ARIX Corporation

System90 Model 25 Site Preparation Manual

ARIX Corporation 821 Fox Lane San Jose, CA 95131

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Date:	January 10, 1990
Written by:	Alan R. Whitehorn
Illustrated by:	Robert Rogers and Alan R. Whitehorn
Production by:	Robert Rogers

Trademarks

ARIX is a registered trademark of ARIX Corporation

UNIX is a registered trademark of AT&T.

FCC WARNING:

This equipment generates, uses, and can radiate RF (radio frequency) energy, and if not installed and used in accordance with the information provided by ARIX Corporation, 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 own expense, will be required to take whatever measures may be required to correct the interference.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

Le presènt appareil numerique n'èmet pas de bruits radioèlectriques dèpassant les limites applicables aux appareils numèriques de Classe A prescrites dans le règlement sur le brouillage radioèlectriques èdictè par le ministère des communications du Canada.

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Preface

This manual provides information and recommendations to help prepare a site for the installation of an ARIX System90 Model 25 computer. It describes physical and functional characteristics of the host, of terminals, printers, modems, and other devices to be configured with the system. However, except for some minor details about equipment external to the system, it covers *only* System90 Model 25 equipment. To obtain similar information on peripheral units (terminals, printers, etc.) produced by companies other than ARIX, refer to the publications offered by the device's manufacturer. All recommendations of this site preparation guide should be followed before the system is installed. Once the system is installed, it can be very difficult to make changes or to correct problems.

Customer Responsibilities

You should follow closely the recommendations made in the manual before the system is installed. Failure to meet any of the requirements listed below may invalidate any warranties or guarantees made under the purchase agreement.

- Provide and install all communications cables, wall jacks, special connectors, and associated hardware.
- Provide and install all necessary power outlets, distribution boxes, conduits, grounds, lightning arresters, and associated hardware.
- Make sure any building alterations meet the environmental requirements of the system and are in accordance with local electrical and building codes.
- Provide floor coverings and environmental systems that prevent the buildup and discharge of static electricity. If humidity is below that recommended in this guide, contact ARIX Customer Support for assistance.
- Provide enough space for field service access to the system. Suggested clearance in front and in back is 45 inches (114.3 cm). Suggested clearance for the left side is 36 inches (91.44 cm).
- Provide enough space for adequate cooling. Suggested clearance on both sides is 12 inches.
- Provide appropriate safety measures, such as fire extinguishers and properly-sized circuit breakers. Sprinkler systems are not recommended for fire protection.
- Provide other equipment as required for full operation of the System90 Model 25 (for example, modems) and arrange for installation of that equipment by the responsible vendor.

Customer Support

For Assistance Call:

- 800-237-2783 from outside California
- 800-521-5783 from inside California but outside the 408 area code
- 408-432-1200 from inside the 408 area (ask for Customer Support)

Document Conventions

All WARNINGS, CAUTIONS, and NOTES are defined as follows:

WARNING:

A WARNING box calls attention to a condition or action that can cause personal injury if allowed to exist or occur.

CAUTION:

A CAUTION box calls attention to a condition or action that can cause damage to the equipment or the software if allowed to exist or occur.

NOTE:

A NOTE box is used in place of a footnote. It calls attention to or contains amplifying information about or stresses the importance of associated text.

1 Space Requirements

This section contains information on system configurations, cabinet placement, floor requirements, equipment placement, service clearances, and total weight tables.

System Configurations

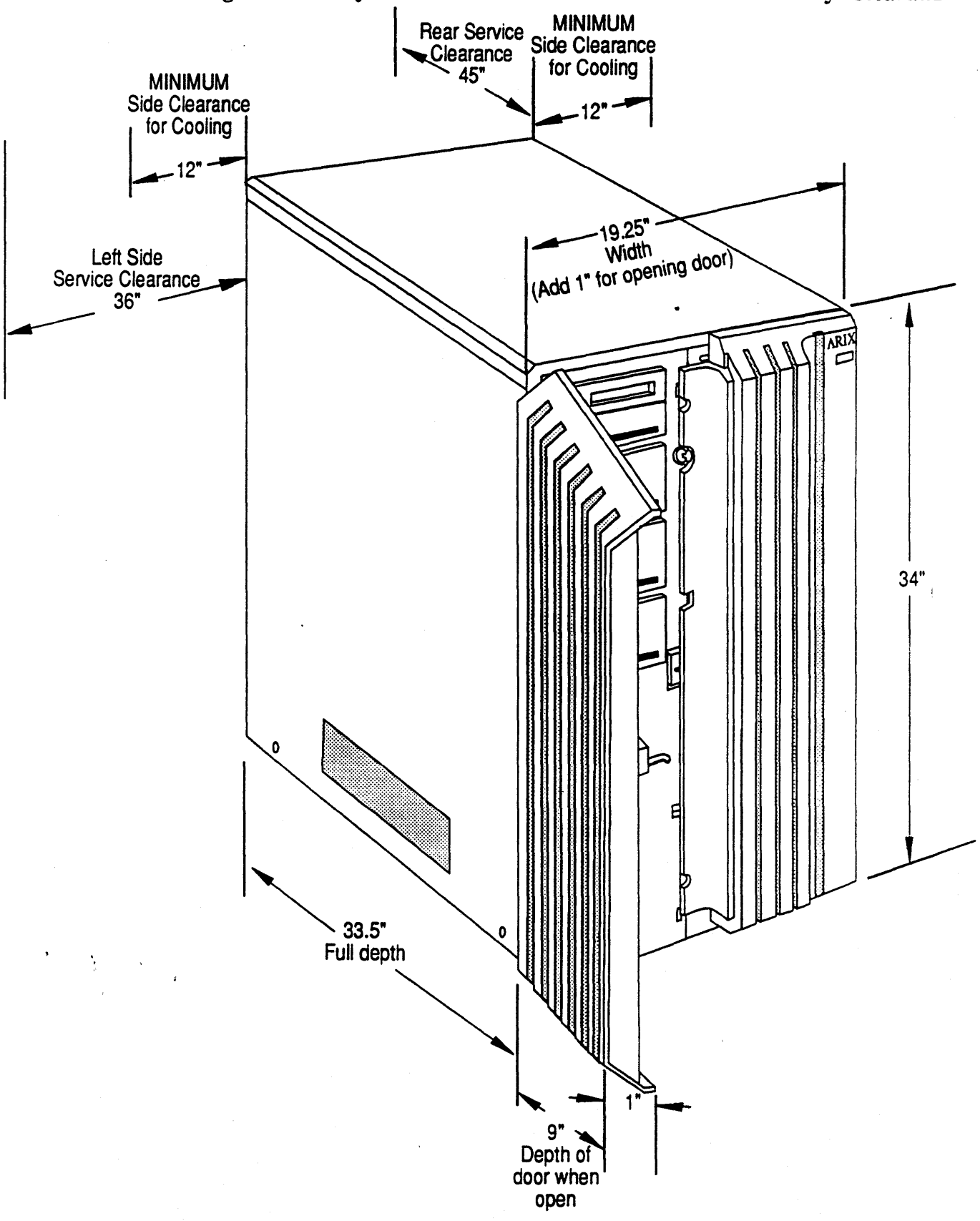
System90 functional units and subassemblies, except for terminals and printers, are housed within metal cabinets measuring 34 in. (86.3 cm) in height by 19.25 in. (48.9 cm) in width by 33.5 in. (85.0 cm) in depth. Refer to Figure 1-1.

