer by depressing the **Power** button (it should pop out and become flush with the side of the printer) and unplug the power cord, before changing the toner cartridge and cleaning the printer. The **Power** button (square) is located on the right side of the printer toward the rear and bottom.
- b. Open the top cover of the printer by pressing in the **Top Cover Release** button (round) found on the right side of the printer toward the top and front. Remove the used toner cartridge by pulling it toward the front of the printer and up.

WARNING:

DO NOT touch the black sponge-rubber transfer roller or any areas marked as HOT inside of the printer!

- c. At this time, use a dry lint free cloth to wipe any residue from the paper path area and the toner cartridge cavity. Remove the small green brush provided with the printer (located above the toner cartridge cavity with the printer top open) and clean the internal mirror. Slide the bristles of the brush under the edge, facing up and slide the brush from left to right along the top-back edge of the toner cartridge cavity. For illustrations on how to clean the printer refer to the HP LaserJet 6P/6MP Printer User's Manual.
- d. Next, remove the new toner cartridge from its bag and rock the new toner cartridge from front-to-back and left-to-right to distribute the toner evenly inside the cartridge. Do not tip the toner cartridge on its side, because it will cause toner to leak out of the cartridge.

CAUTION!

To prevent damage, **DO NOT** expose the toner cartridge to light for more than a few minutes.

- e. Locate the clear plastic sealing tape on the right end of the cartridge. Grasp the end of the tape and firmly pull the entire length of the tape out of the cartridge and discard. It may seem difficult to pull, however, it must be removed completely for the toner to be released during printing. Avoid touching any black toner on the tape.

NOTE:
If toner gets on your clothing, wipe it off with a dry cloth and wash clothing in cold water.

- f. Insert the toner cartridge into the printer lining up the arrow on the cartridge with the arrow on the printer, ensuring that it is seated properly. Follow the diagram on the toner cartridge instruction sheet that comes with the toner cartridge, or consult the HP LaserJet 6P/6MP Printer User's Manual.
- g. Finish by closing the top cover of the printer and turning the printer **On** by pressing the **Power** button (it should now be depressed).

CAUTION!
If the printer's top cover doesn't shut, then the cartridge is not properly installed. DO NOT try to force it closed. Pull out the toner cartridge and reseal it properly until the cover closes easily without being forced.

4.1.5 HP LaserJet 6Pxi Maintenance

The only maintenance to be performed on the HP 6Pxi LaserJet printer involves cleaning the printer. To clean the outside of the printer, use a lightly water-dampened cloth as needed. To maintain print quality, follow the cleaning procedure described in step c. of Subsection 4.1.4, above, every time the toner cartridge is changed or whenever print quality problems occur. As much as possible, keep the printer free from dust and debris. Should any liquid be spilled on or near the printer, be sure to immediately power **Off** and unplug the printer until the spill has been cleaned up and the printer is completely dry.

4.2 HP LaserJet 5/4000/4050/4100 Printers

The HP LaserJet 5 printer with 4 MB RAM, shown in Figure 4-5, below, is used at normal RAPIDS sites. The HP LaserJet 5 printer with the addition of the optional duplex assembly (HP C3925A not shown) is used at High-Volume RAPIDS sites. The components of the HP LaserJet 5 printer are discussed in the subsections below.

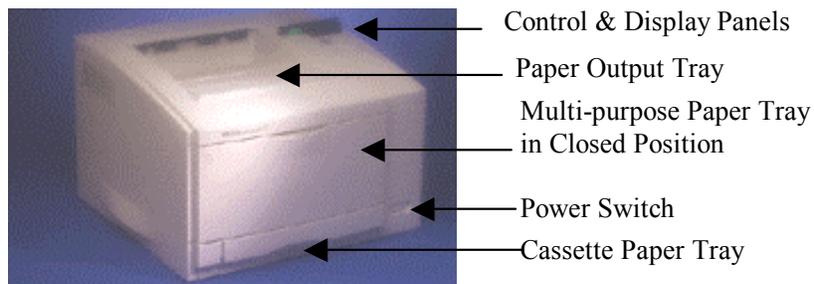


Figure 4-5: HP LaserJet 5 Printer

The HP LaserJet 4000, 4050, and 4100 laser printers have 4 MB, 8 MB, and 8 MB RAM, respectively. These three models are practically identical, shown in Figure 4-6, below, and are used at normal RAPIDS sites. The components of the HP LaserJet 4000, 4050, and 4100 printers are discussed in the subsections below.

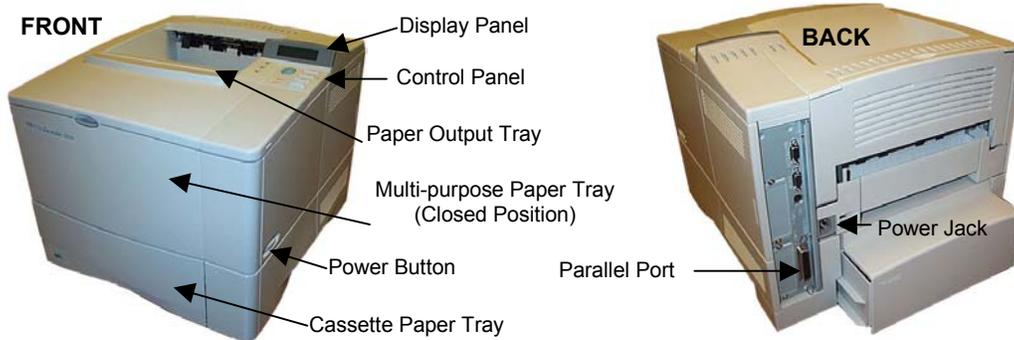


Figure 4-6: HP LaserJet 4000/4050/4100 Printer

4.2.1 HP LaserJet 5/4000/4050/4100 Description

a. Cassette Paper Tray. The cassette paper tray, shown in Figure 4-7, below, is the primary source for paper used to print the DD Forms 1172 and 1172-2, CAC brochures, and audit trail reports. It is located at the bottom of the printer (see Figures 4-5 and 4-6, above). It can hold up to 250 sheets (HP 5) or 500 sheets (HP 4000/4050/4100) of letter-size paper, but does not accommodate tractor feed paper. To add paper, place your hand underneath the cassette tray and gently pull it straight out of the front of the printer. Place the paper in the cassette tray and press on the four corners of the paper stack to ensure that the paper rests flat in the cassette and fits under the metal holders at the corners of the tray. Slide the cassette tray back into the printer.

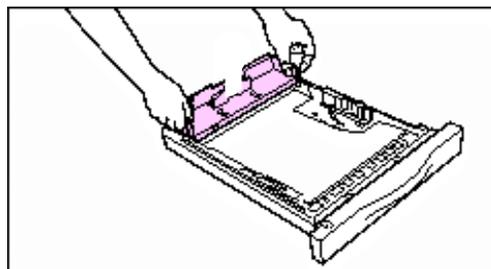


Figure 4-7: HP LaserJet 5/4000/4050/4100 Cassette Paper Tray

CAUTION!
Never remove the cassette paper tray while the printer is printing; it may cause a paper jam.

b. Multi-purpose Paper Tray. The multi-purpose paper tray is used for feeding teslin ID cardstock through the printer, and is located above the cassette paper tray (see Figures 4-5 and 4-6, above). To properly feed and accommodate the teslin ID cardstock, the multi-purpose paper tray must be opened and the paper guides set for the width of the teslin ID cardstock. Figure 4-8, on the next page, is an illustration of the multi-purpose paper tray in the open position. To open the multi-purpose paper tray, grasp the top center of the tray on the front of the printer and gently pull out and down, so that the multi-purpose tray drops down. The following steps should be performed after opening the multi-purpose paper tray, to initially set the paper guides (see Figure 4-8, below) to the width of the teslin ID cardstock:

1. Slide the right paper guide all the way to the right.
2. Pull out the plastic tray extender by grasping the center finger tab.
3. A sheet of teslin ID cardstock should be inserted (short-edge in and print-side up) flush against the left paper guide.
4. Slide the right paper guide to the left, until it lightly touches the teslin ID cardstock without bending it. Make sure that the teslin ID cardstock fits underneath the tab on the right paper guide.

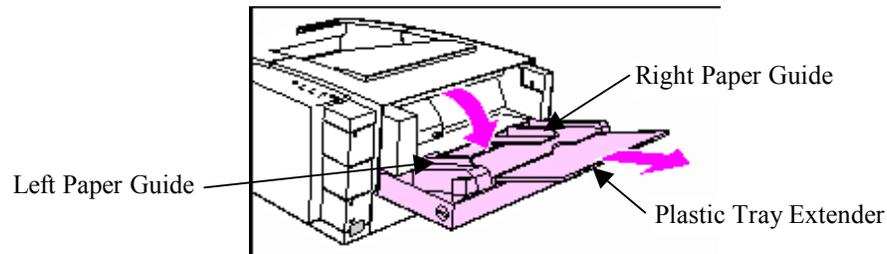


Figure 4-8: HP LaserJet 5/4000/4050/4100 Multi-purpose Paper Tray in Open Position

c. Toner Cartridge. The toner cartridge supplies the ink for the printer and is located under the top cover of the laser printer. It is the site's responsibility to procure new toner cartridges, as required. There are three options for toner cartridges for the HP LaserJet 5: part number 92298A (6,000 pages), 92298F (8,000 pages), or C3973A (4,000 pages). There are two options for toner cartridges for the HP LaserJet 4000/4050/4100: part number C4127A (6,000 pages) or C4127X (10,000 pages). To change the toner cartridge, follow the directions in Subsection 4.2.5, below.

d. Control Panel and Display. The control panel and display are located at the right-rear corner on the top of the printer. The **Cancel Job**, **Go**, **Menu**, **Item**, **-Value+**, and **Select** buttons and the 16-character **Display Panel** are important to the operation of the HP LaserJet 5/4000/4050/4100 printer. Figure 4-9, below, is an illustration of these buttons, indicator lights, and the **Display Panel**.

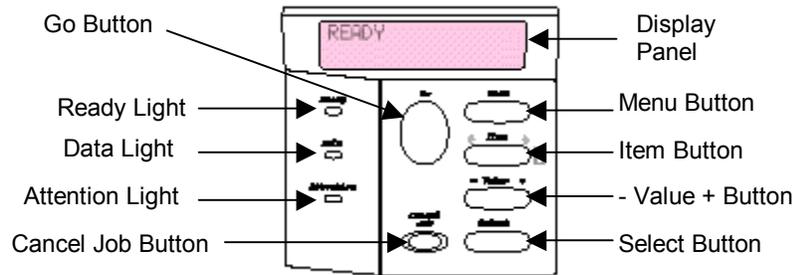


Figure 4-9: HP LaserJet 5/4000/4050/4100 Control Panel and Display

The table below lists all the indicators and buttons on the HP LaserJet 5/4000/4050/4100 printer, as shown in Figure 4-9, above.

Table 4-2. Indicators and Buttons on HP LaserJet 5/4000/4050/4100 Control Panel

Buttons, Indicators, and Display Panel	Location
Cancel Job Button	right-rear on top of printer
Go Button	right-rear on top of printer
Menu Button	right-rear on top of printer
Item Button	right-rear on top of printer
-Value+ Button	right-rear on top of printer
Select Button	right-rear on top of printer
Ready Indicator Light	right-rear on top of printer
Data Indicator Light	right-rear on top of printer
Attention Indicator Light	right-rear on top of printer
Various Text Messages in Display Panel	right-rear on top of printer
Power On/Off Switch	bottom-right on front of printer (HP 5) right side near front (HP 4000/4050/4100)

The **Cancel Job** button should be used if needed to cancel a job that the printer is currently printing. The **Go** button can be used to resume printing when the printer is paused or un-printed data is still in the printer's memory buffer, to print a demo page when in the ready state (**READY** indicated in the **Display Panel**), and to clear some printer errors. The **Menu**, **Item**, **-Value+**, and **Select** buttons are not used with RAPIDS.

The **Ready** indicator light is lit when the printer is ready to print. The **Data** indicator light blinks when the printer is receiving a print job from the RAPIDS workstation. The **Attention** indicator light will be lit when an error had occurred. During an error condition, the **Display Panel** indicates a message that describes the problem. Please refer to the HP LaserJet 5/4000/4050/4100 Printer User's Manual for more details on printer status depicted by the various messages indicated on the **Display Panel**.

e. Cables. The cables for the printer are located at the back of the printer on the left side. The power cord attaches to the printer at the bottom, left side on the back of the printer. The other end of the power cord should be plugged into the surge suppressor that came with the Workstation or Server that the printer is connected to. The data connectors are on the left side of the back of the printer. The data cable should be connected to the large **Parallel** port connector (in the middle) on the back of the printer and for Workstations, to the **Parallel** port on the USB port device or for Servers, to the **LPT1** port on the back of the Server CPU.

f. Optional Duplex Assembly. The optional duplex assembly for the HP LaserJet 5 printer allows both sides of the ID card to be printed on the ID cardstock without manually turning over and reloading the ID cardstock into the multi-purpose tray. The optional duplex assembly is connected to the HP LaserJet 5 printer directly beneath the cassette paper tray. Once the front side of the ID card has been printed, the duplex assembly automatically reroutes the ID cardstock back through the printer so that the back side of the ID card can be printed. The duplex assembly is only available on printers at RAPIDS High-Volume sites.

For a more detailed explanation of the printer's features, please consult the HP LaserJet 5/4000/4050/4100 Printer User's Manual.

4.2.2 How to Use the HP LaserJet 5 and Duplex Assembly

a. Powering On the HP LaserJet 5. The printer will be plugged into the surge suppressor of the RAPIDS Workstation or Server that it is connected to and will be turned **On** and **Off** at the surge suppressor. When the surge suppressor is **On**, the printer should be **On**. The **Power** switch is located on the bottom-right side on the front of the printer and should be kept in the **On** position, unless you need to power off just the printer, such as, when changing the toner cartridge. To turn **On** the printer press the **Power** switch to the **On** position. To turn **Off** the printer press the **Power** switch to the **Off** position. Upon power **On**, the printer will initially perform a warm-up and a self test, as noted by the **WARMING UP** and then **SELF TEST** messages indicated on the **Display Panel**. The printer is ready to print an ID card or DD Form 1172/1172-2 when the **READY** message is displayed and the **Ready** indicator light is lit.

b. Printing a DD Form 1172/1172-2. The tractor-fed, preprinted DD Form 1172 is **NOT** to be used with the HP LaserJet 5 printer. The HP LaserJet 5 will automatically print a DD Form 1172 (blank or populated by DEERS data) or blank DD Form 1172-2, from the RAPIDS application software. Use the following procedures to print a pre-filled DD Form 1172:

1. Ensure that plain white paper is loaded in the cassette paper tray. The **TRAY 2 LOAD** or **TRAY 2 EMPTY** messages should not be indicated on the **Display Panel**.

2. Ensure that the printer's **Display Panel** indicates the **READY** message and the **Ready** indicator is illuminated green.
3. Use the "**Create DD Form 1172 Navigator**" of the RAPIDS application software to create the DD Form 1172. Refer to the RAPIDS Training Guide for details.
4. From the "**Preview DD Form 1172**" screen, click on "**Print**" to send the form to the printer.
5. The message **PRINTING** will be indicated on the **Display Panel** and the **Data** indicator will be blinking while the printer is processing the print job.

Use the following procedures to print a blank DD Form 1172 or DD Form 1172-2:

1. Ensure that plain white paper is loaded in the cassette paper tray. The **TRAY 2 LOAD** or **TRAY 2 EMPTY** messages should not be indicated on the **Display Panel**.
2. Ensure that the printer's **Display Panel** indicates the **READY** message and the **Ready** indicator is illuminated green.
3. Use the "**File|Print|Blank DD Form 1172**" or "**File|Print|Blank DD Form 1172-2 (CAC)**" menu selection from the RAPIDS application software to print the blank DD Form 1172 or 1172-2, respectively. See the RAPIDS Training Guide for details.
4. The message **PRINTING** will be indicated on the **Display Panel** and the **Data** indicator will be blinking while the printer is processing the print job.

c. Printing a Teslin ID Card without the Duplex Assembly. The HP LaserJet 5 will automatically print a teslin ID card populated by DEERS data as part of the RAPIDS application software. Use the following procedures to print a teslin ID card without the duplex assembly:

1. Load a sheet of teslin ID cardstock (of the correct color/form number for the type of ID card to be printed) into the multi-purpose paper tray with the colored side up and the edge of the cardstock with the arrow labeled "top" pointing into the printer. The teslin ID cardstock should be inserted between the two paper guides, that have been adjusted for the ID cardstock (see Subsection 4.2.1.b, above for paper guide adjustment procedures). Make sure that the teslin ID cardstock fits underneath the tab on the right paper guide. The **TRAY 1 LOAD** or **TRAY 1 EMPTY** messages should not be indicated on the **Display Panel**.
2. Ensure that the printer's **Display Panel** indicates the **READY** message.
3. Use the "**Create Card Navigator**" of the RAPIDS application software to create the teslin ID card. See the RAPIDS Training Guide for details.
4. From the "**Create Card Summary**" screen, click on "**Print**" to send the ID card to the printer.
5. The message **PRINTING** will be indicated on the **Display Panel** and the **Data** indicator will be blinking while the printer is processing the print job.
6. After the front side of the teslin ID card is printed, the cardstock will come out of the top output paper tray of the printer. You must flip the teslin ID cardstock over (colored-side down) and reload it into the multi-purpose tray to print the back side of the teslin ID card.

NOTE:

Do not leave the printer unattended between printing the front and the back sides of the teslin ID card, because the back of the ID card will end up being printed on plain paper from the cassette paper tray if the teslin ID cardstock is not reloaded into the multi-purpose tray within one minute from the front side being printed.

d. Printing a Teslin ID Card with the Duplex Assembly. The HP LaserJet 5 will automatically print a teslin ID card populated by DEERS data as part of the RAPIDS application software. With the duplex assembly attached, the HP LaserJet 5 will print both sides of the teslin ID card before the completed card comes out into the top output paper tray. Use the following procedures to print a teslin ID card with the duplex assembly:

1. Load a sheet of teslin ID cardstock (of the correct color/form number for the type of ID card to be printed) into the multi-purpose paper tray with the colored side up and the edge of the cardstock with the arrow labeled “top” pointing into the printer. The teslin ID cardstock should be inserted between the two paper guides, that have been adjusted for the ID cardstock (see Subsection 4.2.1.b, above for paper guide adjustment procedures). Make sure that the teslin ID cardstock fits underneath the tab on the right paper guide. If multiple cards of the same type/color are being printed, load a stack (no more than 75 and 90 pieces) of teslin ID cardstock (of the correct color/form number for the type of teslin ID cards to be printed) into the multi-purpose paper tray. The stack of teslin cardstock should be into the multi-purpose paper tray with the colored side up and the edge of the cardstock with the arrow labeled “top” pointing into the printer. The **TRAY 1 LOAD** or **TRAY 1 EMPTY** messages should not be indicated on the **Display Panel**.
2. Ensure that the printer’s **Display Panel** indicates the **READY** message.
3. Use the “**Create Card Navigator**” of the RAPIDS application software to create the ID card. Refer to the RAPIDS Training Guide for details.
4. From the “**Create Card Summary**” screen, click on “**Print**” to send the teslin ID card to the printer.
5. The message **PRINTING** will be indicated on the **Display Panel** and the **Data** indicator will be blinking while the printer is processing the print job.

e. Printing a CAC Brochure. A CAC brochure must be provided to each CAC recipient, outlining their responsibilities for safeguarding and using their CAC. To print a CAC brochure:

1. Ensure that plain white paper is loaded in the cassette paper tray. The **TRAY 2 LOAD** or **TRAY 2 EMPTY** messages should not be indicated on the **Display Panel**.
2. Ensure that the printer’s **Ready** indicator is illuminated green.
3. Use the “**Tools|Configuration**” menu selection from the RAPIDS application software and select the CAC tab. Next, select the check box “**Print CAC Brochure**” and click “**OK**”. See the RAPIDS Training Guide for details.
4. The message **PRINTING** will be indicated on the **Display Panel** and the **Data** indicator will be blinking while the printer is processing the print job.

f. Printing a Self Test Page. For troubleshooting purposes it may sometimes be useful to print a Self Test Page from the HP 5 LaserJet printer. To print a Self Test Page, press the **Menu**

button until the message **TEST MENU** appears in the display. Next, press the **Item** button until the message **PRINT SELF TEST** is displayed. Finally, press the **Select** button and the HP LaserJet 5 will print out a test page.

4.2.3 How to Use the HP LaserJet 4000/4050/4100

a. Powering On the HP LaserJet 4000/4050/4100. The printer will be plugged into the surge suppressor of the RAPIDS Workstation or Server that it is connected to and will be turned **On** and **Off** at the surge suppressor. When the surge suppressor is **On**, the printer should be **On**. The **Power** switch is located on the bottom-right side on the front of the printer and should be kept in the **On** position, unless you need to power off just the printer, such as, when changing the toner cartridge. To turn **On** the printer press the **Power** switch to the **On** position. To turn **Off** the printer press the **Power** switch to the **Off** position. Upon power **On**, the printer will initially perform a warm-up and a self test, as noted by the **INITIALIZING** and then **SELF TEST** messages indicated on the **Display Panel**. The printer is ready to print an ID card or DD Form 1172 when the **READY** message is displayed and the **Ready** indicator light is lit.

b. Printing a DD Form 1172/1172-2. The tractor-fed, preprinted DD Form 1172 is **NOT** to be used with the HP LaserJet 5 printer. The HP LaserJet 5 will automatically print a DD Form 1172 (blank or populated by DEERS data) or blank DD Form 1172-2, from the RAPIDS application software. Use the following procedures to print a pre-filled DD Form 1172:

1. Ensure that plain white paper is loaded in the cassette paper tray. The **TRAY 2 LOAD** or **TRAY 2 EMPTY** messages should not be indicated on the **Display Panel**.
2. Ensure that the printer's **Display Panel** indicates the **READY** message and the **Ready** indicator is illuminated green.
3. Use the "**Create DD Form 1172 Navigator**" of the RAPIDS application software to create the DD Form 1172. See the RAPIDS Training Guide for details.
4. From the "**Preview DD Form 1172**" screen, click on "**Print**" to send the form to the printer.
5. The message **PRINTING** will be indicated on the **Display Panel** and the **Data** indicator will be blinking while the printer is processing the print job.

Use the following procedures to print a blank DD Form 1172 or DD Form 1172-2:

1. Ensure that plain white paper is loaded in the cassette paper tray. The **TRAY 2 LOAD** or **TRAY 2 EMPTY** messages should not be indicated on the **Display Panel**.
2. Ensure that the printer's **Display Panel** indicates the **READY** message and the **Ready** indicator is illuminated green.
3. Use the "**File|Print|DD Form 1172**" or "**File|Print|DD Form 1172-2 (CAC)**" menu selection from the RAPIDS application software to print the blank DD Form 1172 or 1172-2, respectively. Refer to the RAPIDS Training Guide for details.
4. The message **PRINTING** will be indicated on the **Display Panel** and the **Data** indicator will be blinking while the printer is processing the print job.

c. Printing a Teslin ID Card. The HP LaserJet 4000/4050/4100 will automatically print a teslin ID card populated by DEERS data as part of the RAPIDS application software. Use the following procedures to print a teslin ID card:

1. Load a sheet of teslin ID cardstock (of the correct color/form number for the type of ID card to be printed) into the multi-purpose paper tray with the colored side up and the edge of the cardstock with the arrow labeled “top” pointing into the printer. The teslin ID cardstock should be inserted between the two paper guides, that have been adjusted for the ID cardstock (see Subsection 4.2.1.b, above for paper guide adjustment procedures). Make sure that the teslin ID cardstock fits underneath the tab on the right paper guide. The **TRAY 1 LOAD** or **TRAY 1 EMPTY** messages should not be indicated on the **Display Panel**.
2. Ensure that the printer’s **Display Panel** indicates the **READY** message and the **Ready** indicator is illuminated green.
3. Use the “**Create Card Navigator**” of the RAPIDS application software to create the teslin ID card. Refer to the RAPIDS Training Guide for details.
4. From the “**Create Card Summary**” screen, click on “**Print**” to send the ID card to the printer.
5. The message **PRINTING** will be indicated on the **Display Panel** and the **Data** indicator will be blinking while the printer is processing the print job.
6. After the front side of the teslin ID card is printed, the cardstock will come out of the top output paper tray of the printer. You must flip the teslin ID cardstock over (colored-side down) and reload it into the multi-purpose tray to print the back side of the teslin ID card.

NOTE:

Do not leave the printer unattended between printing the front and the back sides of the teslin ID card, because the back of the ID card will end up being printed on plain paper from the cassette paper tray if the teslin ID cardstock is not reloaded into the multi-purpose tray within one minute from the front side being printed.

d. Printing a CAC Brochure. A CAC brochure must be provided to each CAC recipient, outlining their responsibilities for safeguarding and using their CAC. To print a CAC brochure:

1. Ensure that plain white paper is loaded in the cassette paper tray. The **TRAY 2 LOAD** or **TRAY 2 EMPTY** messages should not be indicated on the **Display Panel**.
2. Ensure that the printer’s **Display Panel** indicates the **READY** message and the **Ready** indicator is illuminated green.
3. Use the “**Tools|Configuration**” menu selection from the RAPIDS application software and select the CAC tab. Next, select the check box “**Print CAC Brochure**” and click “**OK**”. Refer to the RAPIDS Training Guide for details.
4. The message **PRINTING** will be indicated on the **Display Panel** and the **Data** indicator will be blinking while the printer is processing the print job.

e. Printing a Self Test Page. For troubleshooting purposes it may sometimes be useful to print a Configuration or Paper Path Test Page from the HP 4000/4050/4100 LaserJet printer. To print a one of these pages, press the **Menu** button until the message **INFORMATION MENU** appears in the display. Next, press the **Item** button until either **PRINT PAPER PATH TEST** or **PRINT CONFIGURATION** is displayed. Finally, press the **Select** button and the HP LaserJet 4000/4050/4100 will print out the page.

4.2.3 Troubleshooting HP LaserJet 5/4000/4050/4100 Problems

The following problems may be noticed via the front panel display messages; use the following steps to resolve common problems:

a. Out of Paper. The **Display Panel** will indicate **TRAY 2 EMPTY** or **TRAY 2 LOAD** when the cassette paper tray is out of paper or **TRAY 1 EMPTY** or **TRAY 1 LOAD** when there is not any teslin ID cardstock in the multi-purpose paper tray. Once the paper or teslin ID cardstock are in place, the respective message should go away, the **READY** message should be displayed, and the print job should proceed as normal.

b. Toner Low or Out. If the DD Forms 1172/1172-2 and teslin ID cards seem to be getting lighter, it means that the toner cartridge is running out of toner. The **TONER LOW** message will be indicated on the **Display Panel**. When this occurs, initially, the user can get the last of toner out of the cartridge by removing it from the printer and gently rocking it front-to-back and shaking it from left-to-right a few times without tipping it on its sides. This action will disperse the remaining toner in the cartridge to maximize use of the remaining toner before replacing the cartridge. However, if the print quality is no longer acceptable after doing this, then the toner cartridge should be replaced. See Subsection 4.2.5, below, for details on how to replace the toner cartridge.

c. Printer Not Responding. If the printer does not print your job, the **Display Panel** indicates any one of a number of **ERROR** messages, or the RAPIDS application displays a message that the printer is not responding, then perform the following steps.

1. Ensure that the **Display Panel** does not indicate the **OFFLINE** message. If so, then press the **Go** button and the **READY** message should be displayed.
2. If this is not the problem, then check that the data cable is securely connected at the back of the printer and to the LPT1 port on the back of the Workstation or Server CPU.
3. If the printer's **Display Panel** is blank:
 - (a) Check that the power cord is all the way in at the surge suppressor and the back of the printer,
 - (b) Check that the printer's **Power** switch is in the **On** position, and
 - (c) Check that the surge suppressor is turned **On** (**Power** indicator should be illuminated and **Power** button should be in the **On** position).
4. If an **ERROR** message is indicated on the **Display Panel**, use the "Solving Printer Problems" Section of the HP LaserJet 5/4000/4050/4100 Printer User's Manual to attempt to resolve the problem.
5. If you cannot resolve the problem then contact the DRAC, DRSC-E, or DSO-A, as applicable for further assistance.

d. Paper Jam. The front panel display will read **JAM**, which means that you have a paper jam in the printer. Consult the HP LaserJet 5/4000/4050/4100 Printer User's Manual for assistance with clearing paper jams. For additional assistance, RAPIDS users should contact the DRAC, DRSC-E, DSO-A, as applicable.

NOTE:

If a teslin cardstock feeding error occurs, remove the cardstock from the multi-purpose paper tray (note the cardstock lot number). Open and close the printer lid or reset the printer. Load another piece of cardstock (preferably from a different lot number) to print the ID card. If you continue to have problems, call the DRAC, DRSC-E, or DSO-A, as appropriate.

e. Print Quality Problems. Consult the HP LaserJet 5/4000/4050/4100 Printer User's Manual when print quality problems occur. For additional assistance, RAPIDS users should contact the DRAC, DRSC-E, or DSO-A, as applicable.

4.2.5 Changing the HP LaserJet 5/4000/4050/4100 Toner Cartridge

There are three options for toner cartridges for the HP LaserJet 5: part number 92298A (6,000 pages), 92298F (8,000 pages), or C3973A (4,000 pages). There are two options for toner cartridges for the HP LaserJet 4000/4050/4100: part number C4127A (6,000 pages) or C4127X (10,000 pages).

NOTE:

It is recommended that new replacement toner cartridges be used, because refurbished toner cartridges sometimes leak and get toner all over the inside of the printer and may not produce readable bar codes.

The following steps should be followed to replace the toner cartridge in the HP LaserJet 5/4000/4050/4100 printer:

- a. Turn **Off** the printer by pressing the **Power** switch to the **Off** position and unplug the power cord, before changing the toner cartridge and cleaning the printer. The **Power** switch is located on the lower-right side on the front of the printer.
- b. Open the top cover of the printer by pulling up on it. Remove the used toner cartridge by pulling it toward the front of the printer and up, simultaneously.

WARNING:

DO NOT touch the black sponge-rubber transfer roller or any areas marked as HOT inside of the printer!

- c. At this time, use a dry lint free cloth to wipe any residue from the paper path area and the toner cartridge cavity. Remove the small green brush provided with the printer (located on the upper left side of the cavity with the printer top open) and clean the internal mirror. Slide the bristles of the brush under the edge, facing up and slide the brush from left to right along the top-back edge of the toner cartridge cavity. For illustrations on how to clean the printer refer to the HP LaserJet 5/4000/4050/4100 Printer User's Manual.
- d. Next, remove the new toner cartridge from its bag and rock the new toner cartridge from front-to-back and left-to-right to distribute the toner evenly inside the cartridge.

Do not tip the toner cartridge on its side, because it will cause toner to leak out of the cartridge.

CAUTION!

To prevent damage, DO NOT expose the toner cartridge to light for more than a few minutes.

- e. Locate the clear plastic sealing tape on the right end of the cartridge. Grasp the end of the tape and firmly pull the entire length of the tape out of the cartridge and discard. It may seem difficult to pull, however, it must be removed completely for the toner to be released during printing. Avoid touching any black toner on the tape.

NOTE:

If toner gets on your clothing, wipe it off with a dry cloth and wash clothing in cold water.

- f. Insert the toner cartridge into the printer lining up the arrow on the cartridge with the arrow on the printer, ensuring that it is seated properly. Follow the diagram on the instruction sheet that comes with the toner cartridge, or consult the HP LaserJet 5/4000/4050/4100 Printer User's Manual.
- g. Finish by closing the top cover of the printer and turning the printer **On** by pressing the **Power** switch to the **On** position.

CAUTION!

If the printer's top cover doesn't shut, then the cartridge is not properly installed. DO NOT try to force it closed. Pull out the toner cartridge and reseal it properly until the cover closes easily without being forced.

4.2.6 HP LaserJet 5/4000/4050/4100 Maintenance

The only maintenance to be performed on the HP 5/4000/4050/4100 LaserJet printer involves cleaning the printer. To clean the outside of the printer, use a lightly water-dampened cloth as needed. To maintain print quality, follow the cleaning procedure described in step c. of Subsection 4.2.5, above, every time the toner cartridge is changed or whenever print quality problems occur. As much as possible, keep the printer free from dust and debris. Should any liquid be spilled on or near the printer, be sure to immediately power **Off** and unplug the printer until the spill has been cleaned up and the printer is completely dry.

4.3 Brother HL-960/1260 Laser Printer

The Brother HL-960 and HL-1260 laser printers with 6 MB RAM, shown in Figure 4-10, on the next page, are used at normal RAPIDS sites. The HL-960 and HL-1260 laser printer with 10 MB RAM and the addition of the optional duplex assembly (D5 DT1200) are used at RAPIDS High-Volume sites. The components of the Brother HL-960 and HL-1260 laser printers are discussed in the subsections below.

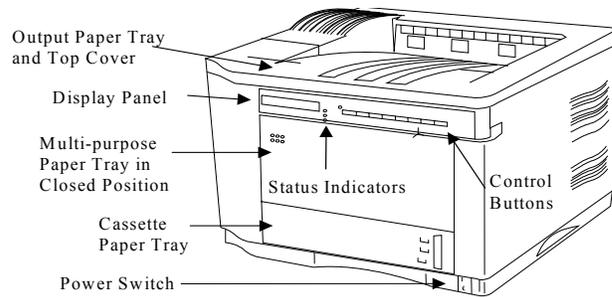


Figure 4-10: Brother HL-960/1260 Laser Printer

4.3.1 Brother HL-960/1260 Description

a. Cassette Paper Tray. The cassette paper tray, shown in Figure 4-10, above, is the primary source for paper used to print the DD Forms 1172 and 1172-2, CAC brochures, and audit trail reports; it is located at the bottom of the printer. It can hold up to 500 sheets of letter-size paper, but does not accommodate tractor feed paper. To add paper, place your hand underneath the cassette tray and gently pull it straight out of the front of the printer. Place the paper in the cassette tray and press on the four corners of the paper stack to ensure that the paper rests flat in the cassette and fits under the metal holders at the corners of the tray. Slide the cassette paper tray back into the printer.

CAUTION!

Never remove the cassette paper tray while the printer is printing; it may cause a paper jam.

b. Multi-purpose Paper Tray. The multi-purpose paper tray is used for feeding teslin ID cardstock through the printer, and is located above the cassette paper tray (see Figure 4-10, above). To properly feed and accommodate the teslin ID cardstock, the multi-purpose paper tray must be opened and the paper guides set for the width of the teslin ID cardstock. Figure 4-11, on the next page, is an illustration of the multi-purpose paper tray in the open position. To open the multi-purpose paper tray, press lightly at the top of the tray and it will drop down. The following steps should be performed after opening the multi-purpose paper tray, to initially set the paper guides (see Figure 4-11, on the next page) to the width of the teslin ID cardstock:

1. Lift up on and slide the right paper guide all the way to the right.
2. Pull out the plastic tray extender by grasping the 1/2" square lip and pulling it out.
3. A sheet of teslin ID cardstock should be inserted (short-edge in and print-side up) flush against the left paper guide.
4. Lift up on and slide the right paper guide to the left, until it lightly touches the teslin ID cardstock without bending it. Make sure that the teslin ID cardstock fits underneath the tabs on the paper guides.

