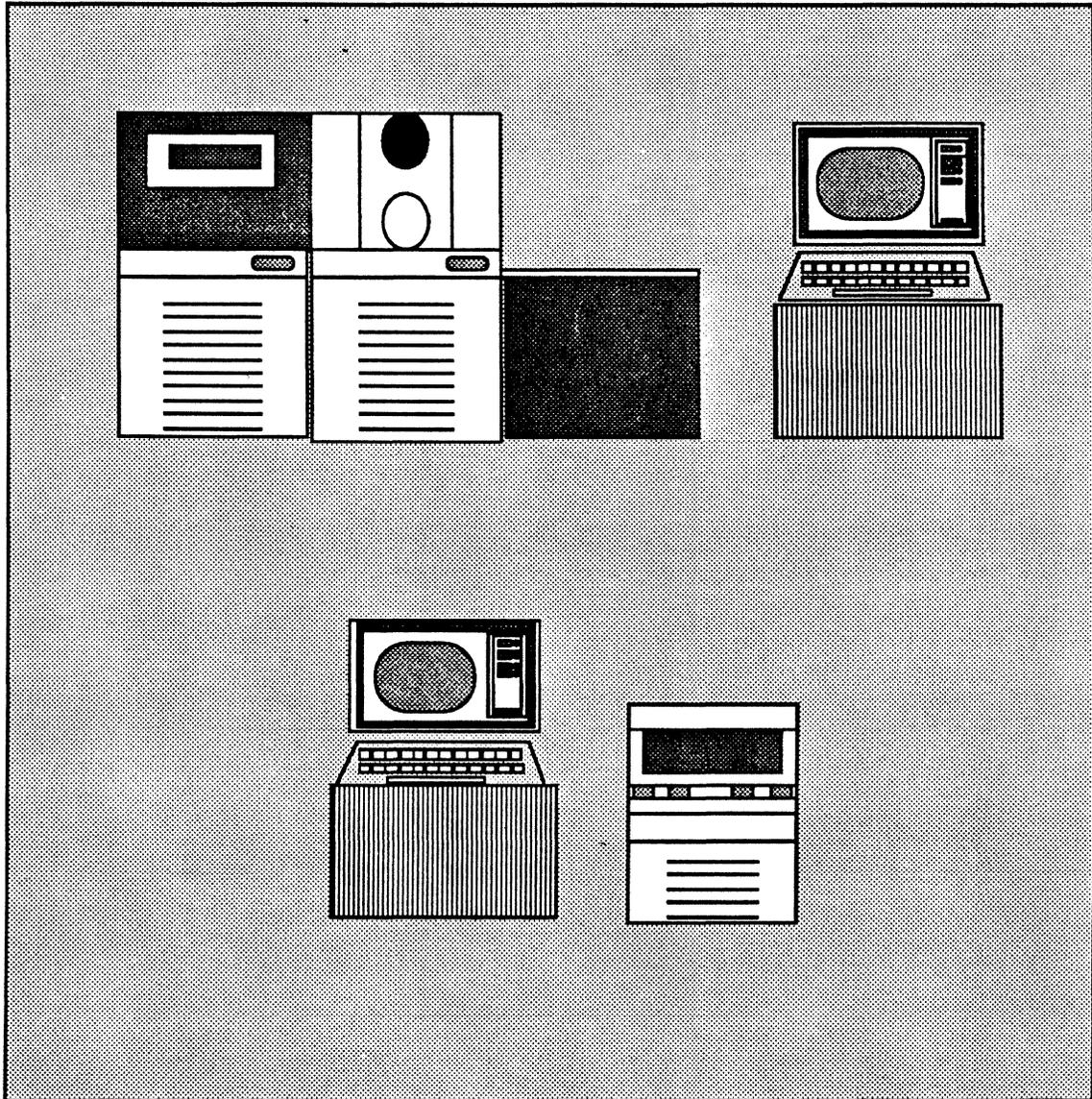


ULT

Site Preparation



THE ULTIMATE CORP.



Site Preparation

PROPRIETARY INFORMATION

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The specifications in this guide apply to DEC-based models 1500, 2000, 2020, and 3030, and Honeywell-based Models 1400, 6000, 6200, 6400, 6600, 6800, 7000, 7200, and 7400.

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Document No. STE-04

FCC Warning

FCC WARNING

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manuals, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his or her own expense, will be required to take whatever measures necessary to correct the interference.

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How To Use This Manual

HOW TO USE THIS MANUAL

Congratulations on the purchase of your new Ultimate computer system! To ensure that your new system is installed correctly, please follow all of the steps in this manual.

Section 1 discusses the importance of **APPOINTING A CONTACT PERSON**, who will be responsible for the installation and operation of your Ultimate system.

Section 2 explains the **SITE REQUIREMENTS** that will guide you through setting up your computer area.

Section 3 explains the **ENVIRONMENTAL REQUIREMENTS** of your system, including temperature, humidity, dust, and static electricity.

Section 4 explains the **POWER REQUIREMENTS** of your system, including proper electrical wiring and cabling. It also explains how to prevent power and other electrical problems.

Section 5 contains a **SITE PREPARATION CHECKLIST**, to help insure that all steps have been completed correctly.

Appendix A provides **SPACE REQUIREMENTS** according to your system model.

Appendix B provides **AIR CONDITIONING SPECIFICATIONS** according to system model.

Appendix C provides **POWER CONDITIONER RECOMMENDATIONS** according to system model.

Appendix D provides **INTERFACE CABLE SPECIFICATIONS** that you must follow when installing CRT cables.

Appendix E provides an **ELECTRICAL WIRING DIAGRAM** for Honeywell-based systems.

Appendix F provides information on **1400 SYSTEM SPECIFICATIONS**, including cabling specifications.

Appoint a Contact Person

1 APPOINT A CONTACT PERSON

Ultimate strongly recommends that one person from your organization be appointed responsible for preparing the site, and overseeing the installation of your system. This person should become thoroughly familiar with the requirements detailed in this manual, and ensure that those requirements are met. In the event of any problems or questions regarding installation, this person should contact your Ultimate marketing representative or the Ultimate Technical Assistance Center (TAC).

It is recommended that, after installation is complete, this same person be responsible to interface with the service organization whenever your system requires support or service. When choosing an installation contact person, keep in mind that this person should be sufficiently knowledgeable to provide accurate and detailed accounts of symptoms of any problems, and should be able to apply remedial instructions from the service organization.

Before you continue, it will be helpful for you to have a complete description of your specific system configuration and options. If you do not have this description, contact your Ultimate marketing representative.

As you are planning and preparing for your installation, keep in mind that the requirements in this manual must be met when planning the layout and specifying the facilities of your computer area. If any characteristics of your site do not meet the requirements specified in this manual, contact your Ultimate marketing representative or the Ultimate TAC.

Site Requirements

2 SITE REQUIREMENTS

The compact size of your Ultimate System allows it to be placed in a variety of areas. Read the following sections for areas to consider when planning your site.

2.1 Space Requirements

The space provided for your Ultimate System should be large enough to allow service personnel to service your system. For example, don't place your system in a closet because the closet may not be large enough for a field engineer to access the entire system. Also, a closet won't provide adequate ventilation for your system. See Appendix A for specific space requirements for your system.

2.2 Avoid Sunlight

Don't place your system in an area where sunlight shines directly on it. Sunlight will increase the temperature inside the computer cabinet.

2.3 Air Conditioning

If your system will be installed in an office, be sure the area containing the system has adequate air conditioning at all times. A small room designed as an office for an individual rarely has sufficient air conditioning to compensate for the amount of heat produced by a computer.

Make sure the air conditioner is not turned off or lowered at night. If so, Ultimate recommends that you either shut down the system at night, or install an independent air conditioner.

See Appendix B for air conditioning specifications by system model.

Once you have decided on a location for your Ultimate System, Ultimate recommends that the following items be installed in that area:

2.4 CO2 Fire Extinguisher

A CO2 fire extinguisher should be kept in the computer room. Sprinkler systems or soda (wet) extinguishers are not recommended because of shock hazards and because of the damage they will cause to the electrical components of your system. Dry chemicals are also not recommended because they leave a very fine dust that can clog air filters on the system. They also leave a coating on the logic boards.

