

MicroVAX

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MicroVAX Site Preparation

Order Number EK-239AA-SP-001

**digital equipment corporation
maynard, massachusetts**

July 1988

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ML-S924

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About This Guide

This guide describes the physical, environmental, and electrical requirements for installing any of the MicroVAX systems listed in the following table. You should verify that your site meets these requirements *before* moving a system to its installation point.

MicroVAX Systems Covered by this Guide

System	Enclosure
MicroVAX II	BA23, BA123, BA213*, H9644, H9642
MicroVAX 3500	BA213*
MicroVAX 3600	H9644
VAXserver 3600	H9644
VAXserver 3602	H9644
VAXstation II	BA23, BA123
VAXstation II/GPX	BA23, BA123, H9642

*The BA213 enclosure referred to in this guide contains mass storage and two power supplies.

The BA23, BA123, and BA213 enclosures are designed for use in open office environments. The BA23 enclosure is available in a pedestal or a tabletop version. The BA123 and BA213 are floorstand enclosures.

You can also have the BA23 and BA213 rack mounted in a cabinet designed for computer rooms rather than office environments. The BA23 rack mounts in the H9642 cabinet. The BA213 rack mounts in the H9644 cabinet.

DIGITAL recommends that you have a DIGITAL service representative install your system. When the system arrives, you should inspect it with a DIGITAL service representative to ensure that the system and all ordered options have arrived undamaged.

Each MicroVAX system is shipped in one large box that is clearly labeled. Other boxes that arrive with your shipment may contain terminals, printers, and software.



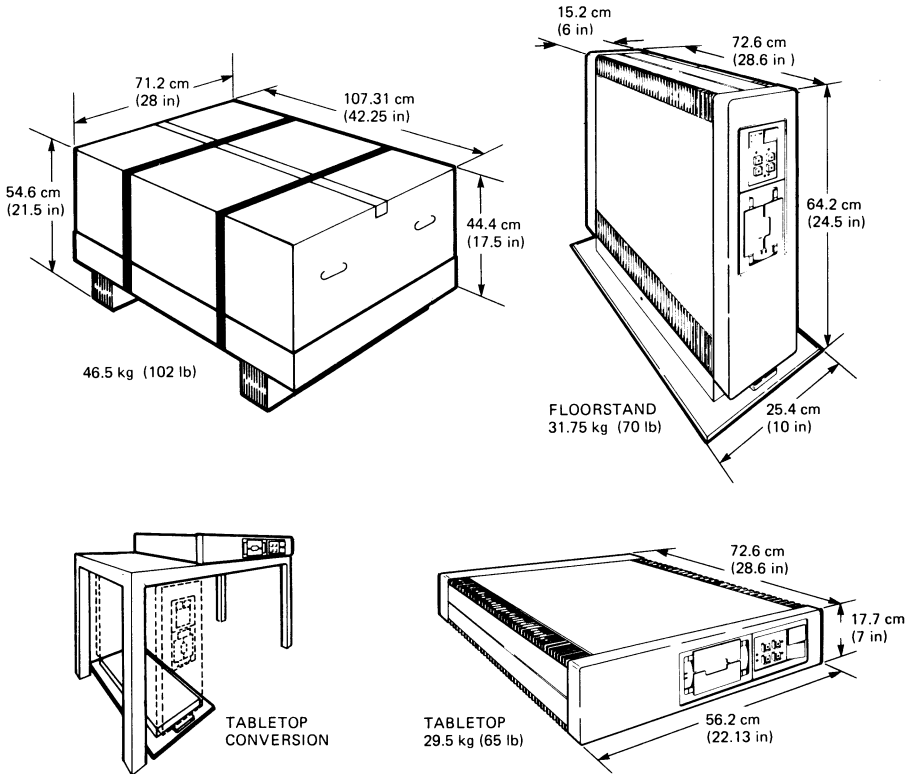
Physical Requirements

Before unpacking any system, make sure you have enough room to remove the system from its shipping container. Also make sure you leave enough room around the system so it can be serviced. Use the information in the following sections to determine your system's dimensions.

System Dimensions for the BA23 Enclosure

The following figure shows the dimensions of a MicroVAX in the BA23 enclosure. The figure also shows the dimensions of the shipping container.

CAUTION: *Due to the weight of the equipment, DIGITAL recommends that at least two people handle the system and terminal boxes.*