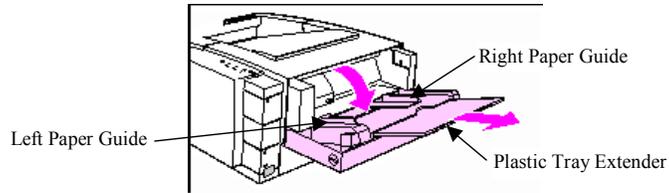


Figure 4-11: Brother HL-960/1260 Multi-purpose Paper Tray in Open Position

c. Toner Cartridge. The toner cartridge supplies the ink for the printer and is located under the top cover of the laser printer. It is the site's responsibility to procure new toner cartridges as required. The part number for the toner cartridge for the Brother HL-960/1260 printers is 92298A. To change the toner cartridge, follow the directions in Subsection 4.3.4, below.

d. Control Panel and Display. The control panel and display are located at the top on the front of the printer. You can adjust the control panel angle so that it can be viewed more easily. To do so, gently pinch the tab on the right side of the panel and move the control panel up or down. The **SEL**, **FORM FEED**, **RESET**, and **TEST** buttons and the **READY**, **DATA**, **ALARM**, and **ONLINE** indicators are important to the operation of the Brother HL-960/1260 printers. Figure 4-12, on the next page, is an excerpt from the Brother Laser Printer HL-960/1260 Series User's Guide that shows the indicators and buttons and describes their purpose. When the **READY** indicator is blinking, the printer is warming up. When the **READY** indicator is illuminated green, the printer is ready to print. When the **DATA** indicator is blinking, the printer is receiving data. When the **DATA** indicator is illuminated orange, it means that data is held in the printer's buffer. If you want to clear the printer's buffer, you need to press the **FORM FEED** button to clear it. When the **ALARM** indicator is illuminated red, an error has occurred and a corresponding error message will be displayed on the **Display Panel**. Refer to the Brother Laser Printer HL-960/1260 Series User's Guide on how to handle various errors. When the **ONLINE** indicator is illuminated green, the printer is on-line and ready to print. When the **ONLINE** indicator is off, the printer is off-line. When the printer is off-line, press the **SEL** (select) button to return the printer to the on-line mode. While the printer is powered on, some of the more common messages displayed are:

- **00 READY 001P T1** - printer's normal status when it is ready to print.
- **00 SLEEP 001P T1** - printer is in the "power save" mode.
- **01 PRINT 00P T1** - printer is printing a job.
- **02 WAIT 001P T1** - printer is warming up.
- **04 SELF TEST** - printer is performing a self-diagnostics test.
- **07 FF PAUSE** - printer has suspended printing. To resume printing, press the **SEL** button.

CHAPTER 3 BEFORE WORKING WITH THE PRINTER

Using the Panel Switches

The printer has a versatile control panel. It has two operation modes:

When you press the switches, they work in the NORMAL mode as indicated above the switches. When you press the switches with the SHIFT switch held down, they work in the SHIFT mode as indicated below the switches. You can control the basic printer operations and make various printer settings in the NORMAL and SHIFT modes.

For further information, see “SWITCHES IN NORMAL MODE” and “SWITCHES IN SHIFT MODE” in Chapter 4.

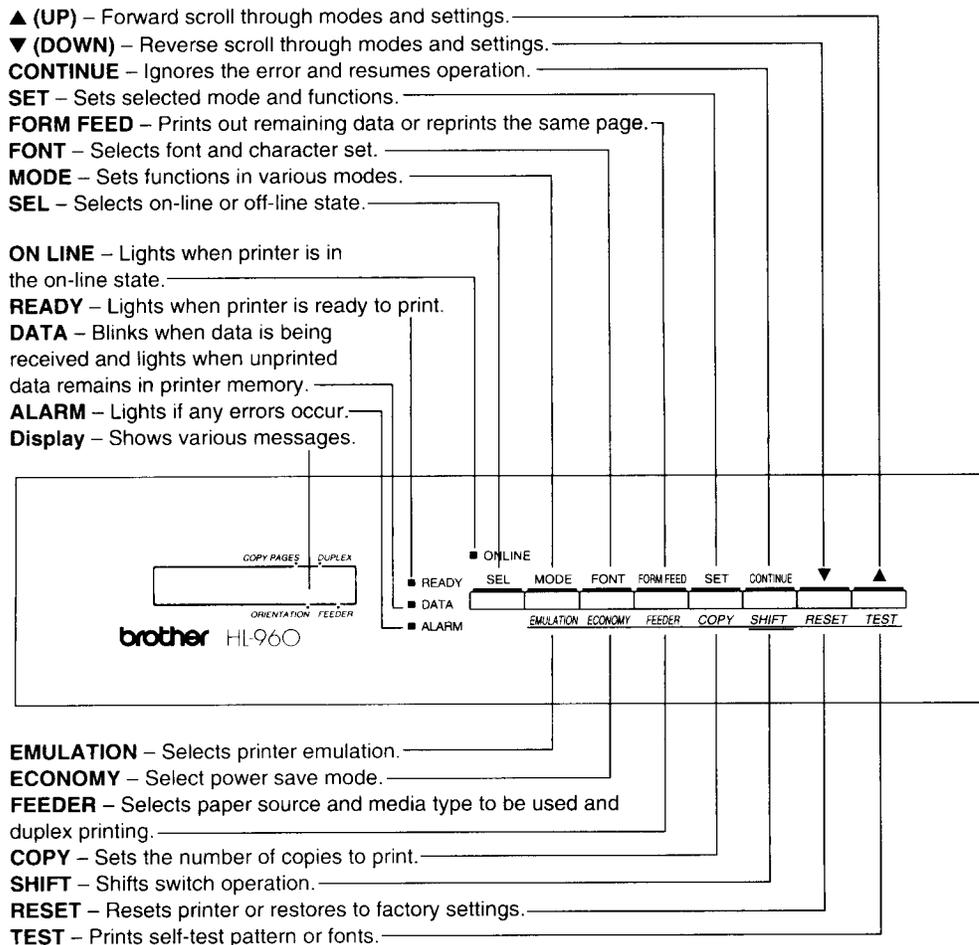


Figure 4-12: Brother HL-960/1260 Printer Control Panel and Display

e. Cables. The cables for the printer are located at the back of the printer, on both sides. The power cord is connected to the printer on the bottom, left side on the back of the printer. The other end of the power cord should be plugged into the surge suppressor that came with the Workstation or Server that the printer is connected to. The data connectors are on the right side of the back of the printer. The data cable should be connected to the large **Parallel** port connector (in the middle) on the back of the printer and for Workstations, to the **Parallel** port on the USB port device or for Servers, to the **LPT1** port on the back of the Server CPU.

f. Optional Duplex Assembly. The optional duplex assembly for the Brother HL-960/1260 laser printer allows both sides of the teslin ID card to be printed on the ID cardstock without manually turning over and reloading the teslin ID cardstock into the multi-purpose tray. The optional duplex assembly is connected to the Brother HL-960/1260 laser printer directly beneath the cassette paper tray. Once the front side of the teslin ID card has been printed, the duplex assembly automatically reroutes the teslin ID cardstock back through the printer so that the back side of the teslin ID card can be printed. The duplex assembly is only available on printers at RAPIDS High-Volume sites.

For a more detailed explanation of the printer's components, consult the Brother Laser Printer HL-960/1260 Series User's Guides.

4.3.2 How to Use the Brother HL-960/1260

a. Powering On the Brother HL-960/1260. The printer will be plugged into the surge suppressor of the RAPIDS Workstation or Server that it is connected to and will be turned **On** and **Off** at the surge suppressor. When the surge suppressor is **On**, the printer should be **On**. The **Power** switch is located on the bottom-right side on the front of the printer and should be kept in the **On** position, unless you need to power off just the printer, such as, when changing the toner cartridge. To turn **On** the printer press the **Power** switch to the **On** position. To turn **Off** the printer press the **Power** switch to the **Off** position. Upon power **On**, the printer will initially perform a warm-up and a self test, as noted by the **02 WAIT 001P T1** and then **04 SELF TEST** messages indicated on the **Display Panel**. During the warm up, the **ALARM** indicator will be lit briefly. The printer is ready to print an ID card or DD Form 1172/1172-2 when the **00 READY 001P T1** message is displayed and the **ONLINE** and **READY** indicators are illuminated green.

b. Printing a DD Form 1172/1172-2. The tractor-fed, preprinted DD Form 1172 is **NOT** to be used with the Brother HL-960/1260 laser printers. The Brother HL-960/1260 will automatically print a DD Form 1172 (blank or populated by DEERS data) or blank DD Form 1172-2, from the RAPIDS application software. Use the following procedures to print a pre-filled DD Form 1172:

1. Ensure that plain white paper is loaded in the cassette paper tray. The **CHECK TRAY 1** message should not be indicated on the **Display Panel**.
2. Ensure that the printer's **Display Panel** indicates the **00 READY 001P T1** message and the **ONLINE** and **READY** indicators are illuminated green.
3. Use the "**Create DD Form 1172 Navigator**" of the RAPIDS application software to create the DD Form 1172. Refer to the RAPIDS Training Guide for details.
4. From the "**Preview DD Form 1172**" screen, click on "**Print**" to send the form to the printer.

5. The **DATA** indicator will be blinking orange and the message **01 PRINT 00P T1** will be indicated on the **Display Panel** while the printer is processing the print job

Use the following procedures to print a blank DD Form 1172 or DD Form 1172-2:

1. Ensure that plain white paper is loaded in the cassette paper tray. The **CHECK TRAY 1** message should not be indicated on the **Display Panel**.
2. Ensure that the printer's **Display Panel** indicates the **00 READY 001P T1** message and the **ONLINE** and **READY** indicators are illuminated green.
3. Use the "**File|Print|Blank DD Form 1172**" or "**File|Print|Blank DD Form 1172-2 (CAC)**" menu selection from the RAPIDS application software to print the blank DD Form 1172 or 1172-2, respectively. Refer to the RAPIDS Training Guide for details.
4. The **DATA** indicator will be blinking orange and the message **01 PRINT 00P T1** will be indicated on the **Display Panel** while the printer is processing the print job.

c. Printing a Teslin ID Card without the Duplex Assembly. The Brother HL-960/1260 will automatically print a teslin ID card populated by DEERS data as part of the RAPIDS application software. Use the following procedures to print a teslin ID card without the duplex assembly:

1. Load a sheet of teslin ID cardstock (of the correct color/form number for the type of teslin ID card to be printed) into the multi-purpose paper tray with the colored side up and the edge of the cardstock with the arrow labeled "top" pointing into the printer. The teslin ID cardstock should be inserted between the two paper guides, that have been adjusted for the teslin ID cardstock (see Subsection 4.3.1.b, above for paper guide adjustment procedures). Make sure that the teslin ID cardstock fits underneath the tabs on the paper guides. The **CHECK MP TRAY** message should not be indicated on the **Display Panel**.
2. Ensure that the printer's **Display Panel** indicates the **00 READY 001P T1** message and the **ONLINE** and **READY** indicators are illuminated green.
3. Use the "**Create Card Navigator**" of the RAPIDS application software to create the teslin ID card. Refer to the RAPIDS Training Guide for details.
4. From the "**Create Card Summary**" screen, click on "**Print**" to send the ID card to the printer.
5. The **DATA** indicator will be blinking orange and the message **01 PRINT 00P T1** will be indicated on the **Display Panel** while the printer is processing the print job.
6. After the front side of the teslin ID card is printed, the cardstock will come out of the top output paper tray of the printer. You must flip the teslin ID cardstock over (colored-side down) and reload it into the multi-purpose tray to print the back side of the teslin ID card.

NOTE:

Do not leave the printer unattended between printing the front and the back sides of the teslin ID card, because the back of the ID card will end up being printed on plain paper from the cassette paper tray if the teslin ID cardstock is not reloaded into the multi-purpose tray within one minute from the front side being printed.

d. Printing a Teslin ID Card with the Duplex Assembly. The Brother HL-960/1260 will automatically print a teslin ID card populated by DEERS data as part of the RAPIDS application software. With the duplex assembly attached, the Brother HL-960/1260 will print both sides of the teslin ID card before the completed card comes out into the top output paper tray. Use the following procedures to print a teslin ID card with the duplex assembly:

1. Load a sheet of ID cardstock (of the correct color/form number for the type of ID card to be printed) into the multi-purpose paper tray with the colored side up and the edge of the cardstock with the arrow labeled “top” pointing into the printer. The ID cardstock should be inserted between the two paper guides, that have been adjusted for the ID cardstock (see Subsection 4.3.1.b, above for paper guide adjustment procedures). Make sure that the ID cardstock fits underneath the tab on the right paper guide. If multiple cards of the same type/color are being printed, load a stack (no more than 75 and 90 pieces) of ID cardstock (of the correct color/form number for the type of ID cards to be printed) into the multi-purpose paper tray with the colored side up and the edge of the cardstock with the arrow labeled “top” pointing into the printer. If the cassette paper tray is being used, load a stack (no more than 75 and 90 pieces) of ID cardstock (of the correct color/form number for the type of ID cards to be printed) into the cassette paper tray with the top edge of the ID cardstock with the arrow labeled “top” facing away from the printer and colored-side facing down. Neither the **CHECK MP TRAY** or **CHECK TRAY 1** message should be indicated on the **Display Panel**.
2. Ensure that the printer’s **Display Panel** indicates the **00 READY 001P T1** message and the **ONLINE** and **READY** indicators are illuminated green.
3. Use the “**Create Card Navigator**” of the RAPIDS application software to create the ID card. See the RAPIDS Training Guide for details.
4. From the “**Create Card Summary**” screen, click on “**Print**” to send the ID card to the printer.
5. The **DATA** indicator will be blinking orange and the message **01 PRINT 00P T1** will be indicated on the **Display Panel** while the printer is processing the print job.

e. Printing a CAC Brochure. A CAC brochure must be provided to each CAC recipient, outlining their responsibilities for safeguarding and using their CAC. To print a CAC brochure:

1. Ensure that plain white paper is loaded in the cassette paper tray. The **CHECK TRAY 1** message should not be indicated on the **Display Panel**.
2. Ensure that the printer’s **Display Panel** indicates the **00 READY 001P T1** message and the **ONLINE** and **READY** indicators are illuminated green.
3. Use the “**Tools|Configuration**” menu selection from the RAPIDS application software and select the CAC tab. Next, select the check box “**Print CAC Brochure**” and click “**OK**”. Refer to the RAPIDS Training Guide for details.
4. The **DATA** indicator will be blinking orange and the message **01 PRINT 00P T1** will be indicated on the **Display Panel** while the printer is processing the print job

f. Printing a Self Test Page. For troubleshooting purposes it may sometimes be useful to print a Self Test Page from the Brother HL-960/1260 laser printer. To print a Self Test Page follow these steps:

1. Ensure that the printer is ready (**Display Panel** shows the **00 READY 001P T1** message).
2. Take the printer off-line by pressing the **SEL** button, so that the **ONLINE** indicator is not lit.
3. Hold down the **SHIFT** and **TEST** buttons, simultaneously.
4. Use the **(UP)** or **(DOWN)** button to scroll through the selections until you see **TEST PRINT** on the **Display Panel**.
5. A test pattern page will be printed by the Brother HL-960/1260.

4.3.3 Troubleshooting Brother HL-960/1260 Problems

The following problems may be noticed via the front panel display messages; use the following steps to resolve common problems:

a. Out of Paper. The **Display Panel** will indicate **CHECK TRAY 1** when the cassette paper tray is out of paper or **CHECK MP TRAY** when there is not any ID cardstock in the multi-purpose paper tray. Once the paper or ID cardstock are in place, the respective message should go away, the **00 READY 001P T1** message should be displayed, and the print job should proceed as normal.

b. Toner Low or Out. If the DD Forms 1172/1172-2 and teslin ID cards seem to be getting lighter, it means that the toner cartridge is running out of toner. The **16 TONER EMPTY** message will be indicated on the **Display Panel**. When this occurs, initially, you can get the last of the toner out of the cartridge by removing it from the printer and gently rocking it front-to-back and shaking it from left-to-right a few times without tipping it on its sides. This action will disperse the remaining toner in the cartridge to maximize the use of the remaining toner before replacing the cartridge. However, if the print quality is no longer acceptable after doing this, then the toner cartridge should be replaced. See Subsection 4.3.4, below, for details on how to replace the toner cartridge.

c. Printer Not Responding. If the printer does not print your job, the **Display Panel** indicates any one of a number of **ERROR** messages, or the RAPIDS application displays a message that the printer is not responding, then perform the following steps.

1. Ensure that the **Display Panel** does not indicate the **OFFLINE** message. If so, then press the **SEL** button and the **00 READY 001P T1** message should be displayed and the **READY** and **ONLINE** indicators should be illuminated green.
2. If this is not the problem, then check that the data cable is securely connected at the back of the printer and to the LPT1 port on the back of the Workstation or Server CPU.
3. If the printer's **Display Panel** is blank and none of the indicators are illuminated:
 - (a) Check that the power cord is all the way in at the surge suppressor and the back of the printer,
 - (b) Check that the printer's **Power** switch is in the **On** position, and
 - (c) Check that the surge suppressor is turned **On** (**Power** indicator should be illuminated and **Power** button should be in the **On** position).

4. If the **ALARM** indicator is illuminated red and an **ERROR** message is indicated on the **Display Panel**, use the “Troubleshooting” Section of the Brother Laser Printer HL-960/1260 Series User’s Guide to attempt to resolve the problem.
5. If you cannot resolve the problem then contact the DRAC, DRSC-E, or DSO-A, as applicable for further assistance.

d. Paper Jam. The front panel display will read “**JAM**,” which means there is a paper jam in the printer. Consult the Brother Laser Printer HL-960/1260 Series User’s Guide for assistance with clearing paper jams and print quality problems. For additional assistance, RAPIDS users should contact the DRAC, DRSC-E, DSO-A, as applicable.

NOTE:

If a teslin cardstock feeding error occurs, remove the cardstock from the multi-purpose paper tray (note the cardstock lot number). Open and close the printer lid or reset the printer. Load another piece of cardstock (preferably from a different lot number) to print the ID card. If you continue to have problems, call the DRAC, DRSC-E, or DSO-A, as appropriate.

e. Print Quality Problems. Consult the Brother Laser Printer HL-960/1260 Series User’s Guide if print quality problems occur. For additional assistance, RAPIDS users should contact the DRAC, DRSC-E, or DSO-A, as applicable.

4.3.4 Changing the Brother HL-960/1260 Toner Cartridge

The part number for toner cartridge for the Brother HL-960 and HL-1260 laser printers is 92298A.

NOTE:

It is recommended that new replacement toner cartridges be used, because refurbished toner cartridges sometimes leak and get toner all over the inside of the printer and may not produce readable bar codes.

The following steps should be followed to replace the toner cartridge in the Brother HL-960/1260 laser printer:

- a. Turn **Off** the printer by pressing the **Power** switch to the **Off** position and unplug the power cord, before changing the toner cartridge and cleaning the printer. The **Power** switch is located on the lower-right side on the front of the printer.
- b. Open the top cover of the printer by pulling up on it. Remove the used toner cartridge by pulling it toward the front of the printer and up, simultaneously.

WARNING:

DO NOT touch the black sponge-rubber transfer roller or any areas marked as HOT inside of the printer!

- c. At this time, use a dry lint free cloth to wipe any residue from the paper path area and the toner cartridge cavity. Remove the small lilac brush provided with the printer (located on the upper left side of the cavity with the printer top open) and clean the internal mirror. Slide the bristles of the brush under the edge, facing up and slide the brush from left to right along the top-back edge of the toner cartridge cavity. For

illustrations on how to clean the printer refer to the Brother Laser Printer HL-960/1260 Series User's Guide.

- d. Next, remove the new toner cartridge from its bag and rock the new toner cartridge from front-to-back and left-to-right to distribute the toner evenly inside the cartridge. Do not tip the toner cartridge on its side, because it will cause toner to leak out of the cartridge.

CAUTION!

To prevent damage, DO NOT expose the toner cartridge to light for more than a few minutes.

- e. Locate the clear plastic sealing tape on the right end of the cartridge. Grasp the end of the tape and firmly pull the entire length of the tape out of the cartridge and discard. It may seem difficult to pull, however, it must be removed completely for the toner to be released during printing. Avoid touching any black toner on the tape.

NOTE:

If toner gets on your clothing, wipe it off with a dry cloth and wash clothing in cold water.

- f. Insert the toner cartridge into the printer lining up the arrow on the cartridge with the arrow on the printer, ensuring that it is seated properly. Follow the diagram on the toner cartridge instruction sheet that comes with the toner cartridge, or consult the Brother Laser Printer HL-960/1260 Series User's Guide.
- g. Finish by closing the top cover of the printer and turning the printer **On** by pressing the **Power** switch to the **On** position.

CAUTION!

If the printer's top cover doesn't shut, then the cartridge is not properly installed. DO NOT try to force it closed. Pull out the toner cartridge and reseal it properly until the cover closes easily without being forced.

4.3.5 Brother HL-960/1260 Maintenance

The only maintenance to be performed on the Brother HL-960/1260 laser printer involves cleaning the printer. To clean the outside of the printer, use a lightly water-dampened cloth as needed. To maintain print quality, follow the cleaning procedure described in step c. of Subsection 4.3.4, above, every time the toner cartridge is changed or whenever print quality problems occur. As much as possible, keep the printer free from dust and debris. Should any liquid be spilled on or near the printer, be sure to immediately power **Off** and unplug the printer until the spill has been cleaned up and the printer is completely dry.

4.4 HP LaserJet 4/4 Plus Printer

The HP LaserJet 4/4 Plus printer with 4 MB RAM, shown in Figure 4-13, on the next page, is used at normal RAPIDS sites. The HP LaserJet 4 Plus printer with the addition of the optional duplex assembly (HP C3157A not shown) is used at High-Volume RAPIDS sites. The components of the HP LaserJet 4/4 Plus printer are discussed in the subsections below.

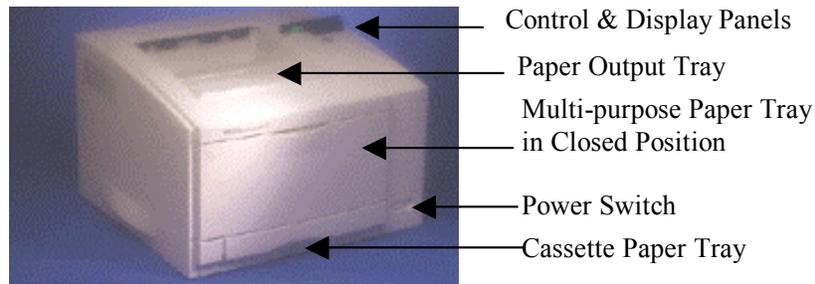


Figure 4-13: HP LaserJet 4/4 Plus Printer

4.4.1 HP LaserJet 4/4 Plus Description

- a. Cassette Paper Tray. The cassette paper tray is the primary source for paper used to print the DD Forms 1172 and 1172-2, CAC brochures, and audit trail reports; it is located at the bottom of the printer (see Figure 4-13, above). It can hold up to 250 sheets of letter-size paper. This printer cannot accommodate tractor feed paper. To add paper, place your hand underneath the cassette tray and gently pull it straight out of the front of the printer. Place the paper in the cassette tray and press on the four corners of the paper stack to ensure that the paper rests flat in the cassette and fits under the metal holders at the corners of the tray. Slide the cassette tray back into the printer. Figure 4-14, below, is an illustration of the cassette paper tray.

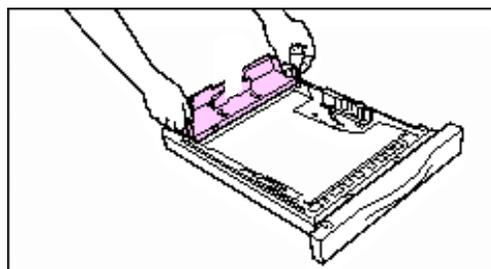


Figure 4-14: HP LaserJet 4/4 Plus Cassette Paper Tray

CAUTION!

Never remove the cassette paper tray while the printer is printing; it may cause a paper jam.

- b. Multi-purpose Paper Tray. The multi-purpose paper tray is used for feeding teslin ID cardstock through the printer, and is located above the cassette paper tray (see Figure 4-13, above). To properly feed and accommodate the teslin ID cardstock, the multi-purpose paper tray must be opened and the paper guides set for the width of the teslin ID cardstock. Figure 4-15, on the next page, is an illustration of the multi-purpose paper tray in the open position. To open the multi-purpose paper tray, gently push in on the top center of the tray on the front of the printer and it will drop down. The following steps should be performed after opening the multi-purpose

paper tray ,to initially set the paper guides (see Figure 4-15, below) to the width of the teslin ID cardstock:

1. Slide the right paper guide all the way to the right.
2. Pull out the plastic tray extender by grasping the center finger tab.
3. A sheet of teslin ID cardstock should be inserted (short-edge in and print-side up) flush against the left paper guide.
4. Slide the right paper guide to the left, until it lightly touches the teslin ID cardstock without bending it. Make sure that the ID cardstock fits underneath the tab on the right paper guide.

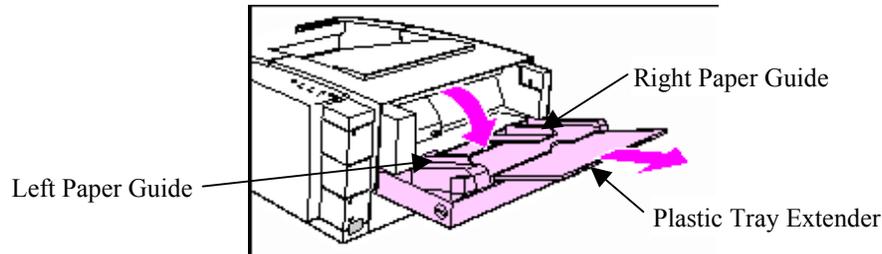


Figure 4-15: HP LaserJet 4/4 Plus Multi-purpose Paper Tray in Open Position

c. Toner Cartridge. The toner cartridge supplies the ink for the printer and is located under the top cover of the laser printer. It is the site's responsibility to procure new toner cartridges as required. There are three options for toner cartridges for the HP LaserJet 4/4 Plus: part number C3973A (4,000 pages), 92298A (6,000 pages), and 92298X (8,000 pages). To change the toner cartridge, follow the directions in Subsection 4.4.4, below.

d. Control Panel and Display. The control panel and display are located at the right-rear corner on the top of the printer. The **Job Cancel**, **Go**, **Menu**, **Item**, **-Value+**, and **Select** buttons and the 16-character **Display Panel** are important to the operation of the HP LaserJet 4/4 Plus printer. Figure 4-16, below, is an illustration of these buttons and the **Display Panel**.

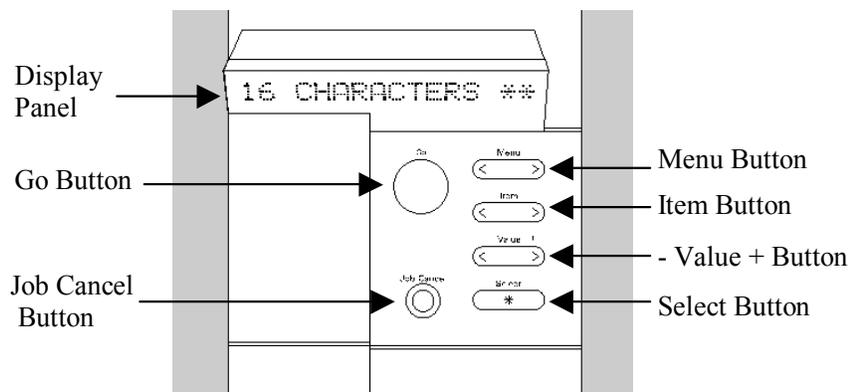


Figure 4-16: HP LaserJet 4/4 Plus Control Panel and Display

The table below lists all the indicators and buttons on the HP LaserJet 4/4 Plus printer, as shown in Figure 4-16, above.

Table 4-3. Location of Indicators and Buttons on HP LaserJet 4/4 Plus Control Panel

Buttons and Display Panel Messages	Location
Job Cancel Button	right-rear on top of printer
Go Button	right-rear on top of printer
Menu Button	right-rear on top of printer
Item Button	right-rear on top of printer
-Value+ Button	right-rear on top of printer
Select Button	right-rear on top of printer
Various Text Messages	Display Panel of printer
Power On/Off Switch (not shown)	bottom-right on front of printer

The **Job Cancel** button should be used if needed to cancel a job that the printer is currently printing. The **Go** button can be used to resume printing when the printer is paused or un-printed data is still in the printer's memory buffer, to print a demo page when in the ready state (**00 READY** indicated in the **Display Panel**), and to clear some printer errors. The **Menu**, **Item**, **-Value+**, and **Select** buttons are not used with RAPIDS. Refer to the HP LaserJet 4/4 Plus Printer User's Manual for more details on printer status depicted by the various messages indicated on the **Display Panel**.

e. Cables. The cables for the printer are located at the back of the printer on the left side. The power cord attaches to the printer at the bottom, left side on the back of the printer. The other end of the power cord should be plugged into the surge suppressor that came with the Workstation or Server that the printer is connected to. The data connectors are on the left side of the back of the printer. The data cable should be connected to the large **Parallel** port connector (in the middle) on the back of the printer and for Workstations, to the **Parallel** port on the USB port device or for Servers, to the **LPT1** port on the back of the Server CPU.

f. Optional Duplex Assembly. The optional duplex assembly is only available for the HP LaserJet 4 Plus printer and it allows both sides of the teslin ID card to be printed on the teslin ID cardstock without manually turning over and reloading the teslin ID cardstock into the multi-purpose tray. The optional duplex assembly is connected to the HP LaserJet 4 Plus printer directly beneath the cassette paper tray. Once the front side of the teslin ID card has been printed, the duplex assembly automatically reroutes the teslin ID cardstock back through the printer so that the back side of the ID card can be printed. The duplex assembly is only available on printers at RAPIDS High-Volume sites.

For a more detailed explanation of the printer's features, consult the HP LaserJet 4/4 Plus Printer User's Manual.

4.4.2 How to Use the HP LaserJet 4/4 Plus and Duplex Assembly

a. Powering On the HP LaserJet 4/4 Plus. The printer will be plugged into the surge suppressor of the RAPIDS Workstation or Server that it is connected to and will be turned **On** and **Off** at the surge suppressor. When the surge suppressor is **On**, the printer should be **On**.

The **Power** switch is located on the bottom-right side on the front of the printer and should be kept in the **On** position, unless you need to power off just the printer, such as, when changing the toner cartridge. To turn **On** the printer press the **Power** switch to the **On** position. To turn **Off** the printer press the **Power** switch to the **Off** position. Upon power **On**, the printer will initially perform a warm-up and a self test, as noted by the **02 WARMING UP** and then **05 SELF TEST** messages indicated on the **Display Panel**. The printer is ready to print an ID card or DD Form 1172 when the **00 READY** message is displayed.

b. Printing a DD Form 1172/1172-2. The tractor-fed, preprinted DD Form 1172 is **NOT** to be used with the HP LaserJet 4/4 Plus printer. The HP LaserJet 4/4 Plus will automatically print a DD Form 1172 (blank or populated by DEERS data) or blank DD Form 1172-2, from the RAPIDS application software. Use the following procedures to print a pre-filled DD Form 1172:

1. Ensure that plain white paper is loaded in the cassette paper tray. The **TRAY EMPTY** message should not be indicated on the **Display Panel**.
2. Ensure that the printer's **Display Panel** indicates the **00 READY** message.
3. Use the "**Create DD Form 1172 Navigator**" of the RAPIDS application software to create the DD Form 1172. Refer to the RAPIDS Training Guide for details.
4. From the "**Preview DD Form 1172**" screen, click on "**Print**" to send the form to the printer.
5. The message **PRINTING** will be indicated on the **Display Panel** while the printer is processing the print job.

Use the following procedures to print a blank DD Form 1172 or DD Form 1172-2:

1. Ensure that plain white paper is loaded in the cassette paper tray. The **TRAY EMPTY** message should not be indicated on the **Display Panel**.
2. Ensure that the printer's **Display Panel** indicates the **00 READY** message.
3. Use the "**File|Print|Blank DD Form 1172**" or "**File|Print|Blank DD Form 1172-2 (CAC)**" menu selection from the RAPIDS application software to print the blank DD Form 1172 or 1172-2, respectively. Refer to the RAPIDS Training Guide for details.
4. The message **PRINTING** will be indicated on the **Display Panel** while the printer is processing the print job.

c. Printing a Teslin ID Card without the Duplex Assembly. The HP LaserJet 4/4 Plus will automatically print a teslin ID card populated by DEERS data as part of the RAPIDS application software. Use the following procedures to print a teslin ID card without the duplex assembly:

1. Load a sheet of teslin ID cardstock (of the correct color/form number for the type of ID card to be printed) into the multi-purpose paper tray with the colored side up and the edge of the cardstock with the arrow labeled "top" pointing into the printer. The teslin ID cardstock should be inserted between the two paper guides, that have been adjusted for the ID cardstock (see Subsection 4.4.1.b, above for paper guide adjustment procedures). Make sure that the teslin ID cardstock fits underneath the tab on the right paper guide. The **CANNOT PRINT FROM TRAY 1** message should not be indicated on the **Display Panel**.
2. Ensure that the printer's **Display Panel** indicates the **00 READY** message.

3. Use the “**Create Card Navigator**” of the RAPIDS application software to create the teslin ID card. See the RAPIDS Training Guide for details.
4. From the “**Create Card Summary**” screen, click on “**Print**” to send the ID card to the printer.
5. The message **PRINTING** will be indicated on the **Display Panel** while the printer is processing the print job.
6. After the front side of the teslin ID card is printed, the cardstock will come out of the top output paper tray of the printer. You must flip the teslin ID cardstock over (colored-side down) and reload it into the multi-purpose tray to print the back side of the teslin ID card.

NOTE:

Do not leave the printer unattended between printing the front and the back sides of the teslin ID card, because the back of the ID card will end up being printed on plain paper from the cassette paper tray if the teslin ID cardstock is not reloaded into the multi-purpose tray within one minute from the front side being printed.

d. Printing a Teslin ID Card with the Duplex Assembly. The HP LaserJet 4 Plus will automatically print a teslin ID card populated by DEERS data as part of the RAPIDS application software. With the duplex assembly attached, the HP LaserJet 4 Plus will print both sides of the teslin ID card before the completed card comes out into the top output paper tray. Use the following procedures to print a teslin ID card with the duplex assembly:

1. Load a sheet of teslin ID cardstock (of the correct color/form number for the type of ID card to be printed) into the multi-purpose paper tray with the colored side up and the edge of the cardstock with the arrow labeled “top” pointing into the printer. The teslin ID cardstock should be inserted between the two paper guides, that have been adjusted for the teslin ID cardstock (see Subsection 4.4.1.b, above for paper guide adjustment procedures). Make sure that the teslin ID cardstock fits underneath the tab on the right paper guide. If multiple cards of the same type/color are being printed, load a stack (no more than 75 and 90 pieces) of teslin ID cardstock (of the correct color/form number for the type of ID cards to be printed) into the multi-purpose paper tray. The stack of teslin cardstock should be into the multi-purpose paper tray with the colored side up and the edge of the cardstock with the arrow labeled “top” pointing into the printer. The **CANNOT PRINT FROM TRAY 1** message should not be indicated on the **Display Panel**.
2. Ensure that the printer’s **Display Panel** indicates the **00 READY** message.
3. Use the “**Create Card Navigator**” of the RAPIDS application software to create the ID card. See the RAPIDS Training Guide for details.
4. From the “**Create Card Summary**” screen, click on “**Print**” to send the ID card to the printer.
5. The message **PRINTING** will be indicated on the **Display Panel** while the printer is processing the print job.

e. Printing a CAC Brochure. A CAC brochure must be provided to each CAC recipient, outlining their responsibilities for safeguarding and using their CAC. To print a CAC brochure:

1. Ensure that plain white paper is loaded in the cassette paper tray. The **TRAY EMPTY** message should not be indicated on the **Display Panel**.