A minimum system configuration consists of a single cabinet. A peripheral expansion cabinet may be added to the system to house additional system storage capacity. The peripheral expansion cabinet dimensions are 34 in. (86.3 cm) in height by 20.25 in. (51.4 cm) in width by 32 in. (81.3 cm) in depth. No side clearance is required for the peripheral expansion cabinet .

Equipment Placement

Once you have defined the number of cabinets and peripheral units the system will comprise, you can begin preparing the site. The first step is to prepare a scaled drawing or floor plan of the site showing the position that each unit will occupy. The total floor area needed for the single cabinet system is 644.9 square inches not including the service clearance values shown in Figure 1-1. Do not forget to add in the dimensions of any peripheral units that will also be in the computer room (usually a console terminal and printer).

Figure 1-1 System90 Model 25 Cabinet with Necessary Clearanc



Flooring

The System90 Model 25 has no special flooring requirements other than being able to support both the total weight and the weight/unit area of each cabinet. Nominal floor loading by the system is less than 87 pounds per square foot. Point loading is a maximum of 100 pounds per square inch (psi). The maximum weight per loaded cabinet is 390 lbs (176.8 Kg).

In locations that experience frequent periods of low humidity, electrostatic discharge may be a problem. Antistatic carpeting, antistatic sprays, or the placement of conductive mats in front of the system and under each peripheral may be required.

Cable Layouts

The only cables external to the System90 Model 25 cabinet, other than power cables, are communications cables to the terminals, printers, modems, and similar devices in the system configuration.

Some of the things you should consider when planning the cabling configuration for these devices include the following:

- Determining cable length and routing.
- Identification and reduction of ambient electrical noise sources.
- Locating usable (existing) on-site cables.
- Determining lead times to make or buy cables.

Refer to Appendix B, which has been included to assist you in planning your total cable configuration.

2 Environmental Requirements

The System90 Model 25 can operate effectively in most environments suited to human business activities and living conditions. Some extreme environmental conditions must be avoided.

Environmental Restrictions

Certain environments must not be used for an installation site. These restricted environments are as follows:

- Areas subject to extreme temperature or humidity variation.
- Kitchens, air-conditioner exhaust areas, or similar areas conducive to exceptional humidity.
- Workshops or manufacturing environments producing high levels of airborne particles, such as dust, grit, smoke, or corrosive chemical agents.
- Basements or similar areas susceptible to flooding.
- Areas subject to electromagnetic fields or radio frequency radiation.
- Areas subject to mechanical vibration or intermittent, high-g force excursions.

Temperature and Humidity

The ideal operating temperature and humidity range for System90 Model 25 cabinets is 21° to 27° centigrade (70° to 80° Fahrenheit), with a relative humidity of 40 to 60 percent.

The operating safety margin, however, permits an extended operating period in case of heating or air conditioning systems failure. Tables 2-1 and 2-2 show the *maximum and minimum* values for these conditions and the altitude range in which the system can operate.

Table 2-1 Environmental Operating Limits

Operating Temp. Range	Relative Humidity	Altitude Range
5° C to 40° C (41° F to 104° F)	20% to 80 % (non-condensing)	Sea Level to 8,000 ft.

Table 2-2 Storage and Shipping Environmental Limits

Non-operating Temp. Range	Temp. Change	Relative Humidity	Humidity Change	Altitude Range
-30° C to 60° C (-22° F to 140° F)	10° C per hour (non-condensing)	5% to 95%	10% per hour (non-condensing)	Sea Level to 40,000 ft.

Certain combinations of temperature, humidity, and atmospheric pressure result in moisture condensing on surfaces in the system. This point is normally outside the range of conditions where the system is located, but if there is any doubt, wet-bulb thermometer readings should be taken and an operating curve plotted.

CAUTION:

It is particularly important to avoid operating the system in environmental conditions that can cause condensation. Even a small amount of moisture can result in a catastrophic system failure.

Media Storage

Store all media (backup tapes, flexible diskettes, optical media, etc.) under the same environmental conditions recommended for the main unit. If these storage conditions are not possible, place the media in the same room as the system for at least one hour before using. This will allow the media enough time to adjust to temperature.

Table 2-3 Magnetic Media Storage Limitations

Media Type	Storage Temperature	Storage Humidity
Magnetic Tape	5° C to 45° C (41° F to 113° F)	20% to 80 % (non-condensing)

Heat and Sound Output

The total heat and sound output from each cabinet is a maximum of: 6,100 BTUs/hr per cabinet, 36 dBA per cabinet.

Electromagnetic Interference

Electromagnetic fields or radiation emanating from radio, television, or radar antennas can interfere with the System90 Model 25 and peripheral equipment.

Electromagnetic interference can also come from nearby industrial equipment such as arc welders, insulation testers, medical equipment, large high-voltage transformers, three-phase power distribution lines and related distribution panels, electric heating units, and electric motors.

Install the equipment as far away from such sources of interference as possible.

Shielding can minimize interference if the shielding is properly located and grounded. In some cases, a separate ground circuit for the system can reduce interference.

Electrostatic Discharges

Electrostatic discharges are common in any environment and can interfere with the operation of the equipment. The power of such discharges is increased under conditions of low humidity, and, before the system is delivered, you should take periodic humidity readings at the site.

The following measures are recommended at *any* site, and can be of critical importance in a dry environment.

- Antistatic furniture coverings
- Antistatic sprays
- The placement of conductive mats in front of the system and under each peripheral

Environmental Specifications

Table 2-4a Environmental Specifications

Power			
	110 Volt Supply	*220 Volt Supply*	*110 or 220 Volt Supply*
Nominal Line Voltage	115 VAC	220 VAC	
Maximum Line Current	16 Amps	12 Amps	
Nominal Line Frequency			50/60 Hz
Maximum Power Consumption			1.80 KVA
Heat Dissipation			6100 BTU/hr
Temperature			
Operating	41° to 104° F (5° to 40° C)		
Non-operating	-22° to 140° F (-30° to 60° C)		
Maximum Gradient	10° C per hour		
Humidity			
Operating	20% to 80% RH non-condensing		
Non-operating	5% to 95% RH non-condensing		
Altitude			
Operating	Sea level to 8,000 feet (2.43 kilometers)		
Non-operating	Sea level to 40,000 feet (12.2 kilometers)		
Vibration			
Operating	5 to 25 Hz 0.04 G maximum 26 to 95 Hz 0.12 G maximum 96 to 300 Hz 0.20 G maximum		
Non-operating	5 to 25 Hz 0.10 G maximum 26 to 95 Hz 0.74 G maximum 96 to 300 Hz 2.00 G maximum		
Shock			
Operating	Less than 1.0 G @ 10 msec. duration		
Non-operating	Less than 8.0 G @ 10 msec. duration		

Table 2-4b Environmental Specifications Continued

Physical Size	
Height	34 inches (86.3 cm)
Width	19.25 inches (48.9 cm)
Depth	33.5 inches (85.0 cm)
Weight	
Weight	390 pounds (176.8 kilograms)
Floor Loading	87 pounds/square foot (425 kilograms/square meter)
Point Loading	100 pounds/square inch (7 kilograms/square centimeter)
Acoustic Noise	
Noise Power Emission Level	5.0 Bels reference: 1pW
Sound Pressure Level	36 dBA

3 Electrical Requirements

The ARIX System90 Model 25 can operate effectively using most source combinations of voltage and frequency found throughout the world.

