Scalar 1000 Library

Planning Guide

Advance Digital Information Corp

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Introduction

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Overview

This manual contains information that outlines the Scalar 1000 [1] library. The topics discussed in this section of the manual are:

- Overview
- Intended Audience
- Organization
- Associated Documents
- Assistance

Intended Audience

This manual is prepared for salespersons and potential purchasers of the Scalar 1000 library.

Organization

This manual contains chapters detailing the Scalar 1000 library. The chapters include:

Chapter 1	*Introduction* - Describes the overview, intended audience, organization, associated documents, and where to acquire additional assistance.
Chapter 2	*System Description* - Describes general information about the Model C10/E10, C20/E20, and C30/E30 components.
Chapter 3	*System Specifications* - Describes the physical and electrical specifications of the Scalar 1000 components.
Chapter 4	*System Configuration* - Describes the structure of the basic Scalar 1000 library and available optional components.
Chapter 5	*Survey Data* - Provides space for planning physical, electrical, and environmental requirements. This information is required by the installation team.

1. Scalar 1000 is a trademark of ADIC. Throughout the remainder of this document, we refer to Scalar 1000 library as Scalar 1000

Associated Documents

600602	Scalar 1000 Maintenance Guide
600685	Scalar 1000 Operator Guide
600604	Scalar 1000 SCSI Reference Manual
600300	AML Configuration Information
600302	Product Order Information
600307	AMASS Documentation Set
600336	DataMgr Documentation Set

Assistance

If questions cannot be solved with the aid of this document or the immediate salesperson, contact the ADIC Technical Assistance Center.

- United States 1-800-827-3822
- Germany / Africa 00.800.9999.3822
- France 33.1.3087.5300

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System Description

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Overview

An in-depth description of the subsystem, tape cartridge, storage and drive configuration, and optional features are provided.

Subsystem Description

The Scalar 1000 automates the storage, retrieval, and control of ADIC Model 8490, ADIC Model 4001, Model 4001S, Model 7001, Model 7001S, AIT3102, Philips NCTP, and IBM 3590 cartridge tapes. The cartridge types for Philips NCTP, the ADIC Model 8490 and IBM 3590 are half-inch. The cartridge type for the ADIC Model 4001, Model 4001S, Model 7001, and Model 7001S are DLT. The cartridge type for the ADIC AIT3102 is Advanced Intelligent Tape (AIT) 8mm. Cartridges are loaded and unloaded on tape drives via firmware and host software without the intervention of an operator.

The Scalar 1000 configuration can contain a maximum of 4 frames. The Scalar 1000 consists of a Control Module and up to 3 Expansion Modules. Refer to Figure 2-1 on page 2-4 for an illustration of a basic Control and Expansion Module. The Control Module contains library control hardware, the cartridge accessor, an Insert/Eject station, an Operator panel, cartridge storage cells and tape drives. The Expansion Module can contain tape drives and cartridge storage.

Note
Pay special attention to the two adjacent paragraphs about the Scalar 1000 module configuration.

Additionally, the Control Module is available in three variations. Model C10 is a mixed media frame capable of holding either half-inch or DLT media. If the buyer is considering half inch and/or DLT media anytime in the future, a C10 frame should be specified. Model C20 is a smaller footprint single media frame capable of holding DLT media only. Model C30 is a smaller footprint single media frame capable of holding AIT 8mm media only

The Expansion Module is also available in an E10, E20, and E30 variation. The E10, E20, E30 configuration are mates to the C10, C20, and C30 Control Modules. E10, E20, and E30 Expansion modules cannot be mixed with C10, C20, and C30 Control Modules. They must remain in their respective family.

Note

The media quantity does not include the 12 cartridge capacity of the half inch Insert/Eject station or the 18 cartridge capacity of the 8mm Insert/Eject station.

The Scalar 1000 can be configured for 118 to 1182 cartridges and 1 to 48 tape drives. The number of tape drive depends on the media type. The Model C10 Control Module and Model E10 Expansion Module may contain a maximum of 4 drives each for half-inch media or a maximum of 12 drives each for DLT media. The Model C20 Control Module and Model E20 Expansion Module may contain a maximum of 12 drives each for DLT media. The Model C30 Control Module and Model E30 Expansion Module may contain a maximum of 12 drives each for 8mm AIT media.

Figure 2-1 Scalar 1000 Frames

Host Attachment

The Scalar 1000 can contain one or two independent SCSI bus adapters. The SCSI bus adapters can individually be either Single Ended or Differential. Terminators are required and are shipped with both types of adapters. A minimum Scalar 1000 configuration requires one SCSI bus adapter that must be specified as either Single Ended or Differential at the time of order. Although the Scalar 1000 can be attached to a wide SCSI bus, it is not a wide SCSI device and the SCSI ID must be in the range of 0 to 7.

As an alternative, the Scalar 1000 can be network attached through an Archive Management Unit (AMU) in a main frame, UNIX, or Windows NT environment. Contact a sales representative for additional additional information about using the AMU.

The Scalar 1000 can also be connected to a Fibre Channel Host via the ADIC Fibre Channel Router FCR100. The ADIC FCR100 provides one SCSI parallel bus connection and a Fibre Channel connection, translating (bridging) the SCSI protocol between the two media types. Up to six FCR's can be installed in each Scalar 1000 frame. There are three models of the FCR100:

Table 2-1 Fibre Channel Models

Model Number	Fibre Channel Option	SCSI Option
FCR100, CU, DE	Copper	Differential
FCR100, MM, DE	Multi-Mode	Differential
FCR100, SM, DE	Single Mode	Differential

Functional Description

The Scalar 1000 can be installed on a solid or a raised floor.

The Scalar 1000 configuration must include from one to 48 tape drives. Different types of half-inch and DLT tape cartridges can be intermixed in the Scalar 1000 per module if the corresponding tape drive(s) are installed and C10 and E10 frames are specified. For DLT media only, specify the C20 and E20 modules. For AIT 8mm media only, specify the C30 and E30 modules.

The cartridge accessor moves cartridges between storage cells, tape drives and the Insert / Eject Station. The cartridge accessor includes the gripper. A barcode scanner on the gripper identifies the cartridges in cells. Refer to *Cartridge Accessor* on page 2-11 for additional details. The Insert / Eject Station allows cartridges to be added to or removed from the Scalar 1000 without interrupting the operation of the library. Refer to *Insert/Eject Station* on page 2-13 for additional information.

STATIC SENSITIVE

The cartridge storage cells, cartridge accessor, and tape drives are accessed by opening the door on the front of the Scalar 1000 module in which the component is found. Maintenance activities are performed by using this door.

Requests from the host result in cartridge movement in the library. The primary requests are for loading and unloading cartridges to and from the tape drives and for inserting and ejecting cartridges to or from the library. The host maintains records of the physical location of a tape cartridge volume in the library. The physical location is also managed by the library. Each volume can have a machine and operator-readable external label to identify a volume in the library during initial inventory and any time a volume is added to the library. The library stores the physical location of the cartridge in an inventory database that is based on the cartridge volume serial number (volser).

In addition to requesting movement of cartridges in the library, the host can request status, performance, configuration, and cartridge storage information.

Functional Units

The Scalar 1000 consists of the following functional units:

- Tape Drives
- Library control hardware
- Cartridge storage cells
- Cartridge accessor
- Insert / Eject Station

Tape Drives

The Scalar 1000 supports the following tape drives:

- Model 8490 (half inch)
- IBM 3590 (half inch)
- Philips NCTP (half inch)

- Model 4001 (DLT)
- Model 4001S (DLT)
- Model 7001 (DLT)
- Model 7001S (DLT)
- AIT 3102 (AIT 8mm)

Control Hardware

The library control hardware controls all operations in the Scalar 1000, including the interaction between the library and operator and the library and the host. The library control firmware creates and maintains the Scalar 1000 configuration, the physical location of the cartridge accessor, and the inventory of cartridges.

Cartridge Storage

The Scalar 1000 contains cartridge storage cells in all the attached modules as follows:

- For the half inch / DLT configuration, refer to Figure 2-2 on page 2-8. The Control Module must be the first frame in the library. Table 2-2 on page 2-8 shows the coordinates for the storage cells.

Figure 2-2 Half Inch Storage Cell

Table 2-2 Half Inch Storage Cell Coordinates

1 - 4	A - E	1 - 42
Frame	Column	Row

The frame number can be from 1 to 4, the Columns are letters A-E in each module, the Rows are numbered 1 to 42 for half inch from top to bottom.

To manipulate the media within the library, the host must reference each movement with source and target designations. This is done via element addressing, which specifies precisely which cells within the library are to be used. Table 2-3 illustrates the addressing scheme used for the Scalar 1000 with half inch media.

Table 2-3 Half Inch Element Addressing (in decimal)

Address Range	Cell Type
0 - 787	Storage Cell
788 - 799	Insert/Eject Station
800 - 847	Drives
848	Accessor

- For the 8mm configuration, refer to Figure 2-3 on page 2-10. The Control Module must be the first frame in the library. Table 2-4 on page 2-10 shows the coordinates for the storage cells.

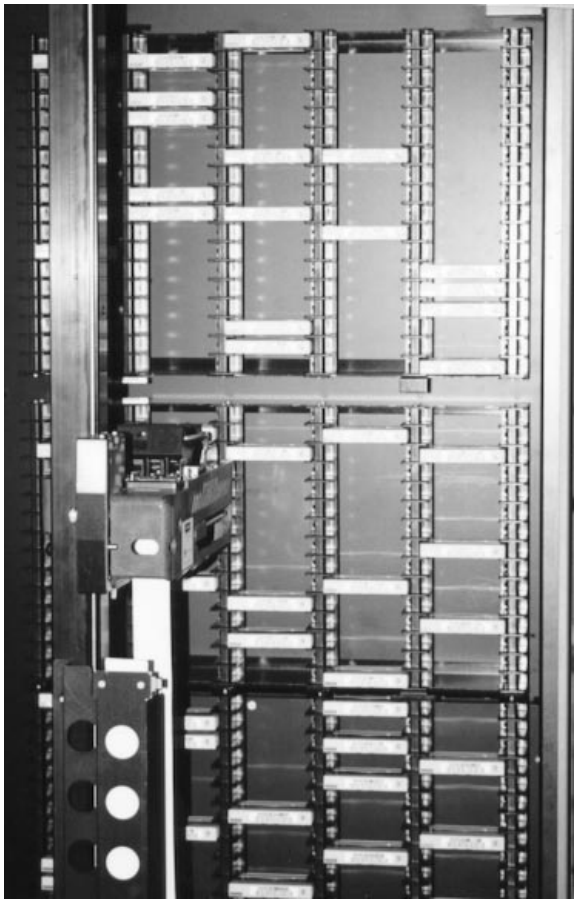

Figure 2-3 8mm Storage Cell

Table 2-4 8mm Storage Cell Coordinates

1 - 4	A - E	1 - 63
Frame	Column	Row

The frame number can be from 1 to 4, the Columns are letters A-E in each module, the Rows are numbered 1 to 63 for 8mm from top to bottom.

To manipulate the media within the library, the host must reference each movement with source and target designations. This is done via element addressing, which specifies precisely which cells within the library are to be used. Table 2-5 illustrates the addressing scheme used for the Scalar 1000 with 8mm media.