Site Requirements

2.5 Location of Port 0 Terminal

Plan your site so that a terminal will be placed next to your system. When performing certain maintenance operations, it is necessary to monitor both the system and the terminal.

2.6 Telephone

A telephone should be placed next to your system. If you need to call Ultimate for assistance, Ultimate support representatives will be able to "talk you through" particular diagnostic or recovery operations if your phone is close to the system.

2.7 Modem

An asynchronous modem (preferably 1200 baud) should be placed next to your system. If you need to call Ultimate for assistance, the modem will allow Ultimate support representatives to "dial in" to your system to diagnose and repair problems. This will considerably reduce the amount of repair time needed.

The modem requires the installation of a separate phone line, typically terminated in an RJ11 (standard) phone jack.

2.8 Multiplexor

Depending on your configuration, you may also want to consider adding a multiplexor. A multiplexor (mux) is a communications device that allows several (from 2 to 16) terminals to share a single data communications line. Multiplexors are extremely reliable, allow for flexible system configuration, and are relatively easy to install.

A mux is connected to a modem, which is connected to a phone line. The phone line can be a dedicated leased-line, or a simple dial-up circuit. The maximum data transmission rate over a leased-line is 19,200 baud. This rate is controlled by the modem.

There are several types of multiplexors. The correct one to use depends upon the individual application. The units listed below are available from, and are completely supported by, Ultimate Technical Support, if purchased from Ultimate and covered by a maintenance agreement. Any of the following products can be used on Honeywell- and DEC-based systems.

1. 800/2 Series - Multiplexors
2. 8000 Series - Multiplexing Modems
3. 470 Series - Short-Haul Multiplexing Line Drivers

Site Requirements

For a detailed description of each type, refer to Sections 2.8.1 through 2.8.3.

Generally, a mux may be used to connect a number of devices located at the same remote site to a computer. If there were only a single device at a particular remote location, a modem would suffice. However, as the number of devices increases, the cost for additional phone lines increases in direct proportion (a line and pair of modems for each device). A pair of multiplexors will allow up to 16 devices to share the same pair of modems and communications line. Below is a formula for calculating savings to be realized by using a pair of multiplexors over the life of an installation:

$$(T*(D-1)*C) - (2*MC) + (2*CM*(D-1)) + (IC*(D-1))$$

T = time, the life of the installation, in months

D = the number of devices at the remote site

C = monthly cost of a communications line between the sites

MC = the cost of a multiplexor

CM = the cost of a modem

IC = installation charge for a communications line

In the following example, it is assumed that the life of the installation will be 2 years (24 months); that the cost of the muxes will be \$3000 each; that the cost of the modems will be \$500 each; that there will be a total of 4 devices at the remote site; that the monthly line charges would be \$600; and that the cost of installing a single communications line is \$1200.

$$(24)(4-1)(600) - (3000)(2) + (500)(2)(4-1) + (1200)(4-1)$$

Total savings over life of installation = \$43,800

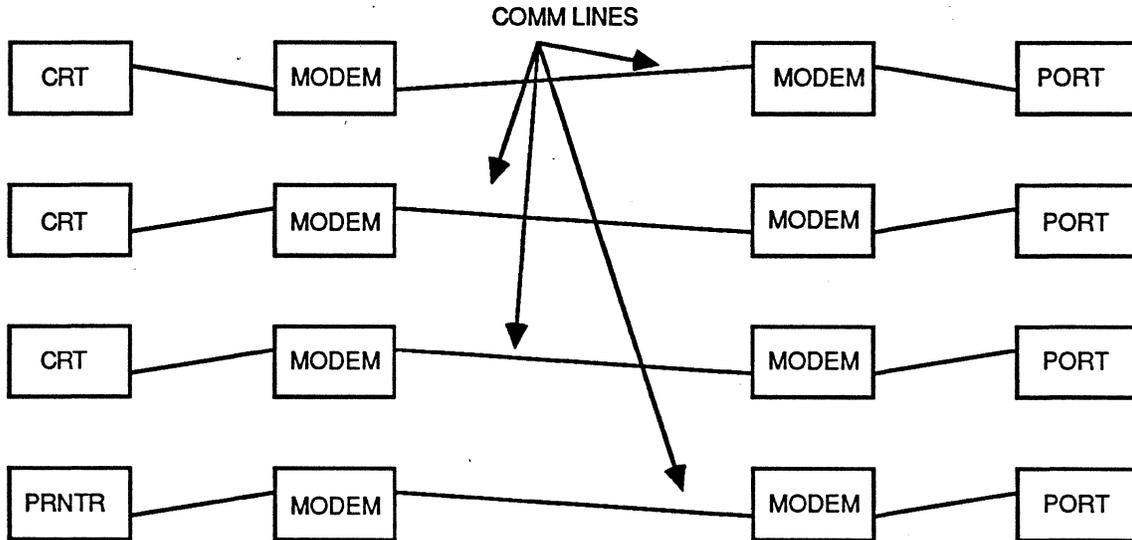
See the illustration on the next page for a visual representation of the differences between using additional modems and communications lines and using multiplexors.

NOTE: The most serious drawback for a remote site using a mux and only one communications line is that all devices are dependent upon the one link, and if any problem develops with any of the components, all of the devices will be affected.

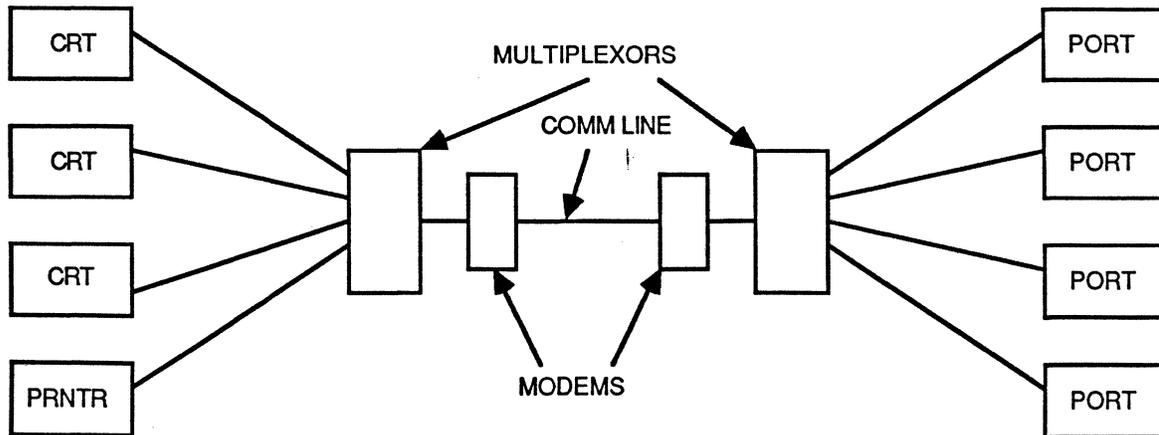
Ultimate recommends that a standby link be considered so that, in the event of a component failure, the affected devices could be routed around the failed device until repairs or replacements can be made.