Primary Power Characteristics

Input power characteristics of voltage and frequency for the System90 Model 25 appear in Table 3-1:

Table 3-1 Primary Power Characteristics

	Nominal Value	Limits / Tolerance	Source System	Delivery Method
Voltage	115 Vac or 220 Vac	± 10 %	Single Phase	2-wire + gnd
Frequency	50/60 Hz	± 3 Hz		

For information on the use of uninterruptible power supplies, refer to *Uninterruptible Power Supply Guidelines for the ARIX System90*

Power Transient Tolerance

The System90 Model 25 can tolerate fluctuations in the voltage and frequency characteristics of the source power within the limits shown in Tables 3-2 and 3-3.

Table 3-2 Voltage Transients

Nominal Voltage	Voltage Limits
115 Volts AC	90 to 132 Volts AC
220 Volts AC	180 to 264 Volts AC

Table 3-3 Operating Frequency Range

Nominal Frequency	Tolerance
50 Hz 60 Hz	47 to 63 Hz

If the history of the site shows that voltage or frequency fluctuations are often outside these limits, you should notify the power company of the problem and request remedial action. In extreme cases, a regulated isolation transformer may be required.

Main Panel Circuit Breaker Requirements

To calculate the main panel fuse or circuit breaker values required for your installation, add the maximum normal operating current values of **all** system units connected to the specific leg. The total power requirement for an installation varies according to the particular configuration. Table 3-4 gives ***approximate*** maximum values for typical units of a system.

Table 3-4 Unit Power Requirements

Unit	Input Power
Fully configured Main Cabinet	1.8 KVA
Typical Dot Matrix Serial Printer	0.10 KVA
Typical Correspondence Quality Printer	0.22 KVA
Typical Laser Printer	1.5 KVA
Typical Personal Computer	0.50 KVA
Typical Video Terminal	0.40 KVA

Branch Circuit Power

CAUTION:

In particular, do not connect equipment having an intermittent duty cycle (e.g., refrigerators, air conditioners, or heavy-current inductive motors) into a branch circuit being used for computer-related equipment.

If the power source is less than optimum, consider using an isolation transformer or battery-backup system. It is also highly recommended that a power line monitor be used for some period of time before installing the system. Appropriate power cables, specified in the order, are normally shipped with ARIX systems.

Power Receptacles

The power cables supplied with the System90 Model 25 are polarized, 3-wire cables with a standard male connector.

For North American 110 Vac systems, the power cables are supplied with NEMA 5-20P plugs and require 5-20R receptacles.

For North American 220 Vac systems, the power cables are supplied with NEMA L6-20P twist lock plugs and require L6-20R receptacles.

Two European 220 Volt versions are also available. The British version uses a BS 1363 type plug, the other uses a CEE 7/7 type plug.

Ensure that the receptacles (Figure 3-1) are compatible with the plugs to be used with the equipment. If any questions arise concerning selection of the correct receptacles, contact an ARIX Customer Support technical representative. Refer to the Preface for information on contacting ARIX Customer Support.

Some countries use plug and receptacle shapes different from the above. For those countries, the customer must supply the plugs.

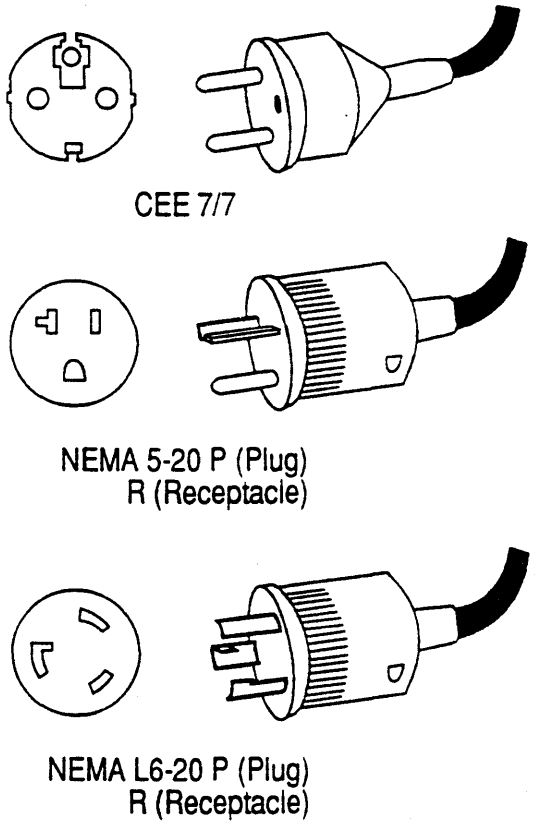


Figure 3-1 Power Plug Diagram

System Power Configuration

The following chart will help you determine whether or not your planned system configuration falls within the power restrictions of the System90 Model 25.

Instructions:

1. Fill in the following chart with your desired configuration of boards and other features in the *Number Installed* column.

2. Multiply the *Number Installed* column by the *Power Required* column and write the result in the *Total Power* column.

3. Add up the total number of boards. It cannot exceed 7.

4. Add up the *Total Power* column. The resultant **Total Power** cannot exceed 180.

Power Configuration Chart for the System90 Model 25

Feature	*Power Required*	X	*Number Installed*	=	*Total Power*
Basic System (Includes tape, SPM, ARB, ACRW)	31.6	X	1	=	31.6
Boards: MM	7.5	X		=	
PM-20	13.5	X		=	
IOPM/ACDB	13.5	X		=	
ACE	0.6	X		=	
IOPM/DSDB	18.5	X		=	
IOPM/LWDB RS232	17.2	X		=	
IOPM/LWDB V.35	17.5	X		=	
IOPM/LWDB RS449	18.1	X		=	
IOPM/LWDB Combo	17.4	X		=	
Total from Boards: (7 BOARDS MAX.)					
Storage Devices: 5.25 inch Disk	2.5	X		=	
3.50 inch Disk	0.75	X		=	
CD ROM	0.5	X		=	
Optical WORM	1.8	X		=	
R/W Optical	2.0	X		=	
Total Power: (180 MAX POWER)					

Planning and Preparation Checklist

The checklist given in this appendix is a useful reminder of the progress of the System90 installation. It can help you plan and prepare the site for the installation. The time periods are suggestions, which, of course, you can change to meet your specific needs. When you have the information given in each box, fill in the "Planned Date" column. Then, as you complete each item in the checklist, record the date in the "Completion Date" column.

Initial Planning

Planning and Preparation Steps	Planned Date	Completion Date
Review description of system to be installed to become familiar with options and peripherals, and uses of the equipment in the system.		
Review content of this site preparation guide.		
Prepare an initial layout showing locations of all equipment.		

90 Days Before Delivery

Planning and Preparation Steps	Planned Date	Completion Date
Determine space requirements.		
Check site dimensions and building access dimensions and prepare a layout showing each peripheral located at its selected site. Include any structural changes or relocation of other equipment which could affect the installation of peripherals or cables.		
Select the location of power receptacles for peripherals to provide maximum flexibility for positioning the equipment and for ease of maintenance.		
Determine the method of installation and suitable routing of signal cables, which include cables between the host processor (direct connection), terminals, and printers.		
If any cables are to be installed during site preparation, request delivery early enough to meet site preparation schedule.		
If necessary, revise planning schedules to meet equipment delivery schedules.		

60 Days Before Delivery

Planning and Preparation Steps	Planned Date	Completion Date
Check environment at selected site for compliance with requirements. Arrange necessary rework of lighting and air conditioning, if necessary.		
Compare electrical facilities with power requirements of the ordered equipment to ensure compatibility. If not compatible, call your ARIX Customer Support representative.		
Make final adjustments to planned layout of data communications devices, peripherals, and cables.		