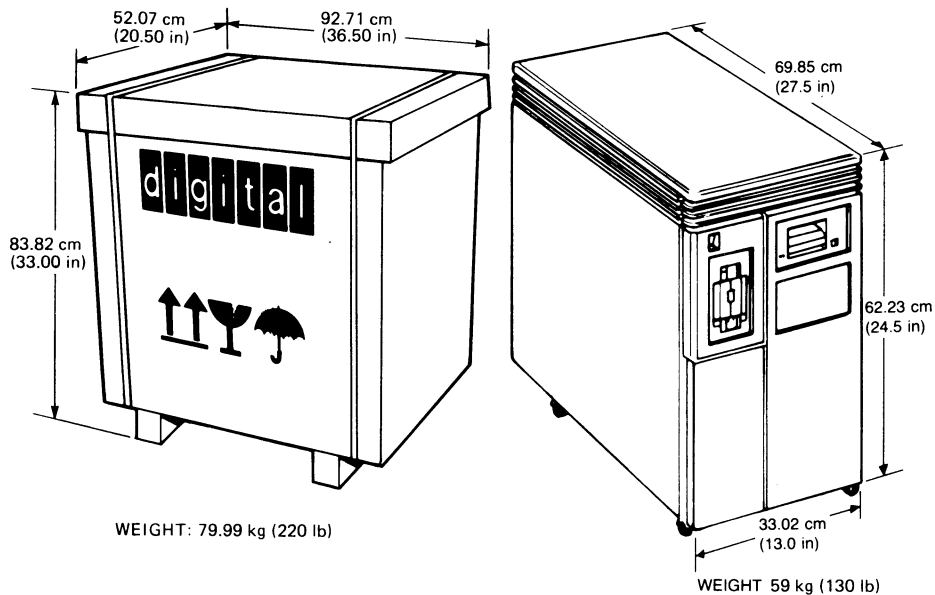


MA-0168-87

System Dimensions for the BA123 Enclosure

The following figure shows the dimensions of a MicroVAX in the BA123 enclosure. The figure also shows the dimensions of the shipping container.

CAUTION: *Due to the weight of the equipment, DIGITAL recommends that at least two people handle the system and terminal boxes.*

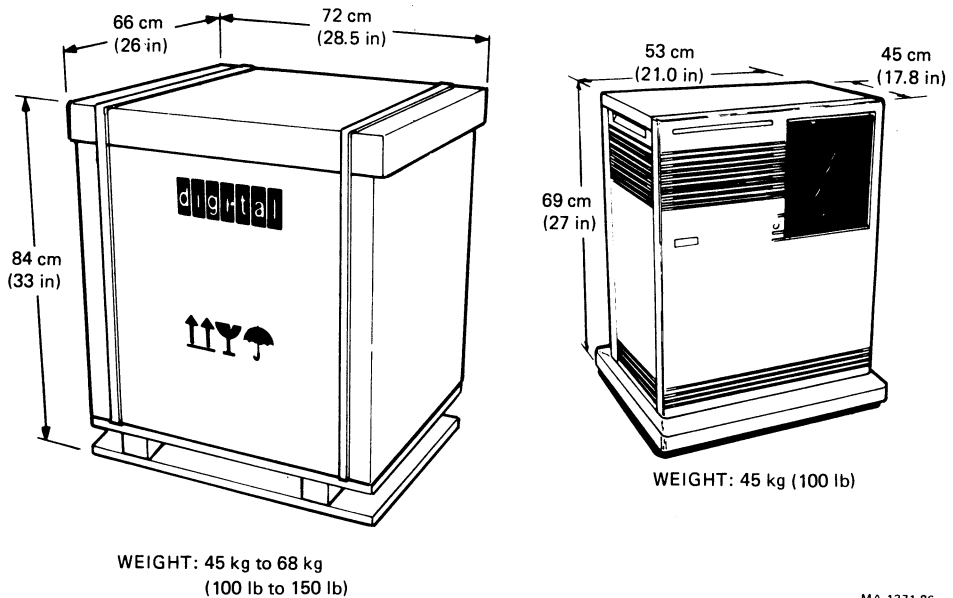


MA-0162-87

System Dimensions for the BA213 Enclosure

The following figure shows the dimensions of a MicroVAX in the BA213 enclosure. The figure also shows the dimensions of the shipping container.

CAUTION: *Due to the weight of the equipment, DIGITAL recommends that at least two people handle the system and terminal boxes.*



You must leave at least 61 cm (24 in) of clearance at the front of the system, for access to system controls. You also must leave at least 5 cm (2 in) of clearance at the sides and rear, for airflow. Since the base of the enclosure is 5 cm (2 in) wider than the cabinet in front and rear, you can place the rear of the system against a wall or table, and the system will have enough room for adequate airflow.

System Dimensions for the H9642 Cabinet

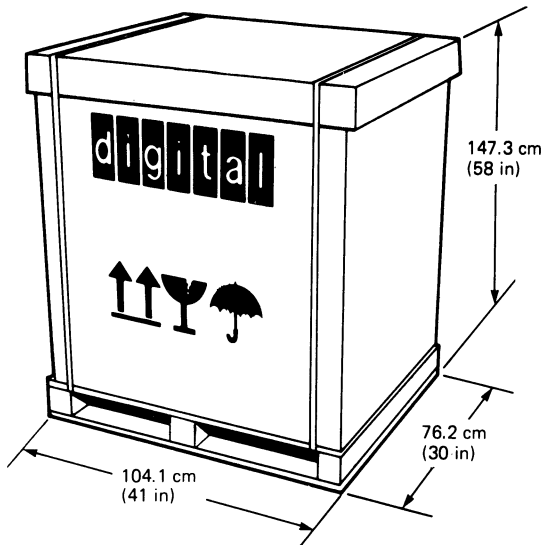
Systems that use the H9642 cabinet are shipped in large containers secured to wooden pallets by four metal hold-down brackets. Other containers arriving with your shipment may contain terminals, printers, software, and other options.