Site Requirements

A COMMUNICATIONS PROBLEM AND 2 SOLUTIONS



Solution 1. 8 MODEMS
4 COMMUNICATIONS LINES



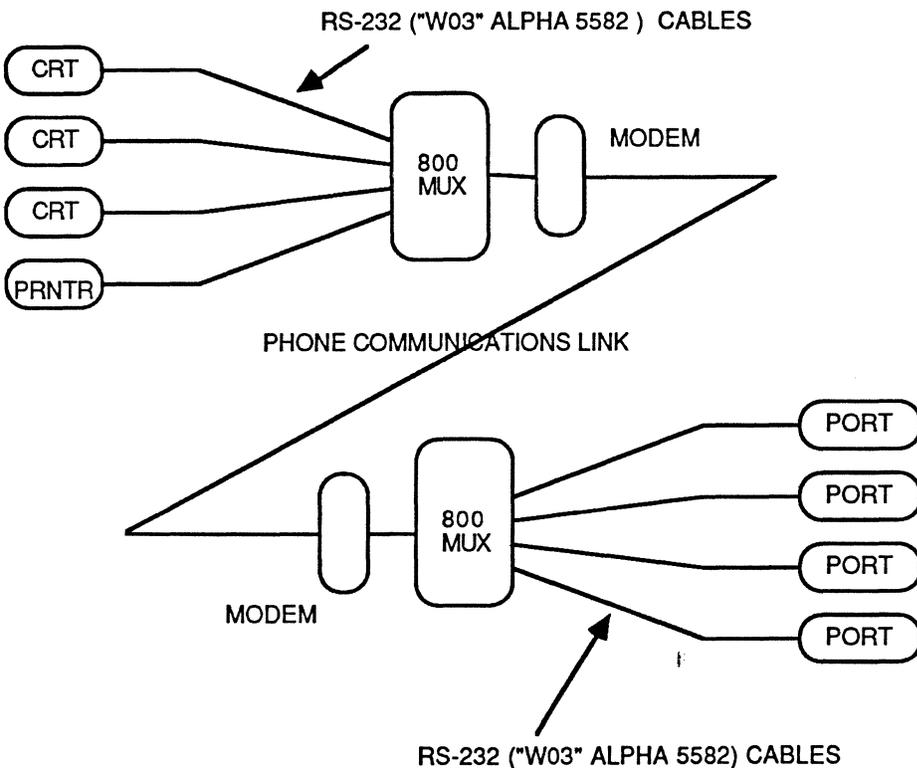
Solution 2. 2 MODEMS
2 MULTIPLEXORS
1 COMMUNICATIONS LINE

Site Requirements

2.8.1 800/2 Series Statistical Multiplexors

The 800/2 Series of multiplexors will allow up to 16 devices to share a single telephone line. The telephone line may be a simple dial-up line, or it may be a leased line. These units are available in configurations of 4, 8, 12, and 16 channels. They must be connected to a modem, which is connected to the phone line. The modems used may operate at rates up to 19,200 baud, depending upon the line characteristics.

A Typical 800/2 Series application

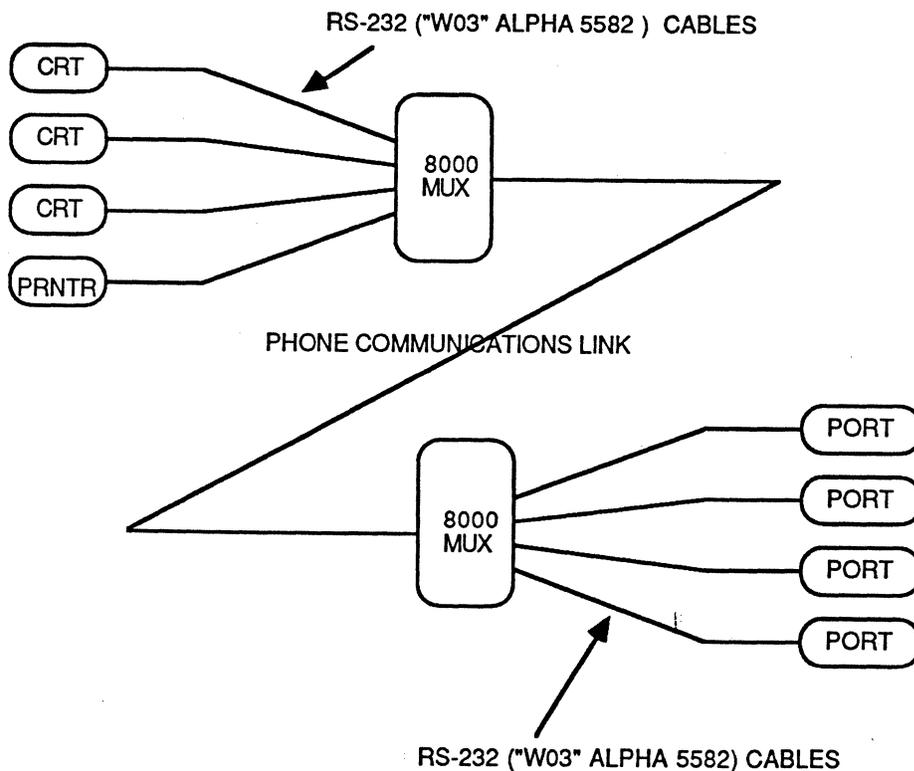


Site Requirements

2.8.2 8000 Series Multiplexing Modems

The 8000 Series of multiplexors will allow up to 16 devices to share a single telephone line. The telephone line may be a simple dial-up line, or it may be a leased line. These units are available in configurations of 4, 8, 12, and 16 channels. Unlike the 800/2 Series, these units connect directly to the telephone line, as they have built-in modems which operate at up to 9600 baud, depending upon the characteristics of the phone line.

A Typical 8000 Series application

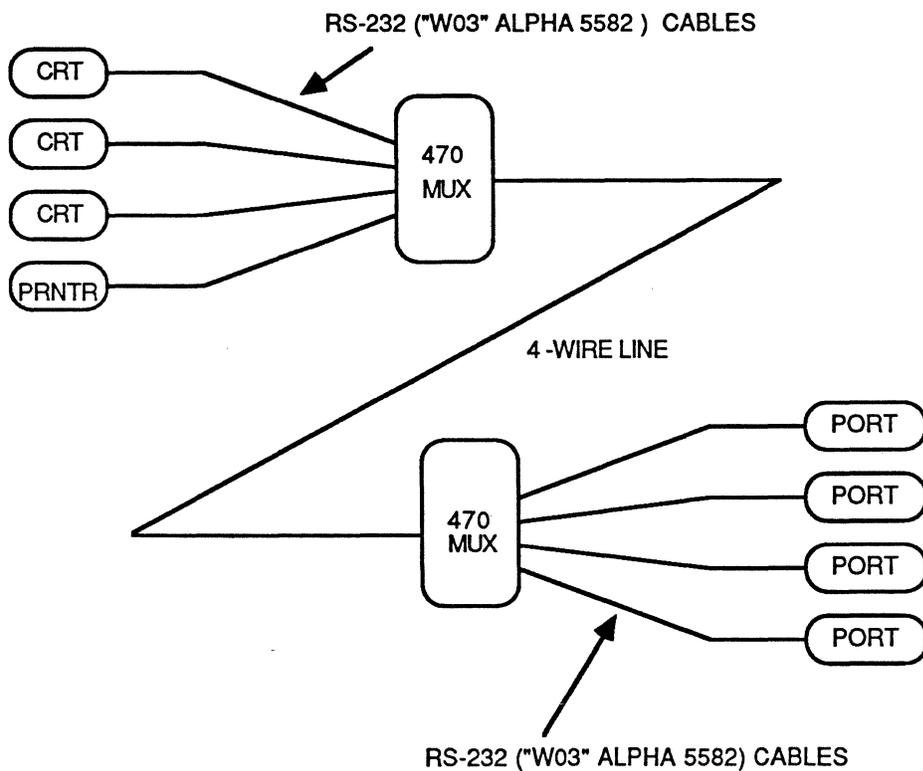


Site Requirements

2.8.3 470 Series Short-haul Multiplexing Line Drivers

The 470 Series of multiplexors will allow up to 8 devices to share a single communication line. The line is composed of two twisted pairs of wires. The maximum transmission range is 9000 feet at a baud rate of 19,200. These units are available in 4 and 8 channel models. The 4 channel model may be upgraded to an 8 channel unit at any time. Modems are not required with these units.

A Typical 470 Series application



Environmental Requirements

3 ENVIRONMENTAL REQUIREMENTS

Although your Ultimate System is made to operate in a wide variety of environmental conditions, you will get optimum performance from your system by following the guidelines below.

3.1 Temperature and Humidity

Your Ultimate System should be installed in an environment where the temperature and humidity are maintained within reasonable limits. Your Ultimate System will operate most efficiently at a temperature of 72 +/-5 degrees and a humidity level greater than 40 percent, but not more than 95 percent.

Avoid rapid changes in temperature and humidity. Make sure the temperature and humidity remain within the specified limits, and that they remain constant. Severe fluctuations in temperature and humidity can damage your system.

Make sure your Ultimate system is not placed in the path of direct sunlight, as this will raise the temperature inside the computer cabinet drastically.

3.2 Dust

Airborn dust reduces the efficiency of air conditioning systems. It also reduces computer reliability. A coat of dust on a logic board acts as an insulator, raising the temperature of the board, and blocking the ability of the system to keep it cool. Airborn dust also clogs the filters on air conditioners, reducing their efficiency and raising the cost of operation. If airborn dust is a problem, Ultimate recommends the use of air cleaners.