30 Days Before Delivery		
Planning and Preparation Steps	**Planned Date**	**Completion Date**
Start installation or improvement of air conditioning, if required.		
Start any structural modifications required for cable routing or for preparing the work area.		
Install wiring, circuit breakers and required electrical receptacles.		

7 Days Before Delivery		
Planning and Preparation Steps	**Planned Date**	**Completion Date**
Check electrical, structural, and air conditioning installation. This work should be finished by this time.		
Before the arrival of equipment, make sure that the appropriate cables have been properly installed.		
Make sure preparations have been completed for interconnecting cables to be installed when the equipment is installed.		
Complete painting, draping, and carpeting of the site, if necessary.		
Make sure desks, tables, chairs, storage cabinets, and other furnishings needed at the site are available for the installation.		
Apply static-discharge treatment to the carpeting, if required.		
Clean the site location.		

Data and Logic Cables

B

This appendix can help you define your data and logic cable needs for the installation. The cable planning charts, Tables B-2 through B-4, are useful as ordering forms. Check, circle, or fill in each of the applicable blocks on the chart as required.

Follow the cable length requirements as shown in the following subsections.

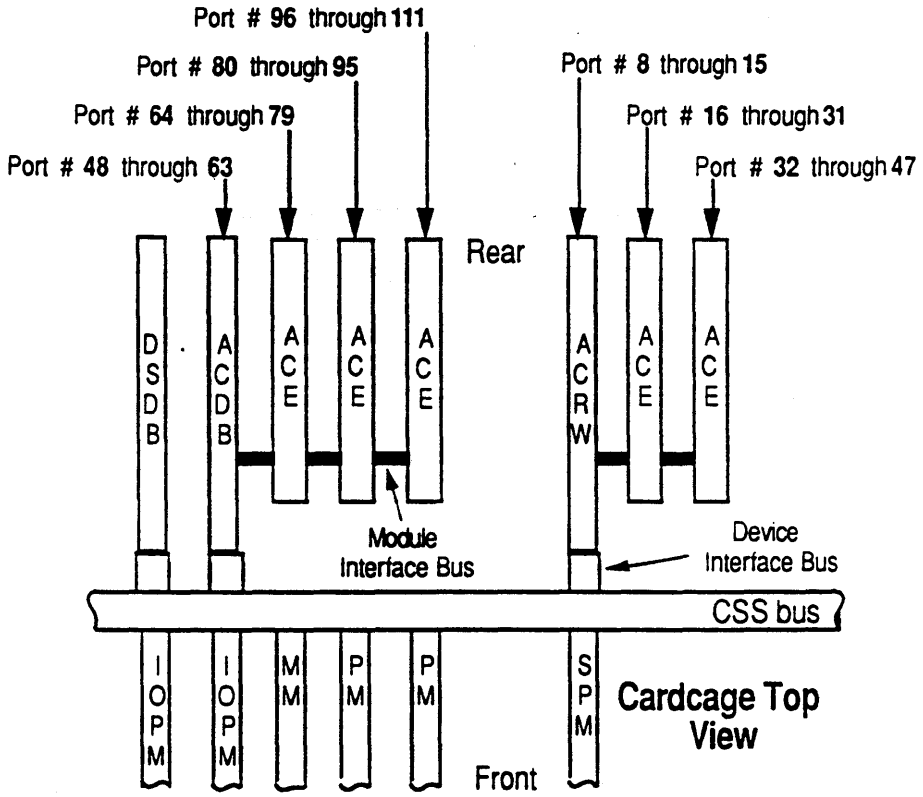
Port Numbering

Referring to Tables B-1 through B-4, the Port Number block asks for the *system logical identification* number of the port.

Asynchronous Ports

All asynchronous ports are assigned *system logical identification* port numbers in groups of 16. Numbering begins with the ACRW. Figure B-1 gives an example of the port numbering scheme used. The figure shows the ACRW, and the ACDB board using their maximum number of ACE boards. See Appendix C for details concerning asynchronous port connector pinouts and signals.

Figure B-1 Asynchronous Port Numbering



ACRW

The Asynchronous Communications Real World (ACRW) interface board provides the following asynchronous ports:

- A system CONSOLE port
- A REMOTE CONSOLE/diagnostic port
- Eight (8) serial communications ports.
- Parallel printer port
- UPS Alarm interface

The local and remote system console ports on the ACRW connect to the terminal and modem through 8-conductor (RJ-45) RS-232C cables.

A maximum of two (2) Asynchronous Communications Extender (ACE) boards (providing an extra 16 asynchronous ports per ACE board) can be used with the ACRW for a maximum of 40 asynchronous ports assigned to the ACRW.

The ACRW also contains a UPS interface port and a parallel printer port (The REMOTE CONSOLE/diagnostic port can also be used as a serial printer port.). However, these ports, as well as the CONSOLE and REMOTE CONSOLE port, are not considered in the asynchronous port numbering scheme.

Consequently, the ACRW can be assigned 8, 24, or 40 ports depending on the number of ACE boards used. The ACRW is always part of the system due to its system-wide interface functions ; therefore, the port numbers of the ACRW's async ports are the lowest in the system. The *system logical identification* port numbering of the ACRW begins with number 8 (the lower eight ports numbers, 0 through 7, are not used).

ACE

The Asynchronous Communications Extender (ACE) board.provides an additional sixteen (16) asynchronous ports per board (see Figure B-1). The ACE board(s) are daughter boards to the ACRW or ACDB. That is, they are stacked/connected directly onto the ACRW or ACDB. *System logical identification* port numbering begins with the next port number in sequence above the last port number taken by its parent board (the parent boards being the ACRW or ACDB). Therefore, if the ACE board is connected to an ACDB whose last port address is 47, the port addresses for the first ACE board attached to that ACDB are 48 through 63.

ACDB

The ACDB provides the asynchronous communications interface for the IOPM. The basic configuration of the ACDB is sixteen (16) asynchronous ports and one Centronics compatible parallel port (25-Pin DB connector). All ports are shielded. and the use of shielded RJ-type plugs and cable is highly recommended.

The ACDB supports up to three (3) Asynchronous Communications Extender (ACE) boards. The maximum port expansion capacity of one IOPM/ACDB/ACE combination is sixty-four (64) asynchronous ports.

Referring to Figure B-1, *system logical identification* port numbering for an ACDB/ACE combination begins with the next port number in sequence above the last port number taken by the ACRW/ACE boards.

Therefore, if the port number of the last ACE board connected to the ACRW is 47, the port addresses for the first ACDB board will be 48 through 63.

Table B-1 Port Numbering

Port Numbers		
Board	*Physical Number of Async Ports*	*System Logical Identification Number*
ACRW	8	8 through 15
ACRW/ACE Board No. 1	16	16 through 31
ACRW/ACE Board No. 2	16	32 through 47
ACDB	16	16 through 31, or 32 through 47, or 48 through 63 (dependent upon the quantity of ACRW/ACE Boards)
ACDB/ACE Board No. 1	16	32 through 47, or 48 through 63, or 64 through 79 (dependent upon the initial ACDB System Logical ID)
ACDB/ACE Board No. 2	16	48 through 63, or 64 through 79, or 80 through 95 (dependent upon the initial ACDB System Logical ID)
ACDB/ACE Board No. 3	16	64 through 79, or 80 through 95, or 96 through 111 (dependent upon the initial ACDB System Logical ID)

LWDB (LAN/WAN) Ports

Local Area Network and Wide Area Network connections are located on the LWDB (LAN/WAN Device Board).