WARNING: A forklift is required to move this system and some options (those mounted on pallets). Do not try to move or lift this equipment by yourself.

The cabinet is mounted on four wheels and has four adjustable leveling feet for stability.

The weight of systems using the H9642 cabinet varies from 168 kg to 311 kg (358 lb to 685 lb), depending on the mass storage subsystems contained in the cabinet. Plan your installation accordingly. A fully loaded system with RA60 and RA81 disk drives weighs 311 kg (685 lb).

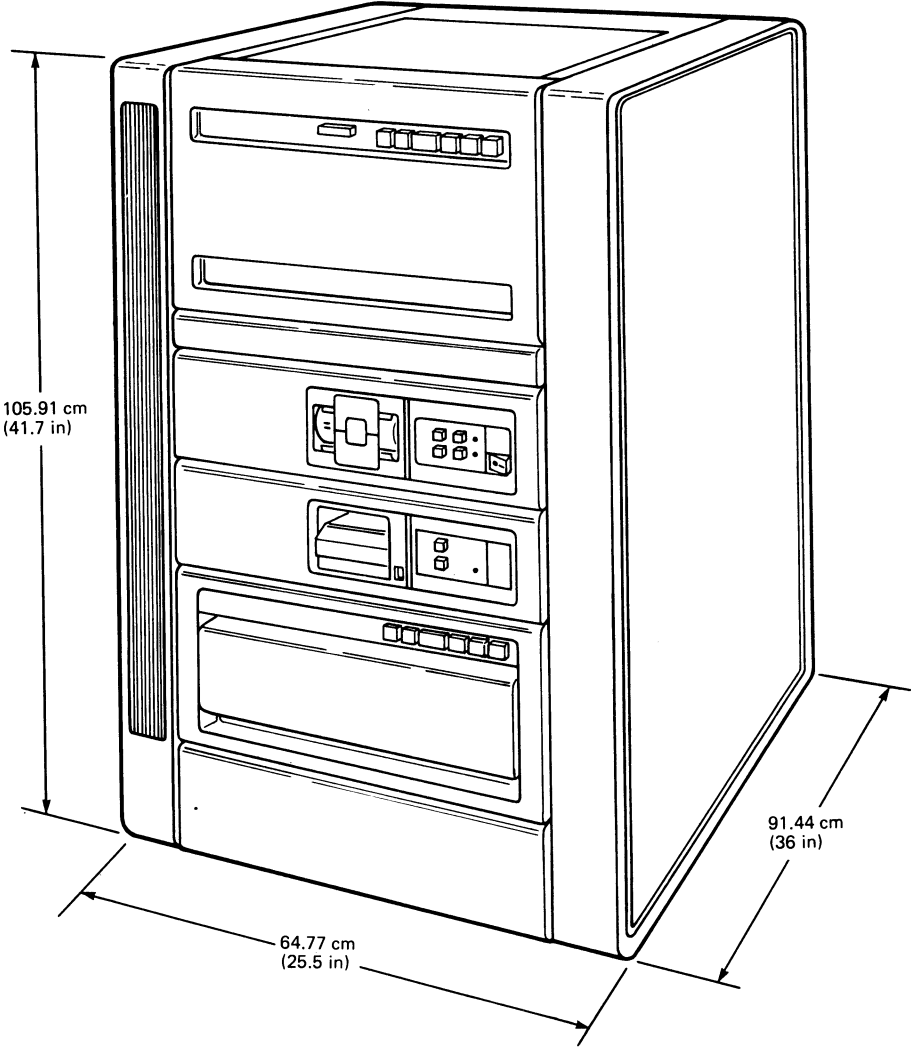
The following figure shows the shipping dimensions of a MicroVAX system in the H9642 cabinet.



WEIGHT: 168 kg to 311 kg
(358 lb to 685 lb)