3.3 Static Electricity

As sophisticated electronics get smaller in size, static electricity becomes a major problem for computers. Your computer runs on 5 and 12 volts, where static electricity can range from a few hundred to many thousands of volts. A walk across a carpeted floor can generate static electricity in excess of 14,000 volts. Because of the low energy stored, these voltages are not harmful to people. However, static electric discharges at these levels can cause many problems, as well as very serious damage, to sensitive electronic components.

Static electricity causes problems such as printer jams, CRT locks, and system hangs. In most cases, these problems are intermittent, and the discharge is not felt by humans.

Environmental Requirements

Static problems are caused when any computer equipment is installed in low humidity areas. It is most likely to occur when the humidity falls below 40 percent. Many heated offices are very dry, and their humidity levels are below 30 percent. Also, plastics such as furniture covers, synthetic fibers and materials, and carpeting all contribute to static electricity.

To minimize static electricity, Ultimate recommends the following:

1. It is preferable that you do not install the system on carpet.
2. If carpeting is to be installed, make sure it is anti-static carpet.
3. Spray existing carpet with anti-static spray. This can be purchased commercially, or you can make your own spray by mixing equal parts of fabric softener and water.
4. Use an anti-static mat for local protection.
5. Install humidifiers or air conditioning with humidity controls.

Power Requirements

4 POWER REQUIREMENTS

4.1 Dedicated Lines

All Ultimate systems require the use of dedicated lines, as indicated below. A dedicated line is one that is used by the computer alone. No other equipment, besides the computer, should be plugged into the dedicated line.

Check the following to determine the type of dedicated line required for your system. Then read Section 4.2 for general wiring specifications. Refer to Appendix E for an Electrical Wiring Diagram for Honeywell-based systems.

NOTE: If you are going to install a power conditioner, the wiring specifications for amps and single- or three-phase lines may change. Refer to Section 4.4 for information on power conditioners.

DEC-Based Model 1500, Honeywell-Based Model 6000

These models require one single-phase, 120 volt, 15-amp dedicated line.

DEC-Based Models 2000 and 2020

These models require one single-phase, 120 volt, 15-amp dedicated line.

DEC-Based Model 3030

This model requires one single-phase, 120 volt, 30-amp line if the recommended power conditioner is installed. If the conditioner is not installed, use two single-phase, 120 volt, 20-amp dedicated lines.

Honeywell-Based Model 1400 Series

This model requires one single-phase, 120-volt, 20-amp dedicated line, with an isolated ground.

Honeywell-Based Models 6200, 6400, 6600, and 6800

These models require one single-phase, 120/208 volt dedicated line rated at 30 amps per phase, or one single-phase, 120/240 volt dedicated line rated at 30 amps per phase. They require a 4-wire circuit terminating to a Hubbell 25403 receptacle. The receptacle should be wired as follows: two phase-legs to terminals X and Y, and neutral to terminal W. Terminal Z is not connected. The fourth wire is the electrical (earth) ground. (Although the Hubbell 25403 is not an isolated ground receptacle, it is appropriate for these systems.)

NOTE: The term "single-phase" is sometimes referred to as

Power Requirements

"dual-phase" because power is supplied by two of three phase-legs of a three-phase transformer. But since we are referencing 208 volt power, two-phase legs only provide one phase of 208 volts from the transformer, hence "single-phase." Be sure to use the term "single-phase" when speaking with an electrician.

Honeywell-Based Models 7000, 7200, and 7400

These models require one three-phase 120/208 volt dedicated line, rated at 30 amps per phase. They require a 5-wire circuit terminating to a Hubbell 25403 receptacle.

4.2 Proper Electrical Wiring

When installing electrical power for your Ultimate System, make sure that the receptacles provide proper grounding.

1. Phase wiring size should be rated for at least the minimum size required by the National Electrical Code (NEC). If the wiring run exceeds 100 feet, the wire size should be increased by one (larger wire) for each 100 feet.
2. The ground wire should not be common with the neutral wire, except at the service entrance or main ground point (such as an isolation transformer).
3. The neutral should not be bonded at the panel. This is a common error, especially in pre-1977 buildings.
4. All wiring connections must be tight and free of corrosion.
5. The earth ground at the electrical panel should be an isolated ground (separate from conduit ground). It should go back to the building electrical entrance. The size of the ground should be at least the size of the conductors.
6. The computer should not be grounded to a cold water pipe or building. Its ground must be the electrical earth ground.
7. All phases of the source transformer must have the proper voltage levels, with all levels being the same.
8. U.S. design optimums are 120, 208, or 240 volts.

4.3 Convenience Power Outlets

The area in which your Ultimate system will be installed should be equipped with adequate power outlets for test

Power Requirements

equipment, cleaning equipment, terminals, and printers. These outlets should be properly grounded.

4.4 Power Problems and Solutions

4.4.1 Causes of Power Problems

Electrical disturbances may occur on your computer's power line, which may cause problems ranging from an occasional system hang to component or major system failures. Studies by a team of IBM experts have shown that as many as 120 potentially damaging (to your computer) power disturbances occur each month at a typical computer installation.

Electrical disturbances, or transients, may be caused by the power company when switching between sub-stations, sags and surges when high current machinery is turned on and off, and electrical storms. These transients can range from 100 to several thousand volts.

The important thing to note is that in the case of sags, surges, or power outages, it is the transients produced during these events that are the primary cause of computer failures, and not the events themselves.

Problems in the electrical distribution and grounding system can also be a source of trouble.

You should be aware of power problems because you have no control over electrical storms. You also have no control over the electrical company or the tenants in surrounding buildings, where transient-producing equipment may be installed.

Many power problems do not produce obvious symptoms. They may produce other symptoms, such as system aborts or other failures that appear to be software or hardware bugs.

You should consider power problems now because, if you experience an electrical storm or any other problem and your system is destroyed, it will be too late. But realistically, suppose you begin having component failures. One board is replaced this month, and another next month. You may attribute it to "just one of those things," or you may begin to doubt the integrity of the hardware. However, electrical disturbances may be causing the damage. Even an obvious problem that causes the lights to flicker may not cause an immediate failure, but may just weaken a component. The actual failure may come weeks later, making it impossible to link the disturbance with the failure.

Power Requirements

4.4.2 Solutions

Voltage regulators, uninterruptable power supplies (UPS), and power conditioners are three classifications of devices designed to address specific power problems that affect computer equipment.

A voltage regulator is designed to handle low-voltage conditions (brownouts) that may be common in some heavy industrial areas. The low-voltage condition is usually easy to detect, because it affects other equipment and even lighting. Although a voltage regulator uses a transformer, it does little or nothing to isolate the computer from electrical noises or surges, and may even cause additional problems.

The primary purpose of the uninterruptable power supply (UPS) is to maintain power to the system if the main power source fails. Its batteries, from which the system draws power, can keep a system up from 10 minutes to well over an hour. Although a UPS does provide isolation from certain types of power disturbances, it does not provide total protection. The UPS is primarily for systems in areas subject to frequent or prolonged power losses.

A power conditioner is designed to prevent the most common forms of electrical disturbances (noise and surges) from reaching your computer. These disturbances account for 95 percent of the electrical problems affecting computers.

Although a power conditioner does not regulate, some will provide a degree of "ride-through." That is, in the case of momentary power dips that cause the lights to flicker, the power conditioner will maintain voltage to the system and prevent a power fail condition.

To summarize, the voltage regulator and the UPS are designed to address specific problems or requirements affecting only a small number of systems. Because electrical noise and surges affect every computer system (to varying degrees of severity), it is the power conditioner that becomes the workhorse at solving or preventing most common power problems.

4.4.3 Power Conditioners Available from Ultimate

The line of conditioners available from Ultimate are modern-technology devices manufactured by a leading-edge company. They have been evaluated by Ultimate's technical department against several other major competitive products, and have been found to be the best unit for overall quality, reliability, and value.

Power Requirements

The advantages of these power conditioners are:

1. They are easily installed. Most simply plug into the same wall receptacle as the computer, and the computer is plugged into the conditioner. This means that they may be installed in minutes, without the cost of paying an electrician.
2. They are lightweight. Because they are solid-state devices, they weigh only 20 to 40 pounds, compared to 60 to several hundred pounds for competitive products.
3. They have very high surge-current capabilities to handle the start-up current of some computer equipment, and have no minimum load requirements, common to transformer-type devices.