The LWDB (Local area network/Wide area network Device Board) has four female WAN ports and one female LAN port. The WAN ports use DB-37 or DB-25 connectors (depending upon the interface type), the LAN AUI (attachment unit interface), or port, uses a female 15-Pin D-style connector with female threaded nuts. A strain relief bracket is included and must be used to ensure the strength of the connection. The LAN interface complies with the IEEE 802.3 CSMA/CD standard (Ethernet software compatible) at the Attachment Unit Interface (AUI); however, an external Media Attachment Unit (MAU) , better known as a transceiver, that fully complies with the IEEE 802.3 standard is required to interface to one of several LAN mediums. With the appropriate transceiver, the LAN interface supp the following LAN mediums:

- 10 Base 5 — 10 Mbit/sec, baseband, thick coaxial cable
- 10 Base 2 — 10 Mbit/sec, baseband, thin coax cable
- 10 Base T — 10 Mbit/sec, twisted pair wiring
- 10 Broad 36 — 10 Mbit/sec, broadband, CATV-type cable
- Fiber Optic — 10 Mbit/sec, IEEE 802.3 compatible, fiber optic

The communications interfaces available for the WAN ports are:

- EIA RS-232C
- EIA RS-449
- CCITT V.35

The four WAN ports can be a mix of the three protocols mentioned above (see your ARIX sales representative for availability and pricing information). The WAN ports are not configurable in the field, the various configurations can be set only at the factory.

The data transfer rates for the WAN interfaces are as follows:

- Up to 252 Kbit/second full duplex on one port
- Up to 128 Kbit/second full duplex on two ports
- Up to 64 Kbit/second full duplex on four ports

The LAN/WAN has five connectors on its retaining bracket as shown in Figure B-2. Ports 0 through 3 are WAN ports. The fifth and uppermost port is the LAN port. Due to the variability of the WAN connectors, they are shown only as blocks.

The AUI external cable and transceiver(s) must comply with the IEEE 802.3 standard.

The LAN AUI is a female 15-Pin D-style connector with female threaded nuts. A strain relief bracket is included and must be used to ensure the strength of the connection.

Figure B-2 Connector Hardware and AUI Cable Configuration

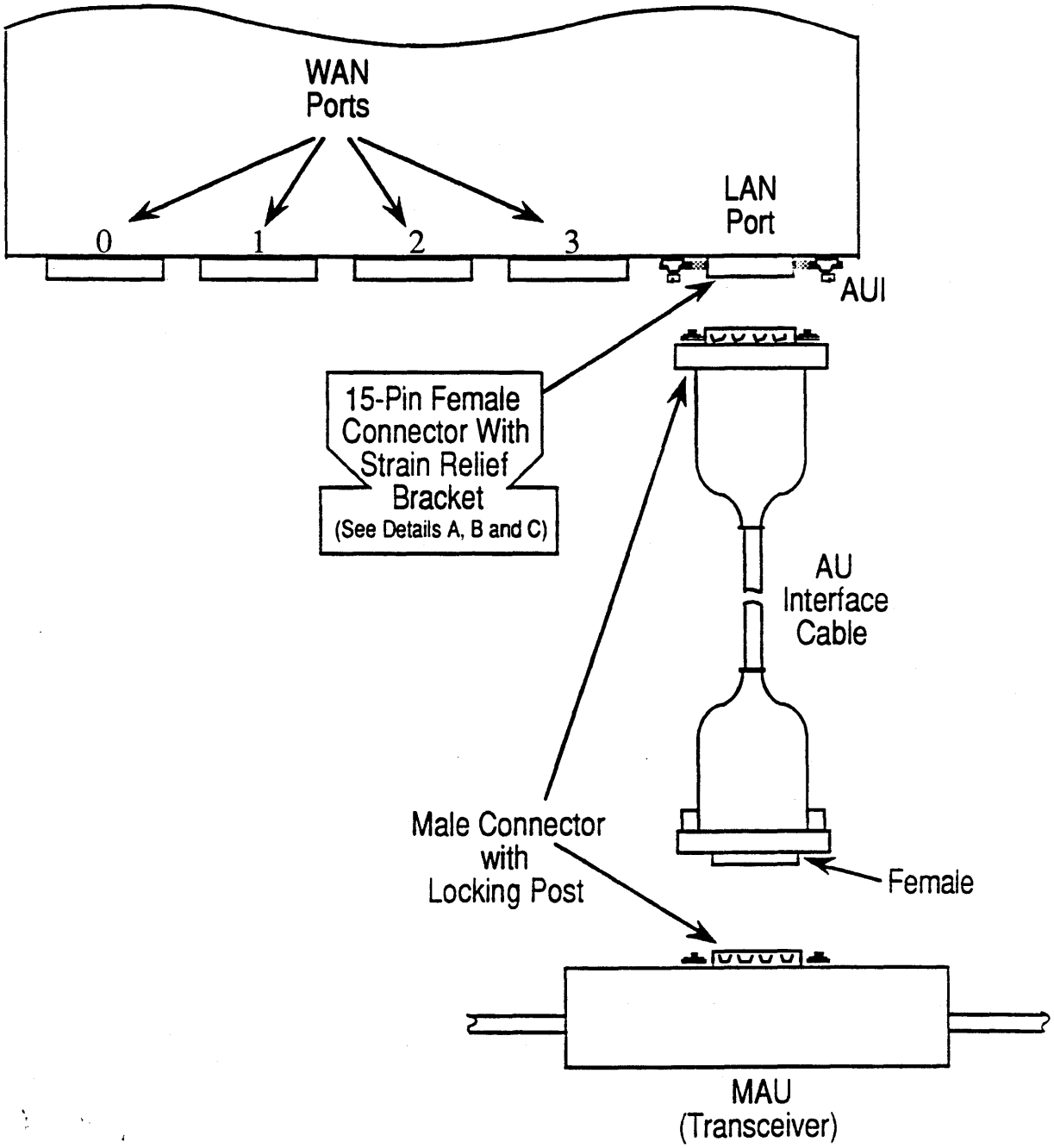
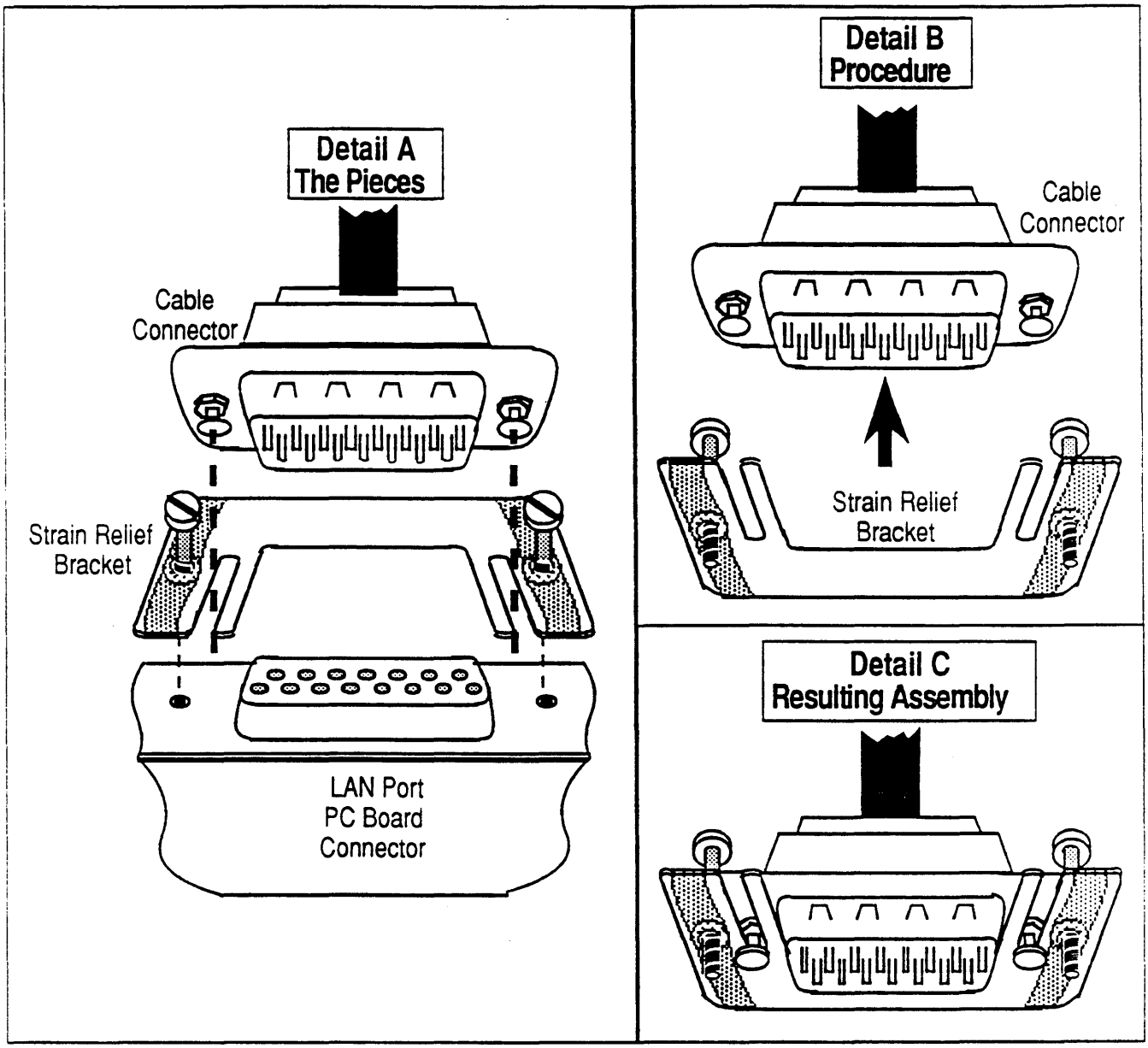