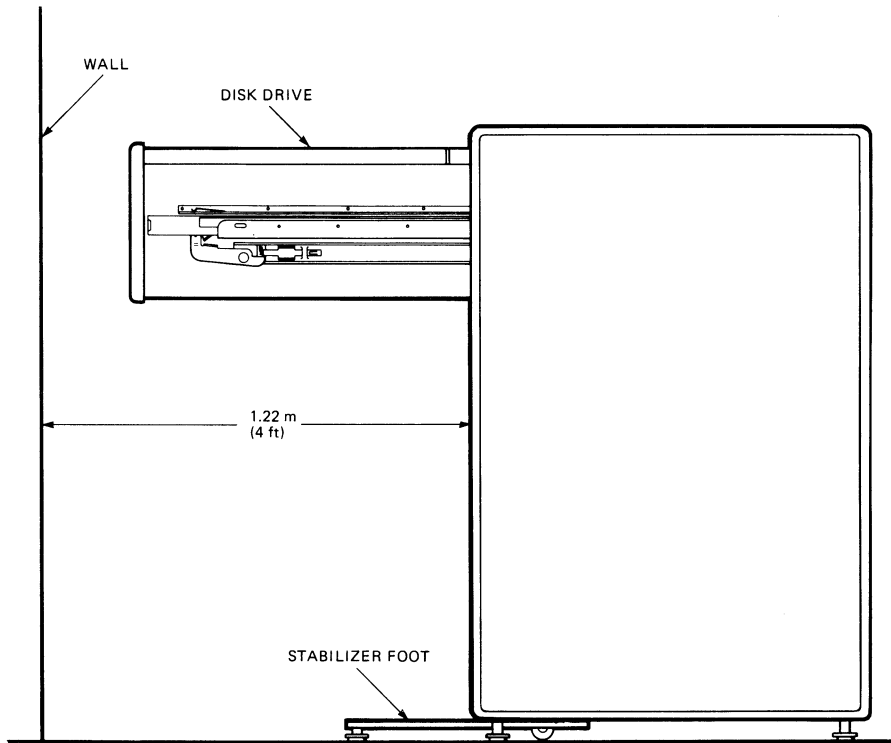
MLO-000447

The following figure shows the dimensions of an unpacked MicroVAX in the H9642 cabinet.



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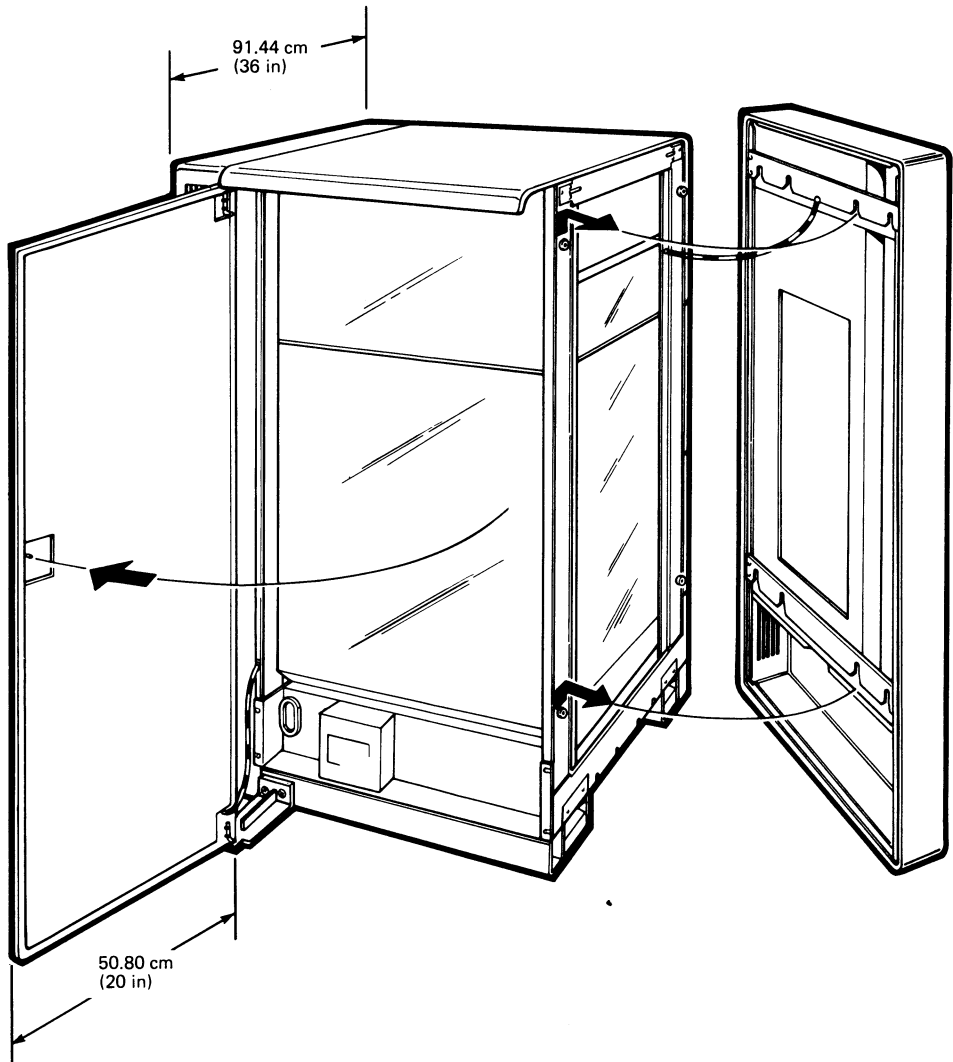
Leave a minimum of 1.2 m (4 ft) from the front of the system to the nearest stationary object, so the disk drives can be extended. The drives are approximately 86.5 cm (33.75 in) deep.



MA-0166-87

Leave a minimum of 1.2 m (4 ft) from the rear of the system to the nearest stationary object, so the rear door can be opened or removed. The rear door is approximately 51.3 cm (20.0 in) wide.