Table 2-5 8mm Element Addressing (in decimal)

Address Range	Cell Type
0 - 1181	Storage Cell
1182 - 1199	Insert / Eject Station
1200 - 1247	Drives
1248	Accessor

Cartridge Accessor

The cartridge accessor identifies and moves cartridges between the storage cells, tape drives and Insert / Eject Station. See Figure 2-4 on page 2-12.

Figure 2-4 Accessor

The cartridge accessor has:

- A gripper assembly for mounting a cartridge gripper and a barcode scanner.
    - A cartridge gripper picks and places cartridges in storage cells, tape drives or the Insert/Eject station.
    - A barcode scanner reads the external labels on the cartridges. The barcode scanner is used during the inventory and teach processes.
- A horizontal axis drive for moving the gripper assembly the length of the rails in the Control Module and the Expansion Modules.
- A vertical axis drive for moving the gripper assembly vertically in the Control Module and the Expansion Modules.

Insert/Eject Station

For the C10 and C20 Control Modules, this station allows the insertion and ejection of one to twelve cartridges without the interruption of the normal operation of the library. See Figure 2-5.

For a single media library, all twelve slots are reserved for the single media type. For a mixed media library of half inch and DLT, the first six slots are reserved for half inch media and the remaining six slots are reserved for DLT media.

For the C30 Control Module, all sixteen slots are reserved for 8mm media.

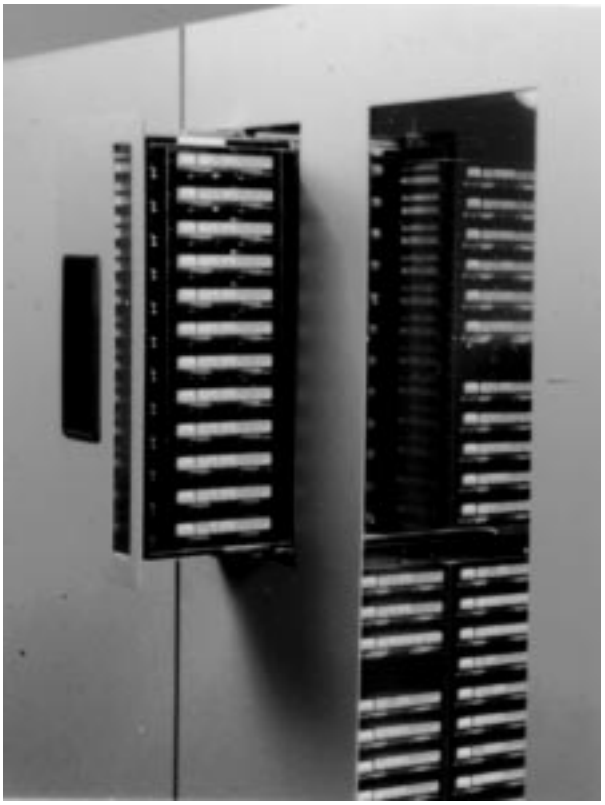

Figure 2-5 Insert / Eject Station

Tape Cartridge

Each tape cartridge in the Scalar 1000 can have an external label that is operator and machine readable to identify the volume serial number (volser). The external label contains six characters for the volser. The 6 character volser is composed of uppercase A-Z and numeric 0-9. The Scalar 1000 currently supports Code 39 and Storage Technology type labels.

A separate seventh character label may be used to identify the cartridge type. The cartridge type is a single character that is either separate from or included with the volser label as follows:

- The separate character E is used to identify the Model 8490 cartridge.
- The separate character J is used to identify the IBM 3590 cartridge.
- The separate character M is used to identify the Philips NCTP cartridge.
- The characters C, D, and E are used to identify the Model 4001, Model 4001S, Model 7001 and Model 7001S cartridges where C means DLT CompacTape III, D means DLT CompacTape IV, and E means DLT CompacTape IIIXT. The C, D, and E characters are included on the same label with the six character volser.

Cartridge Storage and Tape Drive Configurations

Cartridge storage quantity varies by number of modules and tape drives in the modules.Table 2-6 on page 2-15 lists the quantity of media contained by the storage cells for the C10/E10 modules. Table 2-7 on page 2-16 lists the quantity of media contained by the storage cells for the C20/E20 modules. Table 2-8 on page 2-17 lists the quantity of media contained by the storage cells for the C30/E30 modules.

Table 2-6 Scalar 1000 C10/E10 Media Segment Quantities

C10/E10 Frame	Half inch Tape Drives	DLT Tape Drive	Cartridges
Control Module	1 or 2	1 to 6	158
	3 or 4	7 to 12	118
Control Module and 1 Expansion Module	1 or 2	1 to 6	368
	3 or 4	7 to 12	328
	5 or 6	13 to 18	288
	7 or 8	19 to 24	248
Control Module and 2 Expansion Modules	1 or 2	1 to 6	578
	3 or 4	7 to 12	538
	5 or 6	13 to 18	498
	7 or 8	19 to 24	458
	9 or 10	25 to 30	418
	11 or 12	31 to 36	378
Control Module and 3 Expansion Modules	1 or 2	1 to 6	788
	3 or 4	7 to 12	748
	5 or 6	13 to 18	708
	7 or 8	19 to 24	668
	9 or 10	25 to 30	628
	11 or 12	31 to 36	588
	13 or 14	37 to 42	548
	15 or 16	43 to 48	508

Note

With the C10/E10 configuration, the maximum number of tape drives depends on the mix of media types.

Table 2-7 Scalar 1000 C20/E20 Media Segment Quantities

C20/E20 Frame	DLT Tape Drive	Cartridges
Control Module	1 to 6	158
	7 to 12	118
Control Module and 1 Expansion Module	1 to 6	368
	7 to 12	328
	13 to 18	288
	19 to 24	248
Control Module and 2 Expansion Modules	1 to 6	578
	7 to 12	538
	13 to 18	498
	19 to 24	458
	25 to 30	418
	31 to 36	378
Control Module and 3 Expansion Modules	1 to 6	788
	7 to 12	748
	13 to 18	708
	19 to 24	668
	25 to 30	628
	31 to 36	588
	37 to 42	548
	43 to 48	508

Table 2-8 Scalar 1000 C30/E30 Media Segment Quantities

C30/E30 Frame	AIT Tape Drive	Cartridges
Control Module	1 to 6	237
	7 to 12	237
Control Module and 1 Expansion Module	1 to 6	552
	7 to 12	552
	13 to 18	432
	19 to 24	432
Control Module and 2 Expansion Modules	1 to 6	867
	7 to 12	867
	13 to 18	747
	19 to 24	747
	25 to 30	627
	31 to 36	627
Control Module and 3 Expansion Modules	1 to 6	1182
	7 to 12	1182
	13 to 18	1062
	19 to 24	1062
	25 to 30	942
	31 to 36	942
	37 to 42	822
	43 to 48	822

Optional Features

Optional features for the Scalar 1000 are as follows:

- One additional Differential or Single Ended SCSI Adapter card.
- Fibre Channel Router FCR100.

Software Components

ADIC software organizes and manages the Scalar 1000. This software makes automated data manipulation possible without interfering with the performance of host system. ADIC software automatically receives messages, coordinates tasks, manages and updates the library database, and provides recovery from media errors.

ADIC software can be tailored for many different library configurations. In addition, it can be reconfigured to accommodate an expanding library.

UNIX Support

The UNIX virtual file system layer is used to access a media library.

AMASS software

AMASS software presents the Scalar 1000 library as on-line direct access mass storage. The AMASS software provides the following features:

- The Scalar 1000 library appears as a single device
- The Scalar 1000 library utilizes a single mount point
- The data on the media appears as a standard UNIX directory with files
- Write or read to media utilizes the same approach as magnetic disk
- Raw cache partitioning provides high performance

Files are accessible across the network through standard communication protocols. The protocols include:

- NFS
- TCP/IP
- RFS
- FTP
- Telnet
- Hyperchannel

Requirements to support AMASS software are platform dependent. Additional detailed information is provided in the part number *600307 AMASS Documentation Set* manuals.

DataMgr software

DataMgr is an integrated, layered, file migration application that requires and operates with AMASS software. DataMgr provides the following features:

- Fully distributed architecture
- File migration from expensive magnetic disk space to inexpensive storage media
- Transparent access to the migrated files
- Convenient access to migrated data during reloads
- Flexible migration policies determine the criteria for file relocation
- File replication across distributed servers
- Multi-tier migration

Additional detailed information is provided in the part number *600336 DataMgr Documentation Set* manuals.

Scalar 1000 Embedded Software

Scalar 1000 embedded software consists of proprietary operational and utility processes. The Scalar 1000 embedded software provides the following features:

- Communication with host computer, accessor control, and gripper control
- Management of the library catalog of tapes database
- Converts host commands into control commands
- User interface for operator requests
- Log and trace connection

3

System Specification

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Overview

This section contains the following information for the Scalar 1000:

- Physical Specifications
- Electrical Specifications
- Performance Specifications
- Environmental Specifications
- Regulatory Specifications
- Media Quantity Specification
- Flooring Requirement
- Bar code Requirement

Physical Specifications

The physical specifications for the C10 Control Module are shown inTable 3-1. The E10 Expansion Module physical specification are shown in Table 3-2.

Table 3-1 C10 Control Module Physical Dimensions

Control Module	Height	Width	Depth	Maximum Weight [a]	Distributed Load
North America	6 feet	2 feet 6 inches	5 feet	1052 lbs	85 lbs / sq ft
Europe	1.8 meters	0.76 meter	1.52 meters	479 Kg	419 Kg / sq m

a. Includes the weight of 4 - IBM 3590 drives.

Table 3-2 E10 Expansion Module Physical Dimensions

Expansion Module	Height	Width	Depth	Maximum Weight [a]	Distributed Load
North America	6 feet	2 feet 6 inches	5 feet	817 lbs	66 lbs / sq ft
Europe	1.8 meters	0.76 meter	1.52 meters	372 Kg	326 Kg / sq m

a. Includes the weight of 4 - IBM 3590 drives.

The physical specifications for the C20/C30 Control Module are shown inTable 3-3. The E20/E30 Expansion Module physical specification are shown in Table 3-4.

Table 3-3 C20/C30 Control Module Physical Dimensions

Control Module	Height	Width	Depth	Maximum Weight [a]	Distributed Load
North America	6 feet	2 feet 6 inches	3 feet 11 inches	1052 lbs	85 lbs/sq ft
Europe	1.8 meters	0.76 meter	1.18 meters	479 Kg	419 Kg/sq m

a. Includes the weight of 12 ADIC Model 7001S tape drives.

Table 3-4 E20/E30 Expansion Module Physical Dimensions

Expansion Module	Height	Width	Depth	Maximum Weight [a]	Distributed Load
North America	6 feet	2 feet 6 inches	3 feet 11 inches	817 lbs	66 lbs/sq ft
Europe	1.8 meters	0.76 meter	1.18 meters	372 Kg	326 Kg/sq m

a. Includes the weight of 12 ADIC Model 7001S tape drives

Electrical Specifications

The electrical specifications for the Control Module are shown in Table 3-5 and for the Expansion Module are shown in Table 3-6.

