DataGeneral

Customer Documentation

Starting AViiON® 6000 Series Systems

AViiON®
PRODUCT LINE

Starting AViiON® 6000 Series Systems

014-001819-01

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Notice

Starting AViiON® 6000 Series Systems
014-001819-01

Revision History:

Original Release – March 1990
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A vertical bar in the margin of a page indicates substantive technical change from the previous revision.

NOTE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference in which case the user will be required to correct the interference at his own expense. Testing was done with shielded cables. The use of any cable other than the shielded type means that your system will emit excess amounts of radio frequency energy, thereby increasing the likelihood of interference. Therefore, in order to comply with the FCC regulations, it is necessary that you use shielded cables with your installation.

WARNING

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n' émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

この装置は，第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）基準に適合しております。従って，住宅地域またはその隣接した地域で使用すると，ラジオ，テレビジョン受信機等に受信障害を与えることがあります。取扱説明書に従って正しい取り扱いをして下さい。

Preface

This manual is written for the person or persons responsible for starting the AViiON® 6000 series computer. It contains step–by–step procedures for starting your AViiON system hardware for the first time, and reference material you may need to customize your system.

How This Manual is Organized

Chapter 1	Describes the basic AViiON 6000 series system and its hardware components.
Chapter 2	Contains step–by–step procedures for powering up your system the first time. Describes power–up messages and solutions to common power–up problems.
Appendix A	Includes technical specifications of your hardware, and provides maximum configuration guidelines.
Appendix B	Lists external cables and specific I/O pin assignments.

Once your computer system is started, you should refer to your operating system documentation for detailed information on installing, managing, and using your operating system software. You can then refer to this manual as needed.

Related Documents

Some of the first power–up steps described in this manual refer you to the following documentation. Refer to the manual *READ THIS FIRST* (Data General number 069–000519) for a comprehensive list of AViiON 6000 series documentation.

Using the AViiON® System Control Monitor (SCM) (014–001802)

Describes how to use the commands and menus of the firmware monitor program to boot software, control the system environment, and debug programs.

Using AViiON® System Diagnostics (014–001863)

Describes how to start and run the hardware diagnostics utilities provided with your system.

Reader, Please Note

In this book, we distinguish between the words *terminal* and *system console* as follows:

Terminal	An interactive device with a keyboard for input and a screen or printer for output. A terminal with a screen is called a *display terminal*; a terminal with a printer is called a *hard–copy terminal.*
System console	The terminal that will display diagnostic messages and from which you will bring up your operating system. The system console communicates directly with the computer's system board.

In this manual, we use the term *backplane* to describe the interconnecting printed–circuit board that passes VMEbus and power signals to other boards. Some other documentation refers to the backplane as the *backpanel.*

The term *New Line* in this manual refers to the New Line key on some Data General keyboards. The keyboard for your system console may label the equivalent key Return, CR (Carriage Return), Enter, or with a standard symbol like the following:


Additionally, this manual uses certain symbols in special ways:

Symbol	Means
↵	Press the New Line, Carriage Return (CR), or Enter key on your terminal's keyboard.
`SCM>`	The default System Control Monitor (SCM) prompt on single processor systems.
`Jp#n/SCM>`	The default SCM prompt on multiple processor systems, where n is the number of the attached job processor.

Finally, in examples we use

This typeface to show your entry.
`This typeface to show system queries and responses.`

Contacting Data General

Data General wants to assist you in any way it can to help you use its products. Please feel free to contact the company as outlined below.

Manuals

If you require additional manuals, please use the enclosed TIPS order form (United States only) or contact your local Data General sales representative.

Telephone Assistance

If you are unable to solve a problem using any manual you received with your system, and you are within the United States or Canada, contact the Data General Service Center by calling 1–800–DG–HELPS for toll–free telephone support. The center will put you in touch with a member of Data General's telephone assistance staff who can answer your questions.

Free telephone assistance is available with your hardware warranty and with most Data General software service options. Lines are open from 8:30 a.m. to 8:30 p.m., Eastern Time, Monday through Friday.

For telephone assistance outside the United States or Canada, ask your Data General sales representative for the appropriate telephone number.

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Please consider joining the largest independent organization of Data General users, the North American Data General Users Group (NADGUG). In addition to making valuable contacts, members receive FOCUS monthly magazine, a conference discount, access to the Software Library and Electronic Bulletin Board, an annual Member Directory, Regional and Special Interest Groups, and much more. For more information about membership in the North American Data General Users Group, call 1–800–877–4787 or 1–512–345–5316.

End of Preface

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Chapter 1
AViiON® 6000 Series Computer System Hardware and Options

This chapter describes the basic AViiON® 6000 series rack–mounted computer system. Most systems consist of the computer unit, mass–storage devices, a system console, user terminals, modems, and printers. Your AViiON system might also include High Availability Disk Arrays, LAN–based devices such as workstations, and cluster controllers for distributed asynchronous user devices, as illustrated in Figure 1–1.