2. Ensure that the printer's **Display Panel** indicates the **00 READY** message.
3. Use the "**Tools|Configuration**" menu selection from the RAPIDS application software and select the CAC tab. Next, select the check box "**Print CAC Brochure**" and click "**OK**". See the RAPIDS Training Guide for details.
4. The message **PRINTING** will be indicated on the **Display Panel** while the printer is processing the print job.

f. Printing a Self Test Page. For troubleshooting purposes it may sometimes be useful to print a Self Test Page from the HP 4 Plus LaserJet printer. To print a Self Test Page, press the **Menu** button until the message **TEST MENU** appears in the display. Next, press the **Item** button until the message **PRINT SELF TEST** is displayed. Finally, press the **Select** button and the HP LaserJet 4 Plus will print out a test page.

4.4.3 Troubleshooting HP LaserJet 4/4 Plus Problems

The following problems may be noticed via the front panel display messages; use the following steps to resolve common problems:

a. Out of Paper. The **Display Panel** will indicate **TRAY EMPTY** when the cassette paper tray is out of paper or **CANNOT PRINT FROM TRAY 1** when there is not any ID cardstock in the multi-purpose paper tray. Once the paper or ID cardstock are in place, the respective message should go away, the **00 READY** message should be displayed, and the print job should proceed as normal.

b. Toner Low or Out. If the DD Forms 1172 and ID cards seem to be getting lighter, it means that the toner cartridge is running out of toner. The **TONER LOW** message will be indicated on the **Display Panel**. When this occurs, initially, you can get the last of the toner out of the cartridge by removing it from the printer and gently rocking it front-to-back and shaking it from left-to-right a few times without tipping it on its sides. This action will disperse the remaining toner in the cartridge to maximize use of the remaining toner before replacing the cartridge. However, if the print quality is no longer acceptable after doing this, then the toner cartridge should be replaced. See Subsection 4.4.4, below, for details on how to replace the toner cartridge.

c. Printer Not Responding. If the printer does not print your job, the **Display Panel** indicates any one of a number of **ERROR** messages, or the RAPIDS application displays a message that the printer is not responding, then perform the following steps.

1. Ensure that the **Display Panel** does not indicate the **OFFLINE** message. If so, then press the **Go** button and the **00 READY** message should be displayed.
2. If this is not the problem, then check that the data cable is securely connected at the back of the printer and to the LPT1 port on the back of the Workstation or Server CPU.
3. If the printer's **Display Panel** is blank:
 - (a) Check that the power cord is all the way in at the surge suppressor and the back of the printer,
 - (b) Check that the printer's **Power** switch is in the **On** position, and

- (c) Check that the surge suppressor is turned **On** (**Power** indicator should be illuminated and **Power** button should be in the **On** position).
 - 4. If an **ERROR** message is indicated on the **Display Panel**, use the “Solving Printer Problems” Section of the HP LaserJet 5 Printer User’s Manual to attempt to resolve the problem.
 - 5. If you cannot resolve the problem then contact the DRAC, DRSC-E, or DSO-A, as applicable for further assistance.
- d. Paper Jam. The front panel display will read **JAM**, which means that you have a paper jam in the printer. Please consult the HP LaserJet 4/4 Plus Printer User’s Manual for assistance with clearing paper jams. For additional assistance, RAPIDS users should contact the DRAC, DRSC-E, DSO-A, as applicable.

NOTE:

If a teslin cardstock feeding error occurs, remove the cardstock from the multi-purpose paper tray (note the cardstock lot number). Open and close the printer lid or reset the printer. Load another piece of cardstock (preferably from a different lot number) to print the ID card. If you continue to have problems, call the DRAC, DRSC-E, or DSO-A, as appropriate.

- e. Print Quality Problems. Consult the HP LaserJet 4/4 Plus Printer User’s Manual if print quality problems occur. For additional assistance, RAPIDS users should contact the DRAC, DRSC-E, or DSO-A, as applicable.

4.4.4 Changing the HP LaserJet 4/4 Plus Toner Cartridge

There are three options for toner cartridges for the HP LaserJet 4/4 Plus: part number C3973A (4,000 pages), 92298A (6,000 pages), and 92298X (8,000 pages).

NOTE:

It is recommended that new replacement toner cartridges be used, because refurbished toner cartridges sometimes leak and get toner all over the inside of the printer and may not produce readable bar codes.

The following steps should be followed to replace the toner cartridge in the HP LaserJet 4/4 Plus printer:

- a. Turn **Off** the printer by pressing the **Power** switch to the **Off** position and unplug the power cord, before changing the toner cartridge and cleaning the printer. The **Power** switch is located on the lower-right side on the front of the printer.
- b. Open the top cover of the printer by pulling up on it. Remove the used toner cartridge by pulling it toward the front of the printer and up, simultaneously.

WARNING:

DO NOT touch the black sponge-rubber transfer roller or any areas marked as HOT inside the printer!

- c. At this time, use a dry lint free cloth to wipe any residue from the paper path area and the toner cartridge cavity. Remove the small green brush provided with the printer (located on the upper left side of the cavity with the printer top open) and clean the

internal mirror. Slide the bristles of the brush under the edge, facing up and slide the brush from left to right along the top-back edge of the toner cartridge cavity. For illustrations on how to clean the printer refer to the HP LaserJet 4/4 Plus Printer User's Manual.

- d. Next, remove the new toner cartridge from its bag and rock the new toner cartridge from front-to-back and left-to-right to distribute the toner evenly inside the cartridge. Do not tip the toner cartridge on its side, because it will cause toner to leak out of the cartridge.

CAUTION!

To prevent damage, DO NOT expose the toner cartridge to light for more than a few minutes.

- e. Locate the clear plastic sealing tape on the right end of the cartridge. Grasp the end of the tape and firmly pull the entire length of the tape out of the cartridge and discard. It may seem difficult to pull, however, it must be removed completely for the toner to be released during printing. Avoid touching any black toner on the tape.

NOTE:

If toner gets on your clothing, wipe it off with a dry cloth and wash clothing in cold water.

- f. Insert the toner cartridge into the printer lining up the arrow on the cartridge with the arrow on the printer, ensuring that it is seated properly. Follow the diagram on the toner cartridge instruction sheet that comes with the toner cartridge, or consult the HP LaserJet 4/4 Plus Printer User's Manual.
- g. Finish by closing the top cover of the printer and turning the printer **On** by pressing the **Power** switch to the **On** position.

CAUTION!

If the printer's top cover doesn't shut, then the cartridge is not properly installed. DO NOT try to force it closed. Pull out the toner cartridge and reseal it properly until the cover closes easily without being forced.

4.4.5 HP LaserJet 4/4 Plus Maintenance

The only maintenance to be performed on the HP 4/4 Plus LaserJet printer involves cleaning the printer. To clean the outside of the printer, use a lightly water-dampened cloth as needed. To maintain print quality, follow the cleaning procedure described in step c. of Subsection 4.4.4, above, every time the toner cartridge is changed or whenever print quality problems occur. As much as possible, keep the printer free from dust and debris. Should any liquid be spilled on or near the printer, be sure to immediately power **Off** and unplug the printer until the spill has been cleaned up and the printer is completely dry.

SECTION 5: LAMINATORS

5.1 Laminator Description

There are two models of laminators that are part of the RAPIDS hardware configuration, the Identocard Systems, Inc., Pak laminator and the National Laminating, Inc. Model 5000T laminator. Both laminators are the same, except for their brand name. These laminators provide the heat source to affix the hologram laminate to the Uniformed Services teslin ID cards after they have been printed by the laser printer and signed.

CAUTION!

The hologram laminate and laminator should only be used with the teslin ID cards. DO NOT use the hologram laminate or the laminator with the CAC.

5.2 How to Use the Laminator

Figure 5-1, below, shows an illustration of the laminator depicting the important features used for laminating a teslin ID card.

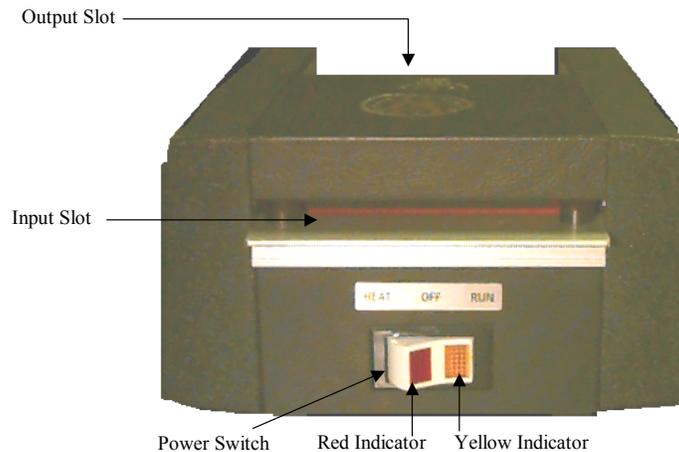


Figure 5-1: Laminator Front and Top View

5.2.1 Powering On the Laminator

Before powering **On** the laminator, you should make sure that the laminator power cord is plugged into the RAPIDS Workstation's surge suppressor. The laminator's **Power** switch is a 3-position rocker switch located directly on the front of the unit. The left position is **HEAT** used for bringing the laminator up to proper operating temperature, the center position is **OFF**, and

the right position is **RUN** used for feeding ID cards through the laminator. To initially bring the laminator up to proper temperature, push the **Power** switch to the **HEAT** position and the **Red** indicator will be illuminated, which indicates that the power is **On** and the laminator is heating up.

WARNING!

Removal of the ground prong on the power plug may cause electrical shock, and will void the warranty!

5.2.2 Laminating Teslin ID Cards

Check the temperature gauge on the right side of the laminator to ensure that it has reached a temperature in the green range on the gauge (between 260° and 280° Fahrenheit). See Subsection 5.3.1, below, for instructions on how to adjust the temperature if it is not within the green range on the gauge. It will take from two to three minutes for the unit to reach the proper laminating temperature, before it can be used to laminate teslin ID cards. When the laminator has reached the proper laminating temperature you can begin to laminate teslin ID cards.

To laminate a teslin ID card, push the **Power** switch to the **RUN** position to start the laminator's feeding motor. The **Yellow** indicator will now be illuminated. Punch the teslin ID card out of the sheet of teslin cardstock and have it signed by the card recipient. Enclose the printed/signed teslin ID card in a laminate pouch by pushing up against the sealed edge. Feed the laminate pouch into the input slot on the front of the laminator (see Figure 5-1, above), in a flat lying position with its narrowest side entering into the laminator. The laminated teslin ID card will emerge from the output slot at the back of the laminator. The next teslin ID card to be laminated can usually be inserted into the input slot as soon as the first teslin ID card has cleared the input slot of the laminator.

WARNING!

DO NOT attempt to laminate CACs in the laminator! The laminator should only be used with the teslin ID card printed by the laser printer and hologram laminate pouches.

NOTE:

When not being used for extended periods, the laminator should be placed in the heat only mode by pushing the Power switch to the HEAT position to minimize wear on the card feeding motor.

5.2.3 Powering Off the Laminator

Prior to shutting down the RAPIDS Workstation system via the surge suppressor, you will want to place the laminator's **Power** switch into the **OFF** position, so that the feeding motor is not running and it is not in the heating mode. Then use the **Power** switch on the surge suppressor to turn **Off** the laminator with the rest of the Workstation system.

5.3 Troubleshooting Laminator Problems

5.3.1 Thermostat Adjustments

The ideal temperature for teslin ID card lamination is between 260° and 280° Fahrenheit. The laminator's thermostat is located on the right side of the unit, which displays the current operating temperature. Although the temperature should be properly adjusted by the manufacturer, if the laminate is not sealing to the teslin ID card properly, the heat may be either too low or too high and may need to be adjusted to maintain the ideal range.

a. Laminate Bubbles after Lamination. If the laminate bubbles after lamination, the laminator is too hot. Reduce the heat by turning the heat adjusting screw located on the top cover of the unit, 1/8 of a turn counter-clockwise. Wait a few minutes and note the decrease on the thermometer on the right side of the laminator. Fine tune the temperature in smaller increments as needed until the temperature is in the ideal range (indicated in green on the thermostat).

b. Laminate Is Not Sealing Completely to the ID Card. If the laminate is not sealing completely to the teslin ID card, the laminator thermostat is set too low. First confirm that the proper heat-up time was allowed and check the reading on the thermostat. If the temperature is too low, increase the heat by turning the heat adjusting screw located on the top cover of the unit, 1/8 of a turn clockwise. Wait a few minutes and note the increase on the thermometer located on the right side of the laminator. Fine tune the temperature in smaller increments as needed until the temperature is in the ideal range (indicated in green on the thermostat).

If you continue to have trouble adjusting the temperature or laminating teslin ID cards, please call the DRAC, DRSC-E, or DSO-A, as appropriate, for assistance.

5.3.2 Laminator Not Mechanically Working

If the laminator is not mechanically working, first check to make sure that the laminator is plugged into the Workstation's surge suppressor, the surge suppressor is in the **On** position, and that the laminator's rocker **Power** switch is not in the **Off** position. If you are laminating, make sure that the **Power** switch is in the **RUN** position. If none of the above are true for the problem, then it may be a blown fuse. Power **Off** the laminator by pushing the **Power** switch to the **Off** position and unplugging the power cord from the surge suppressor. Give the laminator some time to cool down and be careful handling it. To check the fuse, which is located on the bottom of the laminator, turn the laminator over and unscrew the fuse. If the fuse is blown (the wire inside is broken), replace it with a new equivalent 3 amp fuse for the Identocard Systems Pak model 4c and National Laminating 5000T laminators or an equivalent 5 amp fuse for the Identocard Systems Pak model 9 laminator.

5.3.3 Jammed Teslin ID Card

When a teslin ID card becomes jammed in the laminator feeder, try to feed another teslin ID card inside a laminate pouch or just an empty laminate pouch into the input slot, immediately, to

dislodge the jammed card. This should push the jammed card out and both cards should exit the laminator's output slot at the end of the cycle. If this does not work, turn the laminator's **Power** switch to the **Off** position and unplug the power cord from the surge suppressor. Let the laminator cool down for some time.

CAUTION!

The inside of the laminator will be very HOT! Allow it to cool down before opening the back and be careful not to burn yourself while removing a jammed ID card.

Once it is cool, remove the back cover of the laminator, locate the jammed card, and remove it. Replace the cover, plug the laminator back into the surge suppressor, and power it back **On** by pushing the **Power** switch to the **HEAT** position. Once the laminator is heated to the proper temperature, push the **Power** switch to the **RUN** position and begin feeding the next teslin ID card. Should jamming continue to occur, contact the DRAC, DRSC-E, or DSO-A, as appropriate, to report the problem.

5.3.4 Laminator Not Feeding Teslin ID Cards

If the laminator will not feed a teslin ID card, make sure that the laminator's **Power** switch is in the **RUN** position for the feeder motor to be on. If the motor is running, then make sure that a teslin ID card is not jammed inside the laminator by following the process addressed in Subsection 5.3.3, above. If the problem cannot be resolved then contact the DRAC, DRSC-E, or DSO-A, as appropriate, to report the problem.

SECTION 6: MODEMS

6.1 Modem Description

The optional modems used with RAPIDS dial-up Workstations are US Robotics 33.6 kilobits per second (Kbps) or 56 Kbps dial-up line modems. Modem communications between remote RAPIDS Workstations and their Server is made via a dial-up telephone line.

When the connection is over a dial-up line, one modem (at the RAPIDS Workstation) must dial the second modem (at the RAPIDS Server) to establish the communication link. Dial-up modems and their operation are discussed in Subsection 6.2, below.

6.2 Dial-Up Modem

The dial-up modem used with RAPIDS is a US Robotics modem in one of two models: the Courier V.34, which runs at speeds up to 33.6 Kbps with the 33.6 Kbps software upgrade or the Courier V. Everything, that runs at speeds up to 56 Kbps with the V.90 upgrade. Figure 6-1, below, illustrates the US Robotics modems from the front and back.

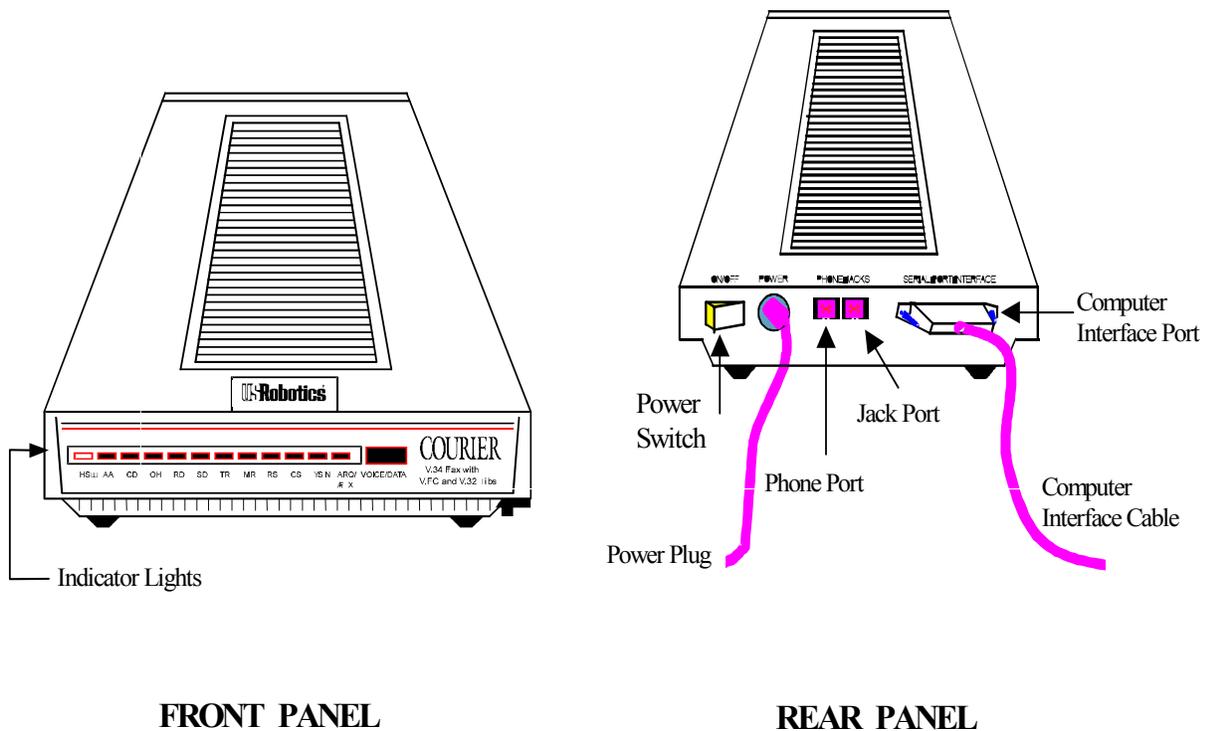


Figure 6-1: US Robotics Dial-up Modem

The table below includes the definitions of the indicators shown on the US Robotics modem in Figure 6-1, above.

Table 6-1. US Robotics Modem Indicator Light Definitions and Status

MODEM INDICATOR LIGHTS	
Definition	Status
HS = High Speed	On for all calls above 2400 bits per second (bps).
AA = Auto Answer	On when the modem is in auto answer mode.
CD = Carrier Detect	On when communicating.
OH = Off Hook	On when the modem takes control to establish a link.
RD = Received Data	Flashes when data is received.
SD = Send Data	Flashes when data is sent.
TR = Terminal Ready	On when the associated modem is ready to exchange data.
MR = Modem Ready	On when the modem is powered on.
RS = Request to Send	On or off depending upon how the modem is setup.
CS = Clear to Send	On or off depending upon how the modem is setup.
SYN = Synchronous	On or off depending upon how the modem is setup.
ARQ/FAX = Error Control/Fax	On, off, or flashing depending on how the modem is setup.

6.2.1 Dial-up Modem Dip Switches and Cables

The US Robotics modem, used for dial-up (2-wire) connections between RAPIDS Servers and Workstations, comes with two cables: a serial data cable and a telephone cable. In addition, when a surge suppressor (110 V sites) or data protection device (220 V sites) are used to protect the telephone line prior to connecting to the modem, a second telephone cable will be used, which comes with the surge suppressor (110 V sites) or data protection device (220 V sites). Because there is only one data protection port on the surge suppressor (110 V sites) or data protection device (220 V sites) at the Server, only one modem line is capable of being protected from spikes/surges. There are 10 dip switches, located on the bottom of the US Robotics modems, numbered left-to-right as 1 through 10. Dip switches 3 and 8 should be in the **On** position (down) and all others should be in the **Off** position (up). The Subsections below discuss these various modem cable connections and the various modem ports are shown in Figure 6-1, above.

6.2.1.1 Serial Data Cable

a. For the Workstation modem end of connections between RAPIDS Servers and Workstations, the serial data cable's DB25 male connector plugs into the **Computer Interface** port on the back of the modem and the DB9 female connector plugs into the **COM3** port of the serial port board on the back of the Workstation CPU.

b. For the Server modem end of connections between RAPIDS Servers and Workstations, the serial data cable's DB25 male connector plugs into the **Computer Interface** port on the back of the modem and the other DB25 male connector plugs into a **Serial** port of the multiport serial adapter box connected to the multiport serial board in the Server CPU.

6.2.1.2 Telephone Cables

a. For modems protected via the surge suppressor (110 V sites) or data protection device (220 V sites) the following connections are made with two telephone cables. The telephone cable provided with the modem has an RJ-11 connector on each end and runs from the RJ-11 **Jack** port on the back of the modem to the RJ-11 **Out** port on the end of the surge suppressor (110 V sites) or data protection device (220 V sites). The telephone cable provided with the surge suppressor (110 V sites) or data protection device (220 V sites) has an RJ-11 connector on each ends and runs from the RJ-11 **Wall Outlet** port to the RJ-11 **In** connector on the end of the surge suppressor (110 V sites) or data protection device (220 V sites).

b. For modems not protected via the surge suppressor (110 V sites) or data protection device (220 V sites) only one telephone cable is used. The telephone cable provided with the modem has an RJ-11 connector on each end and runs from the RJ-11 **Jack** port on the back of the modem to the RJ-11 **Wall Outlet** port.

c. For RAPIDS dial-up Workstations that share the dial-up line with a telephone, another telephone cable will be used, that came with the telephone. This telephone cable has an RJ-11 connector on each end and runs from the RJ-11 **Phone** port on the back of the modem to the RJ-11 **Line** port on the telephone. This will allow for incoming/outgoing calls via the telephone, when the dial-up line is not in use by RAPIDS.

6.2.2 Establishing the Dial-up Communication Link

RAPIDS Workstations with a dial-up modem must establish a dial-up networking link between the Workstation and Server to access records from the DEERS database. The following steps will establish the link:

- a. Ensure that the RAPIDS Workstation and the modem are both powered **On** via the surge suppressor. The **Power** switch for the modem is located in the back and should be left in the **On** position.
- b. The last message will prompt the VO/SVO/SSM to press the **Ctrl+Alt+Delete** keys, simultaneously, to logon. To proceed to logon to the RAPIDS Workstation:
- c. The VO/SVO/SSM should insert his/her CAC into the VO Logon smart card reader/encoder and press the **Ctrl+Alt+Delete** keys, simultaneously.
- d. The VO/SVO/SSM should enter his/her PIN at the "**Logon Information**" dialog box.
- e. Next, select the RAPIDS Server's domain from the pull-down list, if not already selected to establish the connection with your RAPIDS server. As a dial-up site, it may be necessary to also check the "**Logon Using Dial-up Networking**" check box. Then use the mouse to click on the "**OK**" button to connect to your RAPIDS Server. In addition, if you connect to your RAPIDS Server via a central dial-up/terminal

- server you will need to enter your Logon ID and Password provided to you by the system administrator. See the RAPIDS Training Guide, Appendix J for details.
- f. The RAPIDS application should start automatically. If the RAPIDS screen (with the 6.x version number) does not appear, double-click the **RAPIDS** icon to start the application.
 - g. The application will display the RAPIDS logo. The VO/SVO/SSM will then be prompted to verify his/her fingerprint with the one stored on DEERS. It is possible that the user may receive a “**Client Authentication**” dialog box, if so simply verify that the VO/SVO/SSM’s name is displayed and press “**OK**”.
 - h. When the logon procedure is completed, the “**RAPIDS Message of the Day**” is displayed.

If the Workstation disconnected from the Server due to inactivity, then hit any key on the keyboard to get the “**Logon Information**” dialog box and follow the steps above, starting with step d.

6.2.3 Disconnecting the Dial-up Communication Link

If the RAPIDS application is running, exit by selecting “**File**” from the menu bar and “**Exit**” from the drop down list. From the Windows Taskbar click on the “**Start**” button and select “**Shut Down**” from the list. Then select “**Shut down the computer?**” and click on the “**Yes**” button (see Subsection 2.3.2, above, for more details on properly shutting down the RAPIDS Workstation). The communication link with the RAPIDS Server will be disconnected automatically when Windows NT is shut down. Also, if the Windows NT Workstation operating system detects a lengthy period of inactivity, it will disconnect from the RAPIDS Server.

6.2.4 Troubleshooting Dial-up Modem Problems

Once the RAPIDS Workstation and modem are powered on, the following indicator lights on the front panel should be lit red: **AA** or **HS**, **MR**, and **CS**.

When dialing your RAPIDS server to make the initial connection, dialing and communications tones should be heard from the modem (assuming the volume turned up enough) and the following indicator lights on the front panel should be lit red: **HS**, **OH**, **TR**, **MR**, **RS**, and **CS**. The modem’s **Volume Control Switch** is a sliding switch that is located on the bottom side of the modem along the right side towards the front panel. To increase the volume, slide it forward and to decrease the volume, slide it back.

After you are connected to your RAPIDS server, the following indicator lights will blink off and on during data transfers with the server: **RD** and **SD** and the following indicator lights on the front panel should be lit red: **HS**, **CD**, **OH**, **TR**, **MR**, **RS**, **CS**, and **ARQ/FAX**.

In the event you have problems with your dial-up modem or the above indicators are not lit, perform the following steps to try to troubleshoot and fix the problem:

- a. Check the indicators on your modem to make sure at least some of them are lit and/or flashing, which indicates that it is communicating.

- b. If none of the indicators are lit, then check that the modem's **Power** switch is in the **On** position, check that it is plugged into the surge suppressor, and check that the surge suppressor is powered **On** (it's **Power** indicator should be illuminated and the **Power** button should be in the **On** position).
- c. Check to make sure that the serial cable between your modem and Workstation is firmly connected at both ends. Check to make sure that all telephone cables between the wall plate and the modem are firmly connected at both ends. If any cables are loose, perform a system shutdown of the RAPIDS Workstation (see Subsection 2.3.2, above), and power everything **Off** with the surge suppressor's **Power** switch. Reconnect the cables firmly, and power the Workstation system back **On** and logon (see Subsection 2.3.1, above). If there were loose connections, then this should solve your problem.
- d. If this was not the problem, validate that the Server phone number dialed from the dial-up Workstation is the same as the one written on the 1-800-3-RAPIDS sticker located on the front of your RAPIDS Workstation. Also check that a small icon of a telephone with the background blinking off and on in the taskbar at the bottom, right edge of the Windows desktop, which indicates that the connection is established. If this icon is not present, then your connection was terminated. Try to re-establish the connection (see Subsection 6.2.2, above).
- e. If everything is working fine at your site, but you still cannot establish a communication link with your Server, then call the Server site for troubleshooting assistance. The name and phone number of your Server site can be found on the RAPIDS Quick Reference Guide, from the RAPIDS Training Guide Appendix A.
- f. Verify that the Server is operational and that the Server site is able to access records from the DEERS database via their local Workstations. If the Server connection to DEERS is down, then you will need to run in Offline mode until the Server can re-establish its connection with DEERS. If the Server is down, then you will not be able to run the RAPIDS application until the Server is operational again.
- g. If the Server site is operational, have them verify that your modem at the Server end is plugged into the surge suppressor and is powered **On**.
- h. Next, have the Server site check that all the cables connected to your modem at the Server are firmly connected. If yes, then proceed with the next step. Otherwise, the Server site will have to plug in and/or turn **On** your modem at the Server, which should solve your problem.
- i. If none of the above steps helped, then ask the Server site to power **Off** the modem for your Workstation at the Server to reset it. You should turn **Off** the modem via the **Power** switch on the back of the modem to reset it. Wait approximately 10 seconds and then power both modems back **On**. Then perform a shutdown/restart of your Workstation (see Subsection 2.3.2, above), same as shutdown, except at the shutdown window select "**Restart the Computer?**" and click on the "**Yes**" button. Follow the logon instructions in Subsection 6.2.2, above, to re-establish your connection to the Server.

If you still cannot establish a communication link, call the DRAC, DRSC-E, or DSO-A, as appropriate, for additional assistance.

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SECTION 7: FINGERPRINT SCANNER

7.1 Fingerprint Scanner Description

There are several models of the fingerprint scanners used with RAPIDS Workstations: Identicator DFR-90 and Crossmatch Verifier 300. The Crossmatch model is much smaller and more compact than the Identicator DFR-90 fingerprint scanner. All models of fingerprint scanner are capable of capturing fingerprints from fingers and thumbs. The fingerprint scanners do not have any moving parts, which will contribute to their long life. All units are able to capture fingerprint images at 500 dpi with 256 shades of gray.

7.2 Fingerprint Scanner Cables

Included with the fingerprint scanner and framegrabber board it connects to is a custom power/data cable, which combines the data and power cables into a single sleeve. There are two versions of framegrabber boards, the Matrox Meteor PPB and the Matrox Meteor II, each having a different size connector and cable configuration for the fingerprint scanner, as shown in Figure 7-1, below. The fingerprint scanner's data cable is connected to the back of the Workstation CPU via a **DB9 Video** port for the Meteor PPB framegrabber board, as shown in Figure 2-1 (Dell CPU) above. The fingerprint scanner's data cable is connected to the back of the Workstation CPU via a **DB44 Video** port for the Meteor II framegrabber board, as shown in Figure 2-2 (Gateway CPU) above. The other end of this data cable has a **BNC** connector (round twist on) which connects to the **Video Out** port on the back of the fingerprint scanner, as shown in Figures 7-2 and 7-4, on the next page. The power portion of the cable has an **RCA** jack (round) on one end that connects to the **Power** port on the back of the fingerprint scanner and has a power plug with an adapter block on the other end, that plugs into an outlet on the Workstation's surge suppressor (for the Identicator model see Figure 7-1 below and Figure 7-2 on the next page and for the Crossmatch models see Figure 7-3 and 7-4 on the next page).

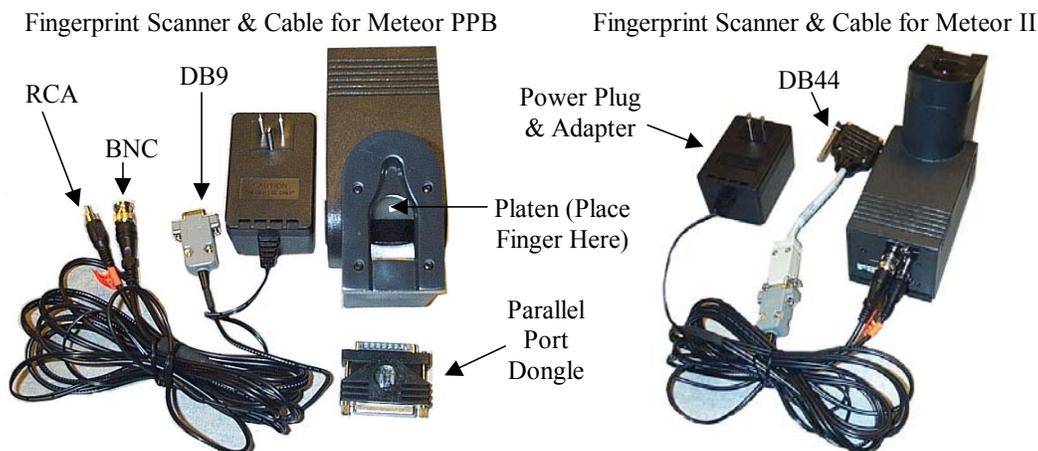


Figure 7-1: DFR-90 Fingerprint Scanner, Dongle, and Cables

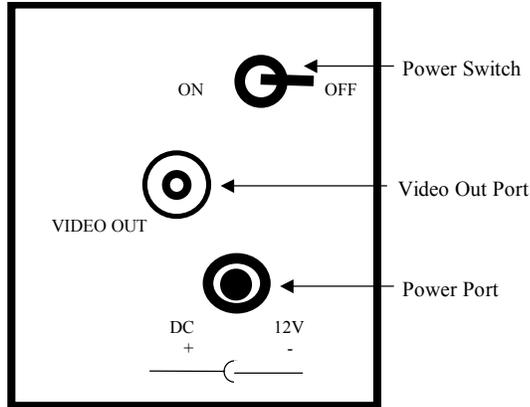


Figure 7-2: DFR-90 Fingerprint Scanner Back View

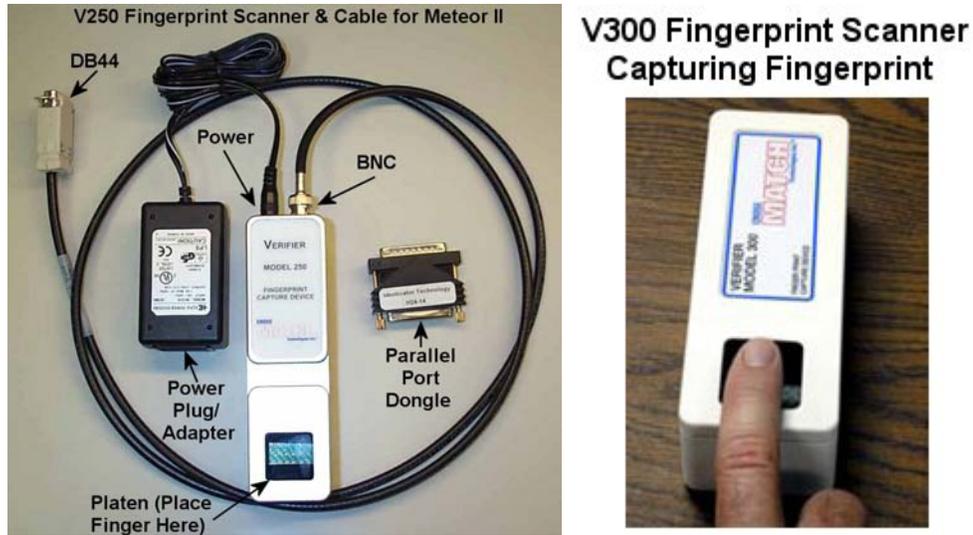


Figure 7-3: Crossmatch Verifier 300 Fingerprint Scanner, Dongle, and Cables

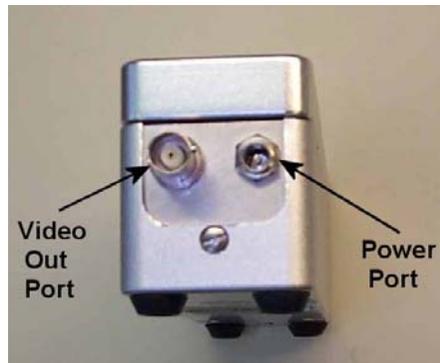


Figure 7-4: Crossmatch Verifier 300 Fingerprint Scanner Back View

Since the fingerprint scanner will be turned **On** and **Off** at the surge suppressor, the **Power** switch should be kept in the **On** position (Identicator model only). In order for the fingerprint scanner software to operate, it must detect the presence of a hardware dongle (see Figures 7-1 and 7-3, on the previous two pages). This dongle is a small (approximately 2" X 2") parallel port pass-through adapter that plugs into the **LPT1** port on the back of the RAPIDS Workstation CPU, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above. The parallel printer cable for the PVC card printer then plugs into the back of this dongle.