Table 3-5 Control Module Electrical Specifications

Control Module	Voltage [a] (Single Phase)	kVA	AMP [b]	Receptacle
North America	115	1.6	14	L5-20
Europe	230	1.6	7	[c]

a. Connect an 18 gauge stranded copper wire from the Control Module cabinet to an earth ground.
b. Includes the drive components
c. Cable and receptacle is determined by location.

Table 3-6 Expansion Module Electrical Specifications

Expansion Module	Voltage (Single Phase)	kVA	AMP	Receptacle
North America	115	1.6	14	L5-20
Europe	230	1.6	7	See Note *c* in Table 3-5

Table 3-7 Scalar 1000 Drive Component Electrical Specification

Device	Voltage (Single Phase)	KVA	AMP
Model 8490	100 - 240 VAC	0.25	2.5
IBM 3590	100 - 240 VAC	0.25	2.5
Philips 3610	100 - 240VAC	0.25	2.5
Philips NCTP	100 - 240 VAC	0.25	2.5
Model 4001	100 - 240 VAC	0.1	1
Model 4001S	100 -240 VAC	0.1	1
Model 7001	100 - 240 VAC	0.1	1
Model 7001S	100 -240 VAC	0.1	1
AIT 3102	100 - 240 VAC	0.1	1

Performance Specifications

Table 3-8 lists the key performance information for the Scalar 1000 library.

Table 3-8 Performance Specifications

Avg Actions per Hour	Peak Actions per Hour	Avg Time to Mount Media	Max Time to Mount Media
290	350	5 Seconds	6 Seconds

Environmental Specifications

Table 3-9 lists the key environmental information for the Scalar 1000 library. Specifications do not include drives.

Table 3-9 Environmental Specifications (Without Drives)

Temperature	Humidity	Altitude
Minimum to Maximum: 60° - 90° F (16° - 32° C) Recommended: 70° - 75° F (21° - 24° C)	Minimum to Maximum: 15 - 75 percent Recommended: 45 - 65 percent	No Limit

Regulatory Specifications

Table 3-10 lists the key safety and electromagnetic regulatory information for the Scalar 1000 library.

Table 3-10 Scalar 1000 Regulatory Specifications

Safety			EMC - EMI		
North America		Europe	North America		Europe
UL	CSA	TUV Product Service	CFR-47, Part 15		89/336/ EEC Directive
			Drive Type	Class	
UL1950 - ITE	C22.2 #950	EN60950	Model 8490	Class A	Class A
			IBM 3590	Class A	Class A
			Philips 3610	Class A	Class A
			Philips NCTP	Class A	Class A
			Model 4001	Class A	Class A
			Model 4001S	Class A	Class A
			Model 7001	Class A	Class A
			Model 7001S	Class A	Class A
			Model 3102	Class A	Class A

Media Quantity Specification

Note

The media quantity shown does not include the cartridge capacity of the Insert/Eject Station.

Table 3-11 on page 3-10 lists the quantity of media contained by the storage cells for the C10 Control Module and E10 Expansion Module. Refer to the part number *600300 AML Configuration Information* manual for additional information.

Table 3-11 Scalar 1000 C10/E10 Media Segment Quantities

C10/E10 Frame	Half inch Tape Drives	DLT Tape Drive	Cartridges
Control Module	1 or 2	1 to 6	158
	3 or 4	7 to 12	118
Control Module and 1 Expansion Module	1 or 2	1 to 6	368
	3 or 4	7 to 12	328
	5 or 6	13 to 18	288
	7 or 8	19 to 24	248
Control Module and 2 Expansion Modules	1 or 2	1 to 6	578
	3 or 4	7 to 12	538
	5 or 6	13 to 18	498
	7 or 8	19 to 24	458
	9 or 10	25 to 30	418
	11 or 12	31 to 36	378
Control Module and 3 Expansion Modules	1 or 2	1 to 6	788
	3 or 4	7 to 12	748
	5 or 6	13 to 18	708
	7 or 8	19 to 24	668
	9 or 10	25 to 30	628
	11 or 12	31 to 36	588
	13 or 14	37 to 42	548
	15 or 16	43 to 48	508

Note

With the C10/E10 configuration, the maximum number of tape drives depends on the mix of media types.

Table 3-12 lists the quantity of media contained by the storage cells for the C20 Control Module and E20 Expansion Module. Refer to the part number *600300 AML Configuration Information* manual for additional information.

Table 3-12 Scalar 1000 C20/E20 Media Segment Quantities

C20/E20 Frame	DLT Tape Drive	Cartridges
Control Module	1 to 6	158
	7 to 12	118
Control Module and 1 Expansion Module	1 to 6	368
	7 to 12	328
	13 to 18	288
	19 to 24	248
Control Module and 2 Expansion Modules	1 to 6	578
	7 to 12	538
	13 to 18	498
	19 to 24	458
	25 to 30	418
	31 to 36	378
Control Module and 3 Expansion Modules	1 to 6	788
	7 to 12	748
	13 to 18	708
	19 to 24	668
	25 to 30	628
	31 to 36	588
	37 to 42	548
	43 to 48	508

Table 3-12 lists the quantity of media contained by the storage cells for the C30 Control Module and E30 Expansion Module. Refer to the part number *600300 AML Configuration Information* manual for additional information.

Table 3-13 Scalar 1000 C30/E30 Media Segment Quantities

C30/E30 Frame	8mm AIT Tape Drive	Cartridges
Control Module	1 to 6	237
	7 to 12	237
Control Module and 1 Expansion Module	1 to 6	552
	7 to 12	552
	13 to 18	432
	19 to 24	432
Control Module and 2 Expansion Modules	1 to 6	867
	7 to 12	867
	13 to 18	747
	19 to 24	747
	25 to 30	627
	31 to 36	627
Control Module and 3 Expansion Modules	1 to 6	1182
	7 to 12	1182
	13 to 18	1062
	19 to 24	1062
	25 to 30	942
	31 to 36	942
	37 to 42	822
	43 to 48	822

Flooring Requirements

In addition to being dust-free, physically, chemically, and acoustically appropriate, the flooring must meet the insulation resistance specifications. The insulation resistance between the floor surface and earth ground must be $1x10^5$ to $1x10^8$ ohms to prevent system failure or electrical shock. Sufficient resistance is achieved by using antistatic, nonconducting floor tile with a resistance of $1x10^6$ to $1x10^9$ ohms. If necessary, provide an appropriate connection to the metal portion of the ground plane.

Barcode Requirement

For customers who wish to print the barcode labels, the individual media labels are supported if the labels meet the ANSI MH10.8M-1983 standard and other additional requirements. The requirements are:

- ANSI MH10.8M-1983 Standard
  - Number of digits: 6
  - Background reflection: at least 25 percent
  - Print contrast: at least 75 percent
  - Ratio: at least 2.2
  - Module: 250 mm
  - Print tolerance: ± 57 mm
- Additional Requirements
  - Length of the rest zones: 5.25 mm ± 0.25 mm
  - No black marks can be present in the intermediate spaces or rest zones
  - No white areas may be present on the bars
  - Bars should read in a uniform direction. Nonuniform reading directions are feasible in principle, but have a detrimental effect on performance
  - Each label should be applied in the upper right corner of the tape cartridge recess (when oriented vertically)
- Quality Testing

Compliance with these specifications can be checked and documented with the Ergilaser 3000 High Density bar code measuring device that is manufactured by the Laetus Company.

If barcode scanning labels are purchased, the individual media labels are supported if they are acquired from the sources listed in Table 3-14 on page 3-14.

Table 3-14 Supported Labels

Media	Label	Source
Model 8490 IBM 3590 Philips 3610 / NCTP	Tri-Code	American Eagle Systems, Inc.
	Tri-Optic	Engineered Data Products
DLT-III		Engineered Data Products 1703-0C
DLT-IV		Engineered Data Products 1703-0D
DLT-IIIXT		Engineered Data Products 1703-0E
AIT 3102 (8mm)		Engineered Data Products

Barcode Label Restrictions

Note
Duplicate Volsers are not supported even if different media labels are used.

The Scalar 1000 supports a range of media labels. With mixed media enabled, some additional restrictions apply. The label types supported in mixed media enabled and mixed media disabled are illustrated in Figure 3-1 on page 3-15.

All labels are restricted to 6 character volsers. For specific DLT media labels which contain an embedded 7th character in the label, the 7th character is stripped off by firmware. For half inch media, the 7th character is separate from the media volser label. For this case, the 7th character is the media identifier and is not used as part of the volser.

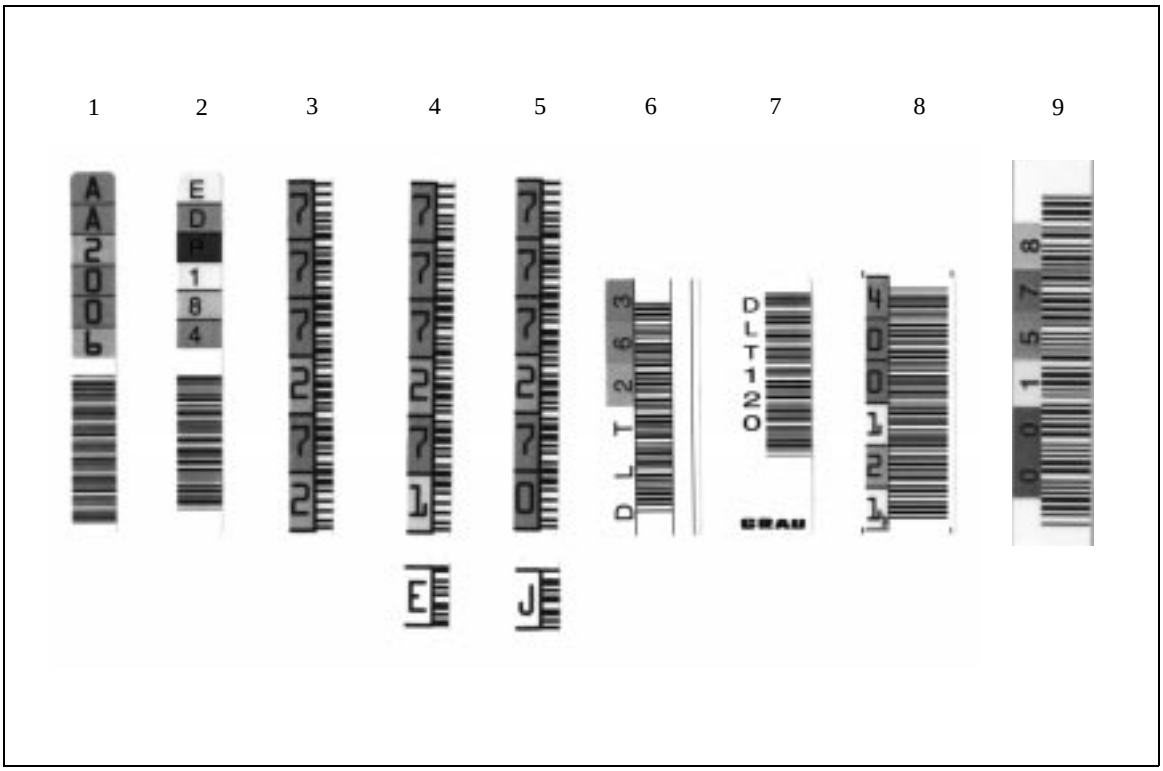

Figure 3-1 Barcode Label Examples

The numeric listing above each label type identifies the restriction associated with the label.