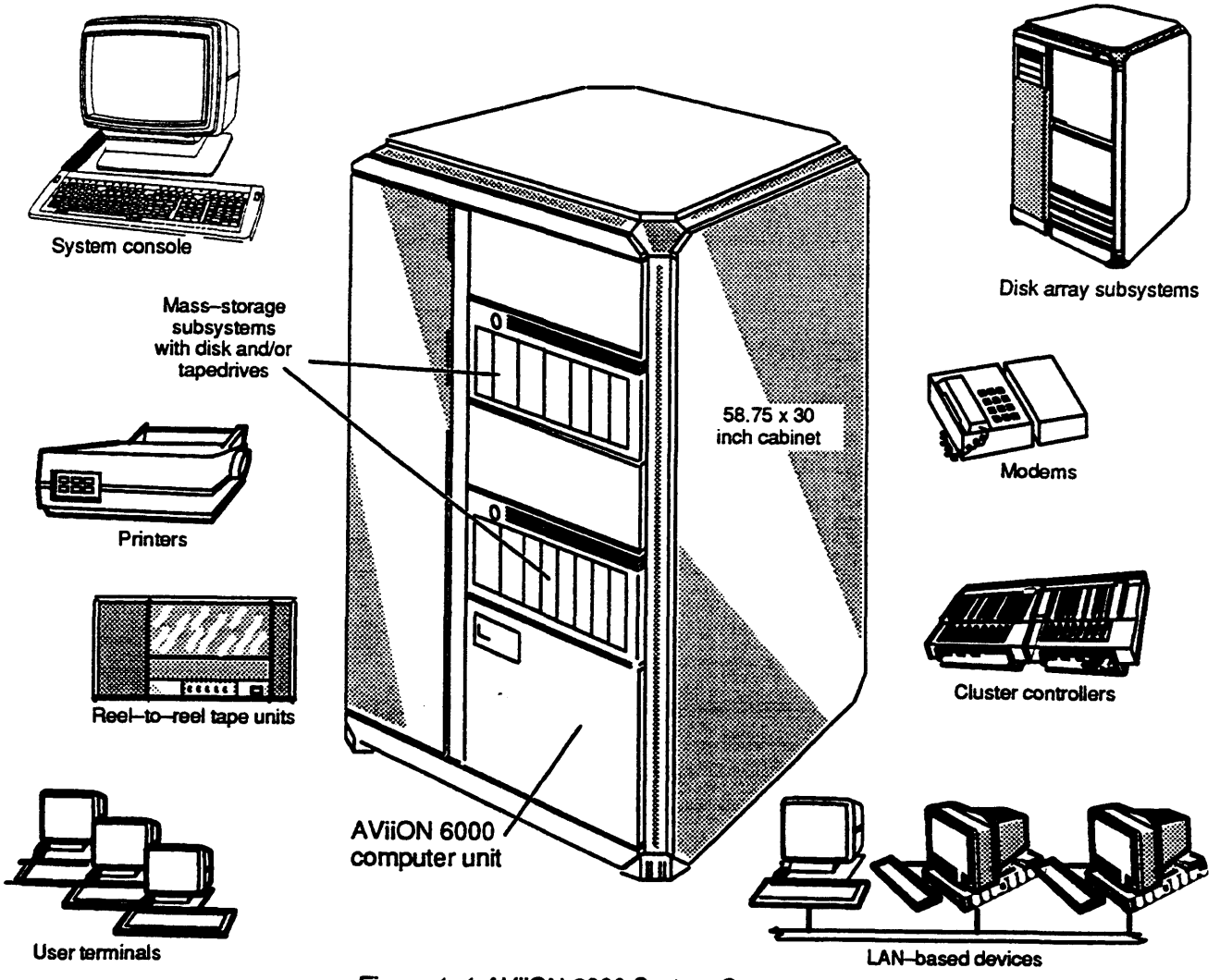


Figure 1–1 AViiON 6000 System Components

Basic System and Options

The AViiON 6000 series computer is a multiuser or server system supporting a variety of configurations. The basic computer unit comes in a 14– or 28–inch high package that includes the power supply, a system board, and a VME bus for internal communication. Models with one or two central processing units include at least 16 Mbytes of memory on the system board. Models with four CPUs also require at least 32 Mbytes of memory; this memory resides on expansion memory boards that connect to the VME bus. Figure 1–2 illustrates the AViiON 6000 series computer unit.

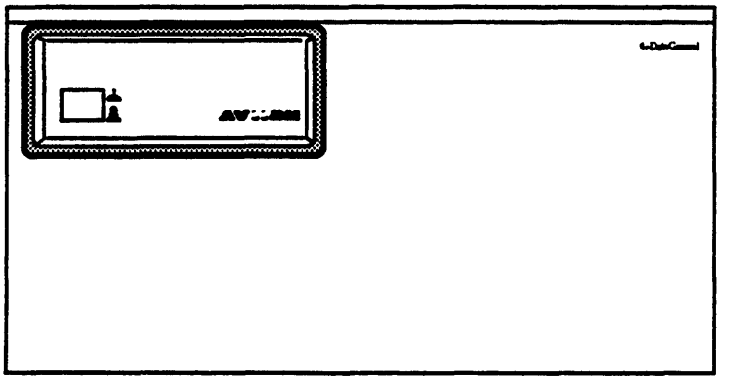


Figure 1–2 AViiON 6000 Series Computer Unit

Each AViiON 6000 series system includes the following standard components enclosed within the computer unit:

Standard Components

- System processor board
  - Single, dual, or quad (one, two, or four) processor(s)
  - Two Central Memory Management Units (CMMUs) per processor
  - 16 Mbytes memory (single and dual processor models only —
    - 0 on–board memory in quad processor systems)
  - Support for three peripheral ports including
    - 1 RS–232–C asynchronous line for system console
    - 1 parallel printer port: Centronics LPT1–compatible
    - 1 RS–232–C asynchronous option (modem) port
- 10– or 20–slot backplane printed circuit board with VME bus
  - One slot dedicated to system processor board
  - At least one slot dedicated to memory board in quad–processor systems;
    - Quad processors require a minimum of 32 Mbytes memory
- 520–watt power supply (1080–watt supply in systems with 20–slot backplane)

Your computer unit may also include a combination of the following optional printed circuit boards. Maximum configurations depend on restrictions listed in Appendix A, "Technical Specifications." Note that software restrictions might also apply.

Optional Printed–Circuit Boards

- Memory expansion boards (16–, 32–, 48–, 64–, 128–, or 192–Mbytes per board)
- SCSI bus controllers
  Single–ended or differential SCSI interface
  One single–ended controller required to support QIC tape boot device
- VSC/4 synchronous controllers
- VAC/16 asynchronous controllers
- VDA asynchronous host adapters
- VLC Ethernet local area network (LAN) controllers
- Disk Array Input/Output Processors

Your computer unit is mounted in either a 58.75 x 30 inch or 39 x 30 inch cabinet and supports a combination of the following external options:

External Options

- CSS2 or CSS2/DC mass storage subsystems:
  Stand–alone (/DC) or rack–mounted with computer unit
  Single–ended or differential SCSI interface
  Seven half–height, five full–height, or combination of seven
  5.25–inch SCSI devices per CSS2
  1/4–inch cartridge (QIC) tape drives
  332–Mbyte, 662–Mbyte, and 1–Gbyte Winchester disks
  2–Gbyte helical scan tape drives
  600–Mbyte rewritable optical disk
  600–Mbyte read–only memory compact disk drives (CD–ROM)
- High Availability Disk Array Subsystems
  Mounted in 58.75 x 30–inch cabinet
  One array of 5 to 30 disks
  QIC or helical scan tape drives
- CSS2 or CSS2/DC Disk Array
  One array of 5 disks; mounted in CSS2 or CSS2/DC
- Model 6586/6587, Model 6588/6589 reel–to–reel tape drives
  (Stand–alone or rack–mounted with computer unit)
- Four synchronous devices per VSC/4 controller
- 16 asynchronous devices per VAC/16 controller
- 128 asynchronous devices per VDA/128 host adapter
  255 asynchronous devices per VDA/255 host adapter
  Controlled by VDC/8P and/or VDC/16 downloadable cluster controller boxes

End of Chapter

Chapter 2
Powering Up the First Time

This chapter contains instructions on powering up your computer for the first time. If you encounter any problems during your initial powerup, refer to the last section in this chapter, "Solving Power–Up Problems."

After your system passes the power–up tests described in this chapter, refer to your operating system documentation, any Release Notices that accompany your system, and *Using the AViiON® System Control Monitor (SCM)* for information on installing and booting your operating system.

After your system powers up, you should set any system configuration parameters that do not conform to the equipment connected to the system console or modem option ports. *Using the AViiON® System Control Monitor (SCM)* describes how to change parameters to support these system board devices.

Figure 2–1 and the following steps outline the sequence of procedures described in this chapter. These steps assume that your computer system and its devices are already set up, and that your system console conforms to the default characteristics listed in *Using the AViiON® System Control Monitor (SCM)*.

1. Supply ac power to peripheral and network devices first. When peripherals are powered on and on line, turn on ac power to the computer unit.
2. Monitor power–up diagnostics.
3. Refer to "Solving Power–Up Problems" if necessary.
4. Specify any nondefault system configurations
5. Refer to Release Notices and operating system documentation.

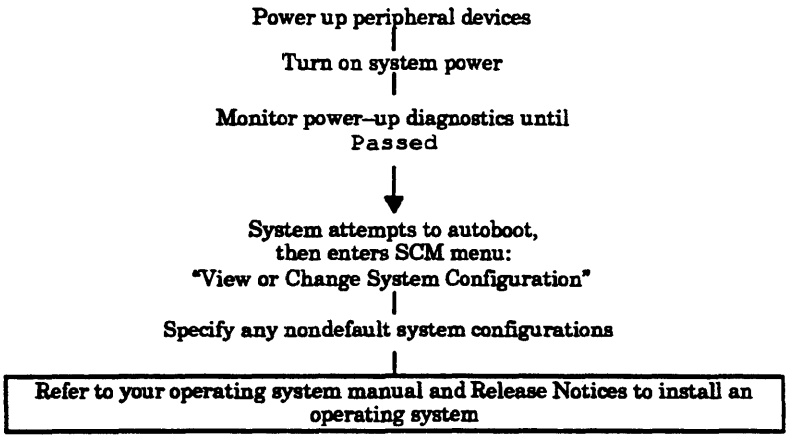


Figure 2–1 First Time Power–Up Sequence

Powering Up

The following sequence of procedures and events describes how to start up your AViiON system for the first time.

1. Turn on ac power to the system console and all cluster boxes, terminals, printers, plotters, and external drives that connect to your system. Figure 2–2 shows the start/power switches in a typical AViiON 6000 cabinet. Make sure that the peripheral devices are *on line.*

   Normally, when you turn on a terminal or printer, it runs an automatic self–test and finishes by coming on line. In general, this is indicated when the On Line light or Data light is steadily on (when the computer power is turned on) or blinking (when the computer is turned off). On some systems, the On Line light on terminals other than the system console will continue blinking until you initialize your asynchronous controllers and/or a multiuser environment. For specific information, see the documentation that came with your device.

2. Turn on the computer unit by pressing the power button on the front panel. Make sure the power button on the computer lights up and stays pushed in. Figure 2–2 shows the location of the power button.

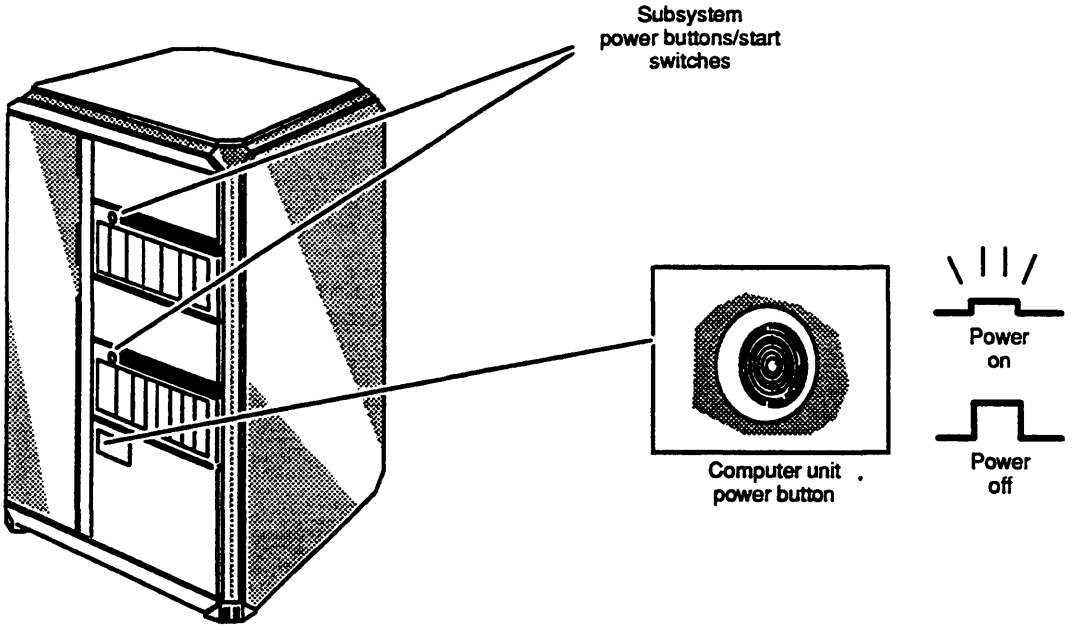


Figure 2–2 Turning on Computer Power

Most display terminals begin displaying the power–up test messages after a 5 to 15 second delay. If your terminal does not behave in this manner, refer to the device–specific documentation and the last section in this chapter, "Solving Power–Up Problems."