Leave space on each side of the system to remove the side panels.



MA-0165-B7

System Dimensions for the H9644 Cabinet

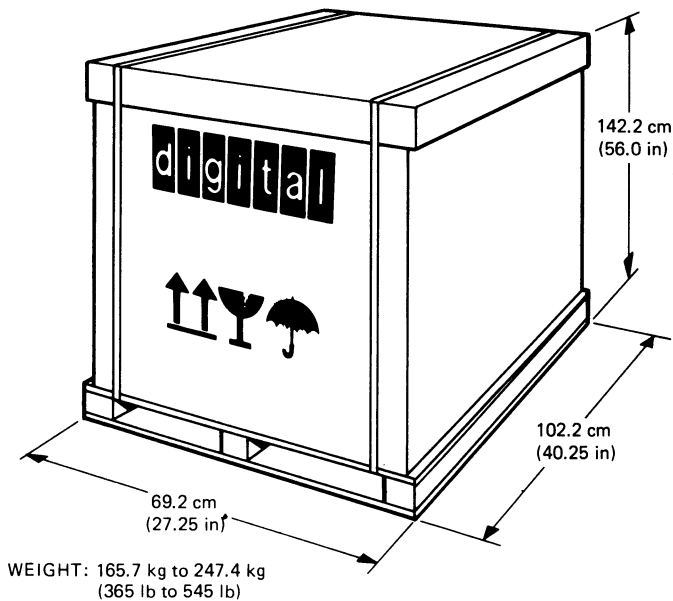
Systems that use H9644 cabinets are shipped in large containers secured to wooden pallets by metal hold-down brackets. Other containers arriving with your shipment may contain terminals, printers, software, and other options. Plan to use about 3 m (10 ft) of floor space for removing each cabinet from its pallet.

WARNING: *You need a forklift to move this system and any option mounted on a pallet. Do not try to move or lift this equipment by yourself.*

The cabinet is mounted on four wheels.

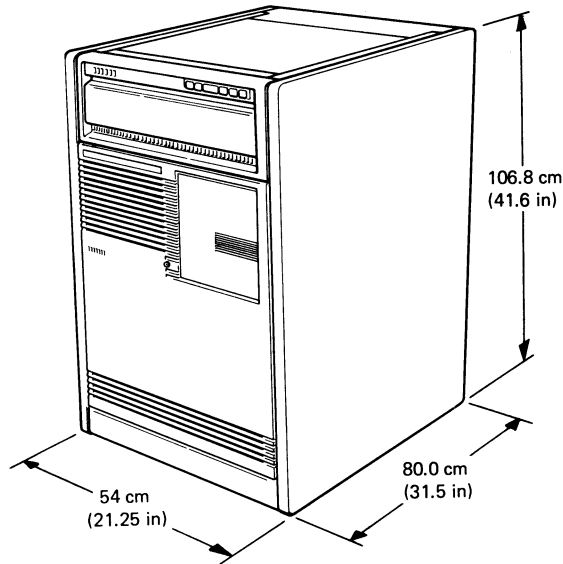
A fully loaded H9644 cabinet, with an RA81 or RA82 disk drive, two RA series disk drives, and a TK70 tape drive, weighs 206.6 kg (455 lb). Plan your installation accordingly.

The following figure shows the shipping dimensions of a MicroVAX system in the H9644 cabinet.



MA-1440-87

The following figure shows the dimensions of an unpacked MicroVAX in the H9644 cabinet.



WEIGHT: 124.9 kg to 206.6 kg
(275 lb to 455 lb)

MA-1350-87A

If your system includes an auxiliary cabinet with an RA82 drive in the bottom, leave a minimum of 1.2 m (4 ft) from the front of the cabinet to the nearest stationary object, so the disk drives can be extended. The drive is approximately 86.5 cm (33.75 in) deep.

Leave approximately 1 m (3 ft) from the rear of the system to the nearest stationary object, so the rear door can be removed.

For cabinets containing a TU81E tape deck, leave enough room above the cabinet to raise the cover of the tape deck.

Additional Equipment

In addition to the space required for the MicroVAX, you should make sure there is enough space for terminals, a printer, mass storage media, printer paper, and other necessary supplies. The temperature and humidity at which mass storage media are kept should be the same as that of the computer area.

If you plan to connect your system to peripheral devices such as printers, terminals, or modems, you will need additional cabling. Cables connecting the system to peripheral devices must be ordered separately.

When planning cable routing for multiple-terminal systems, you should consider factors such as safety, convenience, future expansion, and cost. The system installer has other special factors to consider when cabling a multiple-terminal system on more than one floor in the same building, or in more than one building. DIGITAL offers several cable types for these applications, and DIGITAL Customer Service personnel are available to help you plan your installation. Your sales representative can provide more information.

NOTE: *Cabling from peripheral devices should already be in place and labeled before the system is installed.*

Acoustics

The BA23, BA123, and BA213 enclosures are designed for use in offices and other general working areas. However, the H9642 and H9644 cabinets generate more noise than is acceptable for office use. MicroVAX systems using the H9642 or H9644 cabinet should be installed in a computer room.