Figure B-3 LWDB Connector Hardware and AUI Cable Detail



CAUTION:

If the strain relief bracket is not installed as shown (the *open* portion of the bracket should be on the left-hand side of the board when the board is in a vertical position), the bracket will scrape against any device boards to the left of the LWDB causing damage to the bracket and to the board.

The *system logical identification* port numbers for the LWDB are defined as follows:

WAN Port Numbering

WAN *system logical identification* port numbers are defined as `/dev/macdrvr/sxpy`.

- **s** stands for *slot*
- **x** equals the *number of the slot* the LWDB occupies
- **p** stands for *port*
- **y** equals the *number of the WAN port* on the LWDB

When looking at the front of the system, slots are numbered from right to left. Slot zero (0) is on the far right and slot seven (7) is on the far left.

WAN ports are numbered zero (0) through three (3). WAN port zero is on the bottom and port three is closest to the top (directly below the LAN port).

LAN Port Numbering

LAN *system logical identification* port numbers are defined as `/dev/lnx`.

- **ln** stands for *LAN*
- **x** equals the *number of the slot* the LWDB occupies

Port Type

All ports on the ACRW, ACE, and ACDB are asynchronous. Synchronous ports exist on the LWDB only.

Cable Type

Enter details of the physical description of the cable to be used in either the *Ribbon* or *Shielded* row for the port number specified.

For example, if you are specifying an asynchronous terminal port, you might enter "8-conductor" for an RJ-45 connector, or "15-conductor" for a DB-15 connector.

NOTE:

When deciding whether to use shielded or unshielded cable for a given application, study the environmental conditions of your installation site. If the site is subject to a great deal of electrical noise from motor generators, radiation equipment, or existing wiring and cabling, it is best to use shielded cables and special grounding methods.

Cable Length

Fill in the calculated lengths for each cable being specified. Cable length is defined as the total length of the cable from the attachment point on the Device Board to the device. The horizontal run can be estimated from the floor plan for the site. The vertical run is the distance from the floor to the attachment point, which does not show on the two-dimensional floor plan. Add the vertical and horizontal lengths together for the total cable length. Allow sufficient cable length at the device end in case the device is moved.

NOTE:

If the cable length is greater than 50 feet, consider the use of short-haul modems or other types of line repeaters.

Fill in the standard designation (nomenclature) of the connector for both the system end and the device end of the cable. Possible entries for the system end of the connector are:

Asynchronous

- RJ-45 (ACRW, ACDB, ACE)
- DB-25 for the parallel port

Synchronous

- DB-15 for the Ethernet port
- DB-37 or DB-25 for the WAN ports.

When calculating the lengths of cables between units of your system, you must measure the exact route over which the cables are to pass, over conduit, around corners, rises, drops, etc. In addition, you must allow for extra length to accommodate equipment positioning.

Excess lengths of cable should be folded carefully into protected areas such as cable runs or overhead hangers. Do not coil unshielded cables and place them adjacent one another or in such a way that inductive coupling can occur.

In most cases system cables will lie inside a single building. If you must route cables outside the building, consult the common carrier or local utility for applicable regulations.

Use of Existing On-Site Cables

To use existing on-site cables for a System90 Model 25 installation, first verify that the connectors and internal conductors are compatible.

NOTE:

Ownership of existing on-site cabling (i.e., whether the user owns or leases it) must be determined before any use can be made. The use of leased cables on other than the original equipment may be contrary to the policy of the particular original equipment manufacturer.

Device Type

Enter either DTE (Data Terminal Equipment) or DCE (Data Communication Equipment) in the block corresponding to the port being specified. By convention, terminals and serial printers are usually designated DTE and modems DCE. All asynchronous ports (ACRW, ACDB, ACE) **except the CONSOLE port on the ACRW** are configured as DTE. The ACRW CONSOLE port is configured as DCE. See Appendix C for details on connector pin numbering and signals.

Table B-2. Serial Connectors

Port Number >>>		8	9	10	11	12	13	14	15
Port Type	Asynchronous								
Cable Type	Ribbon								
	Shielded								
	8-Conductor								
Cable Length	Horizontal								
	Vertical								
	Total								
Cable Connector	System-End								
	Device-End								
Device Type	DTE or DCE								

Port Number >>>		16	17	18	19	20	21	22	23
Port Type	Asynchronous								
Cable Type	Ribbon								
	Shielded								
	8-Conductor								
Cable Length	Horizontal								
	Vertical								
	Total								
Cable Connector	System-End								
	Device-End								
Device Type	DTE or DCE								

Table B-2a. Serial Connectors (Cont.)