3. The system begins to display test messages like the following:

```
0123TEST0-->-->-->-->OK!  (quad processor systems only)

(C) DATA GENERAL CORPORATION 1989,1990,1991

Firmware Revision 07.08
Initializing [32 Megabytes]
Testing...
   0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ
Passed
```

   Each character in the alphanumeric sequence 0123...ABC...Z indicates a power–up test that has passed.

4. Compare the test messages with the memory size on your configuration sheet to make sure that the screen display is correct. If the memory size displayed is incorrect, contact Data General immediately.

   If the test messages are either incomplete or end with an error message, refer to the last section in this chapter, "Solving Power–Up Problems."

   Once the system displays the message Passed, the power–up tests are complete.

5. After it passes the power–up tests, all AViiON 6000 systems probe the disks in the default autoboot path provided with your computer for a bootable file. If no operating system was preloaded in the default autoboot path, your system then enters the System Control Monitor (SCM) program at the View or Change System Configuration menu. Boot messages and the SCM menu prompt appear on your screen as shown in the following example.

```
Testing...
  0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ
Passed


Booting sd(cisc())
Unable to load boot file sd(cisc())
Booting cied(ffffef00,0,0)
Unable to load boot file cied(ffffef00,0,0)

View or Change System Configuration

1   Change boot parameters
2   Change console parameters
3   Change modem port parameters
4   View memory configuration
5   Change testing parameters
6   Change VME A24 configuration
7   Return to previous screen

Enter choice(s)->
```

If your system does not display the View or Change System Configuration menu, refer to the last section in this chapter, "Solving Power–Up Problems."

If your screen display appears correct and similar to the previous example, continue with the next section, "Your Next Step."

NOTE: In some instances, the system will verify that the autoboot sequence failed by displaying error code 30FFFFFF before entering the System Control Monitor program. This does not necessarily indicate a system failure, but only that the system did not find a bootable file in its defined (default) autoboot path.

Your Next Step

You have finished powering up for the first time.

If you need to verify or alter configuration parameters (such as baud rate, data bit length, or parity setting) for your system console or modem port device, you can do so now. Refer to *Using the AViiON® System Control Monitor (SCM)* for instructions on how to check or change console and modem settings.

If you want to verify your system hardware before installing an operating system or other software onto a system disk, refer to *Using AViiON® System Diagnostics* for instructions on running a diagnostic acceptance test.

If your system will run the DG/UX™ operating system, you should now refer to the DG/UX installation documentation that applies to your system for detailed instructions on what to do next.

If your system will use an operating system other than the DG/UX system, you should refer to your operating system manual(s) for instructions on what to do next. In most cases, you will need to *software* format your system disk, and then install your operating system on the formatted disk. Consider the following before you begin either process.

- If your operating system does not reside on a hard disk specified in the default automatic boot path, you must either change the autoboot path or load and boot your operating system manually each time you power up. Refer to *Using the AViiON® System Control Monitor (SCM)* for instructions on changing the system boot path to support your system, and for detailed information on booting from nondefault media.
- The disks you received with your system are *hardware* formatted at the factory; you will not need to hardware format disks provided by Data General. For Data General to maintain systems with disks and disk controllers supplied by other vendors, a minimum list of format restrictions includes the following:

  Data General's hardware formatter must be allowed to obtain disk controller parameters, a vendor defect list, and disk chronology information.

  Block 0, track 0 must contain Data General disk geometry information; *do not* write to or alter the contents of block 0 on your disk.

Solving Power–Up Problems

When you turn on your computer unit, power-up diagnostic programs automatically test your computer to make sure that it can perform certain basic operations. This chapter tells you what you should do in case your computer fails a power–up diagnostic test.

When your system passes the power–up diagnostic tests, it displays the message `Passed` before it displays the SCM View or Change System Configuration menu or begins booting an installed operating system. If your computer fails a power–up diagnostic test, either the system console screen remains blank, an error message on the screen indicates a failure, or the system *hangs* (does not continue testing) at some point in the initial powerup.

NOTE: If your system passes powerup testing, but displays the `SCM>` prompt rather than the View or Change System Configuration menu, you should contact Data General as described in the Preface of this manual for help before you continue.

If your system console screen remains blank for more than 2 minutes, try to resolve the problem yourself by following the steps in the "Blank Screen on the System Console" section below. If your system hangs or displays an error message, try to resolve the problem by following the steps in the "Error Messages on the Screen" section later in this chapter.

Blank Screen on the System Console

Follow the steps in this section if your system console screen remains blank for more than 2 minutes after powerup.

1. Make certain that the power switch is lit, and listen for the whirring noise of the fans inside the unit. If you do not see the light or hear the fan, make sure the computer unit is getting power by testing the power cord connection and the power source.

2. Make sure the terminal you are watching is the system console, and that the correct ends of the system console cable are connected to the console and your computer unit. The cable connector marked P1 should be attached to your computer unit, and the connector marked P2 to your system console.

3. Make sure the system console is turned on.

   Make sure the system console's power cord is plugged tightly into an ac power outlet, and that the ac outlet is supplying power.

4. Make sure the screen intensity on your system console is adjusted brightly enough so you can see messages on the screen. (Try temporarily adjusting the screen intensity to the maximum setting.)

5. Make sure the keyboard's On Line light is on. If it is not on, hold down the Cmd key and press the On Line key. If the light comes on, go to step 7.

6. If the keyboard's On Line light is still off, make sure the cable that connects the keyboard to the terminal is plugged securely into the terminal. If it is secure, and the On Line light is still off, go to step 8.

7. If the On Line light is on and your screen is still blank, do the following:

   Take the terminal off line by holding down the Cmd key and pressing the On Line key. With the terminal off line, use the keyboard to type something. If the characters appear on your console screen, put the terminal back on line by holding down the Cmd key and pressing the On Line key.

8. If you still do not receive the power–up messages on your system console screen, make sure the cables that connect your station components together are undamaged and their connectors are secured tightly so that they make a good connection.