7.3 How to Use the Fingerprint Scanner

The fingerprint scanner is used for several RAPIDS operations: (1) VO/SVO/SSM logon to RAPIDS, (2) capturing fingerprint for all sponsors, (3) capturing fingerprint for all eligible individuals in a pay or annuity status, (4) capturing fingerprint for all CAC recipients, and (5) using a CAC holder's fingerprint to unlock their CAC and reset their PIN when forgotten.

7.3.1 Obtaining Good Quality Fingerprints

The instructions shown in Figure 7-5, on the next page, should be used in order to obtain consistently good fingerprint quality. Although this shows the Identicator model, the same principles apply to the two Crossmatch models shown in Figure 7-3, on the previous page.

7.3.2 Capturing a Fingerprint

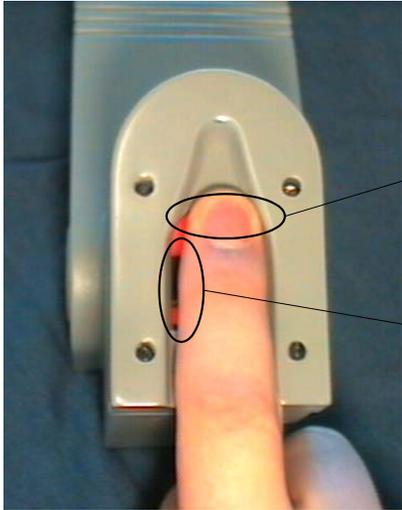
The "**Capture Fingerprint Navigator**" steps you through the process of capturing a fingerprint from all required individuals that do not have a recent fingerprint on file in DEERS. To capture a fingerprint perform the following steps:

- a. Perform an "**Open Sponsor**" and "**Open Characteristics View**," then select the "**Fingerprint**" tab from the "**Characteristics**" view.
- b. Click on the "**Capture...**" button and the "**Capture Fingerprint**" dialog box will be displayed, which will show a live image input from the fingerprint scanner.
- c. The default fingerprint should be captured from the right index finger of the person. This can be altered, as necessary, when capturing the fingerprint by clicking on the designated hand and finger in the **Hand & Finger** window of the "**Capture Fingerprint**" dialog box. Have the recipient put the designated finger on the platen (see Figure 7-3, above) of the fingerprint scanner and you will see that the image is displayed in the "**Capture Fingerprint**" dialog box. Refer to Figure 7-5, on the next page, on how to best capture a quality fingerprint.
- d. Ensure that the core of the fingerprint is displayed in the center and is not skewed. Have the person move their finger around, as necessary, to properly center the image of their finger. Next, click on the "**Capture Fingerprint**" button in the "**Capture Fingerprint**" dialog box to capture the fingerprint. If a good quality fingerprint was captured then the **Captured** indicator in the "**Capture Fingerprint**" dialog box will turn green. If the **Captured** indicator is red, then you will need to recapture the fingerprint by clicking on the "**Capture Fingerprint**" button again. If the **Captured**

indicator is still red, then have the person dab their finger on the PreScan pad to try to enhance the ridges in their fingerprint and try to capture it again. You may also want to try another finger. If after three attempts fail, then the application will display an error dialog box. Just click on the “OK” button to proceed without capturing a fingerprint.

Operator's Edition

Customer's Guide to Good Fingerprints

	<h3>Finger Flat On The Reader</h3> <p>The whole finger or thumb should be touching the DFR-90. The customer should not "arch" his or her finger.</p>
	<h3>Cover The Lighted Area</h3> <p>Most people's fingers should touch the plastic lip at the top of the DFR-90's platen. But some people with very small fingers may not touch the lip. The important thing is to put the core of the fingerprint in the center of the captured image.</p> <p>Many people will not have fingers large enough to block all the light. This doesn't matter. Just concentrate on getting the fingerprint core in the center of the captured image.</p> <p>Note: When people reposition their fingers, make sure they lift the fingers and place them down again. If they just slide their fingers, the print may be distorted.</p>

Identicator Technology San Bruno, California, USA 415-873-8650

Figure 7-5: Procedures to Obtain Good Fingerprints

- e. Verify the fingerprint by having the person remove their finger from the fingerprint scanner's platen and place it back down on the platen. Click on the “**Verify Fingerprint**” button. If a good quality fingerprint was captured then the **Verified** indicator in the “**Capture Fingerprint**” dialog box will turn green. If the **Verified** indicator is red, then you will need to recapture the fingerprint by clicking on the “**Verify Fingerprint**” button again.

For more details on fingerprint capture, please refer to the RAPIDS Training Guide.

7.4 Troubleshooting Fingerprint Scanner Problems

7.4.1 Quality Fingerprint Problems

Most fingerprint quality-related problems are attributable to poor fingerprints. If you are having difficulty in capturing a person's fingerprint have the person dab their finger on the PreScan pad to try to enhance the ridges in their fingerprint, then try to capture it again. You may also want to try a different finger. If after three attempts fail, then the RAPIDS application will display an error dialog box. Just click on the "OK" button to proceed without capturing a fingerprint.

NOTE:

All decisions by a VO/SVO/SSM to override a failed fingerprint match are audited.

The fingerprint scanner's platen will get fingerprints and oils from recipient's skin on it as it is used. This is usually not a problem and does not require you to clean the platen. As long as residue does not show up in the fingerprint display of the "Capture Fingerprint" dialog box, without a finger on the platen, then it is not a problem. However, if residue is being depicted on the fingerprint display of the "Capture Fingerprint" dialog box, without a finger on the platen, then see Subsection 7.5.1, below, for instructions on how to clean the fingerprint scanner's platen.

7.4.2 Fingerprint Scanner Problems

If the fingerprint scanner will not display the fingerprint at all in the "Capture Fingerprint" dialog box, the following steps should be used to attempt to resolve the problem.

- a. Ensure that the **Power** switch on the back of the fingerprint scanner is in the **On** position, that its power cord is securely plugged into the surge suppressor, and that the surge suppressor is powered **On**.
- b. If the surge suppressor is **On** and the fingerprint scanner's power switch is in the **On** position, then check the platen surface for a red glowing light, indicating that the sensors are on.
- c. Check for any loose cables to the fingerprint scanner. To fix a loose cable:
 1. Perform a proper shutdown of the Workstation system and power everything **Off** via the **Power** switch on the surge suppressor.
 2. Make sure the fingerprint scanner's data cable is firmly connected at the fingerprint scanner and the framegrabber board on the back of the Workstation CPU.
 3. Make sure the fingerprint scanner's dongle and the PVC card printer cable are securely plugged into the **LPT1** port on the back of the Workstation CPU.
 4. Make sure that the fingerprint scanner's power cable is securely plugged into the fingerprint scanner and the surge suppressor.
 5. Power the Workstation system back **On** by using the **Power** switch on the surge suppressor and log back on to restart the RAPIDS application.

If the RAPIDS application still doesn't work or produces an error message during fingerprint capture, and the error message persists, write down the complete error message and call the DRAC, DRSC-E, or DSO-A, as appropriate.

7.5 Fingerprint Scanner Maintenance

Because the fingerprint scanner is a fully integrated unit comprised of components that represent the latest in imaging technology, maintenance should be minimal. All that is required for regular maintenance is a periodic cleaning of the platen and replacing the platen if it becomes too scratched or damaged. These procedures are described in the subsections below.

7.5.1 Cleaning the Fingerprint Scanner Platen

The fingerprint scanner platen will get fingerprints on it and oils from people's skin as it is used. As long as it does not show up in the fingerprint display in the **"Capture Fingerprint"** dialog box, when no one's finger is present, then it is OK. However, if residue is being depicted on the fingerprint display in the **"Capture Fingerprint"** dialog box, then you will need to clean the fingerprint scanner platen.

To clean the fingerprint scanner platen, only use the special cleaning cloth that came with the fingerprint scanner or a lint-free cloth to gently wipe off the platen. Be sure you do not put any scratches in the surface of the platen, because this will adversely affect the fingerprint scanner's performance.

7.5.2 Replacing the Fingerprint Scanner Platen

Eventually the fingerprint scanner platen will become so scratched that the fingerprint scanner will consistently fail to take a good quality fingerprint. If this should happen, then you should notify the DRAC, DRSC-E, or DSO-A, as applicable and describe the problem to them. They will likely send a replacement platen for your fingerprint scanner, if you have an Identicator model. The instructions, shown in Figure 7-6, on the next page, detail how to replace the platen on the Identicator DFR-90 fingerprint scanner.

DFR-90 Platen Replacement

Install New Platen



Note: The platen will only install one way. The frosted optical surface should face down and toward the back.

The optical surfaces of the new platen should be checked before installation and, if necessary, wiped with the supplied cloth to remove any dirt or oils.

Position the back edge of the new platen against and under the spring bar. Gently push the platen toward the back.



Lower the front edge of the platen down into its housing. Let the platen slide forward and seat securely. Align the screw holes.

Figure 7-6: Changing the Identicator Fingerprint Scanner Platen

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SECTION 8: UNINTERRUPTIBLE POWER SUPPLIES

8.1 Uninterruptible Power Supply (UPS) Description

There are several models of the American Power Conversion (APC) UPS used with RAPIDS Servers. The following models are used at sites with 110 Volt (V)/60 Hertz (Hz) power: Smart-UPS 600, APC Smart-UPS v/s 650, Smart UPS v/s 620, or Smart UPS 700NET. The following models are used at sites with 220 V/50 Hz power: Smart UPS 600I, Smart UPS v/s 650I, Smart UPS v/s 620I, or Smart UPS 700INET. The UPS is designed to prevent power blackouts, sags, and surges from harming the RAPIDS Server. The UPS is only installed for RAPIDS Servers, with the exception of a few Workstations that have very poor power. Only a single Server CPU and its monitor are plugged onto each UPS. In the case of a power outage, the UPS will initiate a proper Server shutdown to include the Windows NT Server operating system.

8.2 APC Smart-UPS 700NET/700INET

The APC Smart-UPS 700NET/700INET provides protection to the RAPIDS Server and should be plugged into a two-pole, three-wire, grounding receptacle only. Avoid using extension cords and adapter plugs with the UPS. Should a power outage arise, the UPS is designed to switch to running from its battery to keep the Server from powering **Off** until a proper shutdown of the RAPIDS application and the Windows NT Server operating system are performed by the PowerChute Plus application software. The UPS charges its battery whenever it is connected to utility power. For best results, charge the battery for 2.5 hours before initial use to ensure that the battery is fully charged. It is acceptable to use the UPS without first charging the battery, but the on-battery run time may be reduced until the battery is fully charged.

Figure 8-1, below, is an illustration of the APC Smart-UPS 700NET, front and rear panels. The 220 V model, Smart-UPS 700INET, is the same, except that the power outlets are standard European plug versions.

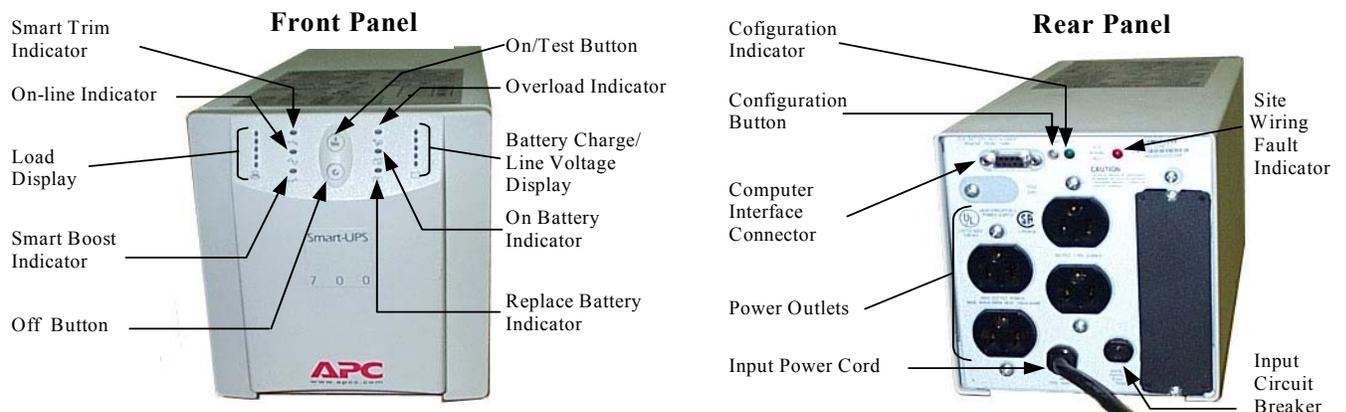


Figure 8-1: APC Smart-UPS 700NET

8.2.1 APC Smart-UPS 700NET/700INET Front Panel

The front panel of the Smart-UPS 700NET/7050INET contains the following buttons and indicators:

a. On/Test Button. With the UPS plugged in, the **On/Test** button turns the UPS **On**, including all components plugged into it. When the UPS is already **On**, you can activate a UPS self test by pressing the **On/Test** button until the UPS beeps and the **On-line** indicator flashes. The self test will verify the operation of the UPS and the condition of the battery. By default, the UPS performs a self test at power up and once every two weeks. Pressing the **On/Test** button during an on-battery condition will stop the beeping. This works for the current alarm only; the next on-battery alarm will have the audible indication.

a. Off Button. With the UPS plugged in and turned **On**, the **Off** button turns the UPS **Off**, including all components plugged into it.

b. On-line Indicator. The **On-line** indicator will be lit when the UPS is operating normally (i.e., it is receiving power from the outlet it is plugged into and is not running on battery) and that power is present at the outlets.

c. On Battery Indicator. When there is a power outage, the UPS will switch to running on battery. At this time the **On Battery** indicator will be lit and the UPS sounds an audible alarm consisting of four beeps every 30 seconds. When this occurs, the RAPIDS Server is notified via the interface cable. The PowerChute Plus software application will notify all connected RAPIDS Workstations and will initiate a proper shutdown of the RAPIDS Server after 3 minutes. The alarm will stop when the power returns and the UPS returns to normal on-line operation.

d. Overload Indicator. When the UPS is overloaded (when the connected loads exceed the maximum supported by the UPS), the **Overload** indicator will be lit. If an overload condition persists for more than 4 seconds, the UPS will sound a constant tone and will be unable to maintain power to the Server it protects during a power failure. The alarm remains on until the overload is removed. Disconnect non-essential equipment from the UPS to eliminate the overload.

e. Replace Battery Indicator. When the UPS's battery is no longer useful and needs replacing, the UPS emits short beeps for one minute and the **Replace Battery** indicator comes on if the battery fails the self test. The UPS repeats the alarm every five hours. Perform the self-test procedure listed above to confirm the replace battery condition. When running on battery during a power outage, if the **Replace Battery** indicator comes on, it means that less than 2 minutes of on-battery run time remains.

f. Smart Trim Indicator. The **Smart Trim** indicator will be lit whenever the UPS is correcting a high utility voltage condition. Since the UPS automatically corrects for high utility voltage, the loads plugged into the UPS receive normal power.

g. Smart Boost Indicator. The **Smart Boost** indicator will be lit whenever the UPS is correcting a low utility voltage condition. Since the UPS automatically corrects for low utility voltage, the loads plugged into the UPS receive normal power.

h. Load Display. The bar graph of lights for the **Load Display** indicates the amount of power being drawn by the loads plugged into the UPS, as follows: (1) bottom one lit = between 17% and 33%, (2) bottom two lit = between 33% and 50%, (3) bottom three lit = between 50% and 67%, (4) bottom four lit = between 67% and 85%, and (5) all five lit = between 85% and 100%. If all five are lit, thoroughly test the system to make sure that the UPS won't become overloaded. If the UPS is overloaded, the **Overload Indicator** will be lit and an alarm sounds.

i. Battery Charge/Line Voltage Display. The bar graph of lights for the **Battery Charge Display** indicates the present battery charge as a percentage of battery capacity, as follows: (1) bottom one lit = 20%, (2) bottom two lit = 40%, (3) bottom three lit = 60%, (4) bottom four lit = 80%, and (5) all five lit = 100%. If all five are lit, the battery is fully charged. When only the bottom one is lit, the battery can supply less than two minutes of run time for the load. This same set of lights is also the **Line Voltage Display** and indicates the voltage of the utility line when you press and hold the **On/Test Button** to see this display. The UPS will also start a self-test, but this will not affect the voltage display. After about four seconds, the utility input voltage to the 110 V UPS is indicated as follows: (1) bottom one lit = between 98 and 107 volts alternating current (VAC), (2) bottom two lit = between 107 and 115 VAC, (3) bottom three lit = between 115 and 123 VAC, and (4) bottom four lit = between 123 and 132 VAC. If none are lit, it indicates extremely low line voltage and if all five are lit it indicates extremely high voltage. If either of these conditions exists, have the line voltage checked by an electrician and use another outlet to plug the UPS into. For the 220 V model a similar indication is made relative to 220 VAC. Refer to the User's Manual that came with your UPS.

8.2.2 APC Smart-UPS 700NET/700INET Rear Panel

The rear panel of the Smart-UPS 700NET/7050INET contains the following:

a. Computer Interface Connector. The **Computer Interface** connector is the port that will be used to connect a serial cable between the UPS and the Server to communicate during power failures. The PowerChute Plus software application uses alerts from the UPS to initiate a proper shutdown of the RAPIDS Server during power outages. The black serial cable supplied with the UPS should be connected from the **Computer Interface** connector to the Server's serial **COM2** port.

b. Site Wiring Fault Indicator. After the UPS has been plugged into a power outlet and the Server CPU and monitor are plugged into it, you should always check the **Site Wiring Fault** indicator to make sure that it is not lit. When the **Site Wiring Fault** indicator is lit, it means that the UPS is plugged into an improperly wired AC power outlet. Wiring faults detected include missing ground, hot-neutral polarity reversal, and overloaded neutral circuit.

c. Configuration Button. The **Configuration Button** is used to change the UPS's sensitivity to utility voltage variations and the low battery warning interval. When power quality is poor, the UPS may frequently transfer to on-battery operation to protect loads plugged into it. If the loads can operate normally under these conditions, then **Voltage Sensitivity** may be reduced to conserve battery capacity and service life. To reduce the UPS sensitivity, press the **Configuration Button** using a pointed object, such as a pencil. Press it once to set it to **reduced** or twice to set it to **low** sensitivity. Pressing it a third time returns it to **normal** (default)

sensitivity. By default, the Low Battery Warning occurs when there are approximately 2 minutes of on-battery run time remaining. If this is not enough time to shut down the server via the PowerChute Plus software, then the **Low Battery Warning Interval** can be increased. To increase, press and hold the **On/Test Button** while pressing the **Configuration Button**, once for a **five** minute warning interval and twice for a **seven** minute warning interval. Pressing it a third time returns it to a **two** minute (default) warning interval.

d. Configuration Indicator. The **Configuration Indicator** indicates the **Voltage Sensitivity** setting and the **Low Battery Warning Interval**. When the UPS's **Voltage Sensitivity** is set to normal, the **Configuration Indicator** is brightly lit; when set to reduced sensitivity, it is dimly lit; and when set to low sensitivity it is not lit. When the UPS is set to a 2 minute **Low Battery Warning Interval**, the **Configuration Indicator** is brightly lit; when set to 5 minutes, it is dimly lit; and when set to 7 minutes, it is not lit.

e. Input Circuit Breaker. The UPS contains an input **Circuit Breaker**, which trips when loads exceed the UPS's capacity. The center plunger of the circuit breaker extends when tripped.

f. Power Outlets. The UPS is configured with four output **Power Outlets**, to provide protection and backup power to up to four devices during a power outage. Due to the limitation of the amount of power provided by this UPS model, only the Server's CPU and monitor should be plugged into the **Power Outlets**.

g. Input Power Cord. The **Input Power Cord** is used to plug the UPS into an alternating current (AC) power outlet for power. The **Input Power Cord** should only be plugged into a two-pole, three-wire, grounding receptacle. Avoid using extension cords and adapter plugs with the UPS.

8.2.3 Troubleshooting APC Smart-UPS 700NET/7050INET Problems

Some common Smart-UPS 700NET/7050INET problems are listed below with steps to resolve them. More detailed troubleshooting information can be found in the APC Smart-UPS User's Manual.

a. UPS Beeps Occasionally. This is normal during UPS operation. It just indicates that the UPS is protecting the Server from surges and power fluctuations.

b. Site Wiring Fault Indicator On. If the **Site Wiring Fault** indicator comes on, you should perform a proper shutdown of the RAPIDS Server and power **Off** the UPS. Check to make sure that the UPS's **Power Cord** is securely plugged into the wall power outlet. If it is not, then push the plug all of the way in and turn the Server back **On** via the **On/Test Button** on the UPS. If it is plugged in properly, then the wall power outlet is at fault, so you should plug the UPS into a different outlet that does not indicate a site wiring fault. Call a certified electrician to report the bad outlet and have them correct the building wiring.

c. Replace Battery Indicator On. If the **Replace Battery** indicator is illuminated, it may be because the battery is weak from recently running on battery or the battery may need replacing. The next time that the Server can be shut down for at least two hours, perform a proper shutdown of the Server. Power **Off** the Server system via the UPS and unplug all plugs

from the UPS's **Power Outlets**. Leave the UPS's **Input Power Cord** plugged into the wall power outlet to recharge the battery. Recharge the battery overnight or for at least 2 hours to see if the battery will recharge itself. After the recharge, turn **Off** the UPS and plug the Server CPU and monitor back into the UPS's **Power Outlets**. If the battery recharged, then the **Replace Battery** indicator should not be lit when you turn the system **On** via the UPS. If the problem persists then the battery is at the end of its service life and the UPS should be replaced, by calling the DRAC, DRSC-E, or DSO-A, as applicable.

d. Overload Indicator On. If the **Overload** indicator is illuminated, an overload condition exists. You must perform a proper shutdown of the Server and power **Off** the UPS to make sure that only the Server's CPU and monitor are plugged into the UPS. Unplug any addition components and plug them into the surge suppressor instead to eliminate the overload condition on the UPS. Power the UPS back **On** and the **Overload** indicator should no longer be lit.

Warning!

DO NOT plug a laser printer, PVC card printer, or laminator into the UPS. These hardware devices draw too much current and will overload the UPS!

e. Circuit Breaker Tripped. If the **Circuit Breaker** is tripped the center plunger of the circuit breaker extends out. This can occur when the load on the UPS is too much. You must perform a proper shutdown of the Server and power **Off** the UPS to make sure that only the Server's CPU and monitor are plugged into the UPS. Unplug any addition components and plug them into the surge suppressor instead to eliminate the overload condition on the UPS. Reset the **Circuit Breaker** by pushing the plunger back in. Power the UPS back **On** and the **Circuit Breaker** should no longer have the plunger extended. If the circuit breaker continues to trip, the UPS has failed and should be replaced via a maintenance call to the DRAC, DRSC-E, or DSO-A, as applicable.

f. All Indicators On. If all of the indicators are lit and the UPS emits a constant tone it means that there is an internal UPS fault. **DO NOT** attempt to use the UPS. You must perform a proper shutdown of the Server and power **Off** the UPS and have it serviced immediately or have it replaced via a maintenance call to the DRAC, DRSC-E, or DSO-A, as applicable. In the meantime the Server CPU and monitor should be plugged into the surge suppressor until the UPS is repaired or replaced.

g. UPS On Button Not Working. If pressing the **On** button on the front of the UPS does not seem to do anything then check the following:

1. If a blackout has occurred, then the battery was probably not charged enough to run. Wait until the power returns and try again.
2. Ensure that the UPS's power cord is securely connected at the wall power outlet and that the outlet is working. You can test the outlet with a standard table lamp. If the bulb does not light or is dim, then use another outlet and report the problem to an electrician so it can be fixed.
3. Ensure that the **Site Wiring Fault** indicator is not on. If it is on, see item b., above.

4. Ensure that the Server's CPU and monitor plugs are securely plugged into the **Power Outlets** on the back of the UPS.
5. Ensure that the **Overload** indicator is not on. If it is on, see item d., above.
6. Ensure that the **Input Circuit Breaker** on the rear panel of the UPS has not been tripped. Its plunger in the center should not be extended. If it is tripped, see item e., above.
7. Ensure that all indicators are not on, which means that there is an internal UPS failure. If they are all on, see item f., above.
8. If none of the above solutions apply, then it is possible that there is a problem with the **Computer Interface** cable between the UPS and the Server. Disconnect the cable from the UPS and try the **On** button again. If it works now, then replace the **Computer Interface** cable.

8.3 APC Smart-UPS v/s 650/650I and v/s 620/620I

The APC Smart-UPS v/s 650/650I and v/s 620/620I provide protection to the RAPIDS Server and should be plugged into a two-pole, three-wire, grounding receptacle only. Avoid using extension cords and adapter plugs with the UPS. Should a power outage arise, the UPS is designed to switch to running from its battery to keep the Server from powering **Off** until a proper shutdown of the RAPIDS application and the Windows NT Server operating system are performed by the PowerChute Plus application software. The UPS charges its battery whenever it is connected to utility power. For best results, charge the battery for 2.5 hours before initial use to ensure that the battery is fully charged. It is acceptable to use the UPS without first charging the battery, but the on-battery run time may be reduced until the battery is fully charged.

Figure 8-2, below, is an illustration of the APC Smart-UPS v/s 650/620, front and rear panels. The 220 V models, Smart-UPS v/s 650I/620I, are the same, except that the power outlets are standard European plug versions.

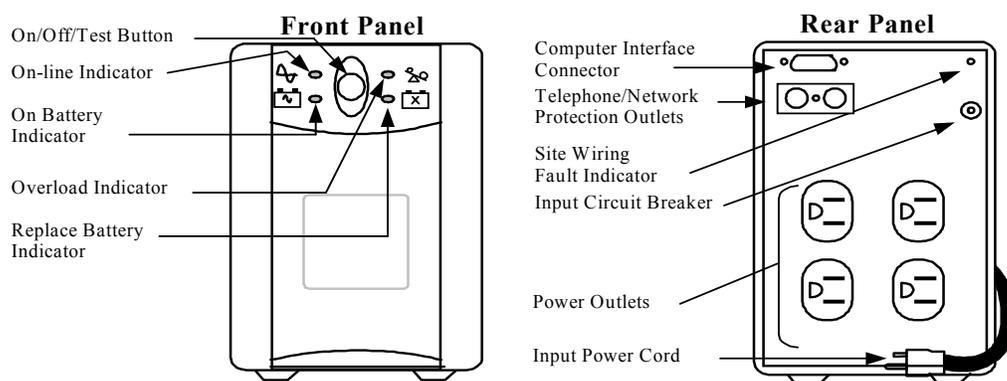


Figure 8-2: APC Smart-UPS v/s 650

8.3.1 APC Smart-UPS v/s 650/650I and v/s 620/620I Front Panel

The front panel of the Smart UPS v/s 650/650I and v/s 620/620I contains the following buttons and indicators:

a. On/Off/Test Button. With the UPS plugged in, the **On/Off/Test** button turns the UPS **On** and **Off**, including all components plugged into it. When the UPS is already **On**, you can activate a UPS self test by pressing the **On/Off/Test** button until the UPS beeps and the On-line indicator flashes. The self test will verify the operation of the UPS and the condition of the battery. By default, the UPS performs a self test at power up. Pressing the **On/Off/Test** button during an on-battery condition will stop the beeping. This works for the current alarm only; the next on-battery alarm will have the audible indication.

b. On-line Indicator. The **On-line** indicator will be lit when the UPS is operating normally (i.e., it is receiving power from the outlet it is plugged into and is not running on battery) and that power is present at the outlets.

c. On Battery Indicator. When there is a power outage, the UPS will switch to running on battery. At this time the **On Battery** indicator will be lit and the UPS sounds an audible alarm consisting of four beeps every 30 seconds. When this occurs, the RAPIDS Server is notified via the interface cable. The PowerChute Plus software application will notify all connected RAPIDS Workstations and will initiate a proper shutdown of the RAPIDS Server after 3 minutes. The alarm will stop when the power returns and the UPS returns to normal on-line operation.

d. Overload Indicator. When the UPS is overloaded (when the connected loads exceed the maximum supported by the UPS), the **Overload** indicator will be lit. If an overload condition persists for more than 4 seconds, the UPS will sound a constant tone and will be unable to maintain power to the Server it protects during a power failure. The alarm remains on until the overload is removed. Disconnect non-essential equipment from the UPS to eliminate the overload.

e. Replace Battery Indicator. The UPS emits short beeps for one minute and the **Replace Battery** indicator comes on if the battery fails the self test. The UPS repeats the alarm every five hours. When running on battery during a power outage, if the **Replace Battery** indicator comes on, it means that less than 2 minutes of on-battery run time remains.

8.3.2 APC Smart-UPS v/s 650/650I and v/s 620/620I Rear Panel

The rear panel of the Smart-UPS v/s 650/650I and v/s 620/620I contains the following:

a. Computer Interface Connector. The **Computer Interface** connector is the port that will be used to connect a serial cable between the UPS and the Server to communicate during power failures. The PowerChute Plus software application uses alerts from the UPS to initiate a proper shutdown of the RAPIDS Server during power outages. The black serial cable supplied with the UPS should be connected from the **Computer Interface** connector to the Server's serial **COM2** port.

b. Telephone/Network Surge Protection Connectors. The **Telephone/Network Surge Protection** connectors are used for single telephone lines and 10BaseT networks. These connectors are **NOT** used with RAPIDS Servers.

c. Site Wiring Fault Indicator. After the UPS has been plugged into a power outlet and the Server CPU and monitor are plugged into it, you should always check the **Site Wiring Fault** indicator to make sure that it is not lit. When the **Site Wiring Fault** indicator is lit, it means that the UPS is plugged into an improperly wired AC power outlet. Wiring faults detected include missing ground, hot-neutral polarity reversal, and overloaded neutral circuit.

d. Input Circuit Breaker. The UPS contains an input **Circuit Breaker**, which trips when loads exceed the UPS's capacity. The center plunger of the circuit breaker extends when tripped.

e. Power Outlets. The UPS is configured with four output **Power Outlets**, to provide protection and backup power to up to four devices during a power outage. Due to the limitation of the amount of power provided by this UPS model, only the Server's CPU and monitor should be plugged into the **Power Outlets**.

f. Input Power Cord. The **Input Power Cord** is used to plug the UPS into an AC power outlet for power. The **Input Power Cord** should only be plugged into a two-pole, three-wire, grounding receptacle. Avoid using extension cords and adapter plugs with the UPS.

8.3.3 Troubleshooting APC Smart-UPS v/s 650/650I and v/s 620/620I Problems

Some common Smart-UPS v/s 650/650I and v/s 620/620I problems are listed below with steps to resolve them. More detailed troubleshooting information can be found in the APC Smart-UPS User's Manual.

a. UPS Beeps Occasionally. This is normal during UPS operation. It just indicates that the UPS is protecting the Server from surges and power fluctuations.

b. Site Wiring Fault Indicator On. If the **Site Wiring Fault** indicator comes on, you should perform a proper shutdown of the RAPIDS Server and power **Off** the UPS. Check to make sure that the UPS's **Power Cord** is securely plugged into the wall power outlet. If it is not, then push the plug all of the way in and turn the Server back **On** via the **On/Off/Test** button on the UPS. If it is plugged in properly, then the wall power outlet is at fault, so you should plug the UPS into a different outlet that does not indicate a site wiring fault. Call your electrician to report the bad outlet and have them correct the building wiring.

c. Replace Battery Indicator On. If the **Replace Battery** indicator is illuminated, it may be because the battery is weak from recently running on battery or the battery may need replacing. The next time that the Server can be shut down for at least 2 hours, perform a proper shutdown of the Server. Power **Off** the Server system via the UPS and unplug all plugs from the UPS's **Power Outlets**. Leave the UPS's **Input Power Cord** plugged into the wall power outlet to recharge the battery. Recharge the battery overnight or for at least 2 hours to see if the battery will recharge itself. After the recharge, turn **Off** the UPS and plug the Server CPU and monitor back into the UPS's **Power Outlets**. If the battery recharged, then the **Replace Battery** indicator should not be lit when you turn the system **On** via the UPS. If the problem persists

then the battery is at the end of its service life and the UPS should be replaced, by calling the DRAC, DRSC-E, or DSO-A, as applicable.

d. Overload Indicator On. If the **Overload** indicator is illuminated, an overload condition exists. You must perform a proper shutdown of the Server and power **Off** the UPS to make sure that only the Server's CPU and monitor are plugged into the UPS. Unplug any addition components and plug them into the surge suppressor instead to eliminate the overload condition on the UPS. Power the UPS back **On** and the **Overload** indicator should no longer be lit.

Warning!

DO NOT plug a laser printer, PVC card printer, or laminator into the UPS. These hardware devices draw too much current and will overload the UPS!

e. Circuit Breaker Tripped. If the **Circuit Breaker** is tripped the center plunger of the circuit breaker extends out. This can occur when the load on the UPS is too much. You must perform a proper shutdown of the Server and power **Off** the UPS to make sure that only the Server's CPU and monitor are plugged into the UPS. Unplug any addition components and plug them into the surge suppressor instead to eliminate the overload condition on the UPS. Reset the **Circuit Breaker** by pushing the plunger back in. Power the UPS back **On** and the **Circuit Breaker** should no longer have the plunger extended. If the circuit breaker continues to trip, the UPS has failed and should be replaced via a maintenance call to the DRAC, DRSC-E, or DSO-A, as applicable.

f. All Indicators On. If all of the indicators are lit and the UPS emits a constant tone it means that there is an internal UPS fault. **DO NOT** attempt to use the UPS. You must perform a proper shutdown of the Server and power **Off** the UPS and have it serviced immediately or have it replaced via a maintenance call to the DRAC, DRSC-E, or DSO-A, as applicable. In the meantime the Server CPU and monitor should be plugged into the surge suppressor until the UPS is repaired or replaced.

g. UPS On Button Not Working. If pressing the **On** button on the front of the UPS does not seem to do anything then check the following:

1. If a blackout has occurred, then the battery was probably not charged enough to run. Wait until the power returns and try again.
2. Ensure that the UPS's power cord is securely connected at the wall power outlet and that the outlet is working. You can test the outlet with a standard table lamp. If the bulb does not light or is dim, then use another outlet and report the problem to an electrician so it can be fixed.
3. Ensure that the **Site Wiring Fault** indicator is not on. If it is on, see item b., above.
4. Ensure that the Server's CPU and monitor plugs are securely plugged into the **Power Outlets** on the back of the UPS.
5. Ensure that the **Overload** indicator is not on. If it is on, see item d., above.
6. Ensure that the **Input Circuit Breaker** on the rear panel of the UPS has not been tripped. Its plunger in the center should not be extended. If it is tripped, see item e., above.