1 This is a 6 character Code 39 forward printed label for a half inch cartridge. This label can be used only when mixed media is disabled.

2 This is a 6 character Code 39 backward printed label for a half inch cartridge. This label can be used only when mixed media is disabled.

3 This is a 6 character Tri-Optic forward printed label for a half inch cartridge. This label can be used only when mixed media is disabled.

4 This is a 6 character Tri-Optic forward printed label with an additional 1 character media identifier for a half inch cartridge. This label can be used in both mixed media enabled and mixed media disabled applications.

Note
When the mixed media mode is disabled, the 7th character is stripped off.

5	This is a 6 character Tri-Optic forward printed label with an additional 1 character media identifier for a half inch cartridge. This label can be used in both mixed media enabled and mixed media disabled applications.
6	This is a 6 character Code 39 forward printed label for a DLT cartridge. This label can be used only when mixed media is disabled.
7	This is a 6 character Code 39 forward printed label for a DLT cartridge. This label can be used only when mixed media is disabled.
8	This is a 7 character Code 39 backward printed label. The embedded additional 7th character media identifies the DLT cartridge media type. This label can be used in both mixed media enabled and mixed media disabled applications.
9	This is a 6 character forward printed label for an 8mm AIT cartridge. This label can be used only when mixed media is disabled.

Applying the Label

All barcode scanning labels are applied to the front of the cartridge. Extreme care should be take to ensure that the barcode labels are never applied in an upside down fashion.

4

System Configuration

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Overview

This section of the manual solicits the information necessary to configure an Scalar 1000 library.

Base Level

Enter the number of Control Modules and Expansion Modules.

_____ C10 Control Module (half inch and / or DLT)
_____ E10 Expansion Module (half inch and / or DLT)
_____ C20 Control Module (DLT only)
_____ E20 Expansion Module (DLT only)
_____ C30 Control Module (8mm only)
_____ E30 Expansion Module (8mm only)

Drive Types

Check (✔) the drive type. For a single drive type, check Single Media I / E Station. If both half inch and DLT drive types are checked, check the Mixed Media Insert / Eject (I / E) Station.

_____ Model 8490 (half inch)
_____ IBM 3590 (half inch)
_____ Model DLT4001 (DLT)
_____ Model DLT4001S (DLT)
_____ Model DLT7001 (DLT)
_____ Model DLT7001S (DLT)
_____ AIT 3102 (8mm)
_____ Single Media I / E Station

_____ Philips 3610 (half inch)
_____ Philips NCTP (half inch)
_____ Mixed Media I / E Station

Drive Ports

Check (✔) the location of the drives in the drive ports (from lower left to upper right) per drive bay for either the C10 / E10, C20 / E20, or C30 / E30 configuration.

C10 Control Module		E10 Expansion Module		E10 Expansion Module		E10 Expansion Module	
_____ (2)	_____ (3)	_____ (2)	_____ (3)	_____ (2)	_____ (3)	_____ (2)	_____ (3)
_____ (0)	_____ (1)	_____ (0)	_____ (1)	_____ (0)	_____ (1)	_____ (0)	_____ (1)

C20 Control Module		E20 Expansion Module		E20 Expansion Module		E20 Expansion Module	
_____ (8)	_____ (11)	_____ (8)	_____ (11)	_____ (8)	_____ (11)	_____ (8)	_____ (11)
_____ (7)	_____ (10)	_____ (7)	_____ (10)	_____ (7)	_____ (10)	_____ (7)	_____ (10)
_____ (6)	_____ (9)	_____ (6)	_____ (9)	_____ (6)	_____ (9)	_____ (6)	_____ (9)
_____ (2)	_____ (5)	_____ (2)	_____ (5)	_____ (2)	_____ (5)	_____ (2)	_____ (5)
_____ (1)	_____ (4)	_____ (1)	_____ (4)	_____ (1)	_____ (4)	_____ (1)	_____ (4)
_____ (0)	_____ (3)	_____ (0)	_____ (3)	_____ (0)	_____ (3)	_____ (0)	_____ (3)

C30 Control Module		E30 Expansion Module		E30 Expansion Module		E30 Expansion Module	
_____ (5)	_____ (11)	_____ (5)	_____ (11)	_____ (5)	_____ (11)	_____ (5)	_____ (11)
_____ (4)	_____ (10)	_____ (4)	_____ (10)	_____ (4)	_____ (10)	_____ (4)	_____ (10)
_____ (3)	_____ (9)	_____ (3)	_____ (9)	_____ (3)	_____ (9)	_____ (3)	_____ (9)
_____ (2)	_____ (8)	_____ (2)	_____ (8)	_____ (2)	_____ (8)	_____ (2)	_____ (8)
_____ (1)	_____ (7)	_____ (1)	_____ (7)	_____ (1)	_____ (7)	_____ (1)	_____ (7)
_____ (0)	_____ (6)	_____ (0)	_____ (6)	_____ (0)	_____ (6)	_____ (0)	_____ (6)

Software Types

Check (✔) the requested type of software.

_____ AMASS
_____ AMASS with DataMgr
_____ Legato Networker
_____ HP OmniBack
_____ Other _____

Host Connection to Control Module

Enter the quantity of Host Connections (Maximum 2 SCSI, Maximum 6 Fibre Channel Routers, Maximum 2 AMU).

Quantity	Termination
_____	SCSI, Single Ended
_____	SCSI, Differential
_____	FCR100 Fibre Channel Router (copper, Differential)
_____	FCR100 Fibre Channel Router (Multi-Mode, Differential)
_____	FCR100 Fibre Channel Router (Single-Mode, Differential)
_____	AMU

Daisy Chain Configuration

Use Figure 4-1 on page 4-9 to sketch the control and data cable connections of the Host, Control Module, and Expansion Modules. Use Table 4-1 to pick the cable set which best matches the configuration and enter the quantity. Refer to Table 4-2 on page 4-7 for the legend and miscellaneous information.

Table 4-1 SCSI Interconnect Cables

Quantity	Type	Description
	68T / 68T MM / MM	1 Meter SCSI Cable
	50T / 50T MM / MM	
	50C / 50C MM / MM	

Table 4-1 SCSI Interconnect Cables (Continued)

Quantity	Type	Description
	68T / 68T MM / MM	3.5 Meter SCSI Cable
	50T / 50T MM / MM	
	50C / 50C MM / MM	
	68T / 68T MM / MM	5 Meter SCSI Cable
	50C / 68T MM / MM	
	50S / 68T MM / MM	
	68T / 68T MM / MM	10 Meter SCSI Cable
	50T / 68T MM / MM	
	50T / 50C MM / MM	
	50C / 68T MM / MM	
	50T / 50T MM / MM	
	50C / 50C MM / MM	
	68T / 68T MM / MM	15 Meter SCSI Cable
	50T / 68T MM / MM	
	50T / 50C MM / MM	
	50C / 68T MM / MM	
	50C / 50C MM / MM	
	68T / 68T MM / MM	20 Meter SCSI Cable
	50T / 68T MM / MM	
	50T / 50C MM / MM	
	50C / 68T MM / MM	
	50C / 50C MM / MM	
	Paralan SD10B, 50S, CF	Converters - SE to DIFF (required when the Host Connection is SCSI Single Ended)
	Paralan SD16B, 68T, MF	
	50C, MM	Differential Terminators
	50S, CM	
	50T, MM	
	68T, MM	
	50S Active, CM	Single Ended Terminators
	50C Active, MM	
	68T Active, MM	

Table 4-1 SCSI Interconnect Cables (Continued)

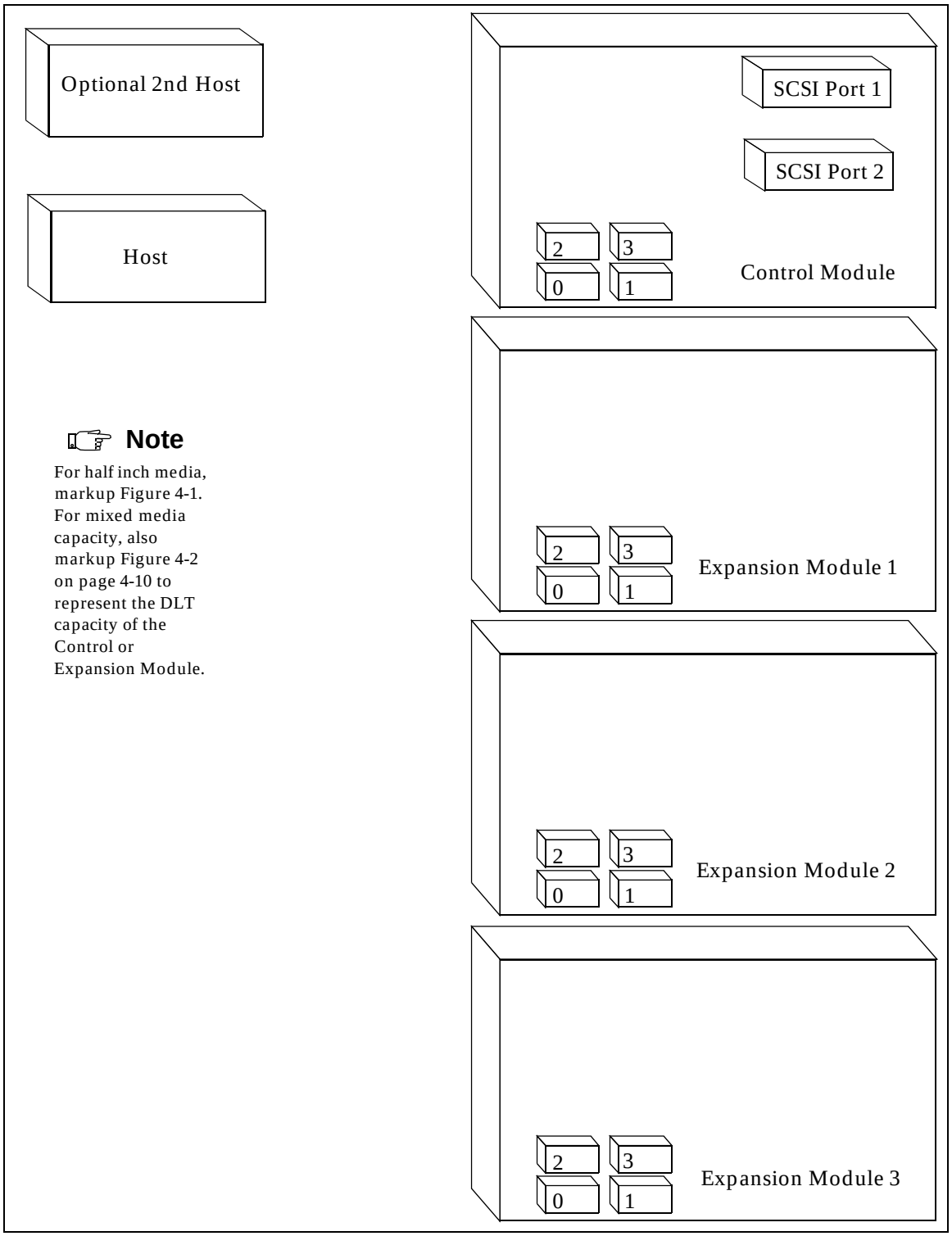
Quantity	Type	Description
	AS/400 FC 6501 Extended Shroud 68T, MM to MF	Interposers - Host SCSI Cable
	RISC/6000 FC 2420 50R male to 68T, male ribbon to MF	
	RISC/6000 FC2416, 68-50 Pin, 50T, MM to MF	
	SCSI-2 50C to SCSI-3 68T, MM to MF, DIFF	
	SCSI-1 50S CM to SCSI-2 50C MF, DIFF	