NOTE: Transformer devices require a minimum load of 70 percent for stable operation, however, you'll need a unit large enough to provide for higher start-up currents and future growth. You can easily see how difficult this makes selecting the appropriate transformer device for your needs.

4. The efficiency of Ultimate's power conditioners is greater than 98 percent, which means that they produce virtually no heat and absolutely no noise.
5. They will handle "ride-throughs" of up to 10 cycles. This accounts for approximately 90 percent of all power outage cases. Ride-through means that if you get a short-duration voltage dip (the kind that makes the lights flicker), the power conditioner will maintain the voltage for that brief period, without the system experiencing a power fail condition.
6. Ultimate offers a maintenance contract on its power conditioners.

Don't be misled by other "bargain" units purported to be of the same quality, but not able to protect your system. The important thing to consider when choosing a unit is that it is a quality unit that will protect the investment you made in your computer. The improvement in reliability and corresponding "uptime" will pay for itself in a short time.

4.4.4 Power Conditioner Wiring Recommendations

In addition to the wiring recommendations in Section 4.2, Ultimate recommends that all portions of the mainframe, related peripherals, and nearby terminals (also printers and comm equipment) should be powered by the power conditioner.

Power Requirements

NOTE: See Appendix C for recommendations on which power conditioner to use for your system model.

4.5 Other Sources of Electrical Noise

Electrical noise may enter your system through paths other than the power line.

The most common paths are the ground wires of cables that connect peripheral devices (such as CRTs and printers). If the electrical outlets, from which the peripheral devices draw power, do not have as sound an electrical ground as the system, an electrical surge at the peripheral device will try to take the path of least resistance to ground (the better ground), and travel through the ground wire between the peripheral and the system. This may cause component damage within the system.

This situation is most common when CRT cables are run externally to the building, but it can occur even when the cables are run internally.

The solution is to add a surge protection device to each end of the cable. This should be done during installation on any cables that run outside of the building.

The installation of the CRT line surge protectors should be added to other lines only as required if problems occur after installation.

4.6 CRT Cabling

CRT cabling must be designed to meet the specifications in Appendix D (and Appendix F for 1400 systems). Long CRT runs (over 500 feet) should have line drivers installed to ensure reliable operation.

CRT cabling that runs outside the building should have surge protectors installed on each end of the cable (see Section 4.5).

If you need to run several CRT cables to a single "general" area, you may want to consider a "local" multiplexor. These devices provide multiplexing, or timesharing, for four, eight, or 32 lines and contain built-in line drivers for operation of up to a mile, with all lines running at 9600 baud.

In areas where line drivers and/or surge protectors are required, the use of a local multiplexor will reduce the number of line drivers and surge protectors required, as well as reduce the amount of CRT cables that would otherwise need to be installed.

Power Requirements

NOTES

Site Preparation Checklist

5 SITE PREPARATION CHECKLIST

Use this list to track your progress and ensure that all necessary steps have been completed before your equipment arrives.

- 1. A contact person has been appointed.
- 2. A computer location has been chosen that is of adequate size, does not get direct sunlight, and is continuously air conditioned.
- 3. A CO2 fire extinguisher has been installed in the computer room.
- 4. A terminal has been allocated for port 0 of your system, to be installed next to your computer.
- 5. A telephone has been installed next to the computer's proposed location.
- 6. A modem and phone line have been installed next to the computer's proposed location. The phone line is in addition to the phone requirements mentioned above.
- 7. Multiplexors (if needed) have been installed.
- 8. Air conditioning in the computer's location is sufficient to maintain a temperature of 72 +/-5 degrees, considering the computer's heat output.
- 9. A humidifier has been installed if static electricity is a problem in your building.
- 10. Measures have been taken to keep dust at a minimum.
- 11. The proper dedicated line has been installed and all lines are properly grounded.
- 12. Convenience power outlets have been installed and properly grounded.
- 13. A power conditioner has been installed (this step is optional, but highly recommended).
- 14. CRT cables have been installed according to specifications.
- 15. CRT cables that run outside the building are protected at both ends by surge protection devices.
- 16. All long CRT runs (over 500 feet) have line drivers.

Site Preparation Checklist

NOTES

Space Requirements

APPENDIX A: SPACE REQUIREMENTS

System Model #	System Dimensions			Service Clearance	
	Width	Depth	Height	Front/Back	Sides
	(in inches)			(in inches)	
DEC 1500	12"	21"	26.5"	24"	0
DEC 2020	24"	36"	40"	30"	0
DEC 3030	47"	37"	41"	30"	6"
Honeywell 1400	15"	28"	28.4"	30"	6"
Honeywell 1400 With Expansion Unit	30"	28"	28.4"	30"	6"
1/2" Tabletop Tape Unit	22"	27"	8.5"		
Honeywell 6000	19"	29"	26"	24"	0
Honeywell 6200				30"	0
CPU Cabinet	27"	36.1"	61.5"		
Fixed Disk Unit	20.5"	33"	30"		
Tape Unit	8.7"	18.4"	9"		
Honeywell 6400 and 6600				30"	0
CPU Cabinet	27"	36.1"	61.5"		
Fixed Disk Unit	20.5"	33"	30"		
Tape Unit	27"	36.1"	61.5"		
Honeywell 6800, and 7000 series				30"	0
CPU Cabinet	27"	36.1"	61.5"		
Fixed Disk Unit	20.5"	33"	30"		
Tape Unit	24"	36.4"	61.5"		

Air Conditioning Specifications

APPENDIX B: AIR CONDITIONING SPECIFICATIONS

<u>System Model #</u>	<u>BTU/hr Rating</u>	<u>Kcal/hr Rating</u>
DEC 1500	2000	500
2020	5000	1250
3030	7000	1750
Honeywell 1400	5000	1250
6000	5000	1250
6200	12000	3000
6400 - 6600	14000	3500
6800	21000	5250
7000 series	29000	7250

Power Conditioner Recommendations

APPENDIX C: POWER CONDITIONER RECOMMENDATIONS

System Model #	Power Cond. Model #	Rating	Plug Type	Wiring Specs.
DEC 1500 series 2000 series 3000 - 3020	PS20	2.4 kva	5-20	120 volt, single-phase 20 amps
DEC 3030	PS30DD	3.6 kva	L5-30	120 volt, single-phase 30 amps
Honeywell 1400	PS20	2.4 kva	5-20	120 volt, single-phase 20 amps
Honeywell 6000	PS20	2.4 kva	5-20	120 volt, single-phase 20 amps
Honeywell 6200, 6400, and 6600	PS60/2M-UC1	7.2 kva	Hubbell 25415	208/120 volt single-phase 30 amps
Honeywell 6800, 7000 series	PS90/3M-UC1	10.8 kva	Hubbell 25415	208/120 volt 3-phase 30 amps
Systems with 288 mb disks	PS90/3M-UC2 (see note below)	10.8 kva	Hubbell 25415	208/120 volt 3-phase 30 amps
Multiple systems	MP208 (see note below)	Unlim- ited	Hard- wired to elec- trical panel	208, 3-phase (shunt device)

NOTE ON PS90: PS90 will accommodate only three 288mb disk drives. Four or more drives will require a second conditioner (to handle up to four additional drives), or preferably the use of an MP208 conditioner for all equipment.

NOTE ON MP208: MP208 is attached to, and will protect all equipment powered from, the electrical circuit breaker panel supplying computer power. (This panel must be dedicated to computer equipment.)

See Section 4.4.4 for additional wiring recommendations for power conditioners.

Power Conditioner Recommendations

APPENDIX D: INTERFACE CABLE SPECIFICATIONS

Follow the steps below to ensure that your equipment cables meet the required specifications.

NOTE: Improper cabling may cause interference with other equipment. See the FCC Warning at the beginning of this manual.

The cables mentioned below, and the materials and construction techniques used in the assembly of these cables, have been verified to comply with FCC regulations. Ultimate strongly recommends that you follow these specifications to insure compliance with FCC regulations.