7. Ensure that all indicators are not on, which means that there is an internal UPS failure. If they are all on, see item f., above.
8. If none of the above solutions apply, then it is possible that there is a problem with the **Computer Interface** cable between the UPS and the Server. Disconnect the cable from the UPS and try the **On** button again. If it works now, then replace the **Computer Interface** cable.

8.4 APC Smart-UPS 600/600I

The APC Smart-UPS 600/600I provides protection to the RAPIDS Server and should be plugged into a two-pole, three-wire, grounding receptacle only. Avoid using extension cords and adapter plugs with the UPS. Should a power outage arise, the UPS is designed to switch to running from its battery to keep the Server from powering **Off** until a proper shutdown of the RAPIDS application and the Windows NT Server operating system are performed by the PowerChute Plus application software. The UPS charges its battery whenever it is connected to utility power. For best results, charge the battery for 8 hours before initial use to ensure that the battery is fully charged. It is acceptable to use the UPS without first charging the battery, but the on-battery run time may be reduced until the battery is fully charged.

Figure 8-3, below, is an illustration of the APC Smart-UPS 600, front and rear panels. The 220 V model, Smart-UPS v/s 600I, is the same, except that the power outlets are standard European plug versions.

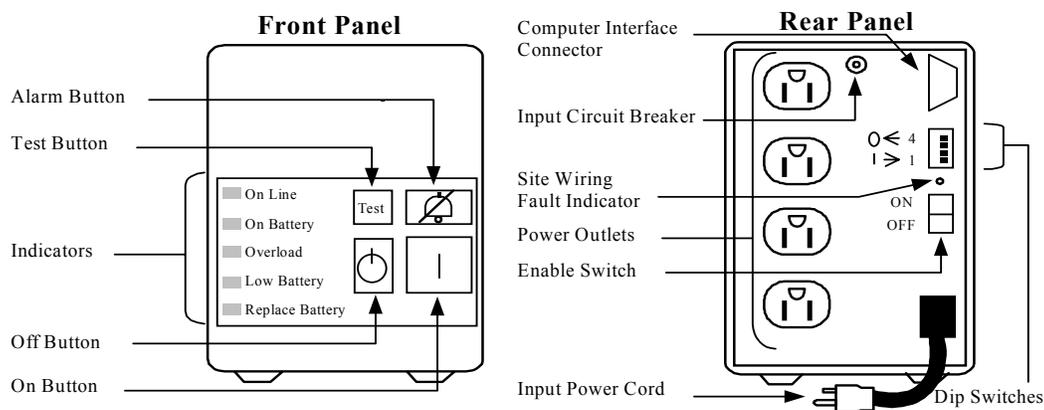


Figure 8-3: APC Smart-UPS 600

8.4.1 APC Smart-UPS 600/600I Front Panel

The front panel of the Smart-UPS 600/600I contains the following buttons and indicators:

- a. On Button. With the UPS plugged in and the **Enable** switch on the back of the UPS in the **On** position, the **On** button turns the UPS **On**, including all components plugged into it.
- b. Off Button. With the UPS plugged in, the **Off** button turns the UPS **Off**, including all components plugged into it.

c. Test Button. When the UPS is already **On**, you can activate a UPS self test by pressing the **Test** button until the UPS beeps and the On-line indicator flashes. The self test will verify the operation of the UPS and the condition of the battery. By default, the UPS performs a self test at power up.

d. Alarm Button. Pressing the **Alarm** button during an on-battery condition will stop the beeping. This works for the current alarm only; the next on-battery alarm will have the audible indication.

e. On-line Indicator. The **On-line** indicator will be lit when the UPS is operating normally (i.e., it is receiving power from the outlet it is plugged into and is not running on battery) and that power is present at the outlets.

f. On Battery Indicator. When there is a power outage, the UPS will switch to running on battery. At this time the **On Battery** indicator will be lit and the UPS sounds an audible alarm consisting of four beeps every 30 seconds. When this occurs, the RAPIDS Server is notified via the interface cable. The PowerChute Plus software application will notify all connected RAPIDS Workstations and will initiate a proper shutdown of the RAPIDS Server after 3 minutes. The alarm will stop when the power returns and the UPS returns to normal on-line operation.

g. Overload Indicator. When the UPS is overloaded (when the connected loads exceed the maximum supported by the UPS), the **Overload** indicator will be lit. If an overload condition persists for more than 4 seconds, the UPS will sound a constant tone and will be unable to maintain power to the Server it protects during a power failure. The alarm remains on until the overload is removed.

h. Low Battery Indicator. When running on battery during a power outage, if the **Low Battery** indicator comes on, it means that less than 2 minutes of on-battery run time remains. The UPS will also beep continuously until the UPS returns to on-line operation or shuts down from battery exhaustion.

i. Replace Battery Indicator. The UPS emits short beeps for one minute and the **Replace Battery** indicator comes on if the battery fails the self test. The UPS repeats the alarm every 5 hours.

8.4.2 APC Smart-UPS 600/600I Rear Panel

The rear panel of the Smart-UPS 600/600I contains the following:

a. Computer Interface Connector. The **Computer Interface** connector is the port that will be used to connect a serial cable between the UPS and the Server to communicate during power failures. The PowerChute Plus software application uses alerts from the UPS to initiate a proper shutdown of the RAPIDS Server during power outages. The black serial cable supplied with the UPS should be connected from the **Computer Interface** connector to the Server's serial **COM2** port.

- b. Dip Switches. There are four switches on a dip switch on the back of the UPS. Generally, these should be left in their default **Off** position. If the UPS switches to battery too often when the power has not gone out, you may want to desensitize the UPS to noisy line voltage by moving the switch labeled “1” to the **On** position by using the tip of a pencil. The other three switches should not be changed from the default **Off** position.
- c. Enable Switch. The **Enable Switch** is a rocker switch with an **On** and **Off** position. In order to use the UPS or charge the battery in the UPS, the **Enable** switch must be in the **On** position.
- d. Site Wiring Fault Indicator. After the UPS has been plugged into a power outlet and the Server CPU and monitor are plugged into it, you should always check the **Site Wiring Fault** indicator to make sure that it is not lit. When the **Site Wiring Fault** indicator is lit, it means that the UPS is plugged into an improperly wired AC power outlet. Wiring faults detected include missing ground, hot-neutral polarity reversal, and overloaded neutral circuit.
- e. Input Circuit Breaker. The UPS contains an input **Circuit Breaker**, which trips when loads exceed the UPS’s capacity. The center plunger of the circuit breaker extends when tripped.
- f. Power Outlets. The UPS is configured with four output **Power Outlets**, to provide protection and backup power to up to four devices during a power outage. Due to the limitation of the amount of power provided by this UPS model, only the Server’s CPU and monitor should be plugged into the **Power Outlets**.
- g. Input Power Cord. The **Input Power Cord** is used to plug the UPS into an AC power outlet for power. The **Input Power Cord** should only be plugged into a two-pole, three-wire, grounding receptacle. Avoid using extension cords and adapter plugs with the UPS.

8.4.3 Troubleshooting APC Smart-UPS 600/600I Problems

Some common problems are listed below with steps to resolve them. More detailed troubleshooting information can be found in the APC Smart-UPS User’s Manual.

- a. UPS Beeps Occasionally. This is normal during UPS operation. It just indicates that the UPS is protecting the Server from surges and power fluctuations.
- b. Site Wiring Fault Indicator On. If the **Site Wiring Fault** indicator comes on, you should perform a proper shutdown of the RAPIDS Server and power **Off** the UPS. Check to make sure that the UPS’s **Power Cord** is securely plugged into the wall power outlet. If it is not, then push the plug all of the way in and turn the Server back **On** via the **On/Off/Test** button on the UPS. If it is plugged in properly, then the wall power outlet is at fault, so you should plug the UPS into a different outlet that does not indicate a site wiring fault. Call your electrician to report the bad outlet and have them correct the building wiring.
- c. Replace Battery Indicator On. If the **Replace Battery** indicator is illuminated, it may be because the battery is weak from recently running on battery or the battery may need replacing. The next time that the Server can be shut down for at least 2 hours, perform a proper shutdown of the Server. Power **Off** the Server system via the UPS and unplug all plugs from the

UPS's **Power Outlets**. Leave the UPS's **Input Power Cord** plugged into the wall power outlet to recharge the battery. Recharge the battery overnight or for at least 8 hours to see if the battery will recharge itself. After the recharge, turn **Off** the UPS and plug the Server CPU and monitor back into the UPS's **Power Outlets**. If the battery recharged, then the **Replace Battery** indicator should not be lit when you turn the system **On** via the UPS. If the problem persists then the battery is at the end of its service life and the UPS should be replaced, by calling the DRAC, DRSC-E, or DSO-A, as applicable.

d. Overload Indicator On. If the **Overload** indicator is illuminated, an overload condition exists. You must perform a proper shutdown of the Server and power **Off** the UPS to make sure that only the Server's CPU and monitor are plugged into the UPS. Unplug any addition components and plug them into the surge suppressor instead to eliminate the overload condition on the UPS. Power the UPS back **On** and the **Overload** indicator should no longer be lit.

Warning!

DO NOT plug a laser printer, PVC card printer, or laminator into the UPS. These hardware devices draw too much current and will overload the UPS!

e. Circuit Breaker Tripped. If the **Circuit Breaker** is tripped the center plunger of the circuit breaker extends out. This can occur when the load on the UPS is too much. You must perform a proper shutdown of the Server and power **Off** the UPS to make sure that only the Server's CPU and monitor are plugged into the UPS. Unplug any addition components and plug them into the surge suppressor instead to eliminate the overload condition on the UPS. Reset the **Circuit Breaker** by pushing the plunger back in. Power the UPS back **On** and the **Circuit Breaker** should no longer have the plunger extended. If the circuit breaker continues to trip, the UPS has failed and should be replaced via a maintenance call to the DRAC, DRSC-E, or DSO-A, as applicable.

f. All Indicators On. If all of the indicators are lit and the UPS emits a constant tone it means that there is an internal UPS fault. **DO NOT** attempt to use the UPS. You must perform a proper shutdown of the Server and power **Off** the UPS and have it serviced immediately or have it replaced via a maintenance call to the DRAC, DRSC-E, or DSO-A, as applicable. In the meantime the Server CPU and monitor should be plugged into the surge suppressor until the UPS is repaired or replaced.

g. UPS On Button Not Working. If pressing the **On** button on the front of the UPS does not seem to do anything then check the following:

1. If a blackout has occurred, then the battery was probably not charged enough to run. Wait until the power returns and try again.
2. Ensure that the UPS's **Enable** button on the rear panel is in the **On** position.
3. Ensure that the UPS's power cord is securely connected at the back of the UPS and at the wall power outlet and that the outlet is working. You can test the outlet with a standard table lamp. If the bulb does not light or is dim, then use another outlet and report the problem to an electrician so it can be fixed.
4. Ensure that the **Site Wiring Fault** indicator is not on. If it is on, see item b., above.

5. Ensure that the Server's CPU and monitor plugs are securely plugged into the **Power Outlets** on the back of the UPS.
6. Ensure that the **Overload** indicator is not on. If it is on, see item d., above.
7. Ensure that the **Input Circuit Breaker** on the rear panel of the UPS has not been tripped. Its plunger in the center should not be extended. If it is tripped, see item e., above.
8. Ensure that all indicators are not on, which means that there is an internal UPS failure. If they are all on, see item f., above.
9. If none of the above solutions apply, then it is possible that there is a problem with the **Computer Interface** cable between the UPS and the Server. Disconnect the cable from the UPS and try the **On** button again. If it works now, then replace the **Computer Interface** cable.

8.5 How to Use the UPS

8.5.1 Handling a Power Outage

The RAPIDS Server has been set up with PowerChute Plus software that will properly handle a power outage or blackout. In the event of a power outage the UPS will automatically switch to running on its battery and the **On-Battery** indicator will be lit. Thirty seconds after power has been cut off from the UPS, the following message will be sent to all users connected to the Server:

Power failure has occurred. Please log out.

This message will be sent to all connected RAPIDS Workstations every 30 seconds until Server system shutdown begins. Obviously this will not be received by collocated Workstations that are affected by the power outage, because they will be off already since they do not have a UPS. Users have 3 minutes to finish the task they are working on and log out. Shutdown will begin 3 minutes after power is transferred to the battery in the UPS. At that time, the following message is sent to all connected RAPIDS Workstations:

Battery timer has expired. Prepare for immediate shutdown.

The following message is then displayed on the Server's and all its connected Workstations' monitors once the shutdown is in progress:

System is shutting down.

The UPS will automatically perform a proper shutdown of the Windows NT Server operating system on the RAPIDS Server. A shutdown by the user will **NOT** need to be performed. If power is restored to the UPS prior to the 3-minute cutoff, the system will not be shutdown and users may continue normal operations. In this case, the following message will be on the Server's and all its connected Workstations' monitors:

Power has returned. Normal operations have resumed

Once electrical power is restored after a shutdown, the UPS will automatically reboot the RAPIDS Server. At that point, you will follow normal logon procedures to bring up the RAPIDS application on the Server and Workstations.

8.5.2 Handling a Power Overload

If the **Overload** indicator remains lit for more than 4 seconds, and the UPS sounds a constant alarm, check to see that only the Server's CPU and monitor are plugged into the UPS. If other items are plugged into the UPS, perform a proper Server shutdown and power **Off** the UPS. Remove any plugs other than the Server's CPU and monitor and re-plug them into the surge suppressor outlet strip (make sure it is powered **Off**, before plugging items into it). Turn the Server system back **On** via the UPS and surge suppressor **Power** buttons and verify that the **Overload** indicator is no longer lit. If the **Overload** indicator is still lit, contact the DRAC, DRSC-E, or DSO-A, as appropriate.

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SECTION 9: SURGE SUPPRESSORS

9.1 Surge Suppressor Description

RAPIDS Servers and Workstations are fielded with several different models of surge suppressor. For sites utilizing 110 V/60 Hz power, the RAPIDS Servers use the 7-outlet APC Per7T Surge Arrest and the RAPIDS Workstations use the 8-outlet Belkin Surge Master II Premier surge suppressor. For sites utilizing 220 V/50 Hz power, the RAPIDS Servers use the 4-outlet Tripp Lite Isobar EURO-4 surge suppressor with the APC Ptel2 data line surge protector and the RAPIDS Workstations use the 4-outlet Tripp Lite Isobar EURO- 4 surge suppressor with the APC Ptel2 data line surge protector and the 5-outlet APC model E20 Surge Arrest 230V surge suppressor together for a total of 9 outlets. The various models of surge suppressors and data line protectors are illustrated in Figures 9-1 through 9-5 below:

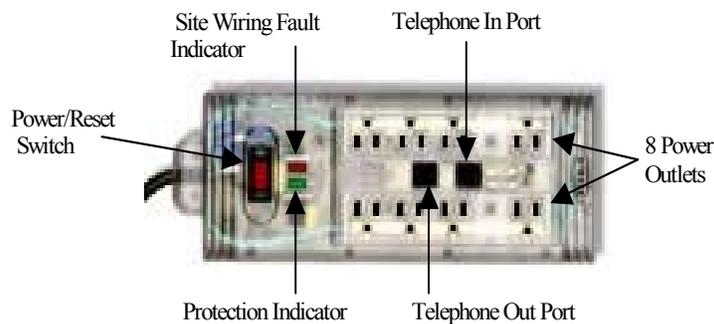


Figure 9-1: 8-Outlet Belkin Surge Suppressor for 110 V/60 Hz Workstations

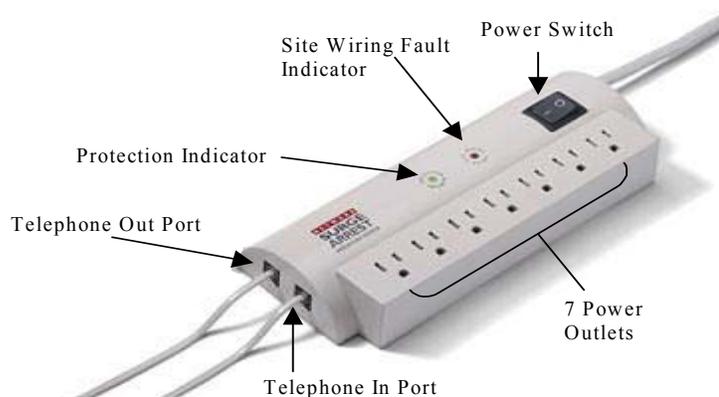


Figure 9-2: 7-Outlet APC Surge Suppressor for 110 V/60 Hz Servers



Figure 9-3: 5-Outlet APC Surge Suppressor for 220 V/50Hz Workstations

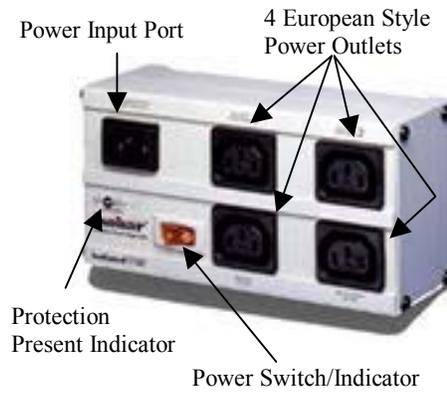


Figure 9-4: 4-Outlet Tripp Lite Surge Suppressor for 220 V/50Hz Servers and Workstations



Figure 9-5: APC Ptel2 Data Line Protector for 220 V/50 Hz Servers and Workstations

9.1.1 RAPIDS Workstation Surge Suppressors

For sites utilizing 110 V/60 Hz power, the Belkin Surge Master II Premier 8-outlet surge suppressor, shown in Figure 9-1, above, offers a unique multiple outlet arrangement that will enable bulky AC adapters for RAPIDS workstation peripherals to be plugged in without impeding the functionality of other outlets. Two Belkin surge suppressor's or a Belkin surge suppressor and the previously fielded 7-outlet APC Per7T Surge Arrest surge suppressor together provide a total of 16 or 15 outlets, so that enough will be available to plug the RAPIDS Workstation and all of its peripherals into the **Power Outlets**. Both models of surge suppressor also provide telephone/fax/modem line protection for one telephone or data line each. Both of these models of surge protector have a **Site Wiring Fault** indicator that will be illuminated red if there is a problem with the building wiring and a **Protection** indicator that will be illuminated green, when the surge suppressor is working properly and powered **On**.

For sites utilizing 220 V/50 Hz power, a 4-outlet Tripp Lite Isobar EURO-4 surge suppressor (shown in Figure 9-4, above), a 5-outlet APC model E20 Surge Arrest 230 V surge suppressor (shown in Figure 9-3, above), and an APC Ptel2 data line surge protector (shown in Figure 9-5, above) are used to protect the RAPIDS Workstation and its peripherals. The Tripp Lite Euro-4 surge suppressor has a two-position rocker-type **Power** switch that is illuminated red, when it is plugged into an outlet receiving power. It also contains a **Protection Present** indicator that will be illuminated green, when the surge suppressor is working properly and powered **On**. The input power cord plugs into the **Power Input Port** on the surge suppressor and a wall outlet that provides 220 V/50 Hz power. The APC model E20 Surge Arrest's **Power** switch is on the front of the unit. It has a **Site Wiring Fault** indicator that will be illuminated red if there is a problem with the building wiring. Its **Protection** indicator will be illuminated green, when the surge suppressor is working properly and powered **On**. The two surge suppressors together provide a total of 9 outlets, so that enough will be available to plug the RAPIDS Workstation and all of its peripherals into the **Power Outlets**. The APC Ptel2 data line surge protector, shown in Figure 9-5, above, provides telephone/data line protection for one telephone or data line.

9.1.2 RAPIDS Server Surge Suppressors

For Server sites utilizing 110 V/60 Hz power, the 7-outlet APC Per7T Surge Arrest surge suppressor, shown in Figure 9-2, above or the Belkin Surge Master II Premier 8-outlet surge suppressor, shown in Figure 9-1, above is used to protect the Server peripherals. While the Server's CPU and monitor must be plugged into the UPS, all other Server peripherals, such as modems for remote dial-up Workstations, should be plugged into the **Power Outlets** on the surge suppressor. Both of these surge suppressors also provide telephone/data line protection for one telephone or data line. The indicators on these surge suppressors are detailed in Subsection 9.1.1, above.

For Server sites utilizing 220 V/50 Hz power, the 4-outlet Tripp Lite Isobar EURO-4 surge suppressor, shown in Figure 9-3, a 5-outlet APC model E20 Surge Arrest 230V surge suppressor, shown in Figure 9-3, above is used to protect the Server peripherals. While the Server's CPU and monitor must be plugged into the UPS, all other Server peripherals, such as modems for remote dial-up Workstations, should be plugged into the **Power Outlets** on the surge suppressor.

The APC Ptel2 data line surge protector, shown in Figure 9-5, above, provides telephone/data line protection for one telephone or data line.

9.2 How to Use the Surge Suppressors

9.2.1 RAPIDS Workstation Surge Suppressors

The following RAPIDS Workstation components should always be plugged into a surge suppressors: CPU, monitor, laser printer, laminator, digital camera, bar code scanner/decoder, fingerprint scanner, USB port device, and PVC card printer. Remote Workstations that have a modem to connect to their Server should also plug the modem's power cord into a surge suppressor. To power **On** the RAPIDS Workstation system press the **Power** switch on the surge suppressor to the **On** or **1** position. After properly shutting down the RAPIDS Workstation, to power **Off** the Workstation system press the **Power** switch on the surge suppressor to the **Off** or **0** position.

For 110 V/60 Hz surge suppressors, the data protection is built into the surge suppressor. The 220 V/50 Hz sites should use the separately provided Ptel2 data protection device for the telephone (data) line. Depending on the communications line performance at each site, data line protection may or may not be used. Some sites have experienced problems using data line protection and do not use it. If data protection is used, the communications (data) line from the wall's telephone jack will go to the surge suppressor's (110 V sites) or data protection device's (220 V sites) **Telephone In** port. The telephone cable that comes with the surge suppressor (110 V sites) or data protection device (220 V sites) should be connected from the **Telephone Out** port of the surge suppressor (110 V sites) or data protection device (220 V sites) to the modem's **Line Input** port.

NOTE:

For sites utilizing 110 V power, the second surge suppressor may be plugged into the first surge suppressor if two dedicated power wall outlets are not available. For sites utilizing 220 V power this may not be possible, if the RAPIDS Workstation and its peripherals use all of the outlets.

9.2.2 RAPIDS Server Surge Suppressors

The Server's CPU and monitor should be plugged into the UPS and not the surge suppressor.

WARNING!

The UPS and surge suppressor must each be plugged into their own separate wall power outlet and must never be plugged into each other, or else their warranty will be voided.

The following RAPIDS Server components should always be plugged into a surge suppressor: Ethernet switch, optional laser printer (if it has one), and all modems used for its remote dial-up Workstations. To power **On** the RAPIDS Server system press the **Power** switch on the surge suppressor to the **On** or **1** position and then power **On** the UPS. After properly shutting down the RAPIDS server, to power **Off** the Server system press the **Power** switch on the surge suppressor to the **Off** or **0** position and then power **Off** the UPS.

For 110 V/60 Hz surge suppressors, the data protection is built into the surge suppressor. The 220 V/50 Hz sites should use the separately provided Ptel2 data protection device for the telephone (data) line. Depending on the communications line performance at each site, data line protection may or may not be used. Some sites have experienced problems using data line protection and do not use it. If data protection is used, the communications (data) line from the wall's telephone jack will go to the surge suppressor's (110 V sites) or data protection device's (220 V sites) **Telephone In** port. The telephone cable that comes with the surge suppressor (110 V sites) or data protection device (220 V sites) should be connected from the **Telephone Out** port of the surge suppressor (110 V sites) or data protection device (220 V sites) to the modem's **Line Input** port.

9.3 Troubleshooting Surge Suppressor Problems

9.3.1 Site Wiring Fault Indicator On

If the **Site Wiring Fault** indicator is illuminated red, you should perform a proper shutdown of the RAPIDS Workstation and power **Off** the surge suppressor. Check to make sure that the surge suppressor's **Power Cord** is securely plugged into the wall power outlet. If it is not, then push the plug all of the way in and turn the Workstation back **On** via the surge suppressor. If it is plugged in properly, then the wall power outlet is at fault, so you should plug the surge suppressor into a different outlet that does not indicate a site wiring fault. Call your electrician to report the bad outlet and have them correct the building wiring.

9.3.2 Protection Indicator Not On

The **Protection** or **Power** indicator should normally be illuminated green when the surge suppressor is On. If after turning on the surge suppressor, this **Protection** or **Power** indicator does not come on, then it means either the power cord is not plugged in properly at the wall outlet, the wall outlet is not working, or the surge suppressor is broken. Check to make sure that the surge suppressor's power cord is securely plugged into the wall power outlet. If it is not, then push the plug all of the way in and turn the Workstation back **On** via the surge suppressor. If it is plugged in properly, then the wall power outlet may be at fault, so you should plug the surge suppressor into a known good outlet and see if the problem is resolved. If the **Protection** or **Power** is still not lit, then the surge suppressor is no longer functioning, so contact the DRAC, DRSC-E, or DSO-A, as appropriate.

9.3.3 Circuit Breaker Tripped

If the **Circuit Breaker** is tripped, the center plunger of the circuit breaker extends out. This may occur during power surges, such as a lighting strike. If this occurs, the Belkin surge suppressor will sound a beep indicating the problem. It will just need to be reset by pressing the **Power** switch momentarily to the **Reset** position. For the other surge suppressors you must perform a proper shutdown of the Workstation, if it's not already **Off**, and power **Off** the surge suppressor at the **Power** switch. If the surge suppressor is overloaded, make sure that only RAPIDS equipment is plugged into the surge suppressor. Unplug any non-RAPIDS components and plug

them into something else instead to eliminate the overload condition on the surge suppressor. Reset the **Circuit Breaker** by pushing the plunger back in. Power the surge suppressor back **On** and the **Circuit Breaker** should no longer have the plunger extended. If the circuit breaker continues to trip, then the surge suppressor is no longer functioning, so contact the DRAC, DRSC-E, or DSO-A, as appropriate.

SECTION 10: BAR CODE SCANNERS/DECODERS

The RAPIDS Workstation includes either a Welch Allyn ST6480 Code 39 bar code slot scanner/decoder or a Metrologic MS9520 Voyager hands-free Code 39 laser scanner/decoder. A few sites may also have a Symbol 6000, 6804, or 620 Code 39/PDF 417 bar code laser scanner/decoder. The bar code scanners are used to read the bar code data printed on the back of the Uniformed Services teslin ID cards, as shown in Figure 10-1, below or the front (PDF417 bar code) and back (Code 39 bar code) of the CAC. This data contains the basic information that is printed on the teslin ID card/CAC and matches the data stored in DEERS for verifying the identity of the teslin ID card/CAC holder.

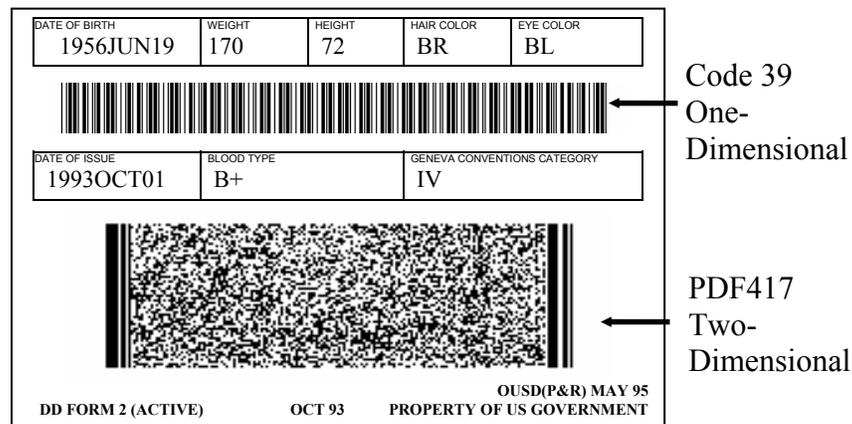


Figure 10-1: Bar Codes on Back of Uniformed Services Teslin ID Card

10.1 Welch Allyn ST6480 Bar Code Slot Scanner/Decoder

10.1.1 Welch Allyn ST6480 Bar Code Slot Scanner/Decoder Description

The Welch Allyn ST6480 Code 39 bar code slot scanner and decoder are contained in a single unit, as shown in Figure 10-2, on the next page, and can read Code 39 (one-dimensional) bar codes. This unit is popularly referred to as a slot scanner, since it uses the narrow slot to slide the teslin ID card/CAC through in order to read the bar-coded data.

The slot scanner has two indicators on the top of the unit. The **Power** indicator is illuminated red whenever the unit is receiving power. The **Data** indicator illuminates green when the scanner/decoder is reading bar-coded data.

The scanner/decoder comes with a special cable (see Figure 10-2, above) that is permanently attached to the scanner/decoder body and splits the connection to the scanner/decoder to power and data sources. The end of the cable with a **DIN** (round) connector attaches to the **DIN** (round) connector on the power cord. The other end of the power cord, on the far side of the power adapter brick, plugs into an outlet on the Workstation's surge suppressor. The end of the

special cable with the **9-pin DB** (rectangular) connector attaches to the **Serial Output Port 2** on the back of the USB port device.

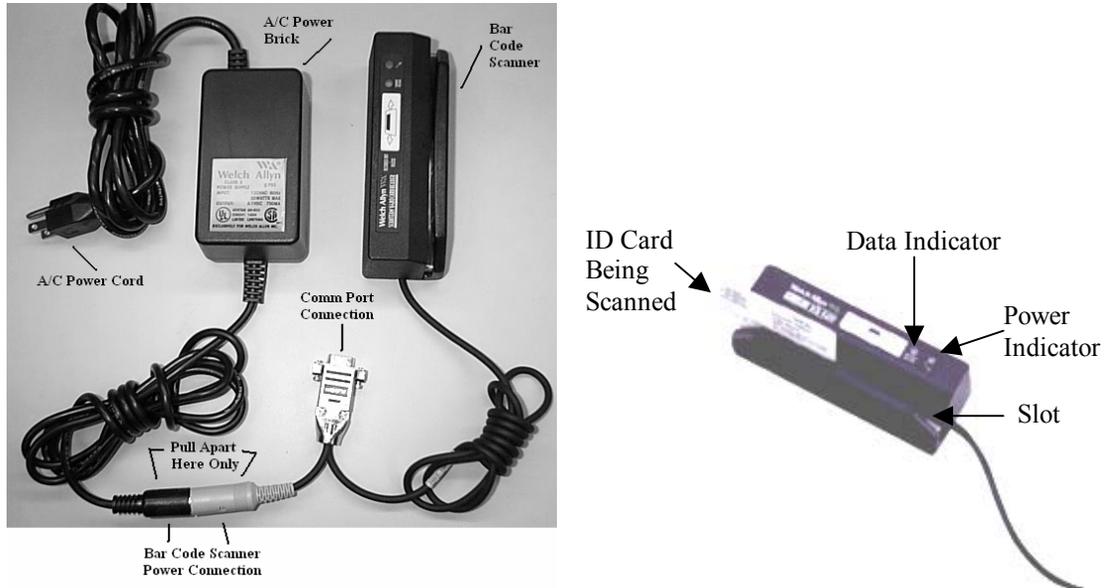


Figure 10-2: Welch Allyn ST6480 Bar Code Slot Scanner/Decoder

10.1.2 How to Use the Welch Allyn ST6480 Bar Code Slot Scanner/Decoder

The Welch Allyn ST6408 slot scanner/decoder is powered **On** when it is plugged into a good power source, it does not have a power or on/off switch. It is turned **On** at the Workstation's surge suppressor that it is plugged into. Upon power **On**, the **Power** indicator is illuminated red.

To use the Welch Allyn ST6480 bar code slot scanner/decoder to read Code 39 bar codes, you should quickly and smoothly slide the ID card through the slot with the Code 39 bar code down and facing the wider side of the scanner. Generally, you cannot slide the ID card through too fast for the scanner/decoder to read the bar-coded data; however, sliding the ID card through too slowly will cause the scanner to fail to read the bar-coded data.

10.1.3 Troubleshooting Welch Allyn ST6480 Bar Code Slot Scanner/Decoder Problems.

If the Code 39 bar code slot scanner/decoder seems to be experiencing problems reading the bar codes from teslin ID card/CAC try the following to solve the problem:

- a. Ensure that you are trying to read the Code 39 (one-dimensional) bar code on the teslin ID card/CAC, and not the PDF417 (two-dimensional) bar code.
- b. Ensure that you are sliding the teslin ID card/CAC through the scanner/decoder's slot in a straight and even motion. Do not allow the teslin ID card/CAC lift up during the swipe.

- c. Make sure that all the cables are firmly secured to the bar code scanner/decoder and the Workstation. To fix a loose cable:
 1. Perform a proper shutdown of the Workstation system and power everything **Off** via the Power switch on the surge suppressor.
 2. Make sure the bar code scanner/decoder's data cable is firmly connected at the scanner/decoder and to the Workstation's CPU via the USB port device.
 3. Make sure that the bar code scanner/decoder's power cable is securely plugged into the scanner/decoder, special cable, and the Workstation's surge suppressor.
 4. Power the Workstation system back **On** by using the **Power** switch on the surge suppressor.

If the RAPIDS application still doesn't work or produces an error message during bar code scanning, and an error message persists, RAPIDS users should write down the complete error message and call the DRAC, DRSC-E, or DSO-A, as appropriate.

10.2 Metrologic MS9520 Voyager Code 39 Bar Code Scanner/Decoder

10.2.1 Metrologic MS9520 Voyager Laser Scanner/Decoder and Stand Description

The Metrologic MS9520 Voyager Code 39 bar code laser scanner and decoder are contained in a single unit that fits into an included stand for hands-free scanning, as shown in Figure 10-3, below, and can read Code 39 (one-dimensional) bar codes. This unit is popularly referred to as a hands-free laser scanner, since it uses a red-light laser to read the bar-coded data and automatically starts to read a bar code that is placed under the laser beam, as shown in Figure 10-4, on the next page.



Figure 10-3: Metrologic MS9520 Voyager Code 39 Bar Code Scanner/Decoder

The scanner/decoder comes with a special cable that includes an “L” adapter to split the connection to the scanner/decoder to power and data sources. The end of the cable with a **10-pin RJ-45** (square) connector attaches to the **Data/Power Input** jack at the bottom end of the bar

code scanner. The end of the cable with the **9-pin DB** (rectangular) connector attaches to the **Serial Output Port 2** on the back of the USB port device. The power cord includes a power adapter brick at one the end that plugs into an outlet on the Workstation's surge suppressor and the other end with the **RCA** (round) connector plugs into the "L" adapter in the middle of the special scanner cable.

The Metrologic MS9520 Voyager scanner/decoder has three indicators on the top of the unit, as shown in Figure 10-3, above. The various light patterns of the indicators have the following meaning:

- a. **Laser On Indicator** is illuminated green whenever the laser is on and ready to scan and off when the laser is deactivated.
- b. **Good Read Indicator** flashes red and the scanner beeps once when the scanner/decoder successfully reads the bar-coded data.
- c. **Auto Trigger Mode Indicator**, if enabled, is illuminated yellow when the Auto Trigger Mode is active.