Table 4-2 Legend and Miscellaneous Information

Drive Type	8490	68T	DIFF, MF
	IBM 3590	68T	DIFF, MF
	DLT	50T	DIFF, MF
Library Type	Scalar 1000	68T	DIFF, MF
		68T	SE, MF
Host Type	Sun	50C	SE, MF
		50C	DIFF, MF
		68T	DIFF, MF
	SGI	50S	SE, MF
		68T	DIFF, MF
	HP	50S	SE, CF
	IBM RISC FC 2416	68T	DIFF, MF
	IBM RISC FC 2420	68T	DIFF, MF
	IBM RISC FC 2410	50R	SE, Female
	IBM AS/400	68T	DIFF, MF

Table 4-2 Legend and Miscellaneous Information (Continued)

Abbreviations	DIFF	Differential
	SE	Single Ended
	CF	Centronic Female (Snap Bail Lock)
	CM	Centronic Male (Snap Bail Lock)
	MF	Micro Female
	MM	Micro Male
	C	Squeeze Latch
	S	Snap Bail Lock
	T	Thumbscrew
	R	Ribbon
Maximum Length	SCSI SE	6 Meters
	SCSI SE - Fast	3 Meters
	SCSI DIFF	25 Meters



Note

For half inch media, markup Figure 4-1. For mixed media capacity, also markup Figure 4-2 on page 4-10 to represent the DLT capacity of the Control or Expansion Module.

Figure 4-1 Cable Interconnection Sketch For C10/E10

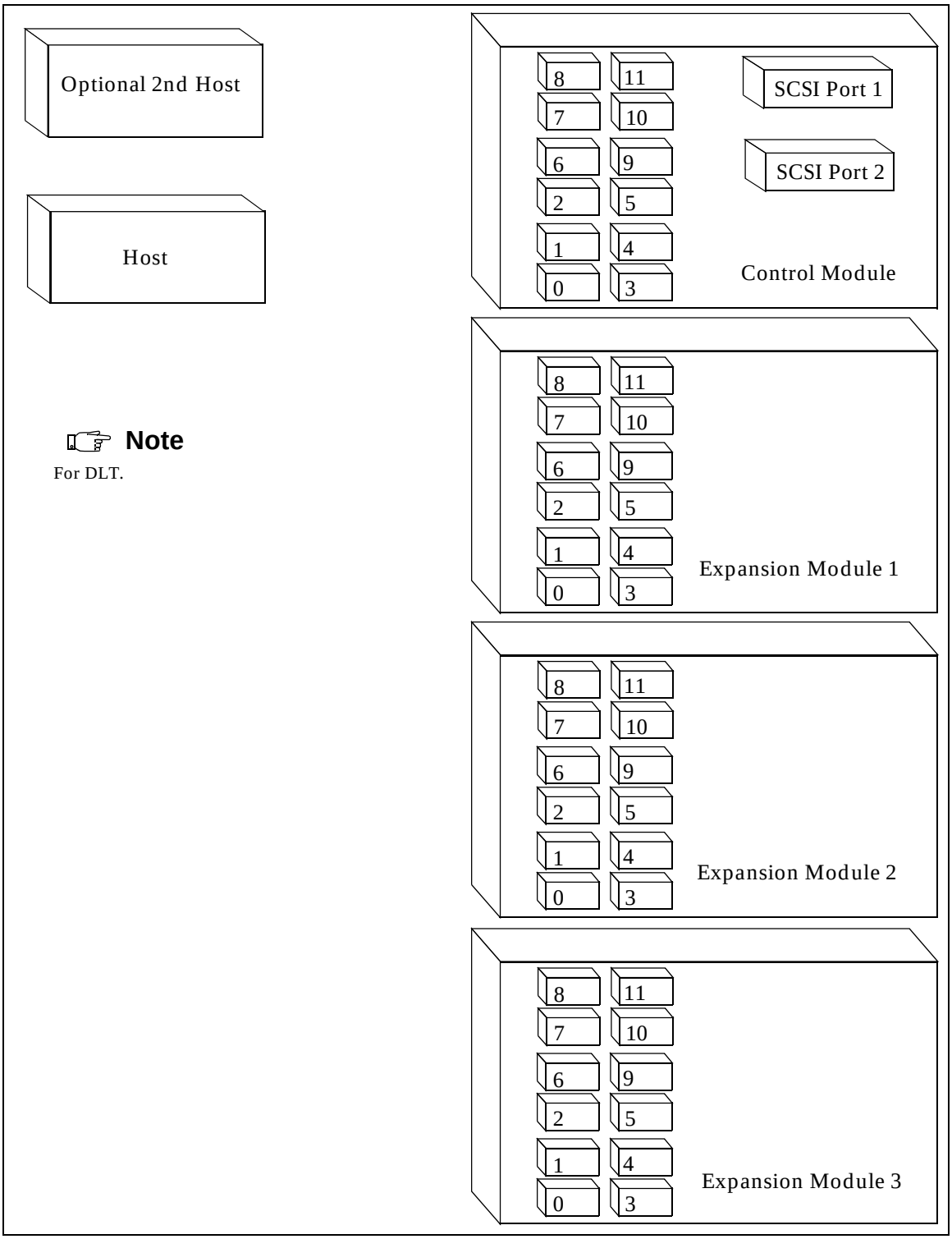


Figure 4-2 Cable Interconnection Sketch For C20/E20

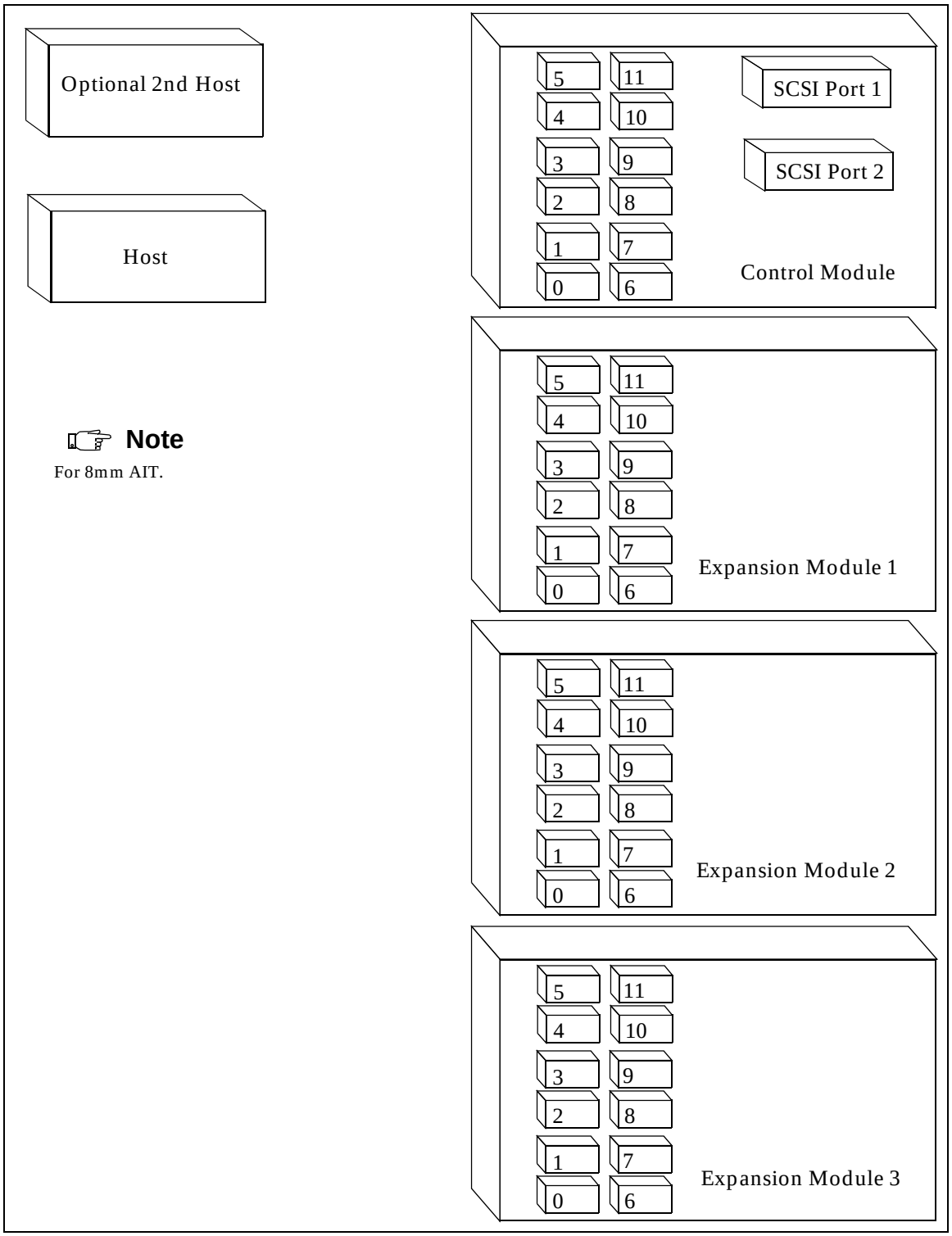


Figure 4-3 Cable Interconnection Sketch For C30/E30

Code Updates and Error Reporting

Check (✔) the desired method for code update deliveries.

_____ FTP / Modem

_____ Internet

_____ 3.5 inch Floppy (via overnight mail)

Code Installation

Check (✔) the method used for code installation.

_____ PC with Windows 95, RS232 port/cable adapter, 3.5 inch floppy

_____ SCSI Host (requires support for Write Buffer command)

Error Reporting

Check (✔) the method used to collect Error Logs and Trace information.

_____ PC with Windows 95, RS232 port/cable adapter, 3.5 inch floppy

_____ SCSI Host (requires support for Read Buffer command)

Documentation

Check (✔) the desired delivery method for Scalar 1000 system documentation.

_____ binder, paper 8.5 x 11

North American System Layout

Sketch the customer's system layout or copy the examples in Figure 4-6 on page 4-14. Figure 4-5 on page 4-14 represents a configuration example.