Table 1: Operating Acoustic Emission Levels

Enclosure	LNPE (B)	LPA (dB)
BA23	6.1	48
BA123	6.0	46
BA213	5.8	43
H9642 with no RA drives	6.0	45
H9642 with RA60 and RA81	7.6	64
H9644 with no RA drives	5.3	42
H9644 with RA82-AA (60 Hz)	7.3	62
H9644 with RA82-AD (50 Hz)	7.1	60

LNPE = Noise power emission level (A-weighted sound power level) measured in bels re 1 pw.

LPA = Sound pressure measured in decibels at 1.0 m from the front edge of the unit and 1.5 m above the floor.

Levels may be lower than those shown, depending on the kind and number of mass storage devices in the system.

All data measured in accordance with ANSI S12.10-1985 (American National Standards Institute) and ISO/DIS 7779 (International Standards Organization).

Operating Environment

Computer systems in office areas are subject to discharge of static electricity, temperature changes, and humidity. These conditions can affect the operation and overall dependability of the computer system.

Your system should be installed in a well-ventilated area, where the temperature and humidity ranges listed for your system are maintained throughout the year. Rapid temperature changes may affect system performance. Therefore, do not operate systems near heating or cooling devices, large windows, or doors that open to the outside. Air should contain a minimum of dust and other abrasive contaminants.

Static Electricity

Static electricity is a common problem for microcomputer systems. It can cause system failure and loss of data. The most common source of static buildup is contact between people and carpeting or clothing. Low humidity allows the greatest buildup of static charges.

To minimize static buildup, follow these guidelines.

- Maintain relative humidity of at least 40 percent.
- Locate your system away from busy office corridors.
- If possible, avoid using carpeting in the computer area. If you install carpeting, use antistatic carpeting. If carpeting is already in place, place an antistatic mat under the system.
- If your site has antistatic floors, carpeting, or mats, make sure you maintain their antistatic properties by following the manufacturer's recommendations for cleaning.

Heat Dissipation

Table 2 lists the values for heat dissipated by each of the MicroVAX enclosures.

Table 2: Heat Dissipation

Enclosure	Heat Dissipation (BTU/h)
BA23	1177.4
BA123	2355
BA213	2304
H9642	5872 at 120 V, 6022 at 240 V
H9644 with no RA82	2408 at 120 V and 240 V
H9644 with RA82	4605 at 120 V and 240 V

Temperature and Humidity Ranges

The following tables list the temperature and humidity ranges for MicroVAX systems in each type of enclosure. The tables also list the altitude limits.

Table 3: Temperature and Humidity Ranges for MicroVAX Systems in the BA23 and BA123 Enclosures

Parameter		Range
Temperature	Operating:*	10°C to 40°C 50°F to 104°F
	Nonoperating:	-40°C to 60°C -40°F to 140°F
Temperature rate of change	Operating:	11°C per hour maximum 19.8°F per hour maximum
Relative humidity	Operating:	20% to 80% (noncondensing)
	Nonoperating:	10% to 95%
Maximum altitude	Operating:	2440 m (8000 ft)
	Nonoperating:	4900 m (16,000 ft)

*For operation above sea level, decrease the operating temperature by 1.8°C per 1000 m (or 1°F per 1000 ft).

Table 4: Temperature and Humidity Ranges for MicroVAX Systems in the BA213 Enclosure

Parameter		Range
Temperature	Operating:*	10°C to 40°C 50°F to 104°F
	Nonoperating:	-40°C to 66°C -40°F to 151°F
Temperature rate of change	Operating:	11°C per hour maximum 19.8°F per hour maximum
Relative humidity	Operating:	20% to 80% (noncondensing)
	Nonoperating:	10% to 90%
Maximum altitude	Operating:	2440 m (8000 ft)
	Nonoperating:	4900 m (16,000 ft)

*For operation above sea level, decrease the operating temperature by 1.8°C per 1000 m (or 1°F per 1000 ft).

Table 5: Temperature and Humidity Ranges for MicroVAX Systems in the H9642 and H9644 Cabinets

Parameter		Range
Temperature	Operating:*	15°C to 32°C 59°F to 90°F
	Nonoperating:	-40°C to 66°C -40°F to 151°F
Temperature rate of change	Operating:	11°C per hour maximum 19.8°F per hour maximum
Relative humidity	Operating:	20% to 80% (noncondensing)
	Nonoperating:	10% to 95% (H9642) 10% to 90% (H9644)
Maximum altitude	Operating:	2440 m (8000 ft)
	Nonoperating:	4900 m (16,000 ft)

*For operation above sea level, decrease the operating temperature by 1.8°C per 1000 m (or 1°F per 1000 ft).

Electrical Requirements

The power source should be able to handle the original system and allow for system expansion. DIGITAL recommends a dedicated circuit from the power source to each system. A dedicated circuit provides electrical isolation from possible power surges or electrical noise caused by other appliances. For this reason, you should not connect appliances such as air conditioners, office copiers, or coffee pots to the same circuit as the system. The dedicated circuit should provide an isolated ground path between the MicroVAX system and the power source.