9. If the display is still blank, your system console may have a problem. Replace the system console with another terminal.

   If your terminal has switches for setting the baud rate, parity, data length, and so forth, make sure they are set to the default settings for a first powerup listed in *Using the AViiON® System Control Monitor (SCM)*. Refer to the device–specific documentation for the terminal if necessary.

10. If the cables are connected properly and the switch settings for the terminals are correct, turn your system power off, and then try powering up your system again.

11. If your screen is still blank, contact Data General. Within the United States and Canada, you can contact the Data General Service Center by calling 1–800–DG–HELPS for toll–free telephone support.

Error Messages on the Screen

Follow the steps in this section if the power–up diagnostic tests display an error message, or the terminal hangs and does not display a complete message.

1. Write down the error code or, if no error code appears, write down the last letter or number displayed. Note which series of tests produced the fault.

2. If the error is indicated by a meaningless display on your system console screen, examine the device cables, interfaces, and line settings at the back of your terminal and computer unit. *Make certain you have connected the correct ends of the system console cable to the console and your computer unit, and that your system console parity setting is correct.* The cable connector marked P1 should be attached to your computer unit, and the connector marked P2 to your system console. Refer to *Using the AViiON® System Control Monitor (SCM)* for the correct baud rate and parity settings for your system console's first powerup. If necessary, also refer to the device–specific documentation for your terminal to reset the settings.

3. Turn off the computer unit's power.

4. Wait at least 20 seconds, then turn on power to the computer unit again.

5. If the error reoccurs, record the screen display and contact Data General. Within the United States and Canada, you can contact the Data General Service Center by calling 1–800–DG–HELPS for toll–free telephone support.

End of Chapter

Appendix A
Technical Specifications

System Board

Single, dual, or quad Central Processing Units (CPU)
- Motorola 88100 32–bit RISC processor

Motorola 88200 or 88204 Central Memory Management Unit (CMMU)
- Two per CPU

16 Mbytes memory (single and dual CPU systems only —
- 0 on–board memory in quad processor systems)
- ERCC with single–bit error correction and double–bit error detection

Three peripheral ports
- One parallel printer port; Centronics LPT1 compatible
- One RS–232–C asynchronous system console port
- One RS–232–C asynchronous optional device port (modem)

Memory Expansion

Maximum of four 16–, 32–, 48–, 64–, 128–, or 192–Mbyte memory expansion boards
- 32–Mbytes minimum required by quad processor systems
- ERCC with single–bit error correction and double–bit error detection

768 Mbytes maximum

VMEbus

Supports 10 or 20 backplane slots, of which 5 also support memory bus

Electrically compliant with Motorola VME specification, Revision C.1

Sustained block mode VME bus transfer rate: 30 Mbytes/s

Sustained nonblock mode VME bus transfer rate: 20 Mbytes/s

Power Supply

520 W (1080 W in systems with 20–slot VMEbus backplane)

Single–phase ac

Frequency range 47 Hz through 63 Hz.

100 V ac	+/–10% (90 V ac through 110 V ac)	12 A
120 V ac	+10%, –15% (102 V ac through 132 V ac)	12 A
220/240 V ac	+10%, –15% (187 V ac through 264 V ac)	10 A

Environment

Temperature:

Operating	50 through 100 °F; 10 through 38 °C
Storage	–40 through +149 °F; –10 through +65 °C

Relative humidity:

Operating	20–80%, noncondensing
Storage	10–90%, noncondensing

Altitude:

Operating	0–8000 ft; 0–2438 m
Storage	0–25000 ft; 0–7620 m

Minimum clearance:

Front	18 in; 45.72 cm
Back	18 in; 45.72 cm

Mass Storage Options

Disk Array Input/Output Processor
- 9U format printed–circuit board
- Maximum two per system (not supported in systems with VAC/16)
- Each processor supports one disk array housed externally in a
  - High Availability Disk Array subsystem or
  - CSS2 or CSS2/DC Disk Array

  High–Availability Disk Array subsystem
  - Supports one 5– to 30–disk disk array
    - 1–Gbyte Winchester disks arranged in one to six 5–disk stripes
  - Maximum of 2 single–ended SCSI devices independent of disk array
    - 2–Gbyte archival cartridge tape (full–height)
    - 1/4–inch cartridge (QIC) tape (half–height)

  CSS2, CSS2/DC Disk Array
  - One array of five 1–Gbyte Winchester disks (one stripe)
  - Housed in CSS2 or CSS2/DC chassis

Small Computer System Interface (SCSI) controller
- Single–ended or differential SCSI interface
- Maximum of six per system; maximum of four in systems with VAC/16
  (Maximum of eight in systems with 20–slot VMEbus backplane)
- One single–ended interface controller required per system
- Asynchronous operation mode support (2 Mbytes/s)
- Synchronous operation mode support (4 Mbytes/s)
- Each controller supports seven devices maximum (all external)

Combined Storage Subsystem 2 (CSS2, CSS2/DC)
CSS2: 8.75 inches high; rack–mounted with computer unit
CSS2/DC: 24 x 8.75 x 19 inches; stand–alone tower
10 half–height slots supporting maximum of seven 5.25–inch SCSI devices
(five full–height, seven half–height, or combination totaling seven or less)
Single–ended or differential SCSI interface

Single–ended interface:

1/4–inch cartridge (QIC) tape
150–Mbyte (half–height):
Read/write QIC 120 Mbytes; read–only QIC 40 and 60 Mbytes
135–Kbytes/s sustained data transfer rate
Multicapacity (half–height):
read/write QIC 150, 325, 525 Mbytes
240–Kbytes/s average data transfer rate

2–Gbyte archival cartridge tape (full–height)
246–Kbytes/s sustained data transfer rate
150 IPS

600–Mbyte read–only memory compact disk drive (CD–ROM)
(half–height)
153.6–Kbytes/s sustained data transfer rate

600–Mbyte rewritable optical disk (full–height)
620–Kbytes/s user data transfer rate (drive interface 7.4–Mbytes/s)