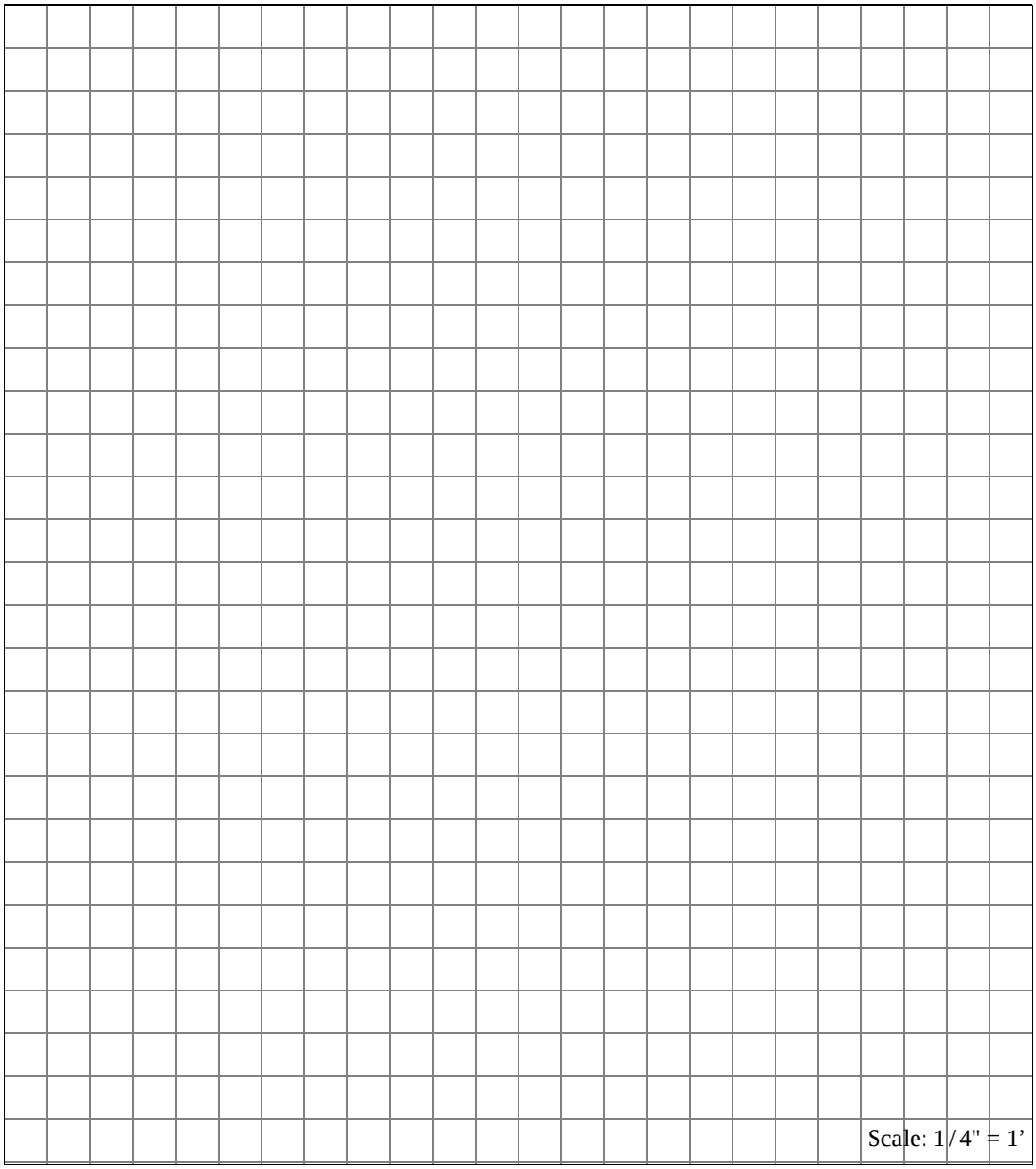


Figure 4-4 North American Scalar 1000 Configuration Layout

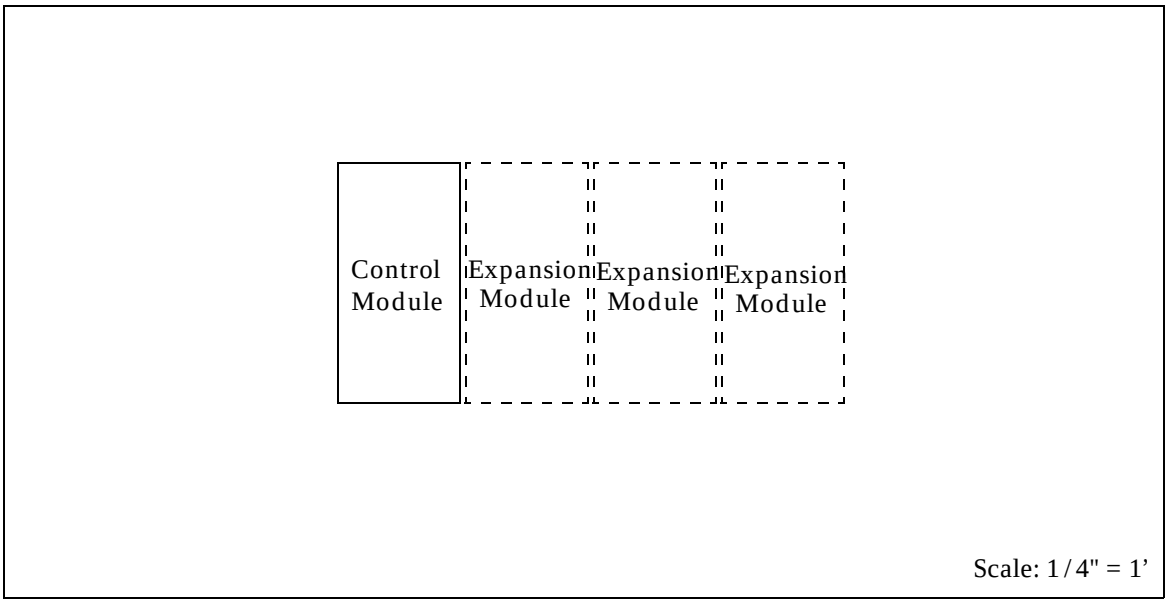


Figure 4-5 North American C10/E10 Configuration Example

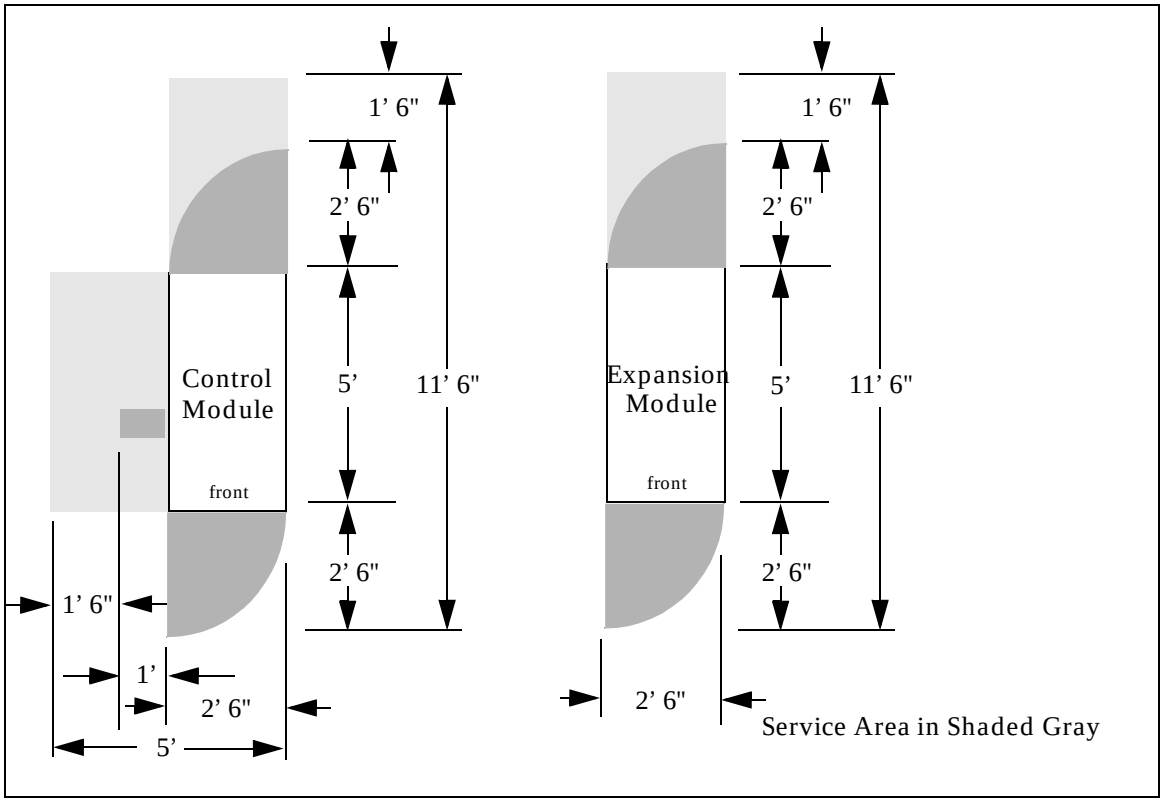


Figure 4-6 North American C10/E10 Dimensions

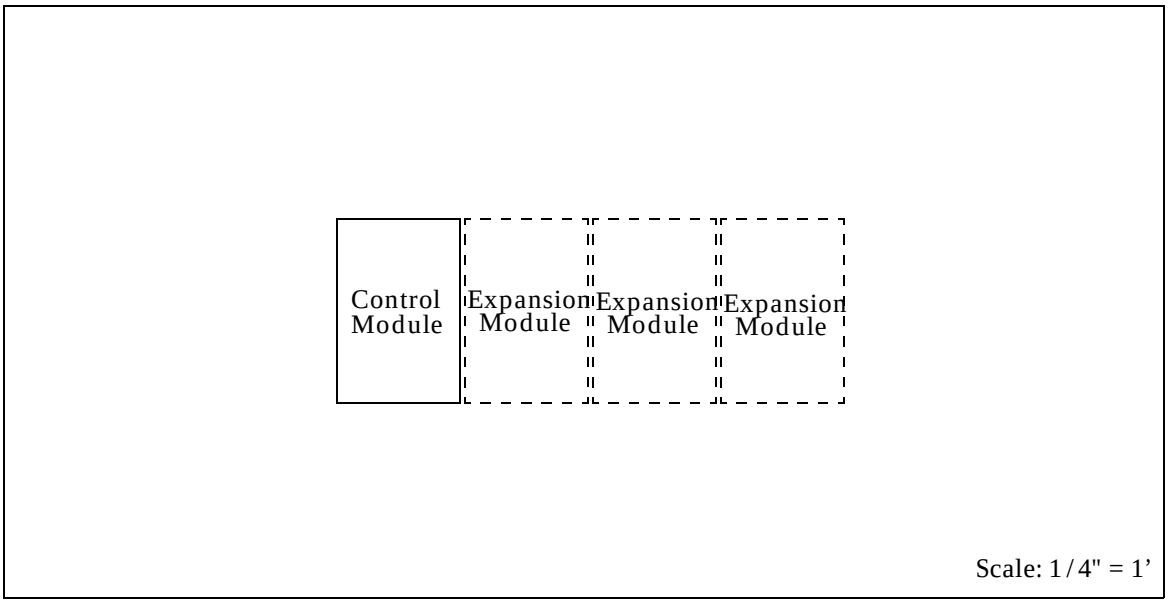


Figure 4-7 North American C20/E20/C30/E30 Configuration Example

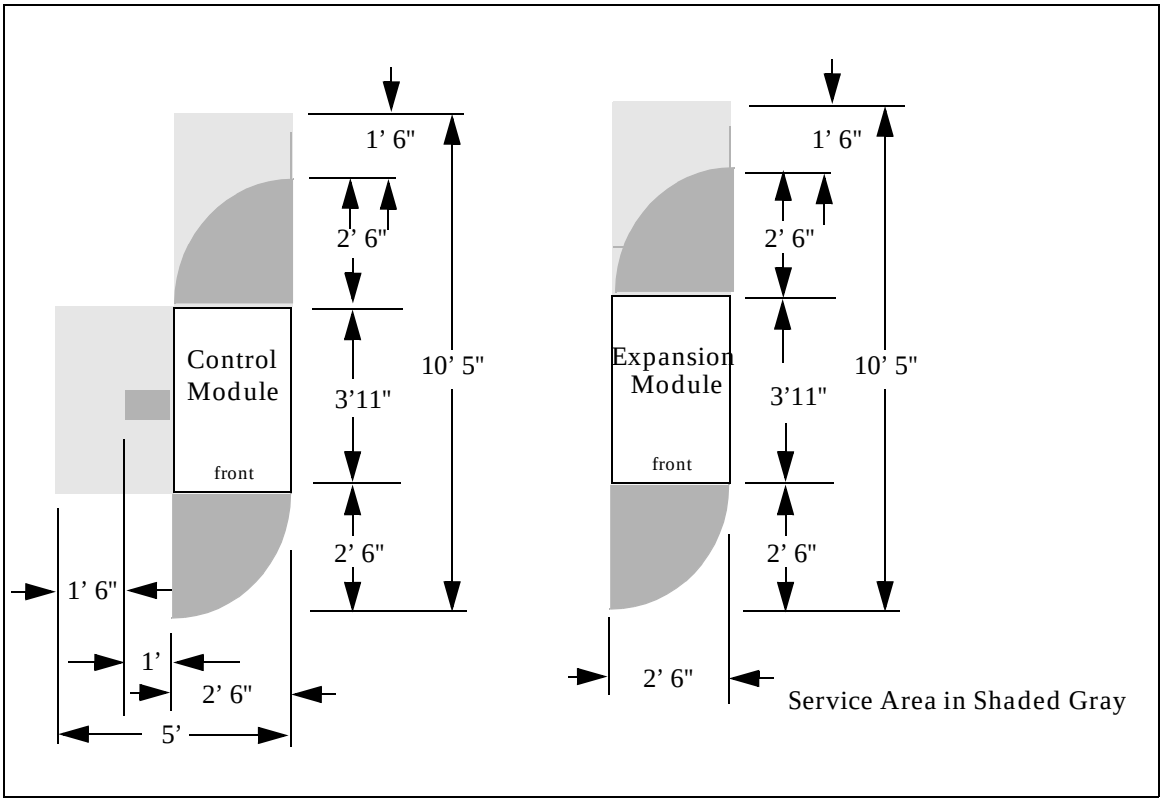


Figure 4-8 North American C20/E20/C30/E30 Dimensions

Metric System Layout

Sketch the customer's system layout or copy the examples in Figure 4-11 on page 4-17. Figure 4-10 on page 4-17 represents a configuration example.