10.2.2 How to Use the Metrologic MS9520 Voyager Laser Scanner/Decoder

The Metrologic MS9520 Voyager laser scanner/decoder is powered **On** when it is plugged into a good power source, it does not have a power or on/off switch. It is turned **On** at the Workstation's surge suppressor that it is plugged into. Upon power **On**, the **Laser On** indicator is illuminated green and the **Good Read** indicator blinks red in concert with a single beep, then goes out.

To use the Metrologic MS9520 Voyager scanner/decoder to read Code 39 bar codes, place the teslin ID card/CAC under the scanner's **Laser Sight Window** with the Code 39 bar code facing up (see Figure 10-4, below). Since the scanner/decoder is set to auto trigger mode, it will read and decode the bar coded data upon sensing a bar code in its field of view. You will see the red laser beam come on and the **Laser On** indicator is illuminated green. When the bar code is successfully read, the **Good Read** indicator blinks red in concert with a single beep, then goes out. The data is transmitted to the RAPIDS Workstation, automatically. After a few seconds without any movement under the scanner/decoder's **Laser Sight Window**, the **Laser On** indicator and laser both turn off.



Figure 10-4: Metrologic Bar Code Scanner/Decoder Reading CAC Code 39 Bar Code

10.2.3 Troubleshooting Metrologic MS9520 Voyager Laser Scanner/Decoder Problems

a. Cleaning Laser View Window. Smudges and dirt can interfere with the proper scanning of a bar code. Therefore, the **Laser View Window** will need occasional cleaning as follows:

1. Spray glass cleaner onto lint free, non-abrasive cleaning cloth.
2. Gently wipe the scanner **Laser View Window**.

b. Troubleshooting Bar Code Reading Problems. If the Code 39 bar code laser scanner/decoder seems to be experiencing problems reading the bar codes from the teslin ID card/CAC try the following to solve the problem:

1. Ensure that you are trying to read the Code 39 (one-dimensional) bar code on the teslin ID card/CAC, and not the PDF417 (two-dimensional) bar code.
2. Ensure that you have properly positioned the teslin ID card/CAC by checking the position of the teslin ID card/CAC, as indicated in Subsection 10.2.2 and Figure 10-4, above.
3. If none of the indicators are lit, make sure that all the cables are firmly secured to the bar code scanner/decoder, USB port device, the RAPIDS Workstation, and surge suppressor. To fix a loose cable:
 - a. Perform a proper shutdown of the Workstation system and power everything **Off** via the **Power** switch on the surge suppressor.
 - b. Make sure the bar code scanner/decoder's data cable is firmly connected at the scanner/decoder and to the Workstation's CPU via the USB port device.
 - c. Make sure that the bar code scanner/decoder's power cable is securely plugged into the scanner/decoder, special cable, and the Workstation's surge suppressor.
 - d. Power the Workstation system back **On** by using the **Power** switch on the surge suppressor.

If the RAPIDS application still doesn't work or produces an error message during bar code scanning, and an error message persists, RAPIDS users should write down the complete error message and call the DRAC, DRSC-E, or DSO-A, as appropriate.

10.3 Symbol Code 39/PDF417 Bar Code Scanners/Decoders

10.3.1 Symbol Code 39/PDF417 Bar Code Scanner/Decoders Description

The Symbol Code 39/PDF417 bar code scanners/decoders, shown in Figures 10-5 through 10-8, on the next several pages, are capable of reading both Code 39 (one-dimensional) and PDF417 (two-dimensional) bar codes. There are several models of Symbol PDF417 laser scanner/decoders fielded at some RAPIDS sites. The Symbol 6000 and 6808 are similar laser style models and the Symbol 620 is a toaster style model.

10.3.1.1 Symbol 6000 Laser Code 39/PDF417 Bar Code Scanner/Decoder

The Symbol 6000 laser scanner/decoder has two pieces, a scanner unit and a decoder unit. It is available in two configurations: (1) mounted on a stand with an automatic trigger/sensor for hands-free scanning (shown in Figure 10-5, below) or (2) as a “gun” style version with a trigger, which must be pressed in for scanning (shown in Figure 10-6, below). The separate decoder unit for both styles of PDF 6000 scanner is the same (shown in Figure 10-6, below).

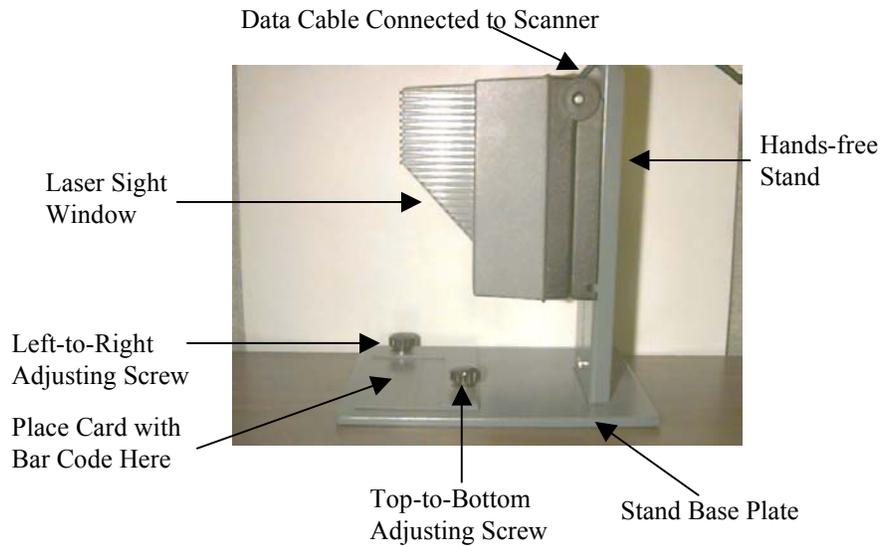


Figure 10-5: Symbol 6000 Hands-free Bar Code Scanner/Decoder

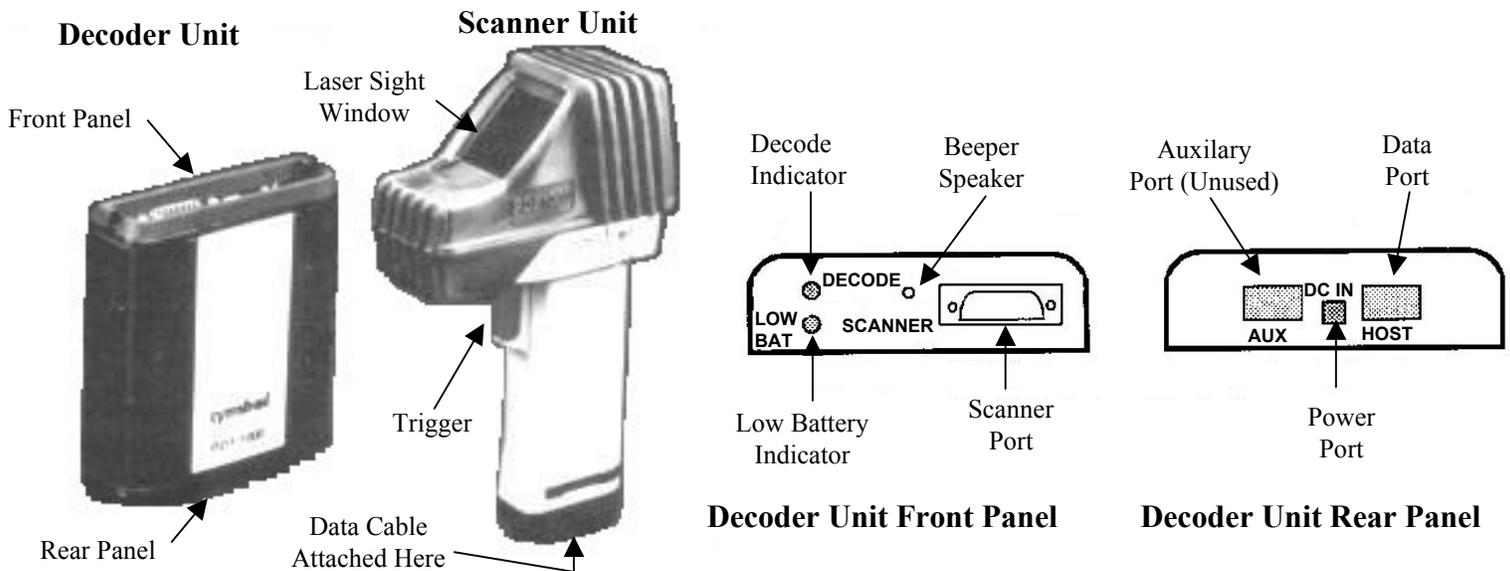


Figure 10-6: Symbol 6000 Gun Style Bar Code Scanner and Decoder Units

For both styles of Symbol 6000, the **RCA** (round) connector on the power cord should be connected to the **Power** port (labeled DC IN) on the back panel of the decoder unit and the power plug should be plugged into an outlet on the Workstation's surge suppressor. The data cable, which is permanently attached to the scanner unit, should be connected to the **Scanner** port (labeled SCANNER) on the front panel of the decoder unit. The serial data cable to the RAPIDS Workstation should be connected between the **RJ-45** (square) **Data** port (labeled HOST) on the back panel of the decoder unit and the **DB-9** (rectangular) **Serial Output Port 2** on the back of the USB port device.

The Symbol 6000 decoder unit has two indicator lights on the front of the scanner:

- a. **Decode Indicator** illuminates green when the scanner/decoder has successfully read data from a bar code.
- b. **Low Battery Indicator** illuminates yellow when the optional battery pack is running low on power. The optional battery pack is not used with RAPIDS.

10.3.1.2 Symbol 6808 Laser Code 39/PDF417 Bar Code Scanner/Decoder

The Symbol 6808 laser scanner/decoder is a single unit and is mounted on a stand with an automatic trigger/sensor for hands-free scanning (shown in Figure 10-7, below without stand).

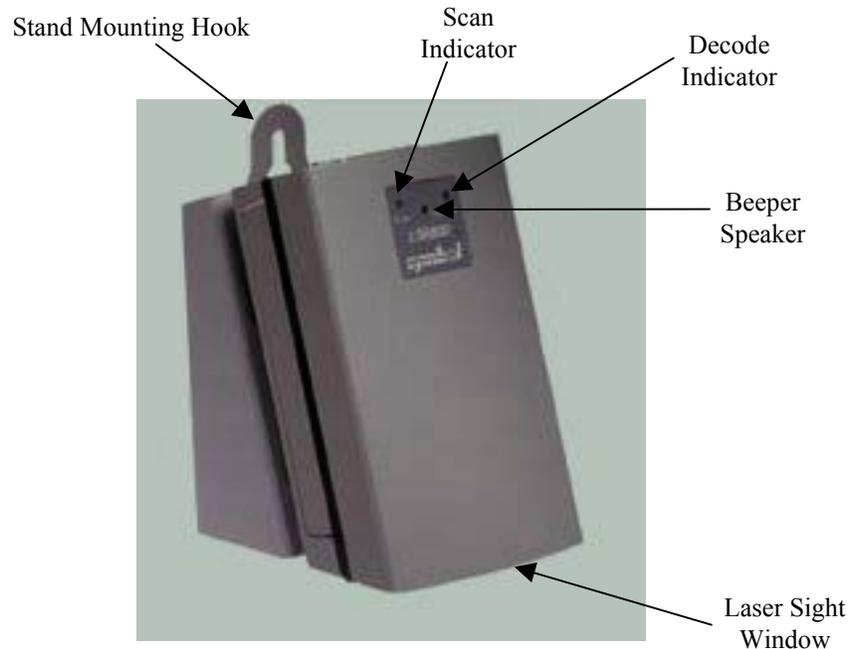


Figure 10-7: Symbol 6808 Laser Bar Code Scanner and Decoder

For The Symbol 6808, the power cord should be connected to the **RCA** (round) **Power** jack on the scanner/decoder and the **Power** plug should be plugged into an outlet on the Workstation's surge suppressor. The serial data cable should be connected between the bar code scanner/decoder's **RJ-45** (square) **Data** port and the **Serial Output Port 2** (rectangular) on the back of the USB port device.

The Symbol 6808 decoder unit has two indicator lights on the front of the scanner:

1. **Decode Indicator** – illuminates green when the a scanned bar code has been successfully decoded.
2. **Scan Indicator** – illuminates red when a bar code is successfully read by the scanner.

10.3.1.3 Symbol 620 Toaster Code 39/PDF417 Bar Code Scanner/Decoder

The Symbol 620 is a toaster style scanner where you must load the card containing the bar code into the card tray at the top of the unit to read the bar codes (shown in Figure 10-8, below).

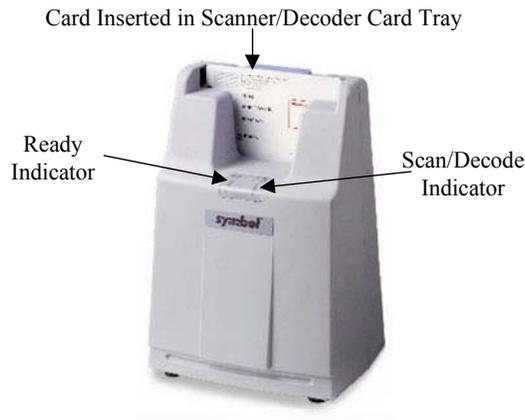


Figure 10-8: Symbol 620 Toaster Code 39/PDF417 Bar Code Scanner/Decoder

For the Symbol 620, the power cord should be connected to the **RCA** (round) **Power** jack (labeled with +, -, and 5V) on the side of the scanner/decoder (it's the top one of the two jacks) and the **Power** plug should be plugged into an outlet on the Workstation's surge suppressor. The serial data cable should be connected between the bar code scanner/decoder's **RJ-45** (square) **Data** jack (labeled HOST) on the left side (it's the lower one of the two jacks) and the **Serial Output Port 2** (rectangular) on the back of the USB port device.

The Symbol 620 bar code scanner/decoder has two indicators on the front of the unit, as shown in Figure 10-8, above:

- a. **Ready Indicator** illuminates green when power is applied to the scanner and it is ready to scan a bar code. It is off when no power is being applied, when reader is trying to decode, and when transmitting data to the RAPIDS Workstation.
- b. **Scan/Decode Indicator** illuminates yellow when there had been a successful decode of the bar code being read and when transmitting data to the RAPIDS Workstation. It is off when the scanner/decoder is reading data from a bar code or when the bar code is not successfully decoded.

10.3.2 How to Use the Symbol Code 39/PDF417 Bar Code Scanners/Decoders

10.3.2.1 Symbol 6000 Laser Code 39/PDF417 Bar Code Scanner/Decoder

The Symbol 6000 laser scanner/decoder is powered **On** when plugged into a good power source, it does not have a power or on/off switch. It is turned **On** at the Workstation's surge suppressor that it is plugged into.

With the hands-free scanner/decoder (shown in Figure 10-5, above) the bar code is at an optimal distance from the laser beam when it is positioned on the tray at the bottom of the stand. This provides increased readability of bar codes. This model comes with the optional auto-sense feature that automatically scans the bar code when it is in view of the scanner without having to pull a trigger.

a. Hands-free Option Reading of Either a Code 39 or PDF417 Bar Code. To read either a Code 39 or PDF417 bar code:

1. Position the teslin ID card/CAC on the tray of the stand's base plate with the bar code to be read facing up and under the red laser beam shining down from the laser sight window onto the stand's base plate.

NOTE:

When reading the PDF417 (two-dimensional) bar code from the teslin ID card, it is recommended that you cover up the Code 39 bar code, so that the scanner does not read it instead.

2. Upon successful decode of the scanned bar code, the **Decode** indicator on the front panel of the decoder unit illuminates green.
3. The unit also emits a beep when finished reading the bar code.

b. To Adjust Guides on Hands-free Base Plate. The guides of the stand's base plate should have been adjusted to a proper setting for teslin ID cards/CACs when it was installed. Perform the following steps, if these guides need to be readjusted:

1. Properly position a teslin ID card/CAC with the bar code to be read on the stand's base plate. Note the area of the bar code that the scanner's red laser beam is shining on.
2. Next, loosen one or both of the black knobs that secure the guides, depending on which direction(s) you need to move the guide(s) to ensure that the red laser beam covers the entire bar code. For reading the Code 39, one-dimensional, bar code, the laser beam should be a straight line that extends slightly past both ends of the bar code. For reading the PDF417, two-dimensional, bar code, the laser beam should start out as a straight line and automatically branch out to read both dimensions of the PDF417 bar code. At this point, the beam should extend slightly past the top and bottom and both sides of the PDF417 bar code.
3. Move the guides until the bar code is centered in laser beam and tighten down the black knob(s).
4. If the laser beam does not extend beyond the edges of the bar code, then you will need to raise the bar code scanner/decoder on the stand until it just slightly extends past the edges. If the laser beam extends too far past the edges of the bar

code, then you will need to lower the bar code scanner/decoder on the stand until it only slightly extends past the edges. To move the bar code scanner up or down, loosen the screw on the back of the stand to release the scanner and move it to a good location. Then tighten the screw until the scanner/decoder is secure in its new position.

c. Hand-held Reading of Either a Code 39 or PDF417 Bar Code. For the “gun” style model without the automatic hands-free option (shown in Figure 10-6, above) you have to hold the scanner unit, pull the trigger to activate the laser, and aim it to cover the bar code to be read. To read either a Code 39 or PDF417 bar code:

1. Position the teslin ID card/CAC on a desk or table or hold it with the bar code to be read facing up. Hold the scanner at an optimum distance from the bar code, such that the red laser beam extends slightly past the left and right edges of the bar code while depressing the trigger on the handle of the scanner. When reading a PDF417 bar code, the scanner’s laser beam will automatically branch out to read both dimensions of this two-dimensional bar code.

NOTE:

When reading the PDF417 (two-dimensional) bar code from the teslin ID card, it is recommended that you cover up the Code 39 bar code, so that the scanner does not read it instead.

2. Upon successful decode of the scanned bar code, the **Decode** indicator on the front panel of the decoder unit illuminates green.
3. The unit also emits a beep when finished reading the bar code, so you should release the trigger after you hear the beep.

b. To Adjust Guides on Hands-free Base Plate. The guides of the stand’s base plate should have been adjusted to a proper setting for teslin ID cards/CACs when it was installed. Perform the following steps, if these guides need to be readjusted:

1. Properly position a teslin ID card/CAC with the bar code to be read on the stand’s base plate. Note the area of the bar code that the scanner’s red laser beam is shining on.
2. Next, loosen one or both of the black knobs that secure the guides, depending on which direction(s) you need to move the guide(s) to ensure that the red laser beam covers the entire bar code. For reading the Code 39, one-dimensional, bar code, the laser beam should be a straight line that extends slightly past both ends of the bar code. For reading the PDF417, two-dimensional, bar code, the laser beam should start out as a straight line and automatically branch out to read both dimensions of the PDF417 bar code. At this point, the beam should extend slightly past the top and bottom and both sides of the PDF417 bar code.
3. Move the guides until the bar code is centered in laser beam and tighten down the black knob(s).
4. If the laser beam does not extend beyond the edges of the bar code, then you will need to raise the bar code scanner/decoder on the stand until it just slightly extends past the edges. If the laser beam extends too far past the edges of the bar code, then you will need to lower the bar code scanner/decoder on the stand until it only slightly extends past the edges. To move the bar code scanner up or down,

loosen the screw on the back of the stand to release the scanner and move it to a good location. Then tighten the screw until the scanner/decoder is secure in its new position.

10.3.2.2 Symbol 6808 Laser Code 39/PDF417 Bar Code Scanner/Decoder

The Symbol 6808 laser scanner/decoder is powered **On** when plugged into a good power source, it does not have a power or on/off switch. It is turned **On** at the Workstation's surge suppressor that it is plugged into.

With the hands-free scanner/decoder (shown in Figure 10-7, above), the bar code is at an optimal distance from the laser beam when it is positioned on the tray at the bottom of the stand. This provides increased readability of bar codes. This model comes with the optional auto-sense feature that automatically scans the bar code when it is in view of the scanner without having to pull a trigger.

a. Reading Either a Code 39 or PDF417 Bar Code. To read either a Code 39 or PDF417 bar code:

1. Position the teslin ID card/CAC on the tray of the stand's base plate with the bar code to be read facing up and under the red laser beam shining down from the laser sight window onto the stand's base plate.

NOTE:

When reading the PDF417 (two-dimensional) bar code from the teslin ID card, it is recommended that you cover up the Code 39 bar code, so that the scanner does not read it instead.

2. Upon a successful scan of the bar code, the **Scan** indicator illuminates red.
3. Upon successful decode of the scanned bar code, the **Decode** indicator illuminates green.
4. The unit also emits a beep when finished reading the bar code.

b. To Adjust Guides on Base Plate. The guides of the stand's base plate should have been adjusted to a proper setting for teslin ID cards/CACs when it was installed. Perform the following steps, if these guides need to be readjusted:

1. Properly position a teslin ID card/CAC with the bar code to be read on the stand's base plate. Note the area of the bar code that the scanner's red laser beam is shining on.
2. Next, loosen one or both of the black knobs that secure the guides, depending on which direction(s) you need to move the guide(s) to ensure that the red laser beam covers the entire bar code. For reading the Code 39, one-dimensional, bar code, the laser beam should be a straight line that extends slightly past both ends of the bar code. For reading the PDF417, two-dimensional, bar code, the laser beam should start out as a straight line and automatically branch out to read both dimensions of the PDF417 bar code. At this point, the beam should extend slightly past the top and bottom and both sides of the PDF417 bar code.
3. Move the guides until the bar code is centered in laser beam and tighten down the black knob(s).

4. If the laser beam does not extend beyond the edges of the bar code, then you will need to raise the bar code scanner/decoder on the stand until it just slightly extends past the edges. If the laser beam extends too far past the edges of the bar code, then you will need to lower the bar code scanner/decoder on the stand until it only slightly extends past the edges. To move the bar code scanner up or down, loosen the screw on the back of the stand to release the scanner and move it to a good location. Then tighten the screw until the scanner/decoder is secure in its new position.

10.3.2.3 Symbol 620 Toaster Code 39/PDF417 Bar Code Scanner/Decoder

The Symbol 620 bar code scanner and decoder are contained within a single unit that resembles a toaster, as shown in Figure 10-8, above. The Symbol 620 is powered **On** when plugged into a good power source; it does not have a power or on/off switch. It is turned **On** at the Workstation's surge suppressor that it is plugged into. Upon power **On**, the scanner/decoder beeps three times while the **Scan/Decode** indicator flashes yellow three times and goes out, and then the **Ready** indicator is illuminated green.

To read either a Code 39 or PDF417 bar code:

- a. Place the teslin ID card/CAC width-wise into the card tray on the top of the scanner/decoder with the bar code to be read facing front and at the bottom edge of the card.
- b. Push the top of the card tray down into the unit until the card tray hits the back end of the slot.

NOTE:

When reading the PDF417 bar code from a teslin ID card, make sure you don't push the card down too quickly or else the scanner will end up reading the Code 39 bar code instead.

- c. The **Ready** indicator turns off and the **Scan/Decode** indicator flashes yellow.
- d. Release your hand from the card tray and the card tray ejects automatically. Once the teslin ID card/CAC is back up to the top of the card tray then it can be removed. This operation is similar to using a toaster, hence the reference "Toaster Scanner".
- e. The **Scan/Decode** indicator quickly flashes yellow while it transmits the data to the RAPIDS Workstation and then the **Ready** indicator is illuminated green, to indicate it is ready to scan another bar code.

10.3.3 Troubleshooting Symbol Code 39/PDF417 Bar Code Scanner/Decoder Problems

If the Symbol Code 39/PDF417 bar code scanner/decoder seems to be experiencing problems reading the bar codes from the teslin ID card/CAC try the following to solve the problem:

- a. Ensure that you are trying to read the bar code you want to read, Code 39 (one-dimensional) or PDF417 (two-dimensional) bar code from the teslin ID card/CAC, by checking the position of the teslin ID card/CAC, as indicated in Subsection 10.3.2.1, above for the Symbol 6000, Subsection 10.3.2.2, above for the Symbol 6808, and Subsection 10.3.2.3, above for the Symbol 620.

- b. For the Symbol 6000/6840 hands-free scanners/decoders, ensure that you have properly positioned the ID card as indicated for the type of bar code scanner/decoder (see Subsections 10.3.2.1 and 10.3.2.2 above). For the Symbol 6000 hand-held scanner/decoder, ensure that you have properly positioned the ID card and pulled the trigger as indicated for this type of bar code scanner/decoder (see Subsection 10.3.2.2 above). For the Symbol 620 toaster scanner/decoder, ensure that you have properly inserted the teslin ID card/CAC bar code you want to read into the top of the scanner/decoder (see Subsection 10.3.2.3, above).
- c. Make sure that all the cables are firmly secured to the bar code scanner/decoder, USB port device, the RAPIDS Workstation, and surge suppressor. To fix a loose cable:
 1. Perform a proper shutdown of the Workstation system and power everything **Off** via the **Power** switch on the surge suppressors.
 2. Make sure the bar code scanner/decoder's data cable is firmly connected at the scanner/decoder and to the Workstation's CPU via the USB port device.
 3. Make sure that the bar code scanner/decoder's power cable is securely plugged into the scanner/decoder and the Workstation's surge suppressor.
 4. Power the Workstation system back **On** by using the **Power** switch on the surge suppressors.

If the RAPIDS application still doesn't work or produces an error message during bar code scanning, and the error message persists, the RAPIDS user should write down the complete error message and call the DRAC, DRSC-E, or DSO-A, as appropriate.

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SECTION 11: ETHERNET SWITCHES

11.1 Ethernet Switch Description

The Ethernet switches are designed to connect RAPIDS Workstations to their Server via a high-speed Ethernet (10 megabits per second [Mbps] or 100 Mbps) LAN configuration. These Ethernet switches are IEEE 802.3/IEEE 802.2 Ethernet Version 2.0 compatible. There are four types of Ethernet switches used with RAPIDS Servers and Workstations: two Lantronix models and two D-Link models. Either the Lantronix LMS8-A-01 8-port 10BaseT Ethernet switch or the D-Link DSS-8 8-port 10/100BaseT Ethernet switch is used at sites with Servers that have four or less collocated Workstations (within 300 feet of the Server). Either the Lantronix LMS2F8-MA-01 10-port 10/100BaseT Ethernet switch or the D-Link DSS-16+ 16-port 10/100BaseT Ethernet switch is used at sites with Servers that have five or more collocated Workstations (within 300 feet of the Server). All of these switches come in 110 V/60 Hz and 220 V/50 Hz models, which look similar and perform similarly. Subsections 11.1.1 and 11.1.2 describe the two Lantronix Ethernet switches. Subsections 11.1.3 and 11.1.4 describe the two D-Link Ethernet switches.

11.1.1 Lantronix LMS8-A 10BaseT 8-port Ethernet Switch

The front and rear panels of the Lantronix LMS8-A Ethernet switch are shown in Figure 11-1, below, and the top panel is shown in Figure 11-2, on the next page.

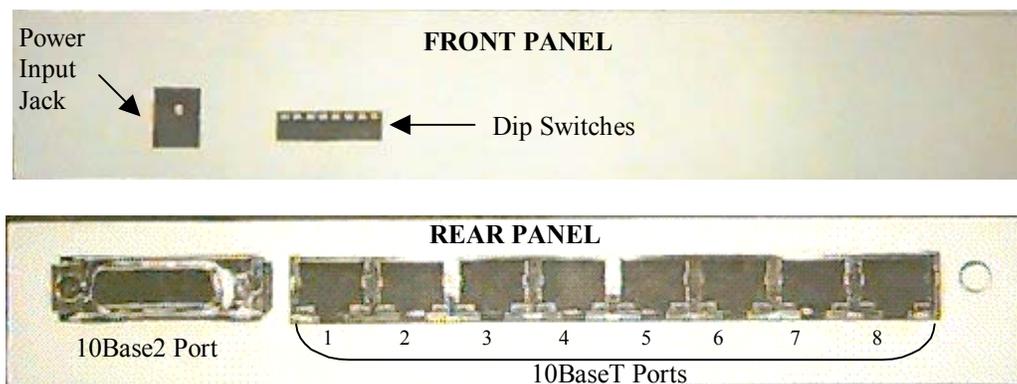


Figure 11-1: Lantronix LMS8-A Ethernet Switch Front and Rear Panels

The Lantronix LMS8-A Ethernet switch has eight RJ45, unshielded-twisted-pair/shielded-twisted-pair (UTP/STP), **10BaseT** ports, located on the rear panel, that are used to connect the RAPIDS Server and its collocated Workstations to the switch. The switch has one 15-pin AUI **10Base2** port, located on the rear panel, that can be used to connect to the base Ethernet WAN for Ethernet Servers that communicate with DEERS over the DISN WAN, if **10BaseT** port 8 can't be used for this connection. The RAPIDS server should be connected to **10BaseT** port 7 and the collocated workstations should be connected to **10BaseT** ports 1-6.

Each **10BaseT** port can be configured to run in either Half Duplex or Full Duplex mode, which is indicated via the **Good Link/Full Duplex** indicator (see table below) for each **10BaseT** port, located on the back panel of the switch, on the left side of each **10BaseT** port. The dip switches on the front panel, for duplex mode of the **10BaseT** ports 1-8 should be in the **Up** position for full duplex. The Ethernet switch has eight **Receive/Collision** diagnostic indicators (see table below), one for each **10BaseT** port, located on the back panel of the switch, on the right side of each **10BaseT** port. The indicator legend for the Ethernet **10BaseT** ports **1-8** on the switch is presented in the table below.

Table 11-1. Legend for Ethernet 10BaseT Port Indicators

Left Side Good Link/Full Duplex Indicators	Right Side Receive/Collision Indicators
Green = Half Duplex Mode Yellow = Full Duplex Mode Unlit = No Link	Green = Receiving Data Yellow = Data Collision

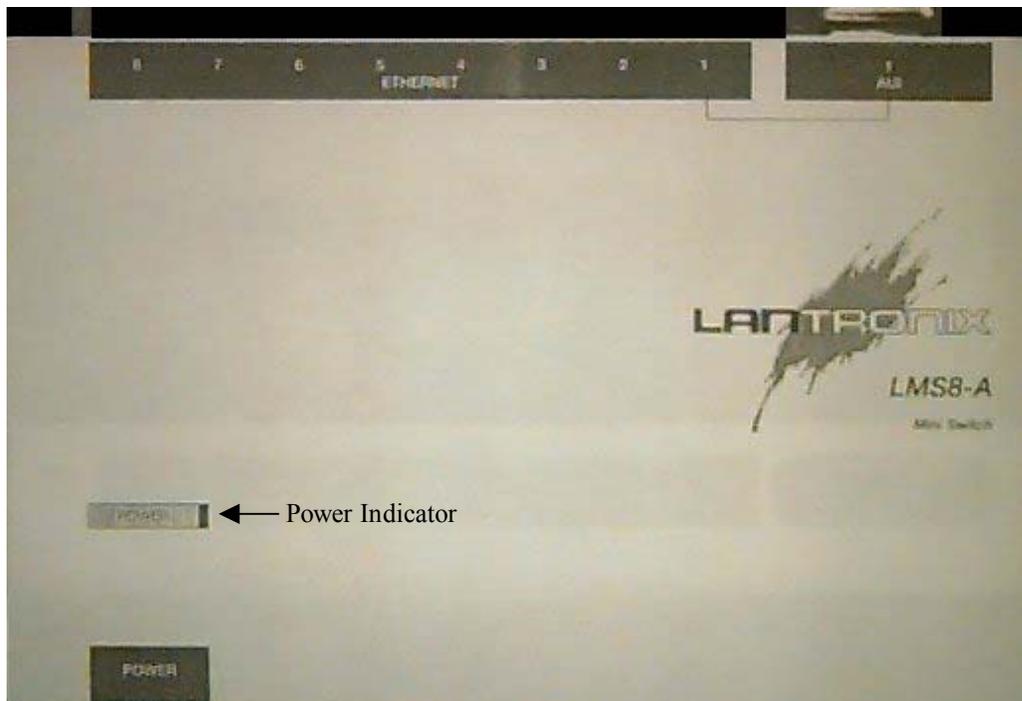


Figure 11-2: Lantronix LMS8-A Ethernet Switch Top Panel

The Lantronix LMS8-A Ethernet switch's power cord is connected from the **Power Input** jack on the front panel of the switch to an outlet on the Server's surge suppressor. As long as the Ethernet switch is plugged into a power source, such as the Server's surge suppressor, it will be powered **On**, since it does not have a power switch.

NOTE:

The Ethernet switch may be installed in the base wiring closet instead of next to the RAPIDS Server. In this case it cannot be plugged into the Server's surge suppressor, but will probably be kept as always powered On.

The Lantronix LMS8-A Ethernet switch has a **Power** indicator, located on the top panel, which is illuminated green when ever the switch is receiving power via the **Power Input** jack. If there is a fault, the **Power** indicator will not be illuminated.

11.1.2 Lantronix LMS2F8-MA 10/100BaseT 10-port Ethernet Switch

The front and rear panels of the Lantronix LMS2F8-MA Ethernet switch are shown in Figure 11-3, below, and the top panel is shown in Figure 11-4, below.

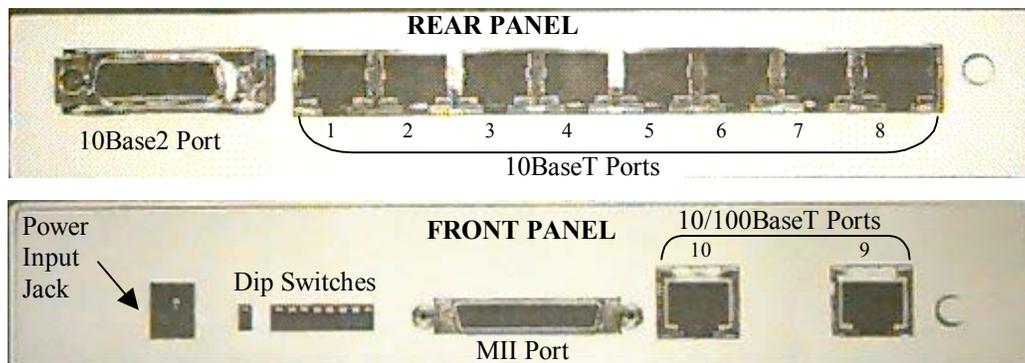


Figure 11-3: Lantronix LMS2F8-MA Ethernet Switch Front and Rear Panels

The Lantronix LMS2F8-MA Ethernet switch has eight RJ45 UTP/STP **10BaseT** ports, located on the rear panel, that are used to connect all collocated RAPIDS Workstations to their RAPIDS Server via the switch. The switch also has two RJ45 **10/100BaseT** ports, located on the front panel, used to connect the RAPIDS Server and the base Ethernet WAN (for Ethernet Servers to communicate with DEERS over the DISN WAN) to the switch. The switch also has one 15-pin AUI **10Base2** port, located on the rear panel, that can be used to connect to the base Ethernet WAN for Ethernet Servers that communicate with DEERS over the DISN WAN, if **10/100BaseT** port 9 can't used for this connection. The RAPIDS server should be connected to **10/100BaseT** port 10 and the collocated workstations should be connected to **10BaseT** ports 1-8. This switch also has one 45-pin **MII** port, located on the front panel, for AUI connections, but this is not used by RAPIDS systems.