5.25–inch Winchester hard disk
332–Mbyte (half–height):
1.5–Mbytes/s (async) — 4.0–Mbytes/s (sync) data transfer rate
14–ms average seek
662–Mbyte (full–height):
1.5–Mbytes/s (async) — 4.0–Mbytes/s (sync) data transfer rate
16.5–ms average seek
1–Gbyte (full–height):
1.5–Mbytes/s (async) — 4.0–Mbytes/s (sync) data transfer rate
15–ms average seek

Differential interface:

1–Gbyte (full–height) 5.25–inch Winchester hard disk:
1.5–Mbytes/s (async) — 4.0–Mbytes/s (sync) data transfer rate
15–ms average seek

Model 6586/6587 reel–to–reel tape
- 1600 bpi PE format reel–to–reel tape drive
- Auto–thread, auto–load
- Horizontal mount
- 25/100 IPS selectable
- 160 Kbytes/s PE transfer rate (instantaneous)
- 6– to 10.5–inch diameter reels
- Single–ended SCSI interface

Model 6588/6589 reel–to–reel tape
- 6250 bpi GCR format, 1600 bpi PE format reel–to–reel tape drive
- Auto–thread, auto–load
- Horizontal mount
- 125 IPS
- 195 Kbytes/s PE transfer rate (instantaneous)
- 763 Kbytes GCR transfer rate (instantaneous)
- 6– to 10.5–inch diameter reels
- Single–ended SCSI interface

Communications

VME Synchronous Controller (VSC/4)
- Maximum of six per system; maximum of four in systems with VAC/16
  - (Maximum of twelve in systems with 20–slot VMEbus backplane)
- Four full–duplex synchronous RS–232–C lines per VSC/4
- 1.6–Mb/s transfer rate per line
  - Signals supported on each synchronous line:
    CTS, DCD, DSR, DTR, RTS, RXD, TXD, TX Clock, RCV Clock, RI, SI, SC

VME LAN Controller (VLC)
- Maximum of two (eight in systems with 20–slot VMEbus backplane
- 10–Mb/s transfer rate
- Supports thick and thin Ethernet coaxial cable

VME Asynchronous Controller (VAC/16)
- Maximum of one (not supported in systems with 20–slot VMEbus backplane)
- Sixteen full–duplex RS–232–C lines per controller
  - Signals supported: CTS, DCD, DSR, DTR, RTS, RXD, TXD, GROUND
- 38.4–Kb/s maximum transfer rate

VME Distributed Asynchronous Host Adapter (VDA/128, VDA/255)
- Maximum of five (one if system contains VAC/16)
- 128 asynchronous lines per VDA/128 host adapter;
- 255 asynchronous lines per VDA/255 host adapter;
  - each supports devices via RG62 coaxial cable connected to
    VDC/16 and VDC/8P downloadable cluster controllers
  - 2.5–Mb/s transfer rate to controllers

VME Distributed Cluster Controllers (VDC/16, VDC/8P)

VDC/16

Maximum of eight VDC/16 per VDA/128 adapter

Maximum of sixteen VDC/16 per VDA/255 adapter

- Connected externally via RG62 coaxial cable
- Sixteen full–duplex RS–232–C asynchronous lines per VDC/16
- Maximum transfer rate 19.2 Kb/s per line
- Signals supported on each line:
  - CTS, DCD, DSR, DTR, RTS, RXD, TXD, GROUND

VDC/8P

Maximum of sixteen VDC/8P per VDA/128 or VDA/255 adapter

- Connected externally via RG62 coaxial cable
- Eight full–duplex asynchronous RS–232–C lines per controller
- Maximum transfer rate 19.2 Kb/s per line
- One Centronics parallel printer port
- Signals supported on each asynchronous line:
  - CTS, DCD, DSR, DTR, RTS, RXD, TXD, GROUND

End of Appendix

Appendix B
I/O Connector Pin Assignments

This appendix lists pin assignments for standard I/O connectors available on AViiON 6000 series systems. All of the AViiON connectors use industry–standard interfaces.

NOTE: This appendix does not list cables or pin assignments used with the Disk Array Input/Output Processor or High Availability Disk Array subsystem.

AViiON 6000 I/O Connectors

This appendix describes pin assignments for the following connectors:

- System console connector (RS–232–C 25 pin)
- Modem port connector (RS–232–C 25 pin)
- Asynchronous connectors (RS–232–C, 25 pin)
- Synchronous connectors (RS–232–C, 25 pin)
- Parallel (printer) connector (CHAMP 36–pin)
- SCSI connectors (CHAMP 50–pin)
- Ethernet LAN connectors (15–pin)

The parallel printer, system console, and modem port connector signals are controlled by the system board. Each SCSI bus connector communicates with a separate SCSI controller/adapter; each LAN connector also requires a separate controller (VLC). One or more VSC/4 controllers manages synchronous connector signals. Asynchronous connector signals are controlled by optional VAC/16 controllers, or by VDC/8P and/or VDC/16 controllers in conjunction with a VDA host adapter. A 10– or 20–slot backpanel printed circuit board with VME bus distributes I/O between the system board, expansion memory board(s) and all adapters/controllers.

Table B–1 lists the connectors, size, and Data General part numbers for device cables that connect directly to AViiON 6000 series systems.

Table B–1 Connectors and Device Cables

Subsystem	Connector Type	Cable Type/ Size	Part Number
System console and terminal at modem port	RS–232 D25	10 ft	005–34255
		15 ft	005–34992
		25 ft	005–34993
Modem at modem port	RS–232 D25	6 ft	005–32917
		15 ft	005–32918
		25 ft	005–32919
Asynchronous terminals	RS–232 D25	10 ft	005–34256
		15 ft	005–34990
		25 ft	005–34991
Asynchronous modems	RS–232 D25	10 ft	005–36256
		15 ft	005–36257
		25 ft	005–36258
Synchronous devices (modems)	RS–232 D25	6 ft	005–32917
		15 ft	005–32918
		25 ft	005–32919
Parallel printer (printer port and VDC/8P; Centronics LPT1)	CHAMP 36 pin	15 ft Centronics	005–37910
		25 ft Centronics	005–37911
LAN interface	D15	5 m Plenum	005–33791
		20 m Plenum	005–33787
		5 m PVC	005–33766
		20 m PVC	005–31694
VDA port	BNC	25 ft RG–62 Coaxial	005–34246
		50 ft RG–62 Coaxial	005–34247
		100 ft RG–62 Coaxial	005–34248

(continued)

Table B–1 Connectors and Device Cables

Subsystem	Connector Type	Cable Type/ Size	Part Number
SCSI port	CHAMP 50 pin		
Single–ended interface		1.3 ft	005–37722
		3 ft	005–37725
		5 ft	005–37723
		10 ft	005–37724
		15 ft	005–36625
Differential interface		1.3 ft	005–33003
		5 ft	005–33004
		10 ft	005–33005
		15 ft	005–36622
		20 ft	005–33006
		30 ft	005–36621
		40 ft	005–36620

(concluded)

System Console Port Connector

The system console connects to the console port through an RS–232–C, 25–pin female DB25 connector located on the computer's rear panel. Figure B–1 shows the signals and pin numbers for this connector.