CPU to Modem and Modem to Device Specifications

The "W03" cable (ALPHA 5582 or equivalent) is used for interface between:

1. a modem and a CRT
2. a CRT and an auxiliary (aux) printer

(Male Connector)

(Male Connector)

See Spec ---		--- See Connector Spec
(shield)	1	1 (shield)
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	13	13
	15	15
	17	17
	20	20
	22	22

(12 conductor - shielded)
(ALPHA 5582)

NOTE: Some peripherals may require a female connector.

CRT to CPU (System) Cable Specifications

The cable (Belden 9504 or equivalent) consists of 4 twisted pairs of #24 gauge stranded wire. Around these 4 pairs is a foil shield, which has a bare wire wrapped around it. The bare wire is used for the ground connection to pin 1 on both

Interface Cable Specifications

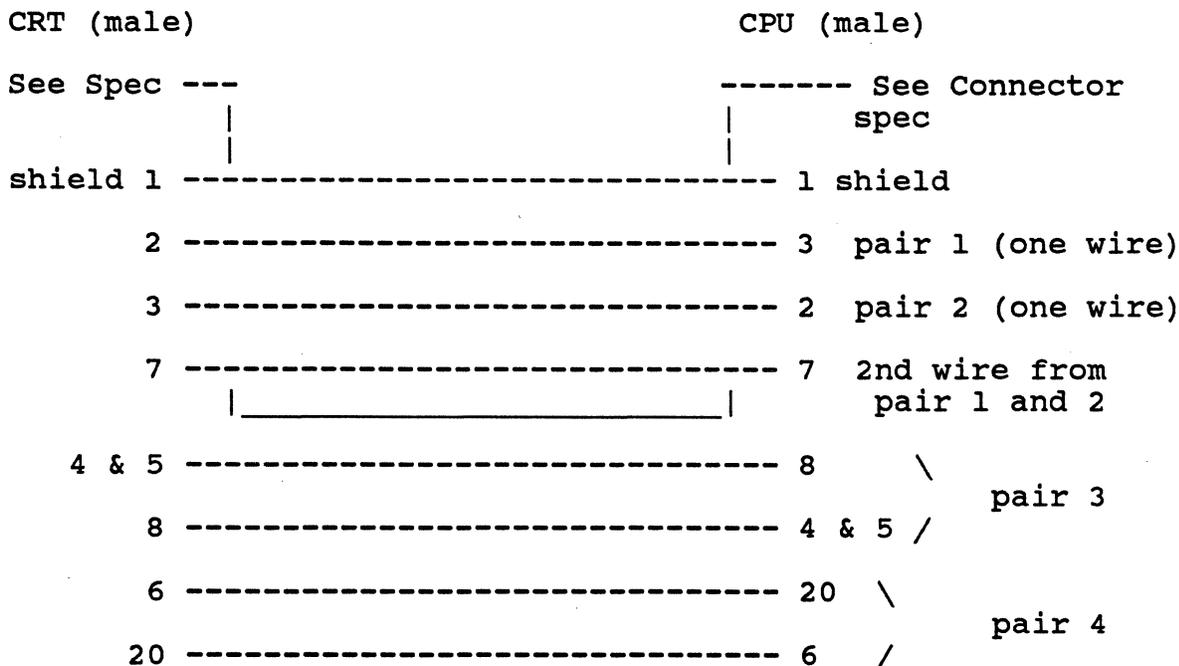
ends of the cable.

If using a Belden equivalent, only 22 or 24 gauge stranded wire should be used. Smaller wire is too thin, and larger wire will not fit into the pin sockets in the connector. Stranded wire is preferred over solid, because of its lower capacitance, which is a major factor in determining acceptable line length.

Connector Specifications

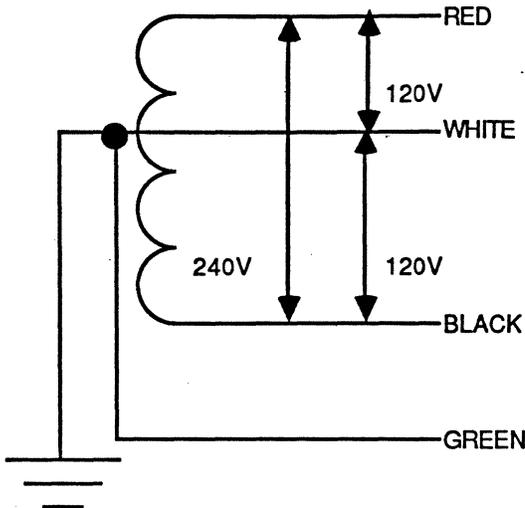
FCC regulations require grounded connector covers. They are made of metalized plastic and must be grounded to the cable shield. This is done by connecting a second "bare" wire to pin 1 at both ends. This wire should be brought back along the cable to the point where the clamshell will engage the cable. At this point, the bare ground wire should be wrapped around the cable sheath 3 to 4 times. The cover is grounded by its pressure on the bare wire. Below are the connector part numbers from "AMP:"

Connector (male)	207464-2
Connector (female)	207463-1
Connector cover	745833-9

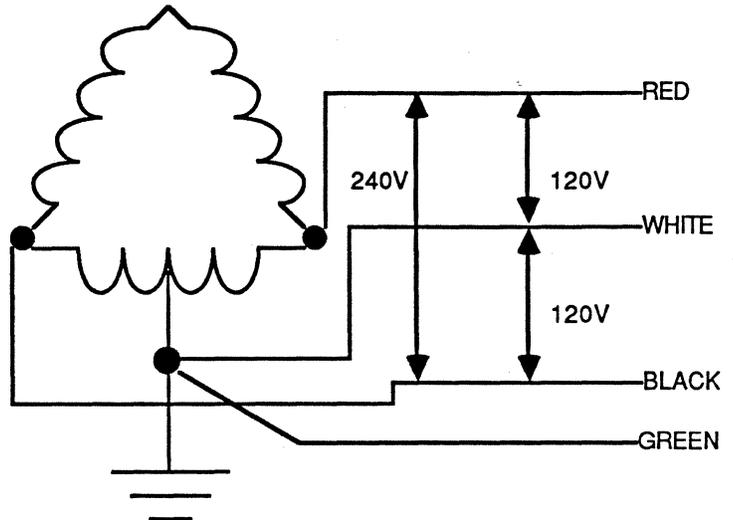


Electrical Wiring Diagram

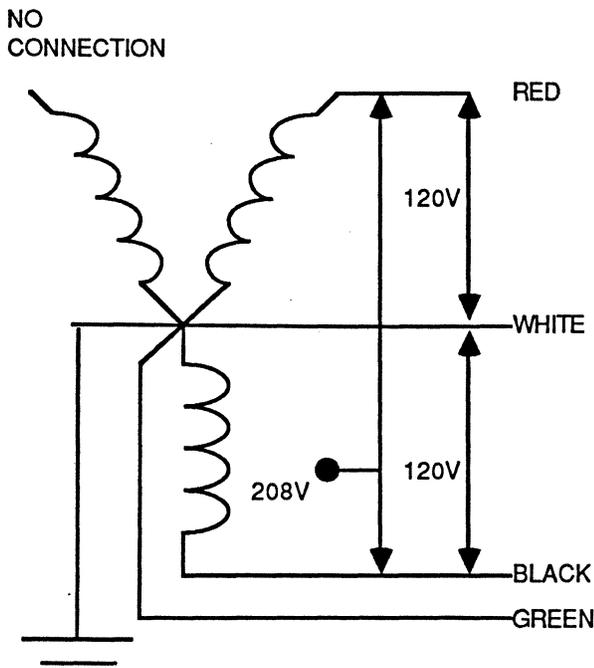
APPENDIX E: ELECTRICAL WIRING DIAGRAM (HONEYWELL-BASED SYSTEMS)



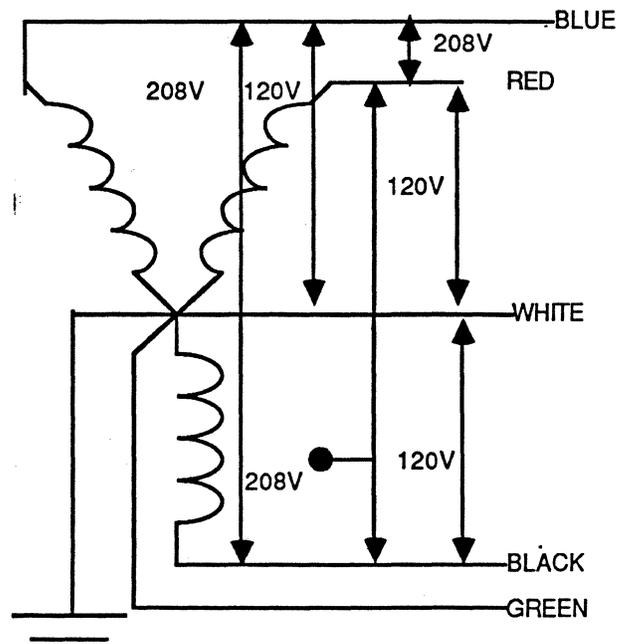
A. FROM SINGLE-PHASE TRANSFORMER OR MOTOR GENERATOR. FOR 6200 TO 6800 SYSTEMS.