Port Number >>>		24	25	26	27	28	29	30	31
Port Type	Asynchronous								
Cable Type	Ribbon								
	Shielded								
	8-Conductor								
Cable Length	Horizontal								
	Vertical								
	Total								
Cable Connector	System-End								
	Device-End								
Device Type	DTE or DCE								

Port Number >>>		32	33	34	35	36	37	38	39
Port Type	Asynchronous								
Cable Type	Ribbon								
	Shielded								
	8-Conductor								
Cable Length	Horizontal								
	Vertical								
	Total								
Cable Connector	System-End								
	Device-End								
Device Type	DTE or DCE								

Table B-2b. Serial Connectors (Cont.)

Port Number >>>		40	41	42	43	44	45	46	47
Port Type	Asynchronous								
Cable Type	Ribbon								
	Shielded								
	8-Conductor								
Cable Length	Horizontal								
	Vertical								
	Total								
Cable Connector	System-End								
	Device-End								
Device Type	DTE or DCE								

Port Number >>>		48	49	50	51	52	53	54	55
Port Type	Asynchronous								
Cable Type	Ribbon								
	Shielded								
	8-Conductor								
Cable Length	Horizontal								
	Vertical								
	Total								
Cable Connector	System-End								
	Device-End								
Device Type	DTE or DCE								

Table B-2c. Serial Connectors (Cont.)

Port Number >>>		56	57	58	59	60	61	62	63
Port Type	Asynchronous								
Cable Type	Ribbon								
	Shielded								
	8-Conductor								
Cable Length	Horizontal								
	Vertical								
	Total								
Cable Connector	System-End								
	Device-End								
Device Type	DTE or DCE								

Port Number >>>		64	65	66	67	68	69	70	71
Port Type	Asynchronous								
Cable Type	Ribbon								
	Shielded								
	8-Conductor								
Cable Length	Horizontal								
	Vertical								
	Total								
Cable Connector	System-End								
	Device-End								
Device Type	DTE or DCE								

Table B-2d. Serial Connectors (Cont.)

Port Number >>>		72	73	74	75	76	77	78	79
Port Type	Asynchronous								
Cable Type	Ribbon								
	Shielded								
	8-Conductor								
Cable Length	Horizontal								
	Vertical								
	Total								
Cable Connector	System-End								
	Device-End								
Device Type	DTE or DCE								

Port Number >>>		80	81	82	83	84	85	86	87
Port Type	Asynchronous								
Cable Type	Ribbon								
	Shielded								
	8-Conductor								
Cable Length	Horizontal								
	Vertical								
	Total								
Cable Connector	System-End								
	Device-End								
Device Type	DTE or DCE								

Table B-2e. Serial Connectors (Cont.)

Port Number >>>		88	89	90	91	92	93	94	95
Port Type	Asynchronous								
Cable Type	Ribbon								
	Shielded								
	8-Conductor								
Cable Length	Horizontal								
	Vertical								
	Total								
Cable Connector	System-End								
	Device-End								
Device Type	DTE or DCE								

Port Number >>>		96	97	98	99	100	101	102	103
Port Type	Asynchronous								
Cable Type	Ribbon								
	Shielded								
	8-Conductor								
Cable Length	Horizontal								
	Vertical								
	Total								
Cable Connector	System-End								
	Device-End								
Device Type	DTE or DCE								

Table B-2f Serial Connectors (Cont.)

Port Number >>>		104	105	106	107	108	109	110	111
Port Type	Asynchronous								
Cable Type	Ribbon								
	Shielded								
	8-Conductor								
Cable Length	Horizontal								
	Vertical								
	Total								
Cable Connector	System-End								
	Device-End								
Device Type	DTE or DCE								

Table B-3. Parallel or Centronics Type Connectors

Port Number >>>		1	2	3	4
Port Type	Parallel				
Cable Type	Ribbon				
	Shielded				
Cable Length	Horizontal				
	Vertical				
	Total				
Cable Connector	System-End	DB-25	DB-25	DB-25	DB-25
	Device-End				
Device Type					

Table B-4 LAN and WAN Connectors

LAN Port(s)					
Port Number > > >		0	1	2	3
Data Type	*Connector Type*				
Ethernet	DB-15				
Cable Length	Horizontal				
	Vertical				
	Total				
WAN Port(s)					
Port Number > > >		0	1	2	3
Data Type	*Connector Type*				
RS-232	DB-25				
Cable Length	Horizontal				
	Vertical				
	Total				
Data Type	*Connector Type*				
V.35	DB-37				
RS-449					
Cable Length	Horizontal				
	Vertical				
	Total				

C System90 Model 25 Connector Pinouts

The ARIX System90 Model 25 provides interfaces to a wide variety of peripherals and communication devices. The following interface definitions are being supplied to ensure system compatibility. All models of the multiuser system provide the same interfaces except for the system console.

Asynchronous Communications Device Board (ACDB)

There are seventeen (17) ports on the ACDB. Sixteen RJ-45, DTE, asynchronous ports and one (1) DB-25 parallel printer port. The RJ ports are shown in Figure C-1. The parallel port is shown in Figure C-2. The pinouts for the RJ-45, DTE ports are described in Table C-1. The pinouts for the DB-25 parallel port is described in Table C-2.

NOTE:
The RJ-45, DTE ports exist on the ACDB, the ACRW, and the ACE. The pin/signal descriptions are identical for all three boards

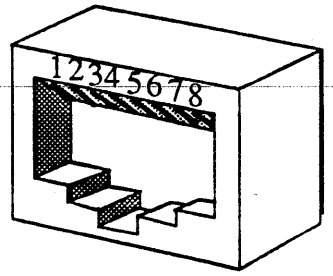


Figure C-1 Female RJ-45

Table C-1 Female RJ-45, DTE, Asynchronous Port Connector Pinout

RJ-45 ARIX (DTE)		Direction	DB-25 Terminal (DTE)	
Pin #	Signal Name		Pin #	Signal Name
1	No Connection			
2	DSR	←	20	DTR
3	TX	→	3	RX
4	RX	←	2	TX
5	GND	- - -	7	GND
6	DTR	→	8 6	DCD DSR
7	DCD	←	20	DTR
8	No Connection			

NOTE: Pin 20 on the DB-25 connector is connected to two pins on the RJ-45 connector. Pin 6 on the RJ-45 connector is connected to two pins on the DB-25 connector.

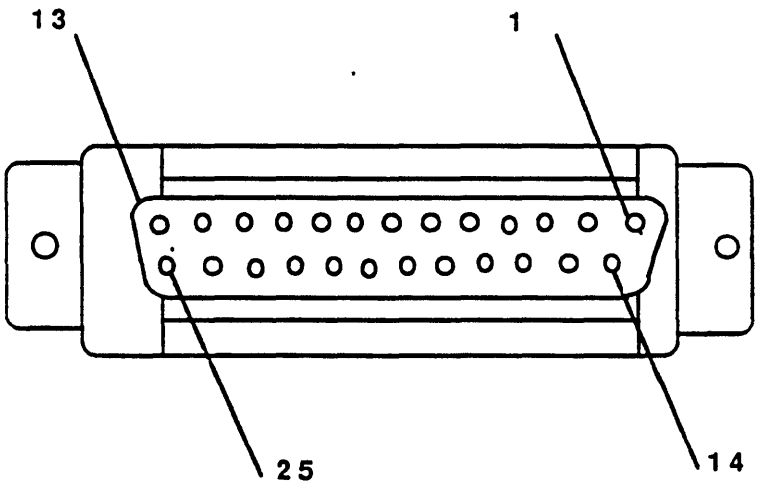


Figure C-2 25-Pin D (Female)

Table C-2 Female DB-25 Parallel Printer Port Connector Pinout for the ACDB and ACRW.