Each **10BaseT** port can be configured to run in either Half Duplex or Full Duplex mode, which is indicated via the **Good Link/Full Duplex** indicator (see table below), located on the back panel of the switch, on the left side of each **10BaseT** port. The dip switches on the front panel, for duplex mode of the **10BaseT** ports 1-8 should be in the **Up** position for full duplex. The Ethernet switch has eight **Receive/Collision** diagnostic indicators (see table below), located on the back panel of the switch, on the right side of each **10BaseT** port. The indicator legend for the Ethernet **10BaseT** ports 1-8 on the switch is presented in the table on the next page.

Table 11-2. Legend for Ethernet 10BaseT (1-8) Port Indicators

Left Side Good Link/Full Duplex Indicator	Right Side Receive/Collision Indicator
Green = Half Duplex Mode Yellow = Full Duplex Mode Unlit = No Link	Green = Receiving Data Yellow = Data Collision

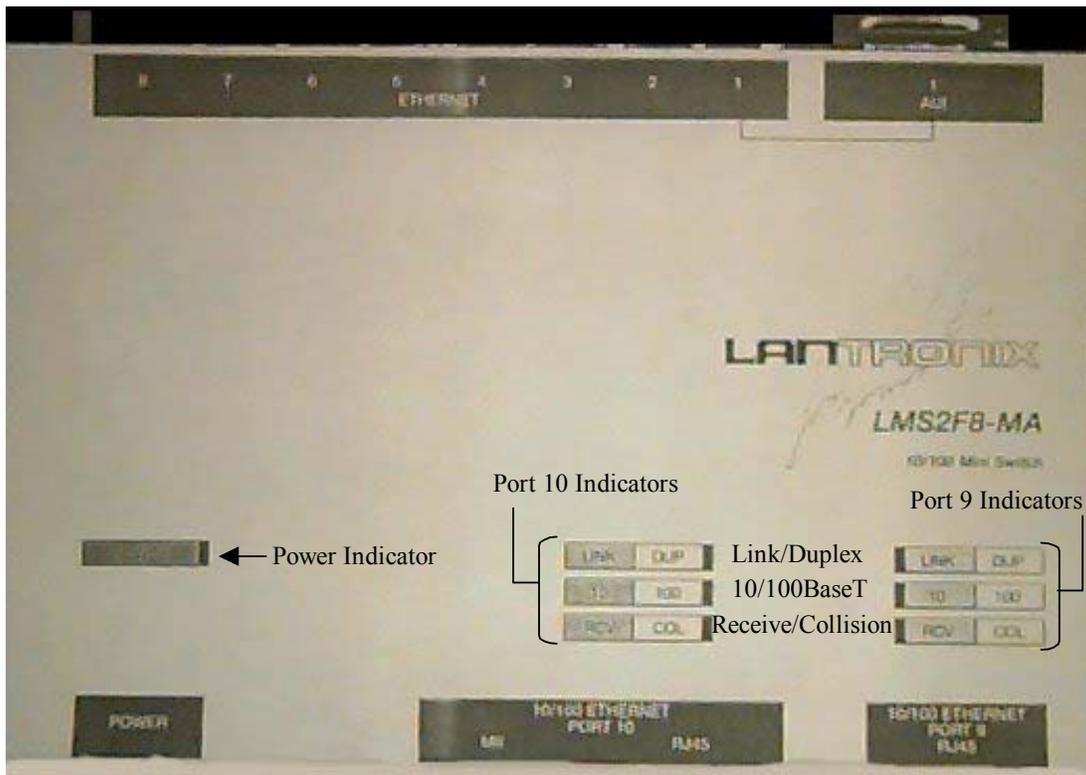


Figure 11-4: Lantronix LMS2F8-MA Ethernet Switch Top Panel

The indicators for the two **10/100BaseT** ports are located on the top of the switch. The indicator legend for the Ethernet **10/100BaseT** ports **9-10** on the switch is presented in the table below.

Table 11-3. Legend for Ethernet 10/100BaseT (9 –10) Port Indicators

Good Link/Full Duplex Indicators	10/100BaseT Indicators	Receive/Collision Indicators
Green = Half Duplex Mode Yellow = Full Duplex Mode Unlit = Fault	Green = 10 Mbps Yellow = 100 Mbps	Green = Receiving Data Yellow = Data Collision

The Lantronix LMS2F8-MA Ethernet switch's power cord is connected from the **Power Input** jack on the front panel of the switch to an outlet on the Server's surge suppressor. As long as the Ethernet switch is plugged into a power source, such as the Server's surge suppressor, it will be powered **On**, since it does not have a power switch.

NOTE:

The Ethernet switch may be installed in the base wiring closet instead of next to the RAPIDS Server. In this case it cannot be plugged into the Server's surge suppressor, but will probably be kept as always powered On.

The Lantronix LMS2F8-MA Ethernet switch has a **Power** indicator, located on the top panel, which is illuminated green when ever the switch is receiving power via the **Power Input** jack. If there is a fault, the **Power** indicator will not be illuminated.

11.1.3 D-Link DSS-8 10/100BaseT 8-port Ethernet Switch

The front and rear panels of the D-Link DSS-8 Ethernet switch are shown in Figure 11-5, below.

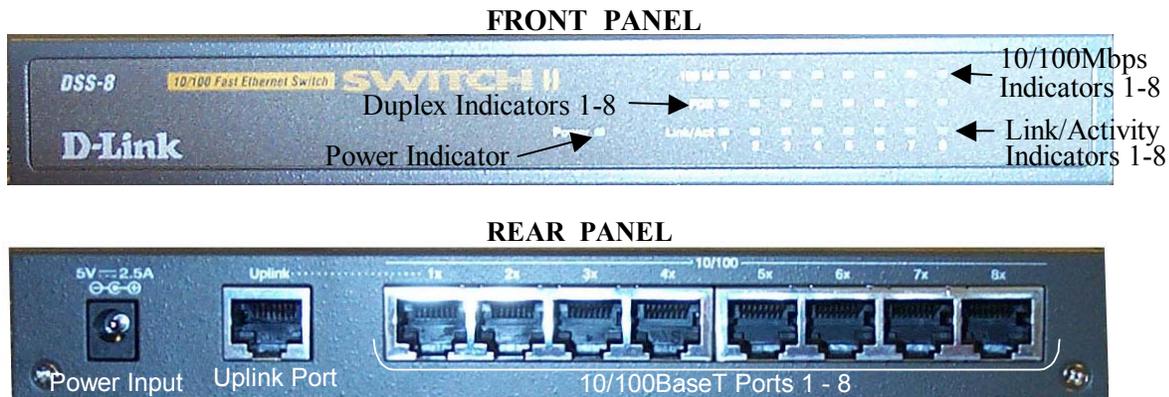


Figure 11-5: D-Link DSS-8 Ethernet Switch Front and Rear Panels

The D-Link DSS-8 Ethernet switch has eight RJ45 UTP/STP **10/100BaseT** ports (**1X – 8X**), located on the rear panel, that are used to connect the RAPIDS Server and its collocated Workstations to the switch creating a LAN. The **Uplink** port, located on the rear panel, is used to connect to the base Ethernet LAN for Ethernet Servers that communicate with DEERS over the DISN WAN.

Note:

The Uplink Port is shared with port 1X, so it should not be used to connect to the RAPIDS server or its collocated RAPIDS workstations to the switch.

Each **10/100BaseT** port auto-detects the connection speed to run at either 10 Mbps or 100 Mbps, which is indicated via the **10/100 Mbps** indicator for each port (see table below), located on the front panel of the switch, top row. Each **10/100BaseT** port auto-detects the Duplex Mode (Half Duplex or Full Duplex), which is indicated via the **Duplex** indicator for each port (see table below), located on the front panel of the switch, middle row. The Ethernet switch has a

Link/Activity diagnostic indicator for each port (see table below), located on the front panel of the switch, bottom row. The indicator legend for the Ethernet **10/100BaseT** ports (**1X - 8X**) on the switch is presented in the table below.

Table 11-4. Legend for Ethernet 10/100BaseT (1X – 8X) Port Indicators

10/100 Mbps Indicators	Duplex Indicators	Activity/Link Indicators
Green = 100 Mbps Speed Unlit = 10 Mbps Speed	Green = Full Duplex Mode Unlit = Half Duplex Mode	Green = Link Blinking = Link w/ Packet Transfer Unlit = No Link

The D-Link DSS-8 Ethernet switch’s power cord is connected from the **Power Input** jack on the rear panel of the switch to an outlet on the Server’s surge suppressor. As long as the switch is plugged into a power source, such as the Server’s surge suppressor, it will be powered **On**, since it does not have a power switch.

NOTE:

The Ethernet switch may be installed in the base wiring closet instead of next to the RAPIDS Server. In this case it cannot be plugged into the Server’s surge suppressor, but will probably be kept as always powered On.

The D-Link DSS-8 Ethernet switch has a **Power** indicator, located on the front panel, which is illuminated green when ever the switch is receiving power via the **Power Input** jack. If there is a fault, the **Power** indicator will not be illuminated.

11.1.4 D-Link DSS-16+ 10/100BaseT 16-port Ethernet Switch

The front and rear panels of the D-Link DSS-16+ Ethernet switch are shown in Figure 11-6 below.

The D-Link DSS-16+ Ethernet switch has sixteen RJ45 UTP/STP **10/100BaseT** ports (**1X – 16X**), located on the rear panel, that are used to connect the RAPIDS Server and its collocated Workstations to the switch creating a LAN. The **Uplink-1 Port**, located on the rear panel, is used to connect to the base Ethernet LAN for Ethernet Servers that communicate with DEERS over the DISN WAN. The **Uplink-2 Port**, located on the rear panel, is not used by RAPIDS.

Note:

The Uplink-1 Port is shared with port 1X, so it should not be used to connect to the RAPIDS server or its collocated RAPIDS workstations to the switch.

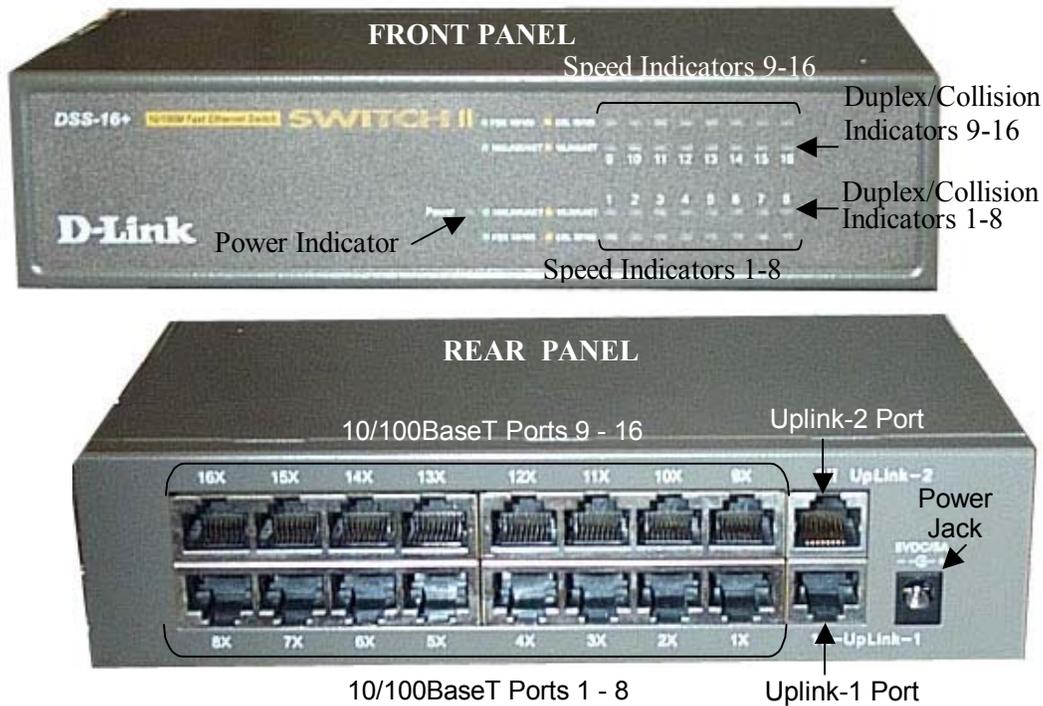


Figure 11-6: D-Link DSS-16+ Ethernet Switch Front and Rear Panels

Each **10/100BaseT** port auto-detects the connection speed to run at either 10 Mbps or 100 Mbps. Connection speed is indicated by the **Port Speed** indicator for each port (see table below), located on the front panel of the switch, bottom row for ports **1X – 8X** or top row for ports **9X – 16X**. Each **10/100BaseT** port auto-detects the Duplex Mode (Half Duplex or Full Duplex), which is indicated via the **Duplex/Collision** indicator for each port (see table below), located on the front panel of the switch, top row for ports **1X – 8X** or bottom row for ports **9X – 16X**. The indicator legend for the Ethernet **10/100BaseT** ports (**1X - 16X**) on the switch is presented in the table below.

Table 11-5. Legend for Ethernet 10/100BaseT (1X – 16X) Port Indicators

Duplex/Collision Indicators	Port Speed Indicators
Green = Full Duplex Mode	Green = 100 Mbps Speed
Unlit = Half Duplex Mode	Yellow = 10 Mbps Speed
Yellow = Collision	Blinking = Packet Transfer
	Unlit = No Link

The D-Link DSS-16+ Ethernet switch's power cord is connected from the **Power Input** jack on the rear panel of the switch to an outlet on the Server's surge suppressor. As long as the switch is plugged into a power source, such as the Server's surge suppressor, it will be powered **On**, since it does not have a power switch.

NOTE:

The Ethernet switch may be installed in the base wiring closet instead of next to the RAPIDS Server. In this case it cannot be plugged into the Server's surge suppressor, but will probably be kept as always powered On.

The D-Link DSS-16+ Ethernet switch has a **Power** indicator, located on the front panel, which is illuminated green when ever the switch is receiving power via the **Power Input** jack. If there is a fault, the **Power** indicator will not be illuminated.

11.2 How to Use the Ethernet Switches

The Ethernet switch's power cord should by plugged into the Server's surge suppressor, unless it is located in another location. In which case it should be plugged into a surge suppressor or other reliable power source at that location.

For the Lantronix LMS8-A, 8-port Ethernet switch, connect the LAN cable from the RAPIDS Server into port **7** (10BaseT) and the LAN cables from the Workstations into ports **1** through **6** (10BaseT), as applicable, on the rear panel of the Ethernet switch. If this is an Ethernet Server, then also connect the base-provided hub cable (connection via base WAN to DISN for DEERS communications) to port **8** (10BaseT) on the back of the Ethernet switch. Duplex mode for the RAPIDS Server should be set to **Full Duplex** and for the Workstations should be set to **Half Duplex** via software configuration.

For the D-Link DSS-8, 8-port Ethernet switch, connect the LAN cable from the RAPIDS Server into port **8X** (10/100BaseT) and the LAN cables to the Workstations into ports **2X** through **7X** (10/100BaseT), as applicable, on the rear panel of the Ethernet switch. If this is an Ethernet Server, then also connect the base-provided hub cable (connection via base WAN to DISN for DEERS communications) to the **Uplink** port (10/100BaseT) on the rear of the Ethernet switch. Duplex mode for the RAPIDS Server should be set to **Full Duplex** and for the Workstations should be set to **Half Duplex** via software configuration.

For the Lantronix LMS2F8-MA, 10-port 10/100BaseT Ethernet switch, connect the LAN cable from the RAPIDS Server into port **10** (10/100BaseT) and the LAN cables to the Workstations into ports **1** through **8** (10BaseT), as applicable, on the rear panel of the Ethernet switch. If this is an Ethernet Server, then also connect the Service-provided hub cable (connection via base WAN to DISN for DEERS communications) to port **9** (10/100BaseT) on the back of the Ethernet switch. The **10/100BaseT** ports (9 and 10) are set to auto detect speed (10 Mbps vs. 100 Mbps) and Duplex (Half vs. Full). Duplex mode for the RAPIDS Workstations should be set to **Half Duplex** via software configuration.

For the D-Link DSS-16+, 16-port Ethernet switch, connect the LAN cable from the RAPIDS Server into port **8X** (10/100BaseT) and the LAN cables to the Workstations into ports **2X** through **7X** (10/100BaseT), as applicable, on the rear panel of the Ethernet switch. If this is an Ethernet Server, then also connect the service provider hub cable (connection via base WAN to DISN for DEERS communications) to the **Uplink-1** port (10/100BaseT) on the rear of the Ethernet switch. The **Uplink-2** port (10/100BaseT), on the rear of the Ethernet switch, is not

used by RAPIDS. Duplex mode for the RAPIDS Server should be set to **Full Duplex**. Duplex mode for the RAPIDS Workstations should be set to **Half Duplex** via software configuration.

11.3 Troubleshooting Ethernet Switch Problems

If the Ethernet switch seems to be experiencing problems, the following steps should be used to attempt to resolve the problem.

- a. Ensure that the power cord is securely plugged into the Ethernet switch and an outlet on the surge suppressor, and that the surge suppressor is powered **On**.
 - b. If the switch is connected to a power source, then check the **Power** indicator, on the Ethernet switch, to make sure that it is illuminated green.
 - c. Check to make sure that the switch is operational by checking the indicators for each port being used on the switch:
 1. For the Lantronix LMS8-A 8-port or LMS2F8-A 10-port switch, make sure that each **Good Link/Full Duplex** indicator is lit (should be green for Workstations = half duplex or yellow for Servers = full duplex) and each **Receive/Collision** indicator should be lit green.
 2. For the D-Link DSS-8 8-port switch, make sure that each **Duplex** indicator is not lit yellow (should be unlit for Workstations = half duplex or green for Servers = full duplex) and each **Link/Activity** indicator is lit green or blinking.
 3. For the D-Link DSS-16+ 16-port switch, make sure that each **Duplex/Collision** indicator is lit (should be unlit for Workstations = half duplex or green for Servers = full duplex) and each **Port/Speed** indicator is not unlit (should be lit or blinking).
- If not, contact the DRAC, DRSC-E, or DSO-A, as appropriate.
- d. If only one or some of the indicators that should be lit are off, then check for any loose cables to the Ethernet switch connected to the port with the indicators that are not illuminated. To fix a loose cable:
 1. If the connection is to the Server, perform a proper shutdown of the Server and all connected Workstations, being sure to first notify all remote Workstation users connected to the Server before you shut it down. If the connection is to one or more Workstations, perform a proper shutdown of the affected Workstation(s). For the PC(s) that is (are) having the problem, power everything **Off** via the **Power** switch on the UPS and/or surge suppressor(s) for the affected system(s).
 2. Make sure the Ethernet data cables for the affected PC(s) are all firmly connected at the Ethernet switch, all wall plates, and the PC's Ethernet port on the back of the CPU.
 3. Power the affected system(s) back **On** by using the **Power** switch on the UPS and/or surge suppressor(s) and log back on. If it was the Server, notify any remote Workstation users that they can also restart and log back on.

If these steps do not resolve the problem, then RAPIDS users should call the DRAC, DRSC-E, or DSO-A, as appropriate for further assistance.

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SECTION 12: USB PORT DEVICE

12.1 USB Port Device Description

Each RAPIDS Workstation is equipped with an Inside Out Edgeport/421 USB port device to provide an additional four USB ports, two serial ports, and one parallel port for connecting peripherals to the RAPIDS Workstation.

The connectors and indicator lights on the Inside Out Edgeport/421 USB port device are shown in Figure 12-1, below and Figure 12-2, on the next page.

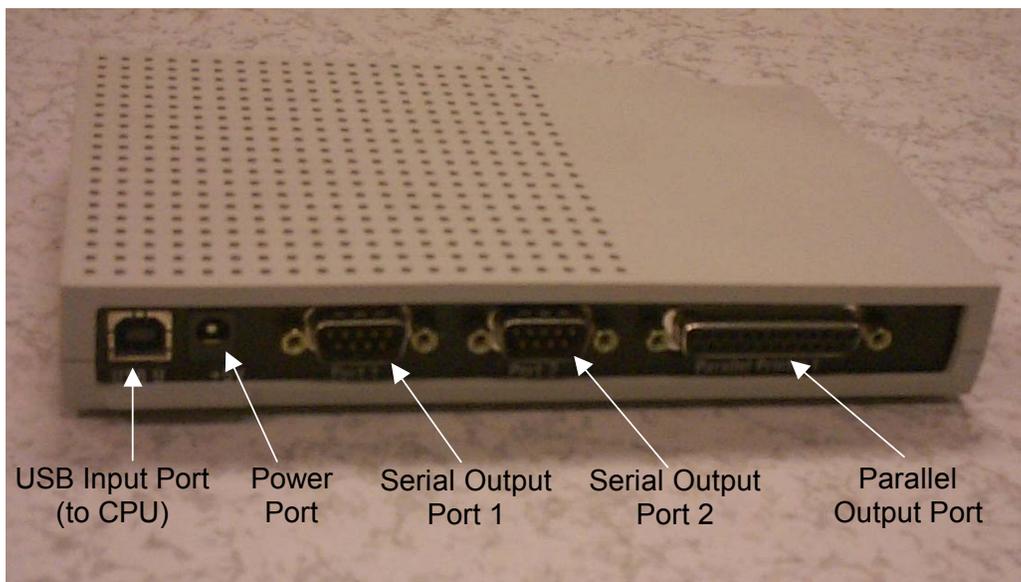


Figure 12-1: Inside Out Edgeport/421 USB Port Device Rear Panel

The USB port device has a **System Status** indicator, located on the far left side of the front panel, which starts out blinking red and turns green once the RAPIDS Workstation is fully operational.

The USB port device does not have a power switch; it is **On** when ever it is receiving power via the **Power Input** jack. If there is a fault, the **Power** indicator will not be illuminated.

Each **USB Output Port Indicator**, located on the front panel of the USB port device, is illuminated green whenever power is being supplied to the USB port.

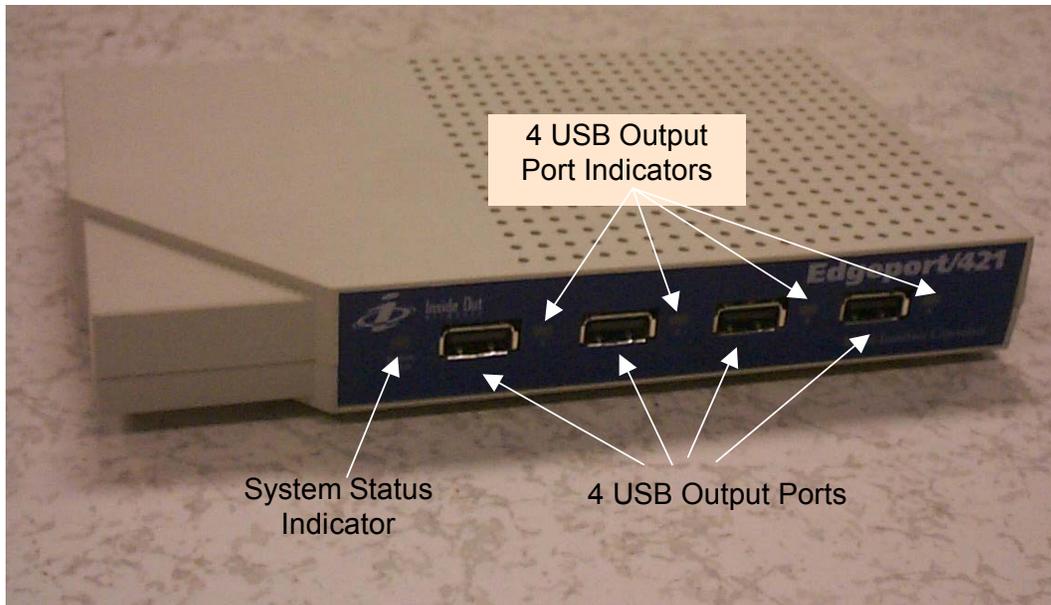


Figure 12-2: Inside Out Edgeport/421 USB Port Device Front Panel

12.2 How to Use the USB Port Device

The USB port device's power adapter/cord should be connected to the **Power Input** jack, located on the rear panel of the USB port device and plugged into the Workstation's surge suppressor, so that it is turned **On** and **Off** at the surge suppressor.

The USB interface cable that comes with the USB port device is connected between the top **USB** port, located on the back of the Workstation CPU, and the **USB Input** port, located on the back of the USB port device.

The pan-and-tilt control cable for the digital camera (to Visca In on camera) is connected to the RAPIDS Workstation via the **Serial Output Port 1**, located on the back panel of the USB port device.

The barcode scanner is connected to the RAPIDS Workstation via the **Serial Output Port 2**, located on the back panel of the USB port device. The laser printer is connected to the RAPIDS Workstation via the **Parallel Output Port**, located on the back of the USB port device.

The four **USB Output Ports**, located on the front of the USB port device are currently not used by RAPIDS. However, in the future these may be used to connect USB devices to the RAPIDS Workstation, as they become available.

12.3 Troubleshooting USB Port Device Problems

If the USB port device or one of the RAPIDS Workstation peripherals connected to it (laser printer, digital camera pan-and-tilt control, or bar code scanner) seems to be experiencing problems, the following steps should be used to attempt to resolve the problem.

- a. Ensure that the power cord is securely plugged into the USB port device and an outlet on the surge suppressor, and that the surge suppressor is powered **On**.
- b. If the USB port device is connected to a power source, then check the **Power** indicator, on the USB port device, to make sure that it is illuminated green.
- c. Check to make sure that each **USB Output Port Indicator**, located on the front panel of the USB port device, is illuminated green. If not, contact the DRAC, DRSC-E, or DSO-A, as appropriate.
- d. Check for any loose cables to the USB port device from the RAPIDS Workstation or one of the peripherals connected to it (laser printer, digital camera pan-and-tilt control, or bar code scanner). To fix a loose cable:
 1. Perform a proper shutdown of the Workstation. Power everything **Off** via the **Power** switch on the surge suppressors for the affected Workstation.
 2. Make sure all cables for the affected Workstation are all firmly connected at the USB port device, on the back of the Workstation CPU, and the peripherals (laser printer, digital camera pan-and-tilt control, or bar code scanner).
 3. Power the affected Workstation back **On** by using the **Power** switch on the surge suppressors.

If these steps do not resolve the problem, then RAPIDS users should call the DRAC, DRSC-E, or DSO-A, as appropriate for further assistance.

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SECTION 13: PVC CARD PRINTER

13.1 PVC Card Printer Description

Each RAPIDS Workstation is equipped with a Fargo Pro-L PVC card printer used to print CACs. An initial supply of CAC cardstock with chips, chipless CAC cardstock (for off-line temporary CACs), and printer consumables, based on your ID card production volume are provided when the printer is installed. The CAC cardstock comes in packages of 100. The printer consumables consist of: 5-panel yellow, magenta, cyan, black resin, black resin (YMCKK) color printer ribbon (prints 250 two-sided CACs with color on front and black-and-white only on back), laminate roll (laminates the front side of 125 CACs), and printer cleaning supplies (cleaning cards, cleaning pens, and cleaning pads).

Although the site does not have to purchase the CAC cardstock and consumable supplies, each site is responsible for ordering replacement blank CAC cardstock (with chips and chipless), color printer ribbons, laminate rolls, and cleaning supplies for CAC production. Use the forms provided to order additional cardstock and PVC printer consumables, as needed. Be sure to maintain a sufficient quantity (approximately 30-day supply) on-hand between orders. This order form can be found in the RAPIDS Training Guide. If you need assistance in ordering smart card consumables, please call the DRAC, DRSC-E, or DSO-A, as applicable.

Proper CAC cardstock and consumables handling and storage procedures are discussed in the RAPIDS Training Guide.

NOTE:

The CAC cardstock and consumables are very sensitive to environmental conditions and contamination, and the consumables have a short shelf life. It is imperative that you comply with these procedures to ensure high quality printing on the CACs.

Figures 13-1 and 13-2, below, show the front and back of the Fargo Pro-L PVC card printer indicating where the various features and connectors are located.

The Fargo Pro-L PVC card printer includes a power adapter brick with a permanently attached cable with an **RCA** (round) connector on the end that connects to the **Power Input Port** on the back of the printer (see Figure 13-2, below). The power cord (see Figure 13-2, below) should be plugged into the other end of the power adapter brick and plugged into an outlet on the Workstation's surge suppressor. The parallel interface cable should be connected between the **Parallel Data Port** on the back of the Fargo Pro-L PVC card printer, as shown in Figure 13-2, below, and the **LPT1 Port** on the back of the RAPIDS Workstation CPU, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above.

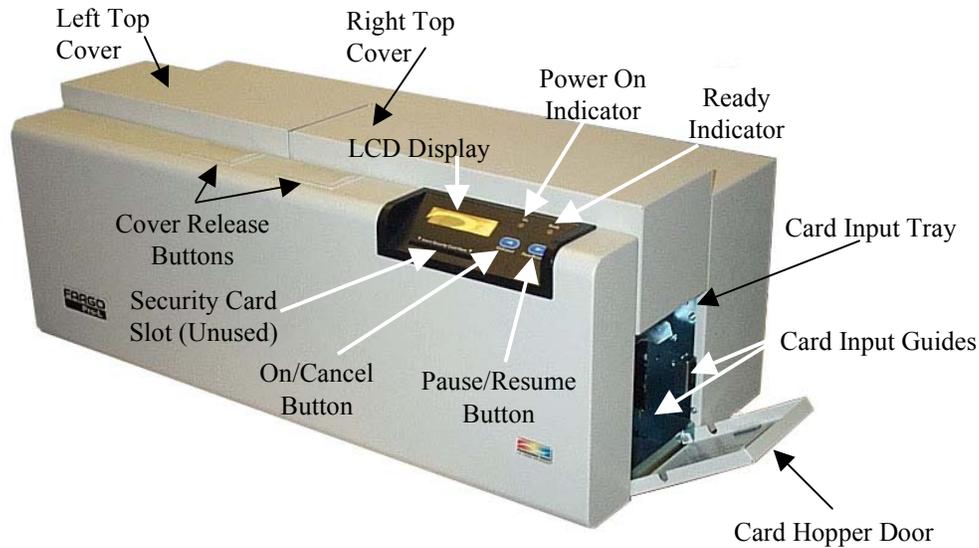


Figure 13-1: Front of Fargo Pro-L PVC Smart Card Printer

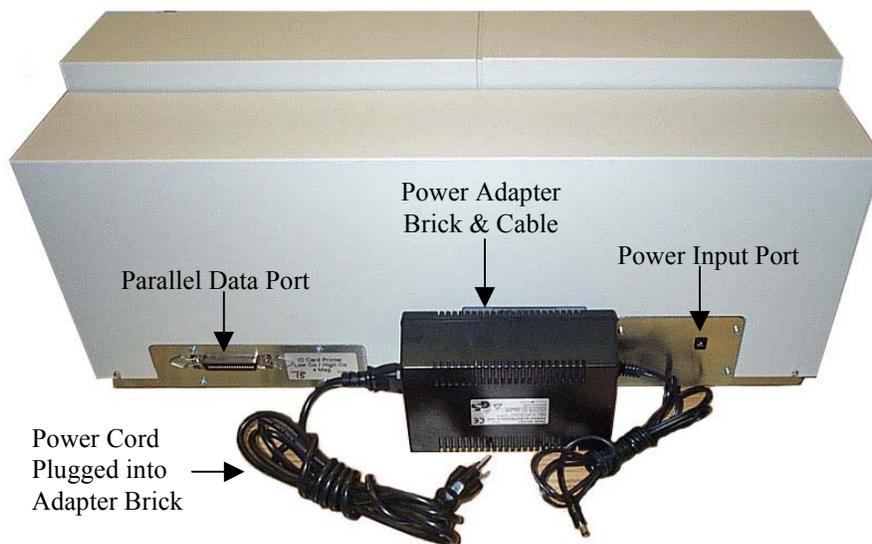


Figure 13-2: Back of Fargo Pro-L Printer With Power Brick and Cables

13.2 How to Use the Fargo Pro-L PVC Card Printer

a. Fargo Pro-L Printer Features. The front panel of the Fargo Pro-L PVC card printer contains a LCD display panel, two status indicators, and two buttons. These and other key features and components are shown in Figure 13-1, above and are noted below.

1. **LCD Display Panel.** Shows the current status of the printer. The top line reports the status of printing functions and the bottom line reports the status of laminating

functions. During operation, it indicates the specific ribbon panel being printed (Y, M, C, or K), whether or not it is laminating, and if any printing errors have occurred.

2. **Power On Indicator.** When illuminated green, indicates that the power is **On** and when unlit, indicates that power is **Off**.
3. **Ready Indicator.** When illuminated green, indicates that the printer is ready for operation. When unlit, indicates the printer is either **Off** or paused and will not operate. If flashing, a printer error has occurred.
4. **On/Cancel Button** turns the printer power **On** and **Off**. It also serves to cancel the current print job and reset the printer for the next print job, if an unrecoverable print error has occurred. If print meant for the HP printer is erroneously directed to the Fargo printer, pressing this button will prevent the misprinting of a CAC. If a card is left within the printer after a print job is canceled, it will automatically be ejected when the printer is turned back **On**. The ejected blank CAC should be placed back in the **Card Hopper**. With the **Top Cover(s)** open, this button can also be used to manually wind the feed rollers forward. This is helpful when cleaning the printer or if clearing jammed media.
5. **Pause/Resume Button** allows the user to pause the printer at any time during operation. However, the printer will always finish its current task before pausing. For example, if the **Pause/Resume** button is pressed in the middle of printing the magenta ribbon panel, the printer will pause only after the entire magenta panel has printed. The **Ready** indicator is unlit when the printer is paused and illuminated green again when operation is resumed. With the **Top Cover(s)** open, this button can also be used to manually wind the feed rollers backward. This is helpful when cleaning the printer or if clearing jammed media.
6. **Security Card Slot** is unused by RAPIDS.

b. To turn the Fargo Pro-L Printer On and Off. The Fargo Pro-L PVC card printer's power cord should be plugged into the Workstation's surge suppressor, so that it is turned **On** and **Off** at the surge suppressor. Power is automatically applied to the printer when it is plugged in. Upon power up, the printer's startup screen appears displaying the current firmware version and amount of installed printer memory (4 MB or 16 MB). Upon initial power up of the printer, you will notice that the bottom line of the **LCD Display** reads **Lam Adjust Temp**, while its built-in laminator is heating to its target temperature. This heating process takes about 3-4 minutes. Once the laminator reaches its default temperature, the bottom line of the **LCD Display** changes to **Lam Ready**. The bottom line of **LCD Display** reads **Lam Adjust Temp** whenever the laminator is heating up or cooling down to the prescribed temperature. Once the printer has finished its startup system check, the **LCD Display** displays **Printer Ready** and **Lam Ready** and the **Power On** indicator illuminates green to indicate it is ready for operation.

Warning!

DO NOT begin to use the PVC card printer while Lam Adjust Temp is displayed. Wait until the laminator has reached its target temperature, when Printer Ready and Lam Ready are displayed.

To turn the printer **Off**, press the **On/Cancel** button on the front of the printer. The **Power On** indicator goes out and the **Display Panel** is blank.

c. Opening and Closing the Fargo Pro-L Printer's Top Cover. To access the printer ribbon, laminate roll, or printhead, clear jams, or clean the printer, you will need to open one of both of the printer's **Top Cover(s)**, which are located on the top of the printer. Open the printer's **Top Cover(s)** by pressing the appropriate **Cover Release Button(s)**. Each **Top Cover** is then opened by pulling it up and towards the side of the printer. Close the printer's **Top Cover(s)** by firmly pushing it (them) down until latched.

d. Loading Plastic Smart Cardstock in the Fargo Pro-L Printer. The printer has a **Card Hopper** that holds up to 100 blank plastic smart cards (3.375" X 2.125"). When the printer's **Card Hopper** is empty, the top row of the **LCD Display** reads **Card Out/Not Fed**.