If you cannot avoid power disturbances, your system will need additional power-conditioning equipment. For more information, contact your DIGITAL sales representative.

Electrical Requirements for MicroVAX Systems in the BA23 and BA123 Enclosures

Table 6 lists the power cords used to operate a MicroVAX at 240 V in the BA23 and BA123 enclosures. For more information on 240 V operation, check with your DIGITAL sales representative.

Table 6: 240 V Power Cords for MicroVAX Systems in the BA23 and BA123 Enclosures

Power Cord Number	Countries
BN02A-2E	United Kingdom and Ireland
BN03A-2E	Austria, Belgium, Czechoslovakia, Finland, France, Germany, Hungary, Netherlands, Norway, Poland, Portugal, Spain, and Sweden
BN04A-2E	Switzerland
BN05A-2E	Australia and New Zealand
BN06A-2E	Denmark
BN07A-2E	Italy

Table 7 lists the electrical requirements for MicroVAX systems in the BA23 enclosure.

Table 7: Electrical Requirements for MicroVAX Systems in the BA23 Enclosure

Nominal AC Voltage ⇒	100 Vac	120 Vac	220-240 Vac
Voltage range	90 to 110 Vac	104 to 128 Vac	191 to 256 Vac
Power source phase	Single	Single	Single
Nominal frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz
Frequency range	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz
Maximum steady state current at nominal voltage	5.3 A	4.4 A	2.2 A
Maximum steady state current at minimum voltage	6 A	5.5 A	2.7 A
Maximum inrush current	100 A	100 A	100 A
Maximum power consumption	345 W	345 W	345 W

Table 8 provides electrical requirements for MicroVAX Systems in the BA123 enclosure.

Table 8: Electrical Requirements for MicroVAX Systems in the BA123 Enclosure

Nominal AC Voltage ⇒	100 Vac	120 Vac	220-240 Vac
Voltage range	90 to 110 Vac	104 to 128 Vac	191 to 256 Vac
Power source phase	Single	Single	Single
Nominal frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz
Frequency range	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz
Maximum steady state current at nominal voltage	10.5 A	8.8 A	4.4 A
Maximum steady state current at minimum voltage	12 A	11.0 A	5.5 A
Maximum inrush current	100 A	100 A	100 A
Maximum power consumption	690 W	690 W	690 W

Electrical Requirements for MicroVAX Systems in the BA213 Enclosure

Table 9 lists the power cords used to operate a MicroVAX at 240 V in the BA213 enclosure.

Table 9: 240 V Power Cords for MicroVAX Systems in the BA213 Enclosure

Power Cord Number	Countries
BN20B-2E	Japan
BN20C-2E	Australia and New Zealand
BN20D-2E	Austria, Belgium, Czechoslovakia, Finland, France, Germany, Hungary, Netherlands, Norway, Poland, Portugal, Spain, and Sweden
BN20E-2E	United Kingdom and Ireland
BN20F-2E	Switzerland
BN20H-2E	Denmark
BN20K-2E	India, South Africa
BN20L-2E	Israel
BN20J-2E	Italy

Table 10 and Table 11 show electrical requirements for MicroVAX systems in the BA213 enclosure.

Table 10: Electrical Requirements for MicroVAX II Systems in the BA213 Enclosure

Nominal AC Voltage ⇒	100 Vac	120 Vac	220-240 Vac
Voltage range	90 to 110 Vac	104 to 128 Vac	191 to 256 Vac
Power source phase	Single	Single	Single
Nominal frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz
Frequency range	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz
Maximum steady state current at nominal voltage	10.2 A	8.6 A	4.7 A
Maximum steady state current at minimum voltage	11.3 A	9.8 A	5.4 A
Startup current (30 seconds)	13.5 A	11.5 A	6.3 A
Maximum inrush current	100 A	100 A	100 A
Maximum power consumption	670 W	670 W	670 W

Table 11: Electrical Requirements for MicroVAX 3500 Systems in the BA213 Enclosure

Nominal AC Voltage ⇒	101 Vac	120 Vac	220-240 Vac
Voltage range	88 to 110 Vac	104 to 132 Vac	176 to 264 Vac
Power source phase	Single	Single	Single
Nominal frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz
Frequency range	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz
Maximum steady state current at nominal voltage	10.2 A	8.6 A	4.7 A
Maximum steady state current at minimum voltage	1.2 A	1.0 A	0.54 A
Startup current (30 seconds)	13.5 A	11.5 A	6.3 A
Maximum inrush current	100 A	100 A	100 A
Maximum power consumption	670 W	670 W	670 W

Electrical Requirements for MicroVAX Systems in the H9642 Cabinet

For 120 V operation, MicroVAX systems in the H9642 cabinet must use a NEMA (National Electrical Manufacturers Association) L5-30R ac electrical receptacle rated at 30 amperes.