Pin Numbers	*Descriptions*
1	Data Strobe
2-9	Data Lines 1 through 8
10	Acknowledge
11	Busy
12	Paper Empty
13	Select
14-25	Signal Ground

LAN/WAN Device Board (LWDB)

There are three types of external interfaces on the LWDB. The first is a female DB-15 connector (see Figure C-3) to connect to an IEEE 802.3 network. The second is a female DB-25 connector (Figure C-4) used for synchronous RS-232 communications. The third is a female DB-37 connector (Figure C-5) to provide V.35 connection to an X.25 network. The pinouts of these connectors are described in Tables C-3, -4, and -5.

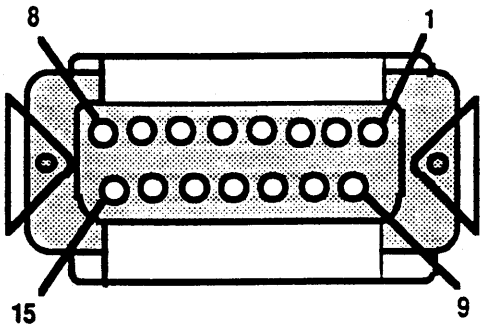


Figure C-3 15-Pin D (Female)

Table C-3 LWDB Female DB-15 IEEE 802.3 Connector Pinout

Pin Numbers	*Descriptions*
1	Control IN Signals Shield
2	Collision Presence (+)
3	Transmit (+)
4	Data in Signals Shield
5	Receive (+)
6	Power Return (Ground)
7	Reserved
8	Control OUT Signals Shield
9	Collision Presence (-)
10	Transmit (-)
11	Data OUT Signals Shield
12	Receive (-)
13	Power (+12 VDC fused)
14	Power Shield
15	Reserved

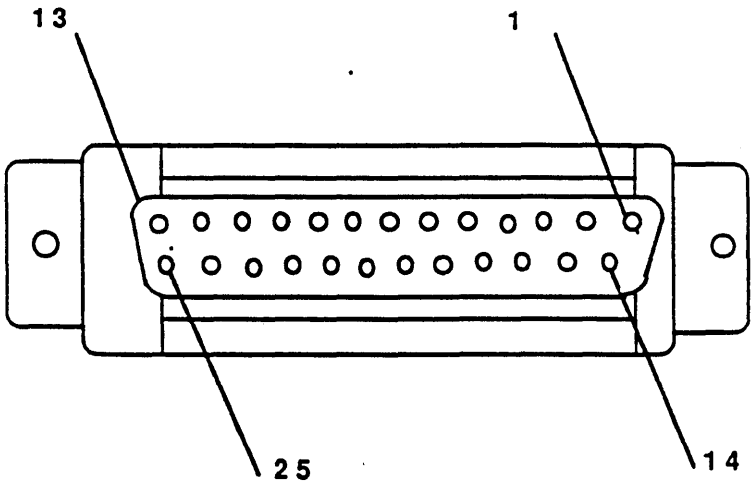


Figure C-4 25-Pin D (Female)

Table C-4 LWDB DB-25 Synchronous Port Connector Pinout

Pin Number(s)	*Description*
1	Chassis Ground
2	Transmit Data
3	Receive Data
4	Request to Send
5	Clear to Send
6	Data Set Ready
7	Signal Ground
8	Data Carrier Detected
9-14	No Connection
15	Transmitter Clock
16	No Connection
17	Receiver Clock
18 19	No Connection
20	Data Terminal Ready
21	No Connection
22	Ring Detector
23	No Connection
24	Tx Sig Element Timing
25	No Connection

Table C-5 LWDB Female DB-37 V.35 Connector Pinout

Pin Number(s)	*Description*
1	Chassis Ground
2-3	No Connection
4	Transmit Data BA(A)
5	Transmit Clock DB(A)
6	Receive Data BB(A)
7	Request to Send
8	Receive Clock DD(A)
9	Clear to Send
10	Local Loopback
11	Data Set Ready
12	Terminal Ready
13	Remote Loopback
14	Data Carrier Detected
15-16	No Connection
17	External Transmit Clock
18	Test Mode
19	Signal Ground
20	Receive Common
21	No Connection
22	Transmit Data BA(B)
23	Transmit Clock DB(B)
24	Receive Data BB(B)
25	Request to Send
26	Receive Clock DD(B)
27	Clear to Send
28	No Connection
29	Data Mode
30	Terminal Ready
31	Receive Ready
32-34	No Connection
35	Terminal Timing
36	No Connection
37	Send Common

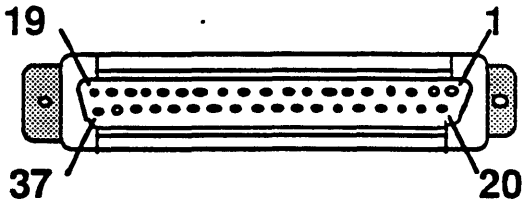


Figure C-5 37-Pin D (Female)

Asynchronous Communication Real World Interface (ACRW) Board

Four types of external interfaces exist on the ACRW board. The first is a female RJ-45 connector (Figure C-1) used for DTE asynchronous communications. Refer to Table C-1 for a description of the connector pinouts. The second is the ACRW CONSOLE port. It is a female RJ-45 connector (Figure C-1) used for DCE asynchronous communications. Refer to Table C-6 for a description of the connector pinouts. The third connector is a female DB-25 connector (Figure C-2) which is used to interface to a parallel printer. Refer to Table C-2 for a description of the pinouts for the connector. The fourth type of connector is a male DB-9 (Figure C-6) used to connect to the Uninterruptible Power Supply (UPS) port. Pinouts for this connector are described in Table C-7.

Table C-6 Female RJ-45, DCE, Asynchronous CONSOLE Port Connector Pinout

RJ-45 ARIX CONSOLE Port (DCE)		Direction	DB-25 Terminal (DTE)	
Pin #	Signal Name		Pin #	Signal Name
1	No Connection			
2	DSR	→	6	DSR
3	TX	←	2	TX
4	RX	→	3	RX
5	GND	—	7	GND
6	DTR	←	20	DTR
7	DCD	→	8	DCD
8	No Connection			

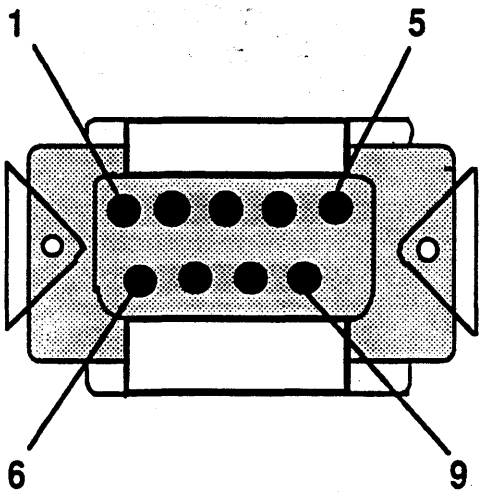


Figure C-6 9-Pin D (Male)

Table C-7 ACRW Male DB-9 UPS Port Connector Pinout

Pin Number	Description
1	AC Fail (active low)
2	No Connection
3	UPS Off (active low)
4	No Connection
5	Low Battery (active low)
6	No Connection
7	Signal Ground
8	No Connection
9	No Connection

For more information on the UPS interface, refer to *Uninterruptible Power Supply Application Guidelines for the ARIX System90*