Pin	Signal
1	Chassis Ground (CG)
2	TxD (Transmit Data) >
3	RCD (Receive Data) <
4	Request to Send (RTS) >
5	Clear to Send (CTS) <
6	Data Set Ready (DSR) <
7	Signal Ground (SG)
8	Data Carrier Detect (DCD) <
20	Data Terminal Ready (DTR) >

< indicates received by controller
> indicates transmitted from controller

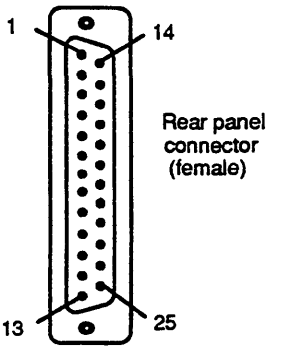
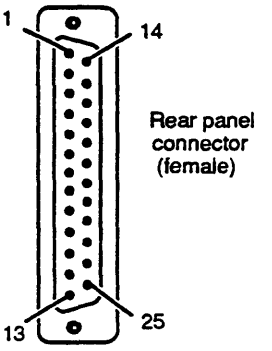


Figure B–1 System Console Connector Signals

Modem Port Connector

Modems and other asynchronous serial devices can connect to the modem port through an RS–232–C, 25–pin female DB25 connector. This connector is located on the computer's rear panel. Figure B–2 shows the signals and pin numbers for the modem port connector.

Pin	Signal
1	Chassis Ground (CG)
2	Transmit Data(TxD) >
3	Receive Data (RCD) <
4	Request to Send (RTS) >
5	Clear to Send (CTS) <
6	Data Set Ready (DSR) <
7	Signal Ground (SG)
8	Data Carrier Detect (DCD) <
20	Data Terminal Ready (DTR) >
22	Ring Indicator (RI) <
23	Speed Indicator (CI) <



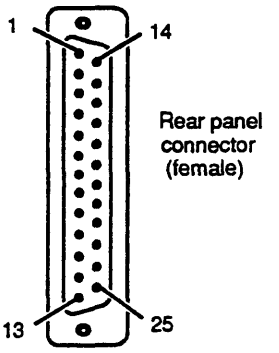
< indicates received by controller
> indicates transmitted from controller

Figure B–2 Modem Port Connector Signals

Asynchronous Serial Port Connectors

Serial devices connect to the serial ports through RS–232–C, 25–pin female DB25 connectors. Asynchronous connectors are located either on an optional cluster box or on the computer's bulkhead, labeled 1 through 32. Figure B–3 shows the signals and pin numbers for these asynchronous connectors.

Pin	Signal
1	Chassis Ground (CG)
2	TxD (Transmit Data) <
3	RCD (Receive Data) >
4	Request to Send (RTS) <
5	Clear to Send (CTS) >
6	Data Set Ready (DSR) >
7	Signal Ground (SG)
8	Data Carrier Detect (DCD) >
20	Data Terminal Ready (DTR) <



< indicates received by controller
> indicates transmitted from controller

Figure B–3 Asynchronous Serial Connector Signals

Synchronous Serial Port Connectors

Synchronous serial devices (usually modems) connect to the serial ports through RS–232–C, 25–pin female DB25 connectors. Synchronous connectors are labeled "OPTION" 1 through 4 on the rear panel. Figure B–4 shows the signals and pin numbers for synchronous connectors.

Pin	Signal
1	Chassis Ground (CG)
2	Transmit Data(TxD) >
3	Receive Data (RCD) <
4	Request to Send (RTS) >
5	Clear to Send (CTS) <
6	Data Set Ready (DSR) <
7	Signal Ground (SG)
8	Data Carrier Detect (DCD) <
15	Transmit Signal Timing (TX Clock) <
17	Receiver Signal Timing (RCV Clock) <
20	Data Terminal Ready (DTR) >
22	Ring Indicator (RI) <
23	Speed Indicator (CI) <
24	Transmit Signal Timing (SC) >

< indicates received by controller
> indicates transmitted from controller

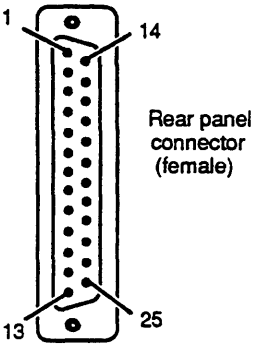


Figure B–4 Synchronous Serial Connector Signals

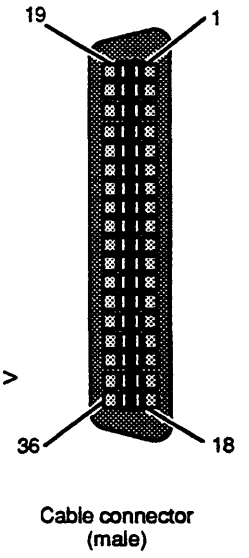
Parallel Port Connector

A Centronics–compatible parallel printer connects to the system through a 36–pin connector located on the back of the computer unit. Figure B–5 shows the signals and pin numbers for this connector.

NOTE: For the supported signals and pin numbers used by the parallel printer connector on VDC/8P controller boxes, refer to your *HPS Downloadable Cluster Controller Installation Guide* (014–001814).

The parallel printer cables listed in Table B–1 support both VDC/8P and AViiON 5000 parallel printer connectors.