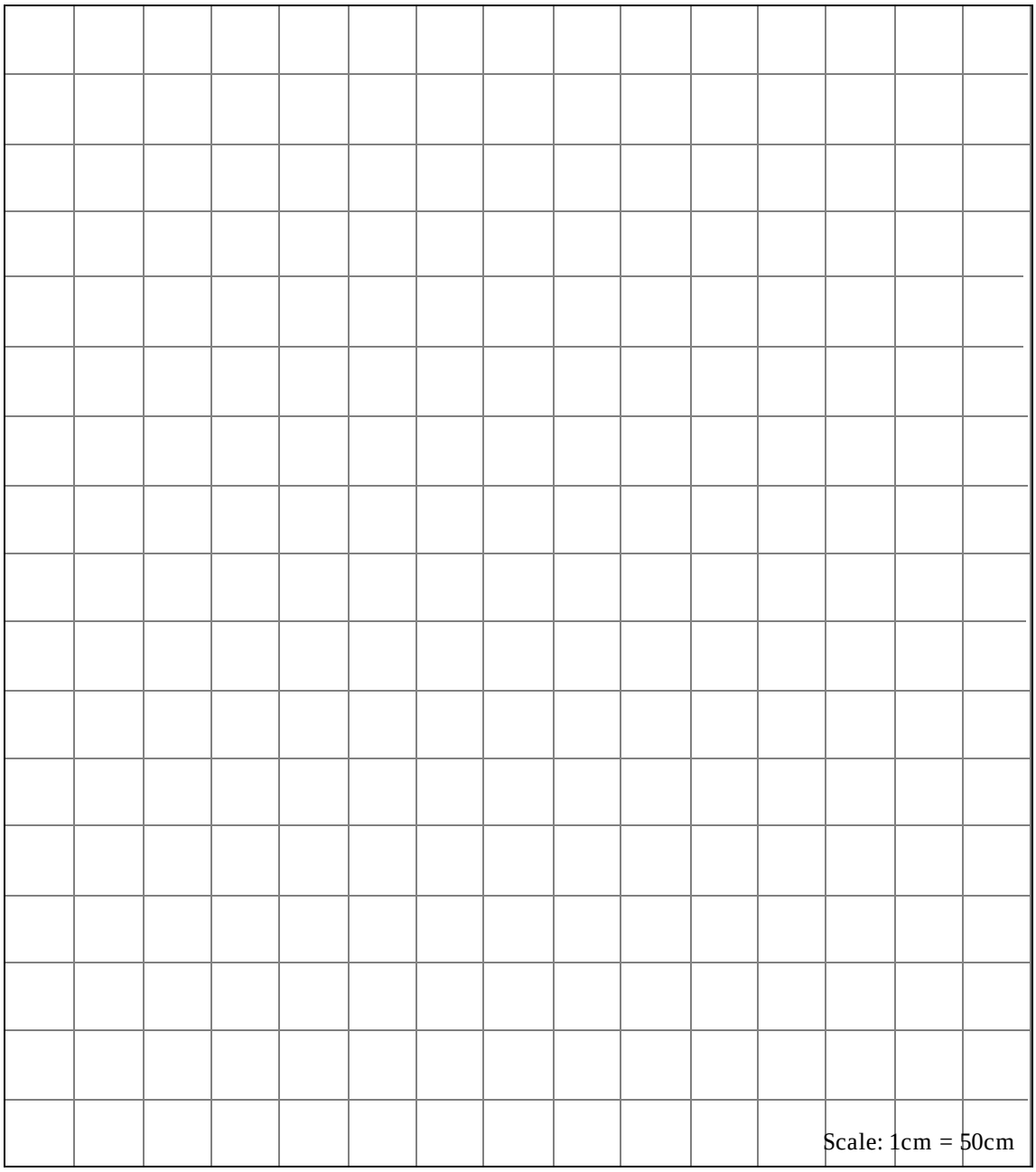


Figure 4-9 Metric Scalar 1000 Configuration Layout

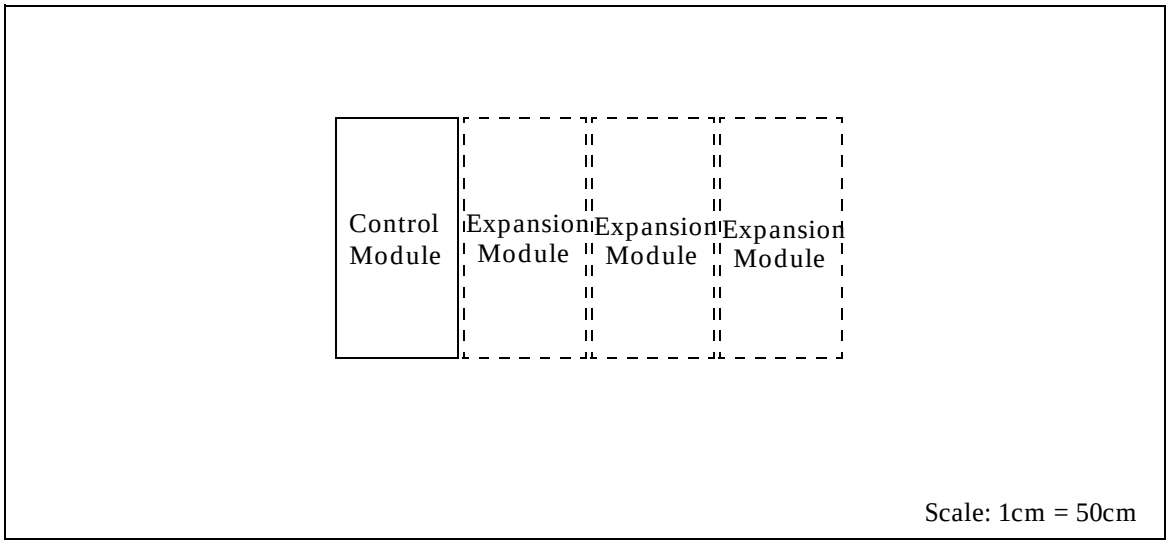


Figure 4-10 Metric C10/E10 Configuration Example

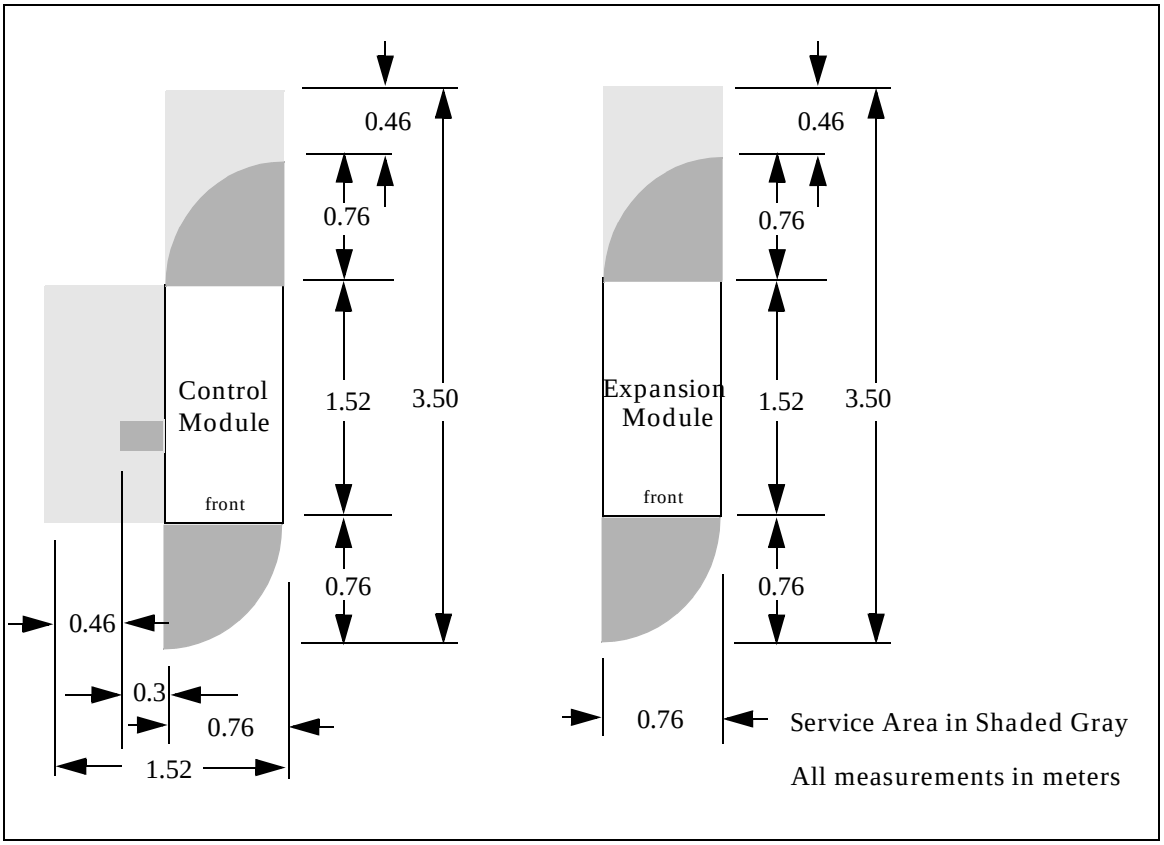


Figure 4-11 Metric C10/E10 Dimensions

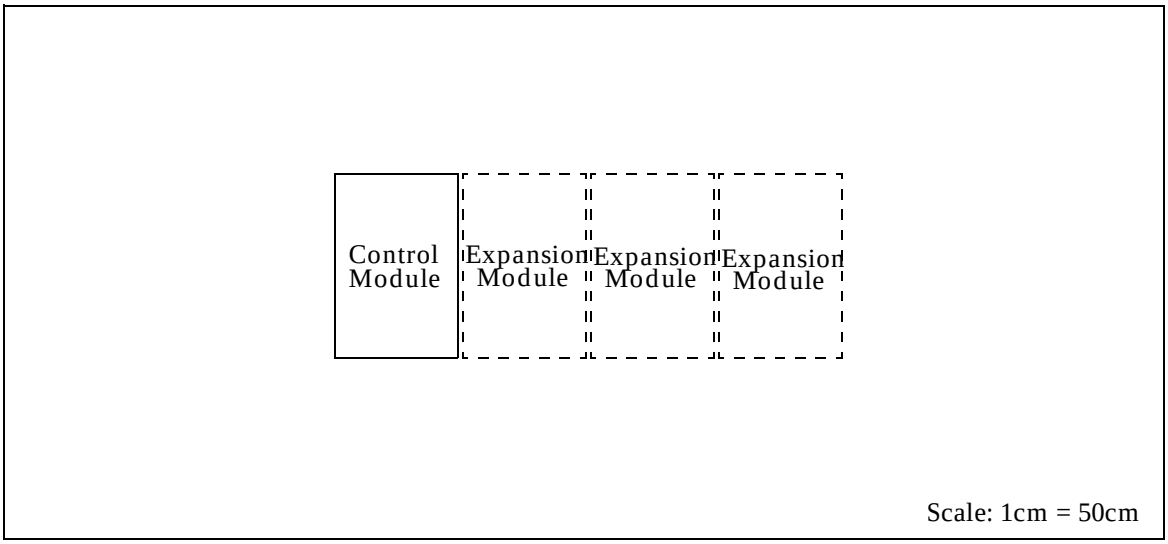


Figure 4-12 Metric C20 / E20 / C30 / E30 Configuration Example

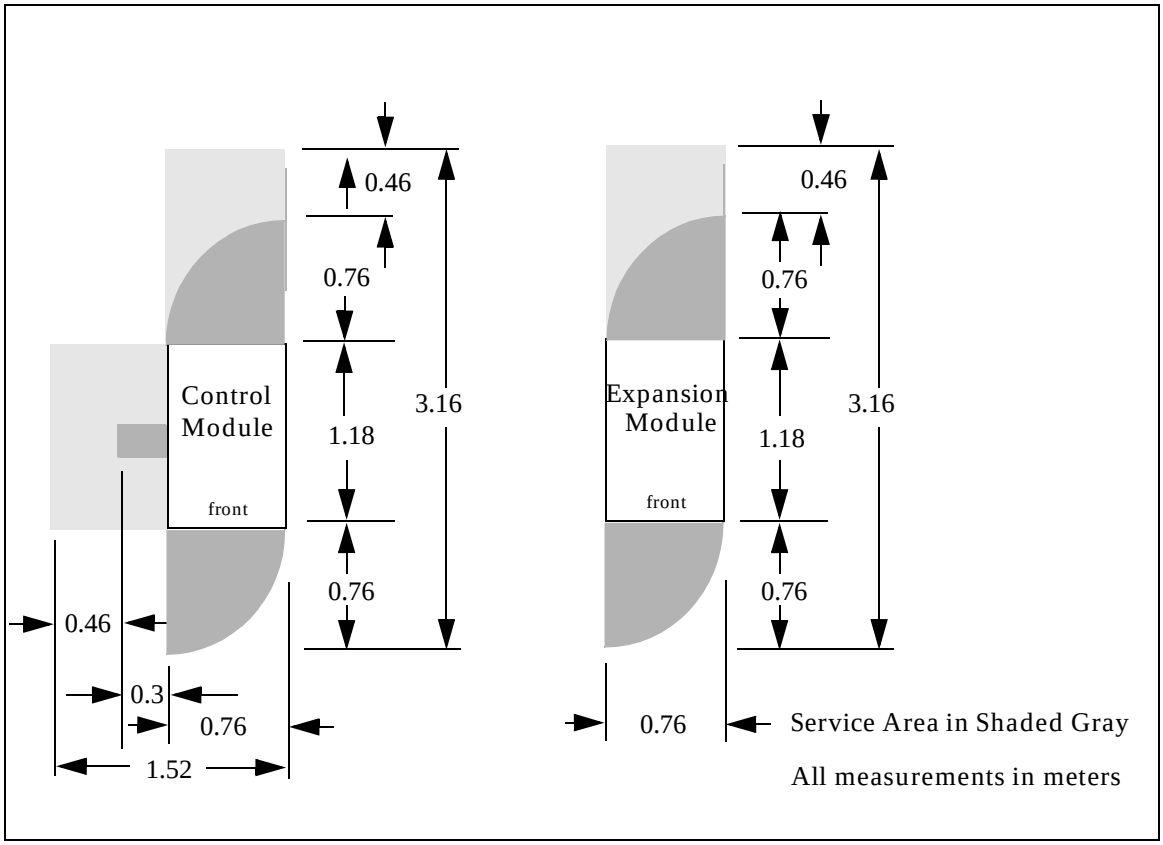


Figure 4-13 Metric C20 / E20 / C30 / E30 Dimensions

5

Survey Data

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  - Metric Building Layout 5-10
  - Access Conditions 5-11
- Additional Comments 5-14

Overview

This section solicits pertinent information about the delivery site. Record all requested general information.

General Information

Place any additional information in *Additional Comments* on page 5-14.

Customer Name: _____

_____

Mailing Address: _____