Warning!

DO NOT use cardstock with a contaminated, dull, or uneven surface or that has been dropped or soiled. These should be returned to the DRAC, DRSC-E, or DSO-A, as applicable, along with a filled out Common Access Card (CAC) Return/Reissue Form. Printing onto such cards produces poor print quality and greatly reduces the life of the printhead. Always store cardstock in its original packaging or a clean, dust-free container and only hold it by its edges. Printhead damage caused by contaminated or poor quality cards will automatically void the printhead's warranty!

To refill the **Card Hopper** refer to the procedure and figures in Section 4 D. of the Fargo Pro/Pro-L Card Printer User's Manual and follow the steps below:

1. Open the **Card Hopper Door** located on the right-hand side of the printer's exterior by grasping the top of the door and pulling down. Allow the door to swing completely open.
2. Remove a stack of 100 cards from the card packaging.

Caution!

DO NOT touch the area of the card where you intend to print, hold the stack of cards only by their edges. Oil or dirt from your hands impairs print quality.

3. Insert the stack of cards into the printer by depressing the spring loaded **Card Input Tray** and placing the cards between the two **Card Input Guides** (see Figure 13-1, above). Always load cards with the chip or front facing up and with the magnetic stripe down and toward the rear of the printer.
4. Once the cards have been inserted, close the **Card Hopper Door**. The cards will automatically feed off the top of the stack.

e. Loading and Replacing Printer Ribbon. When the printer ribbon is running low, the top row of the **LCD Display** reads **Low Ribbon/Clean**. The printer also beeps just before each ribbon panel is printed. Continue to print until the ribbon is gone, as indicated by **Ribbon Error/Out** in the **LCD Display**, then replace it. To replace the printer ribbon, follow the instructions and figures in Section 4 B. of the Fargo Pro/Pro-L Card Printer User's Manual that came with your printer. Be sure to perform the standard printhead cleaning procedure with a cleaning pen (see Subsection 13.3 a. below and Section 7 B. of the Fargo Pro/Pro-L Card Printer User's Manual), perform the cleaning of the printer's rollers with a cleaning card and cleaning pad (see Subsections 13.3 f. and g. below and see Sections 7 H., I., and J. of the Fargo Pro/Pro-L Card Printer User's Manual), and perform the Sensor Calibration procedure for the printer (see subsection 13.3 h. below) prior to using the printer.

f. Loading and Replacing Laminate Roll. When the printer laminate roll has run out, the bottom row of the LCD Display reads **Lam Error/Out**, then replace it. To replace the laminate roll, follow the instructions and figures in Section 5 C. of the Fargo Pro/Pro-L Card Printer User's Manual that came with your printer. Be sure to perform the Sensor Calibration procedure for the printer (see subsection 13.3 h. below) prior to using the printer.

Warning!

The printer's lamination roller can reach temperatures exceeding 350 °F. Use extreme caution when installing printer ribbon and/or laminate roll. Never touch the lamination shield or lamination roller unless the printer's power has been turned off for at least 20-30 minutes!

g. Printing a CAC with the Fargo Pro-L Printer. The Fargo Pro-L printer will automatically print a CAC populated by DEERS data, as part of the RAPIDS application software. Use the following procedures to print a CAC:

1. Ensure that the correct cardstock (with chip during on-line mode and chipless for a temporary card during off-line mode) is loaded in the **Card Hopper**. Ensure that the printer has printer ribbon and laminate remaining, indicated by **Printer Ready** and **Lam Ready** on the **Display Panel**.
2. Ensure that the printer's **Power On** and **Ready** indicators are illuminated green.
3. Use the "**Create Card Navigator**" of the RAPIDS application software to create the CAC. See the RAPIDS Training Guide for details.
4. From the "**Create Card Summary**" screen, click on "**Print**" to send the CAC to the printer.
5. The **LCD Display** displays **Feeding Card**, as it feeds the blank cardstock into the printer from the **Card Hopper**. The top row of the **LCD Display** displays the panel of the ribbon it is printing from as follows: **Printing Yellow, Printing Magenta, Printing Cyan, and Printing Resin**, while the printer is printing the front of the CAC. The **LCD Display** displays **Flipping Card**, as it flips it over to print the back side. The top row of the **LCD Display** displays **Printing Resin**, while the printer is printing the back of the CAC. The bottom row of the **LCD Display** displays **Laminating**, while the printer is laminating the front of the CAC.
6. After the CAC is printed (front and back) and laminated, the completed CAC will come out of the side of the printer that is opposite the **Card Hopper**.

h. Running Self Test and Printing a Test Card with the Fargo Pro-L Printer. For troubleshooting purposes it may sometimes be useful to run the Self Test and print a Test Card from the Fargo Pro-L printer to confirm that it is working properly. The standard self test function prints onto both sides of a card but does not utilize the printer's laminate capability.

Note:

Most rectangles on the back side of the self test card will appear as solid black. A sample of the self test pattern is shown in Section 4 of the Fargo Pro/Pro-L Card Printer User's Manual that came with your printer.

To run the Self Test and print a Test Card perform the following steps:

1. If the printer is **On**, turn it **Off** by pressing the **On/Cancel** button. The indicator lights should no longer be illuminated. Verify that a full-color ribbon is installed and that chipless cardstock are properly loaded.
2. Press and hold the **Pause/Resume** button.
3. While holding the **Pause/Resume** button down, turn the printer back **On** by quickly pressing and releasing the **On/Cancel** button.
4. Release the **Pause/Resume** button. The self test will begin printing approximately 5 seconds after the **Pause/Resume** button has been released.

13.3 PVC Card Printer Maintenance

The Fargo Pro-L PVC Card Printer is built to require a minimum amount of maintenance. Nevertheless, there are a few procedures you can perform on a regular basis or as needed to ensure the best possible performance. For details on each procedure refer to the instructions and figures in Section 7 of the Fargo Pro/Pro-L Card Printer User's Manual that came with your printer.

For the maintenance procedures you have been provided the following items:

- **Printhead Cleaning Pens** pre-moistened with 99.99% isopropyl alcohol for cleaning your printer's printhead.
- **Cleaning Cards** with an adhesive backing for automatically cleaning your printer's gray card feed rollers and cleaning rollers.
- **Cleaning Pads** pre-moistened with 99.99% isopropyl alcohol for cleaning your printer's drive roller and general inside area.

Caution!

Never use a sharp tool or abrasive object of any kind to clean the Printhead. You will damage the Printhead! Watches, rings, bracelets, and other jewelry can damage the Printhead if accidentally bumped against it. For best results, remove such items before touching any internal components of printer. Internal components of the printer, such as the Printhead, may be damaged if exposed to static electrical discharges. To avoid potential damage, make positive contact with the bare metal chassis of the printer with your hand prior to touching any internal electrical components.

a. Performing Standard Printhead Cleaning for the Fargo Pro-L Printer. This procedure should be performed if you notice a streak on the card where color was not transferred using the **Printhead Cleaning Pen**. If you don't have a **Printhead Cleaning Pen**, use isopropyl alcohol and a soft, lint-free cloth. This procedure should also be performed during every ribbon change or after every 250 prints in order to maintain consistent print quality. The **Printhead** is located near the center of the opened **Top Cover** assembly.

Caution!

Do NOT use a cotton swab; the cotton fibers can stick to the Printhead and make printing worse.

b. Performing Extended Printhead Cleaning for the Fargo Pro-L Printer. Perform if you have a streak on the printed output that can't be solved by the Standard Printhead Cleaning procedure, above. Use a soft, lint-free cloth slightly moistened with acetone to clean the surface of the **Printhead**. To maintain your printer's high quality of printing, this procedure should also

be performed approximately every 2,500 prints. The **Printhead** is located near the center of the opened **Top Cover** assembly.

c. Cleaning the Fargo Pro-L Printer's Case. The printer has a durable casing that should retain its luster and appearance for many years. Clean it only with a soft cloth slightly dampened with water or a mild soap. Do not use excess water or cleaning solvents of any kind. Never spray the cabinet with a cleaner. Rather, spray the cloth first, then wipe down the printer.

d. Cleaning Inside of the Fargo Pro-L Printer. As you use your printer, dust and other foreign particles may accumulate inside the printer's case. These particles are attracted to the underside of the ribbon by static produced during printing and can cause voids on the printed image. Periodically, use a **Cleaning Pad** or a soft, lint-free cloth slightly moistened with isopropyl alcohol to wipe out all visible areas inside the printer. Remove any debris that may be inside.

e. Cleaning the Card Feed Rollers. To assure consistent printer operation, all the gray **Card Feed Rollers** within the printer should be cleaned during every ribbon change (every 250 prints) or if the rollers are noticeably dirty. To clean these rollers, use the special adhesive-backed **Cleaning Cards**.

Note:

Each cleaning card should only be used once and discarded.

f. Cleaning the Fargo Pro-L Printer's Drive Rollers. The printer's **Drive Rollers** should be cleaned during every ribbon change or after every 250 prints. This helps to prevent jams and maintain uninterrupted service. Also perform this procedure if the roller is visibly dirty. Use a **Cleaning Pad** or a soft, lint-free cloth slightly moistened with isopropyl alcohol to clean the **Drive Rollers**.

g. Maintaining the Fargo Pro-L Printer's Cleaning Rollers. The black **Cleaning Rollers** remove dust particles from the top and bottom of a blank card as it feeds into the printer. Cleaning these rollers with either a **Cleaning Card** or the sticky side of a piece of standard clear adhesive tape will help prevent contaminated cards from passing beneath the **Printhead**, thus extending the printhead's life and allowing for higher quality output. The **Cleaning Rollers** should be cleaned during every ribbon change or after every 250 prints.

h. Calibrating the Fargo Pro-L Printer's Ribbon and Laminate Sensors. This procedure should be followed whenever the ribbon or laminate roll is replaced.

1. Open the printer's top covers and remove the color ribbon and laminate rolls.
Close the printer's top covers.
2. From the **Start Menu**, select **Settings** and then **Printers**.
3. Right click on the **Pro-L Card Printer**.
4. Click on **Document Defaults**.
5. Highlight **Calibrate** from the list then click on the **Calibrate** button.
6. Click on the **Sensors** button.
7. Click on each of the **Send** buttons, under Ribbon Sensor Calibration and Lamination Sensor Calibration. The printer beeps when it is finished calibrating and the printers display will no longer show "Sensor Calibrate".

8. Click on the **Cancel** button and then the **OK** button..
9. Open up the printer's top covers and install the color ribbon and laminate rolls.
Close the printer's top covers.
10. Place a piece chipless CAC cardstock at the top of the stack in the Card Hopper.
Perform the Self Test procedure described in subsection 13.2 h., above to ensure the CAC is printed and laminated properly.

i. Calibrating the Fargo Pro-L Printer's Ribbon and Laminate Placement. This procedure should be followed whenever the printed image or laminate on the CAC are not properly centered on the cardstock. Please call the DRAC/DRSC-E/DSO-A for assistance in determining the image and laminate placement values during the calibration procedure (see Section 6 D. of the Fargo Pro/Pro-L Card Printer User's Manual). Upon completion place a piece of chipless CAC cardstock at the top of the stack in the Card Hopper and perform a Self Test, as described in Subsection 13.2 h., above to ensure that the CAC is properly printed and laminated.

j. Replacing the Printhead of the Fargo Pro-L Printer. If cleaning the **Printhead** did not improve the print quality, you may require a replacement **Printhead** for your printer. Call the DRAC, DRSC-E, or DSO-A, as applicable and they can arrange to ship a new **Printhead** to you. To replace the **Printhead**, follow the instructions that came with the replacement **Printhead**.

13.4 Troubleshooting PVC Card Printer Problems

If you have difficulty operating the printer, the troubleshooting suggestions, in Section 9 of the Fargo Pro/Pro-L Card Printer User's Manual that came with your printer, should, in most cases, solve the problem. The printer's LCD Display shows you the current status of the printer. The top line reports the status of the printing functions and the bottom line reports the status of the laminating functions. General system messages will display over both lines. Please refer to Section 9 of the Fargo Pro/Pro-L Card Printer User's Manual that came with your printer for troubleshooting suggestions and a complete list and cause of all possible LCD Display messages.

The following procedures offer some suggestions to solve Fargo Pro-L printing problems:

- a. Ensure that the printer is receiving power, by making sure its power cord is securely plugged into the surge suppressor, and that the surge suppressor is powered **On**.
- b. If the surge suppressor is **On**, then check that the printer's **Power On** and **Ready** indicators are both illuminated green.
- c. Ensure that the correct cardstock (with chip during on-line mode and chipless for a temporary card during off-line mode) is loaded in the **Card Hopper**. Ensure that the printer has printer ribbon and laminate remaining, indicated by **Printer Ready** and **Lam Ready** on the **LCD Display**.
- d. Check to make sure that the printer is ready to print and the laminator is at the proper temperature. The **LCD Display** should not indicate **Lam Adjust Temp** or any error messages. For details on troubleshooting error messages, refer to Section 9 of the Fargo Pro/Pro-L Card Printer User's Manual that came with your printer.
- e. Ensure that the printer is not paused, as indicated by LCD Display of **CANCEL=Abort** on top row and **RESUME=Continue** or **RESUME=Reprint** on bottom row. To resume printing press the **Pause/Resume** button. To cancel the print job, press the **On/Cancel** button.

- f. Ensure that the printer's cables are all securely connected. To fix a loose cable:
1. Perform a proper shutdown of the RAPIDS Workstations. Power everything **Off** via the **Power** switch on the surge suppressors.
 2. Make sure the printers parallel data cable is firmly connected at the back of the printer and the LPT1 port on the back of the Workstation CPU.
 3. Power the system back **On** by using the **Power** switch on the surge suppressors.

If these steps do not resolve the problem, then call the DRAC, DRSC-E, or DSO-A, as appropriate, for further assistance.

g. CAC Printing or Laminate Off-center. If you notice that the printing on either the front or back of the CAC is not centered both top-to-bottom and left-to-right, then the printer needs to be recalibrated. If you notice that the chip cutout in the laminate is not centered both top-to-bottom and left-to-right around the chip or centered overall on the CAC, then the printer needs to be recalibrated. Call the DRAC, DRSC-E, or DSO-A, as applicable, informing them of the problem you are having, so they can assist you in performing the recalibration or arrange for maintenance.

h. Common Card Jam Causes. Plastic card jams are usually caused due to some of the conditions listed below:

1. Using dirty, dusty, scratched, or damaged CAC card stock. Never use card stock that has dropped on the floor. Discard any card stock with scratches/damage you can see or feel.
2. Touching the CAC card stock with your hands/fingers and getting oils from your skin on them. Always handle CACs by their edges.
3. Printer's **Top Cover(s)** are not completely closed.
4. **Card Hopper** is too full or **Card Hopper Door** not closed correctly.
5. Printer ribbon or laminate roll is not installed correctly.
6. **Printhead** is not installed correctly.
7. Printer rollers need to be cleaned.

Caution!

Never use any sharp or hard objects to remove a jammed card!

Note:

You may have to press the printer's Pause/Resume button after clearing the jam.

i. Clearing a Card Jam from the Fargo Pro-L Printer. If a card becomes jammed inside the printer, the **LCD Display** will indicate approximately where it is jammed. At this point you can either try to correct the problem and continue printing with the same card, or remove the card completely and continue printing with a new card. To clear jammed CAC card stock from the Fargo Pro-L printer follow the steps in Section 7 of the Fargo Pro/Pro-L Card Printer User's Manual that came with your printer. If the jammed card cannot be reused, it should be returned to the DRAC, DRSC-E, or DSO-A, as applicable, along with a filled out Common Access Card (CAC) Return/Reissue Form.

j. Clearing a Ribbon or Laminate Jam from the Fargo Pro-L Printer. If the ribbon or laminate becomes stuck to a card or jammed inside the printer, the **LCD Display** will indicate that it is jammed. To clear a ribbon or laminate jam from the Fargo Pro-L printer follow the steps in Section 7 of the Fargo Pro/Pro-L Card Printer User's Manual that came with your printer. If the laminate is stuck to a card, the card should be returned to the DRAC, DRSC-E, or DSO-A, as applicable, along with a filled out Common Access Card (CAC) Return/Reissue Form.

k. Removing a Card Jam at the End of the Laminate Roll. Sometimes, the last piece of laminate becomes stuck to a card or jams inside the printer. The **LCD Display** will indicate that it is jammed by displaying **Lam Jam/Out**. Refer to the following steps and Figure 13-3, below, to clear the jam:

CAUTION!

Do NOT touch the metal lamination shield or the lamination roller. You will burn yourself!

1. Leave the power **On** and open the printer's **Top Covers**, using the two **Cover Release** buttons and pulling each cover up and out.
2. Remove the **Lamination Take-up Roll** (the side with used laminate on it) from in between the two black **Take-up Lamination Drive Hubs**.
3. To unjam the laminate, steadily pull the laminate free from where it is jammed. If stuck to a card, pull or cut the laminate off of the card. If it is jammed underneath the Rollers, press and hold down the printer's **Pause/Resume** button as you gently pull up on the laminate. Do not jerk the laminate to free it, since this will increase the chance of breaking it.

NOTE:

If the printer laminate does happen to break, simply tape the broken end of the Supply Lamination Roll directly onto the Lamination Take-up Roll. Then, wind a few inches worth of laminate from the Supply Lamination Roll onto the Lamination Take-up Roll. Be sure the laminate is passing beneath both the supply and take-up rolls.

4. To unjam the card if it is still stuck in the printer, use the **On/Cancel** and **Pause/Resume** buttons to manually eject the card. The card that jammed should be returned to the DRAC, DRSC-E, or DSO-A, as applicable, along with a filled out Common Access Card (CAC) Return/Reissue Form.

NOTE:

You may need to remove the printer's color ribbon to free the jammed card.

5. Refer to the steps in Section 5 of the Fargo Pro/Pro-L Card Printer User's Manual that came with your printer to load the new laminate rolls into the printer. If you had to remove the printer ribbon, refer to the steps in Section 4 of the Fargo Pro/Pro-L Card Printer User's Manual that came with your printer to load the printer ribbon back into the printer.

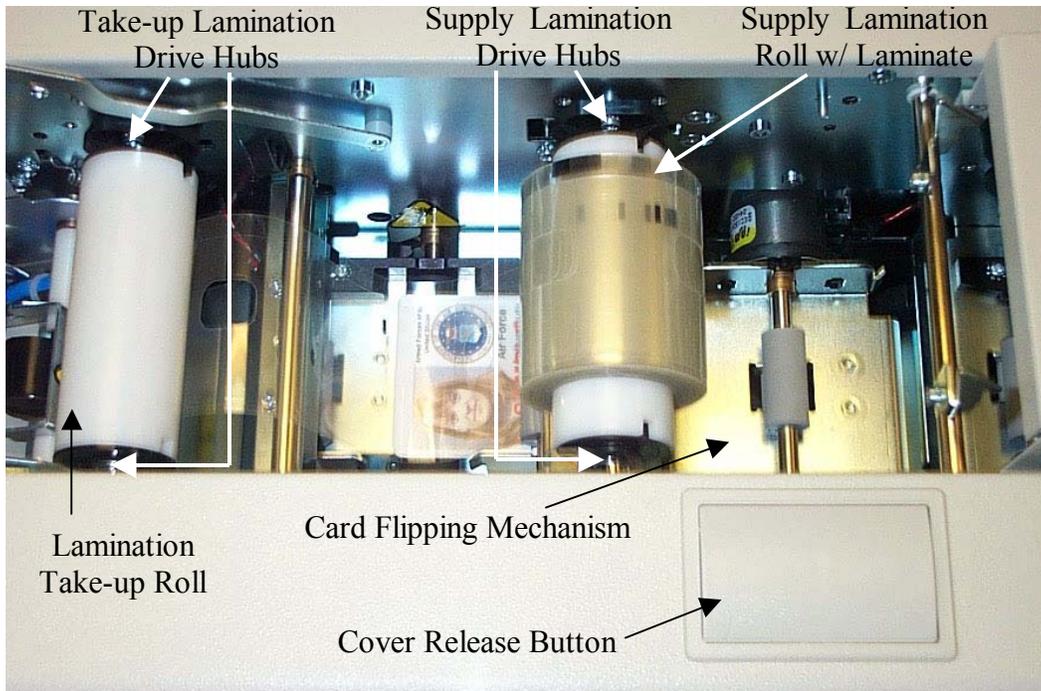


Figure 13-3: Fargo Pro-L Printer's Internal Components with Top Covers Open

6. Close the **Top Covers**, and press the **On/Cancel** button. At this point, the **LCD Display** will prompt you to either press the **Pause/Resume** button to feed in a new card and reprint the CAC that originally jammed or the **On/Cancel** button reboot the printer and cancel the card from the printer's memory. In the second case, you must reprint the CAC from the RAPIDS application.

If other problems occur or persist, refer to Section 7 of the Fargo Pro/Pro-L Card Printer User's Manual that came with your printer. For additional assistance, contact the DRAC, DRSC-E, or DSO-A, as applicable.

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SECTION 14: SMART CARD READER/ENCODERS

14.1 Smart Card Reader/Encoder Description

Each RAPIDS Workstation is equipped with two ActivCard Smart card reader/encoders used to read from and encode to the chip on CACs. Each RAPIDS Server is also equipped with an ActivCard smart card reader/encoder used to read from the chip on the user's CAC.

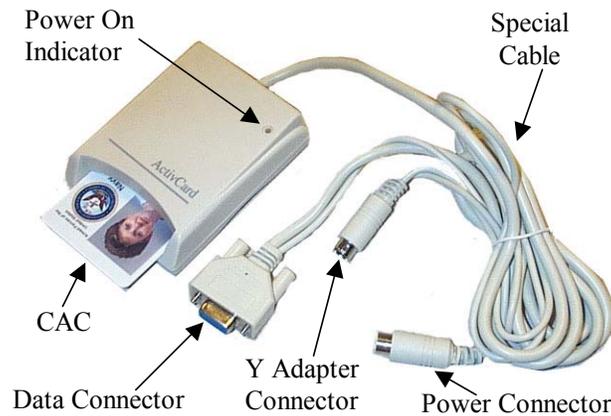


Figure 14-1: ActivCard Smart Card Reader/Writer and Special Cable

14.2 How to Use the Smart Card Reader/Encoder

The ActivCard smart card reader/encoder gets its power from the RAPIDS Workstation's or RAPIDS Server's PS/2 port, so that it is **On** whenever the Workstation/Server it's connected to is **On**. The **Power On** indicator will be illuminated red when it is receiving power.

The ActivCard smart card reader/encoder comes with a special cable (see Figure 14-1, above) that is permanently attached to the reader/encoder body and splits the connection to the reader/encoder to power (round connector on very end with only one cord coming out of it), a Y adapter (round connector in the middle with two cords coming out of it), and serial data sources (rectangular connector with two cords coming out of it).

For connection of the smart card reader/encoder to a RAPIDS Server, the end of the special cable with the **9-pin DB** (rectangular) **Data** connector attaches to the **COM1** port on the back of the Server CPU, as shown in Figures 1-1 (Dell CPUs), 1-2 (Gateway E4600SE CPU), and 1-3 (Gateway E3600 CPU). The **DIN** (round) **Power** connector on the very end of the special cable plugs into a **PS/2** port on the back of the Server CPU, as shown in Figures 1-1 (Dell CPUs), 1-2 (Gateway E4600SE CPU), and 1-3 (Gateway E3600 CPU). The Server's keyboard plugs into the **DIN** (round) **Y adapter** connector built into the middle of the special cable.

For connection of the first smart card reader/encoder (labeled “VO Smart Card Reader/Writer”) to a RAPIDS Workstation, the end of the special cable with the **9-pin DB** (rectangular) reader/encoder connector attaches to the **COM1** port on the back of the Workstation CPU, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above. The **DIN (round) Power** connector on the very end of the special cable plugs into the **DIN (round) Y adapter** connector on the special cable of the second smart card reader/encoder (labeled “Customer Smart Card Reader/Writer”). The **DIN (round) Y adapter** connector plugs into a **PS/2** port on the back of the Workstation CPU, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above.

For connection of the second smart card reader/encoder (labeled “Customer Smart Card Reader/Writer”) to a RAPIDS Workstation, the end of the special cable with the **9-pin DB** (rectangular) reader/encoder connector attaches to the **COM2** port on the back of the Workstation CPU, as shown in Figures 2-1 (Dell CPUs), 2-2 (Gateway E4600SE CPU), and 2-3 (Gateway E3600 CPU), above. The PIN Pad plugs into the **DIN (round) Power** connector on the very end of the special cable. The **DIN (round) Y adapter** connector plugs into the **Power** connector on the very end of the special cable of the first smart card reader/encoder (labeled “VO Smart Card Reader/Writer”).

a. Logging onto RAPIDS Workstation with a CAC. The VO/SVO/SSM’s CAC should be inserted into the first smart card reader/encoder (labeled “VO Smart Card Reader/Writer”) to log onto the RAPIDS Workstation and start the RAPIDS application. His/her CAC should remain in the smart card reader/encoder as long as he/she is using the RAPIDS Workstation. Upon leaving the RAPIDS Workstation (i.e., for lunch or a break), the VO/SVO/SSM’s CAC should be removed from the smart card reader/encoder, which will Lock the system, so an unauthorized user can not use it for fraudulent purposes. Upon returning to the RAPIDS Workstation, insert the VO/SVO/SSM’s CAC back into the smart card reader/encoder, press the **Ctrl+Alt+Delete** keys, simultaneously and enter your PIN when prompted to log back in.

b. Encoding the Chip on a CAC. After the CAC has been printed by RAPIDS, the screen will prompt you to insert the CAC into the slot of the second smart card reader/encoder (labeled “Customer Smart Card Reader/Writer”) for encoding the chip. This process will take several minutes to complete. To encode (write to) the chip on a CAC follow the steps below:

Note:
The VO/SVO/SSM’s CAC must be in the first smart card reader/encoder (labeled “VO Smart Card Reader/Writer”) to create a CAC for the recipient/customer.

1. With the chip on the CAC facing up, insert the CAC into the slot on the smart card reader/encoder so the end the chip is closest to goes in first (see Figure 14-1, above). Push the card in until it is seated all the way in the smart card reader/encoder slot.
2. At the RAPIDS Workstation, click on the “Encode” button to begin to write to the chip on the CAC. The Encoder icon on the RAPIDS Workstation’s screen will flash green when it is reading or writing to the chip in the second smart card reader/encoder (labeled “Customer Smart Card Reader/Writer”) and will flash red

when it is reading data from the chip of the VO/SVO/SSM's CAC in the first smart card reader/encoder (labeled "VO Smart Card Reader/Writer").

3. The RAPIDS software will prompt you to remove the CAC from the smart card reader/encoder when it is finished.
4. Remove the CAC from the smart card reader/encoder by pulling out on the CAC until it is released.

14.3 Troubleshooting Smart Card Reader/Encoder Problems

a. Troubleshooting Process for a CAC with Errors Returned during Encoding. When a card fails during encoding, the following steps need to be followed to (1) ensure the VO/SVO/SSM does not assume the chip is bad and discard a valid card, and (2) ensure consistent troubleshooting procedures.

1. Use the RAPIDS **Create Card Navigator** to print and encode the CAC.
2. If encoding fails during CAC issuance, the system will give the VO the option to "Retry". When asked, "Do you want to retry?" the VO should select "No".
3. The VO should use the "Update CAC" process (select **Beneficiary|Card|Update CAC** from the menu bar) to reattempt encoding. Using the "**Update**" command is important because it does not remove data already written to the CAC's chip.
4. If updating fails, cancel out of the **Create Card Navigator** and select **Tools|Configure** from the menu bar and select the "CAC" tab from the dialog box. Select the "**Verify CAC**" button.
5. Attempt to read the chip by selecting the "**CAC Properties**" tab. If the CAC properties are displayed, then the problem is not likely a bad chip.
6. Next check to see if any certificates were encoded on the chip by selecting the "**CAC Certificates**" tab. Verify each certificate separately (E-mail Encipherment, E-mail Signing, and ID) by highlighting a certificate and selecting "**View Certificate**". This will help to determine if any certificates were successfully written to the chip.
7. If it is determined that the chip is not at fault, contact the DRAC, DRSC-E, or DSO-A, as applicable, for further assistance in troubleshooting the problem.
8. If it is determined that the chip is faulty and it still cannot be encoded after the above attempts, then try a new card. The cardstock that appears to have a bad chip should be returned to the DRAC, DRSC-E, or DSO-A, as applicable, along with a filled out Common Access Card (CAC) Return/Reissue Form.

b. Troubleshooting Smart Card Reader/Encoder Problems. If one of the smart card reader/encoder seems to be experiencing problems, the following steps should be used to attempt to resolve the problem.

1. Ensure that the VO/SVO/SSM's CAC is inserted all the way in the first smart card reader/encoder (labeled "VO Smart Card Reader/Writer"). Ensure that the customer's CAC is inserted all the way in the second smart card reader/encoder (labeled "Customer Smart Card Reader/Writer"). Ensure that CACs are inserted correctly, with chip up and the edge the chip is closest to inserted first.

2. If the RAPIDS Workstation/Server is **On**, then check the **Power On** indicator, on the top of each smart card reader/encoders are illuminated red.
3. Ensure that all connectors on special cables of each smart card reader/encoder are firmly connected. To fix a loose cable:
 - (a) Perform a proper shutdown of the Workstation/Server that the smart card reader/encoder is attached to. For the Workstation/Server that is having the problem, power everything **Off** via the **Power** switch on the UPS and/or surge suppressors.
 - (b) Push in all connectors of the special cable of each smart card reader/encoder to make sure they are firmly connected.
 - (c) Power the affected Workstation/Server back **On** by using the **Power** switch on the UPS and/or surge suppressors.

If these steps do not resolve the problem, then RAPIDS users should call the DRAC, DRSC-E, or DSO-A, as appropriate, for further assistance.

SECTION 15: PIN Pad

15.1 PIN Pad Description

Each RAPIDS Workstation is equipped with a Cherry GCR410 PIN pad keypad with PS/2 interface cable. Figure 15-1, below, shows the PIN pad keypad with its PS/2 interface cable, which is permanently attached.

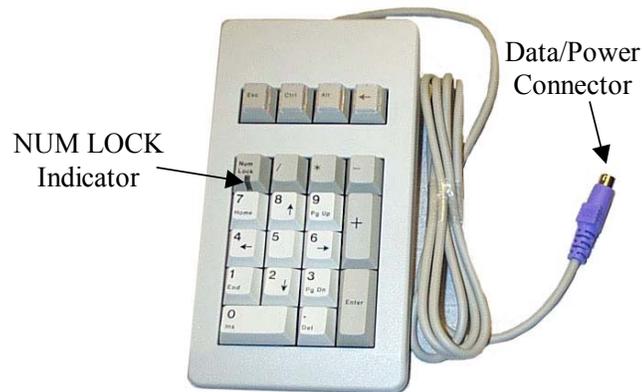


Figure 15-1: Cherry PIN Pad Keypad

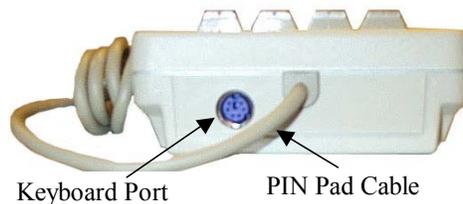


Figure 15-2: Back of Cherry PIN Pad Keypad

15.2 How to Use the PIN Pad

The PIN pad is always **On**, as long as it is connected to the RAPIDS Workstation and the RAPIDS Workstation is powered **On**.

The RAPIDS application will prompt the VO/SVO/SSM for his/her PIN and when the CAC recipient should enter a PIN for his/her CAC. This PIN should be entered in privacy and should only be known by the CAC holder.

The PIN pad's **Power/Data** connector on the end of its cable that is permanently attached, plugs into the **DIN** (round) **Power** connector the end of the special cable of the second smart card reader/encoder (labeled "VO Smart Card Reader/Writer") (see Figure 14-1, above). The

RAPIDS Workstation's keyboard plugs into the **Keyboard** port on the back of the PIN pad, as shown in Figure 15-2, above.

15.3 Troubleshooting PIN Pad Problems

If the PIN pad seems to be experiencing problems, the following steps should be used to attempt to resolve the problem.

- a. Ensure that the NUM LOCK is **On**, as indicated by the NUM LOCK indicator being illuminated green.
- b. Ensure that the PIN pad's connector and all connectors on special cables of each smart card reader/encoder are firmly connected. To fix a loose cable:
 1. Perform a proper shutdown of the Workstation. For the Workstation that is having the problem, power everything **Off** via the **Power** switches on the surge suppressors.
 2. Push in on all connectors of the PIN pad and the special cable of each smart card reader/encoder to make sure they are firmly connected.
 3. Power the affected Workstation back **On** by using the **Power** switches on the surge suppressors.

If these steps do not resolve the problem, then RAPIDS users should call the DRAC, DRSC-E, or DSO-A, as appropriate for further assistance.

APPENDIX A: LIST OF ACRONYMS AND ABBREVIATIONS

12X/24X	twelve/twenty-four times single speed
14X/32X	fourteen/thirty-two times single speed
16X	sixteen times single speed
17X/40X	seventeen/forty times single speed
20X/48X	twenty/forty-eight times single speed
AC	alternating current
AGP	Accelerated Graphics Port
APC	American Power Conversion
ATAPI	Advanced Technology Attachment Packet Interface
bps	bits per second
CA	Certificate Authority
CAC	Common Access Card
CD-ROM	Compact Disk-Read Only Memory
CPU	central processing unit
DD	Department of Defense
DEERS	Defense Enrollment Eligibility System
DISN	Defense Information Systems Network
DMA	direct memory access
DMDC	Defense Manpower Data Center
dpi	dots per inch
D/R OPS DIV	DEERS/RAPIDS Operations Division
DRSC-E	DEERS/RAPIDS Support Center-Europe
DRAC	DEERS/RAPIDS Assistance Center
DSO-A	Defense Manpower Data Center (DMDC) Support Office - Asia Pacific
DVD	Digital Video Disk
EIDE	Enhanced Industry Device Electronics
GB	gigabyte
GHz	gigaHertz
GUI	graphical user interface
HP	Hewlett Packard
Hz	Hertz
ID	identification
I/O	input/output
ISA	Industry Standard Architecture
Kbps	kilobits per second

LAN	local area network
LCD	liquid crystal display
LRA	Local Registration Authority
MB	megabyte
Mbps	megabits per second
MHz	megaHertz
MS	Microsoft
NIC	network interface card
PC	personal computer
PCI	peripheral component interconnect
PCMCIA	Personal Computer Memory Card International Association
PDF417	Portable Data File 417 (bar code symbology)
PIN	personal identification number
PS/2	Personal System/2
PVC	polyvinyl chloride
RAM	random access memory
RAPIDS	Real-time Automated Personnel Identification System
RDRAM	Rambus dynamic random access memory
SDRAM	synchronous dynamic random access memory
SSM	Site Security Manager
STP	shielded-twisted-pair
SVGA	super video graphics array
SVO	Super Verifying Official
UPS	uninterruptible power supply
USB	universal serial bus
UTP	unshielded-twisted-pair
V	volts
VAC	volts alternating current
VISCA IN	Video System Control Architecture Input
VO	Verifying Official
WAN	wide area network