B. FROM ONE PHASE OF DELTA-CONNECTED THREE-PHASE TRANSFORMER. NOTE: DELTA POWER SOURCE CANNOT BE USED TO POWER 3-PHASE SYSTEMS (7000 SERIES).



C. FROM A TWO-PHASE DISTRIBUTION OF A THREE-PHASE TRANSFORMER. FOR 6200 TO 6800 SYSTEMS.



D. FROM A Y-CONNECTED THREE-PHASE TRANSFORMER. FOR 7000 SERIES SYSTEMS.

1400 System Specifications

APPENDIX F: 1400 SYSTEM SPECIFICATIONS

Recommended Tapes

1/4" Tape Cartridge

1. Honeywell M1450
2. DEI Series II Gold

These two types of tape cartridges are available through Ultimate Computer Supplies (see catalog for ordering information).

Uninterruptible Power Supplies (UPS)

If you use an uninterruptible power supply, it must have a minimum rating of 2 kva.

1400 CABLING SPECIFICATIONS

The cabling specifications are divided into three parts:

1. CRT to CPU (System) Cable
2. Parallel Printer Cable
3. Using Existing Ultimate Cabling

1. CRT TO CPU (SYSTEM) CABLE

Note that improper cabling may cause interference with other equipment that would be required to be corrected by the user at the user's expense (see the FCC Warning Statement at the beginning of this manual).

The following specifications apply to the 8-way Station Processor Board. Devices used on the 8-way must use X-ON/X-OFF protocol.

Cable Specifications:

The cable (Belden 9502 or equivalent) consists of two (2) twisted pairs of #24 stranded gauge wire. Around these 2 pairs is a foil shield, which has a bare wire wrapped around it. The bare wire is used for the ground connection to pin 1 on both ends of the cable.

If using a Belden equivalent, only 22 or 24 gauge stranded wire should be used. Smaller wire is too thin, and larger wire will not fit into the pin sockets in the connector. Stranded wire is preferred over solid because of its lower capacitance, which is a major factor in determining acceptable line length.

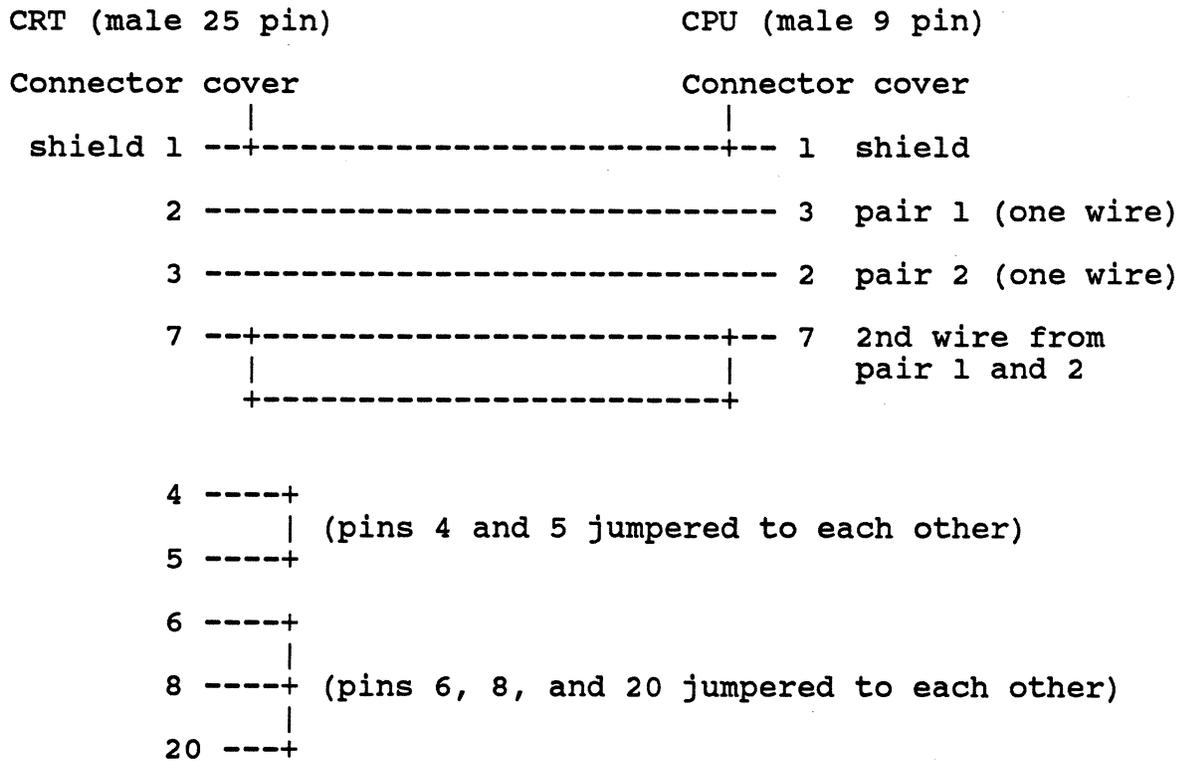
1400 System Specifications

Connector Specifications:

FCC regulations require grounded connector covers. They are made of metallized plastic and must be grounded to the cable shield. This is done by connecting a second "bare" wire to pin 1 at both ends. This wire should be brought back along the cable to the point where the clamshell will engage the cable. At this point, the bare ground wire should be wrapped around the cable sheath 3 or 4 times. The cover is grounded by its pressure on the bare wire.

The cable has a 9-pin connector (AMP 205204-4) with an EMI/RFI connector cover (amp 745854-3) at one end, and a 25-pin connector (AMP 207464-2) with an EMI/RFI connector cover (AMP 745833-9) at the other end.

CRT to CPU (System) Cable:



1400 PARALLEL PRINTER CABLE (CENTRONICS INTERFACE)

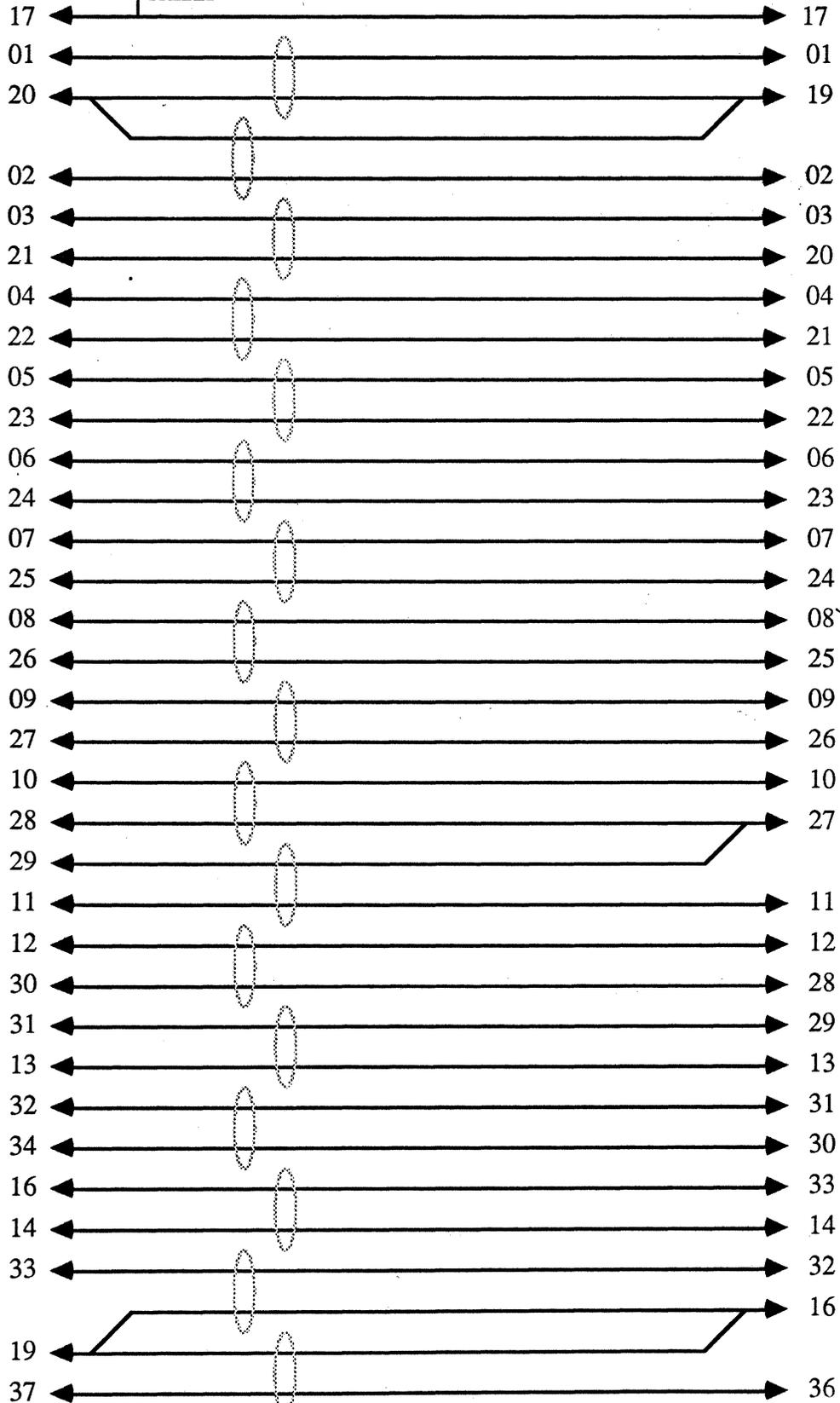
TO: SYSTEM
37-PIN CONNECTOR (MALE)

TWISTED
PAIR

TO PRINTER
CENTRONICS
CONNECTOR

connector

SHIELD



1400 System Specifications

3. USING EXISTING ULTIMATE CABLING

If Ultimate cabling is already installed according to Ultimate's specifications, then that cabling can be modified for the 1400 system by one of the following two methods.

1. Remove existing cable connectors, and re-pin them to match the cable specifications described in the section titled "CRT to CPU (System) Cable."
2. Use special adapters for the 1400 system (see the following section titled "Special Adapters for 1400 Systems."

SPECIAL ADAPTERS FOR 1400 SYSTEMS

Note that improper cabling may cause interference with other equipment that would be required to be corrected by the user at the user's expense (see the FCC Warning Statement at the beginning of this manual).

Cable and Connector Specifications

For cable and connector specifications, refer to the section titled "CRT to CPU (System) Cable."

1400 System Specifications

Adapter for Standard Ultimate CRT to CPU Cables to 1400 System

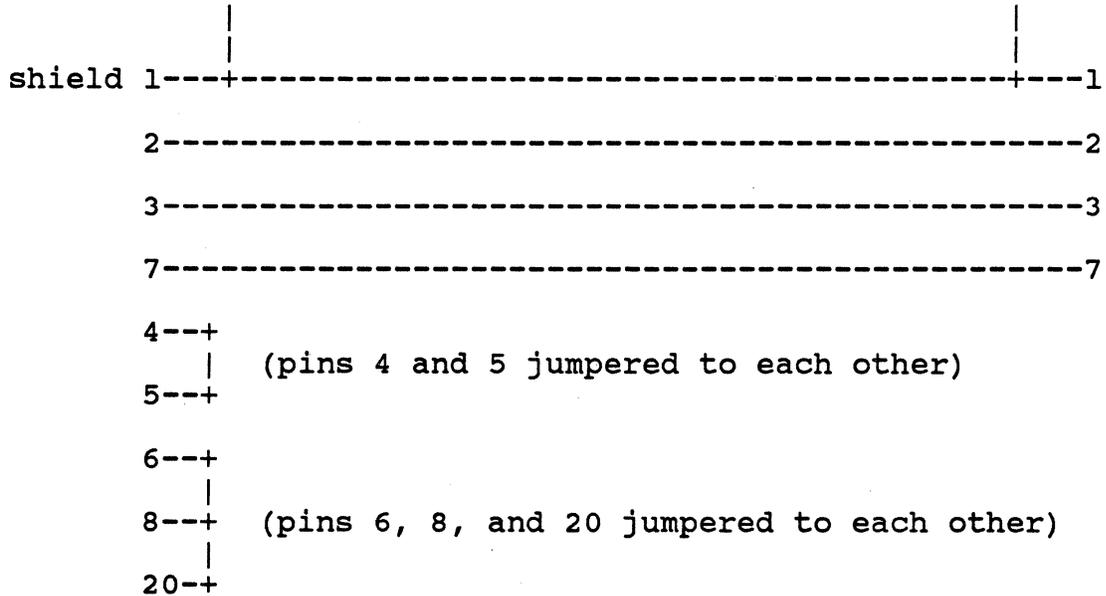
The adapter consists of a 25-pin (female) connector to a 9-pin (male) connector. The 9-pin connector connects to the 1400 system. The 25-pin connector connects to the CPU end of the Standard Ultimate CRT to CPU cable.

25-pin CRT end
(female connector)

9-pin CPU end
(male connector)

Connector cover

Connector cover



1400 System Specifications

Adapter For 1525 CRT to CPU Cables to 1400 System

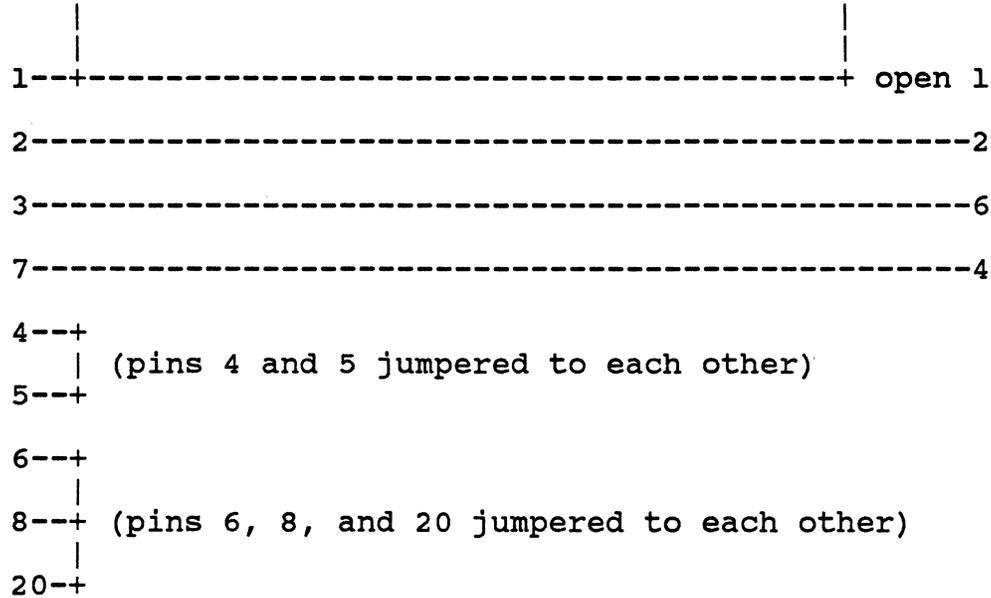
This adapter consists of a 25-pin connector (male) to a 25-pin connector (female). The male end of the adapter connects to the CRT, and the female side connects to the CRT end of the 1525 CRT to CPU cable.

25-pin CRT end
(male end)

25-pin 1525 cable end
(female end)

connector cover

connector cover



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717 RIDGEDALE AVENUE, EAST HANOVER, NEW JERSEY 07936

(201) 887-9222 TWX 710-996-5862 Telecopier (201) 887-8439