Pin	Signal	Pin	Signal
1	Data Strobe >	19	Ground
2	Data 1 >	20	Ground
3	Data 2 >	21	Ground
4	Data 3 >	22	Ground
5	Data 4 >	23	Ground
6	Data 5 >	24	Ground
7	Data 6 >	25	Ground
8	Data 7 >	26	Ground
9	Data 8 >	27	Ground
10	Acknowledge <	28	Ground
11	Busy <	29	Not Used
12	Not Used	30	Not Used
13	Select	31	!Reset (Input Prime) >
14	Sg (Ground)	32	Ready (Fault) <
15	Not Used	33	Not Used
16	Not Used	34	Not Used
17	Not Used	35	Not Used
18	Not Used	36	Reserved



< indicates received by controller
> indicates transmitted from controller

Figure B–5 Parallel Printer Connector Signals

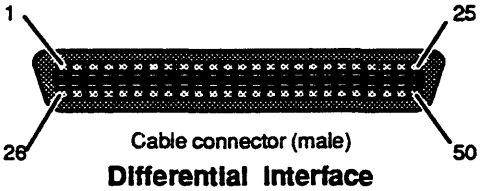
SCSI Bus Connector

The SCSI bus 50–pin CHAMP connectors are located on the rear panel of the computer unit. Figure B–6 shows the signals and pin numbers for these connectors.

Single–Ended Interface

Pin	Signal	Pin	Signal
26	Data Bus 0 (DB0)	39	Ground
27	Data Bus 1	40	Ground
28	Data Bus 2	41	Attention (ATN)
29	Data Bus 3	42	Ground
30	Data Bus 4	43	Busy (BSY)
31	Data Bus 5	44	Acknowledge (ACK)
32	Data Bus 6	45	Reset (RST)
33	Data Bus 7	46	Message (MSG)
34	Data Bus P	47	Select (SEL)
35	Ground (GND)	48	Control/Data (C/D)
36	Ground	49	Request (REQ)
37	Ground	50	Input/Output (I/O)
38	Termination Power (TERMPWR)		

NOTE: For single–ended SCSI connectors, pins 1 through 24 are connected to ground. Pin 25 is left open.



Differential Interface

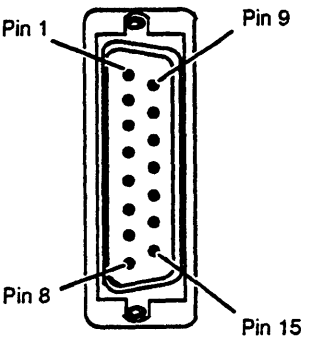
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	Shield	14	GND	27	DB0–	39	GND
2	DB0+	15	ATN+	28	DB1–	40	ATN–
3	DB1+	16	GND	29	DB2–	41	GND
4	DB2+	17	BSY+	30	DB3–	42	BSY–
5	DB3+	18	ACK+	31	DB4–	43	ACK–
6	DB4+	19	RST+	32	DB5–	44	RST–
7	DB5+	20	MSG+	33	DB6–	45	MSG–
8	DB6+	21	SEL+	34	DB7–	46	SEL–
9	DB7+	22	C/D+	35	DBP–	47	C/D–
10	DBP+	23	REQ+	36	GND	48	REQ–
11	DIFFSENS	24	I/O+	37	GND	49	I/O–
12	GND	25	GND	38	TERMPWR	50	GND
13	TERMPWR	26	GND				

Figure B–6 SCSI Bus Connector Signals

LAN Interface Connector

The LAN interface provides a 15–pin D connector for an AUI cable. The AUI cable connects the computer to an external Medium Attachment Unit (MAU). The MAU contains the Ethernet transceiver and the Medium Dependent Interface (MDI) for connection to the physical network. Figure B–7 shows the signals and pin numbers for these connectors.

Pin	Signal	Circuit Name
1	Ground	CI–S (Control In circuit shield)
2	Collision +	CI–A (Control In circuit A)
3	Transmit +	DO–A (Data Out circuit A)
4	Ground	DI–S (Data In circuit shield)
5	Receive +	DI–A (Data In circuit A)
6	Ground	VC (Voltage common)
7	No Connect	CO–A (Control Out circuit A)
8	Ground	CO–S (Control Out circuit shield)
9	Collision –	CI–B (Control In circuit B)
10	Transmit –	DO–B (Data Out circuit B)
11	Ground	DO–S (Data Out circuit shield)
12	Receive –	DI–B (Data In circuit B)
13	+12 Volts	VP (Voltage plus)
14	Ground	VS (Voltage shield)
15	No Connect	CO–B (Control Out circuit B)
Connect shell	Ground	PG (Protective Ground)



Rear panel LAN connector (female)

Figure B–7 LAN Interface Connector Signals

End of Appendix

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TO ORDER

1. An order can be placed with the TIPS group in two ways:
   a) MAIL ORDER – Use the order form on the opposite page and fill in all requested information. Be sure to include shipping charges and local sales tax. If applicable, write in your tax exempt number in the space provided on the order form.

      Send your order form with payment to: Data General Corporation
      ATTN: Educational Services/TIPS G155
      4400 Computer Drive
      Westboro, MA 01581–9973

   b) TELEPHONE – Call TIPS at (508) 870–1600 for all orders that will be charged by credit card or paid for by purchase orders over $50.00. Operators are available from 8:30 AM to 5:00 PM EST.

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2. As a customer, you have several payment options:
   a) Purchase Order – Minimum of $50. If ordering by mail, a hard copy of the purchase order must accompany order.
   b) Check or Money Order – Make payable to Data General Corporation.
   c) Credit Card – A minimum order of $20 is required for MasterCard or Visa orders.

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3. To determine the charge for UPS shipping and handling, check the total quantity of units in your order and refer to the following chart:

Total Quantity	Shipping & Handling Charge
1–4 Items	$5.00
5–10 Items	$8.00
11–40 Items	$10.00
41–200 Items	$30.00
Over 200 Items	$100.00

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5. Read the TIPS terms and conditions on the reverse side of the order form carefully. These must be adhered to at all times.

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6. Allow at least two weeks for delivery.

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7. Items ordered through the TIPS catalog may not be returned for credit.
8. Order discrepancies must be reported within 15 days of shipment date. Contact your TIPS Administrator at (508) 870–1600 to notify the TIPS department of any problems.

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