For 240 V operation, most MicroVAX systems in the H9642 cabinet do not use the NEMA connector. Those 240 V systems that do use the NEMA connector operate on 60 Hz. Contact your DIGITAL sales representative for information on any restrictions that may apply to 240 V, 60 Hz systems.

Table 12 lists the power cords used to operate a MicroVAX system at 240 V in the H9642 cabinet.

Table 12: 240 V Power Cords for MicroVAX Systems in the H9642 Cabinet

Power Cord Number	Country	Service
BN18B-4E	United Kingdom and Ireland	240 V
BN18C-4E	Austria, Belgium, Finland, Netherlands, Norway, Portugal, Spain, and Sweden	220 V
BN18D-4E	Australia and New Zealand	240 V
BN18E-4E	Italy and Switzerland	220 V
BN18F-4E	Israel	230 V
BN18H-4E	India	220 V
BN18J-1K	US	240 V
BN18K-1K	Japan	100 V

Table 13 shows the electrical requirements for fully configured systems in the H9642 cabinet.

Maximum current and power values represent systems with two RA81 disk drives installed.

Table 13: Electrical Requirements for MicroVAX II and VAXstation II/GPX Systems in the H9642 Cabinet

Nominal AC Voltage \Rightarrow		120 Vac	240 Vac
Voltage range		90 to 128 Vac	184 to 256 Vac
Power source phase		Single	Single
Nominal frequency		60 Hz	50 Hz
Frequency range		59 to 61 Hz	49 to 51 Hz
Steady state current	Typical:	16.4 A	8.6 A
	Maximum:	24.0 A	12.0 A
Power consumption	Typical:	1722 W	1766 W
	Maximum:	3132 W	3216 W

Electrical Requirements for MicroVAX Systems in the H9644 Cabinet

For 120 V operation, MicroVAX systems in the H9644 cabinet must use a NEMA L5-30R ac electrical receptacle rated at 30 amperes. These systems require a CSA 12-3 type power cord.

For 240 V operation, MicroVAX systems in the H9644 cabinet must use a NEMA L6-15R ac electrical receptacle rated at 15 amperes. Contact your DIGITAL sales representative for information on any restrictions that may apply to 240 V, 60 Hz systems. Power cords for 240 V operation in the H9644 cabinet are the same as those for the H9642 cabinet. See Table 12 for a list of power cord numbers.

Table 14 lists the electrical requirements for MicroVAX 3600 and VAXserver 3600/3602 systems that use one H9644 cabinet. Tables 15 and 16 list the electrical requirements for a second H9644 cabinet in a MicroVAX 3600 and VAXserver 3600/3602 system, respectively.

Table 14: Electrical Requirements for MicroVAX 3600 and VAXserver 3600/3602 Systems in the H9644 Cabinet

Nominal AC Voltage ⇒	101 Vac	120 Vac	240 Vac
Voltage range	90 to 110 Vac	90 to 128 Vac	184 to 256 Vac
Power source phase	Single	Single	Single
Nominal frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz
Frequency range	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz
Maximum steady state current			
At nominal voltage	28.5 A	24.0 A	12.0 A
At typical voltage	12.0 A	11.3 A	5.9 A
Startup current			
For 10 seconds	57 A	48 A	24 A
For 50 seconds	36 A	30 A	15 A
Typical power consumption	Not specified	1090 W	1140 W

Table 15: Electrical Requirements for Auxiliary Cabinet Used with MicroVAX 3600 Systems

Nominal AC Voltage ⇒	101 Vac	120 Vac	240 Vac
Voltage range	Not used	90 to 128 Vac	184 to 256 Vac
Power source phase	Not used	Single	Single
Nominal frequency	Not used	50 to 60 Hz	50 to 60 Hz
Frequency range	Not used	47 to 63 Hz	47 to 63 Hz
Maximum steady state current			
At typical voltage	Not used	8.0 A	4.1 A
At maximum voltage	Not used	8.3 A	4.6 A
Startup current (150 milliseconds)	Not used	44.0 A	33.0 A
Power consumption			
Typical	Not used	620 W	620 W
Maximum	Not used	960 W	960 W

Table 16: Electrical Requirements for Auxiliary Cabinet Used with VAXserver 3602 Systems

Nominal AC Voltage ⇒	101 Vac	120 Vac	240 Vac
Voltage range	90 to 110 Vac	90 to 128 Vac	184 to 256 Vac
Power source phase	Single	Single	Single
Nominal frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz
Frequency range	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz
Maximum steady state current at typical voltage	10.2 A	8.6 A	4.7 A
Maximum available current for cabinet	28.5 A	24.0 A	12.0 A
Startup current (10 seconds)	57.0 A	48.0 A	24.0 A
Power consumption			
Typical	670 W	670 W	670 W
Maximum limit of the power controller	2880 W	2880 W	2880 W

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MicroVAX Site Preparation
EK-239AA-SP-001

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Clarity (easy to understand)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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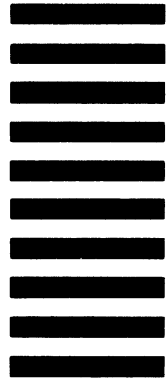


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