_____

_____

_____

_____

Shipping Address: _____

_____

_____

Sales Contact: _____

Telephone: _____

ADIC Sales Rep: _____

ADIC Account Mgr: _____

Installation Contact: _____

_____

Telephone: _____

Target Installation Date: _____

Target Operational Date: _____

Physical Environment

Place any additional information in *Additional Comments* on page 5-14.

Room Dimension: _____

_____

_____

Ceiling Projection _____

_____

_____

Floor Type _____

_____

_____

Floor Load Capacity _____

_____

_____

Fire Protection

North American Room Layout

Sketch the approximate measurements of the Scalar 1000 library room and any obstructions. Use Figure 5-1.

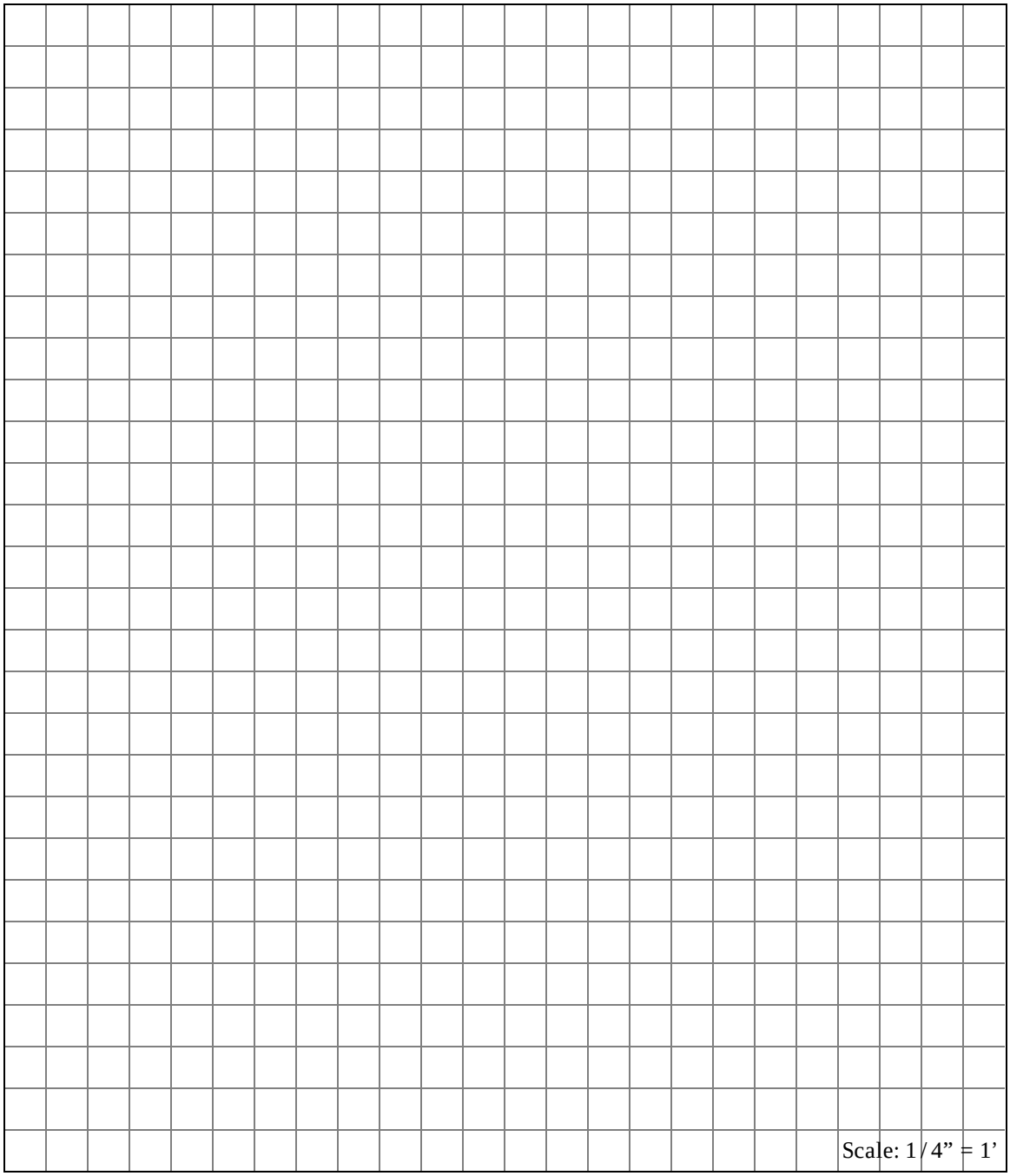

Figure 5-1 North American Room Layout

Metric Room Layout

Sketch the approximate measurements of the Scalar 1000 library room and any obstructions. Use Figure 5-2.

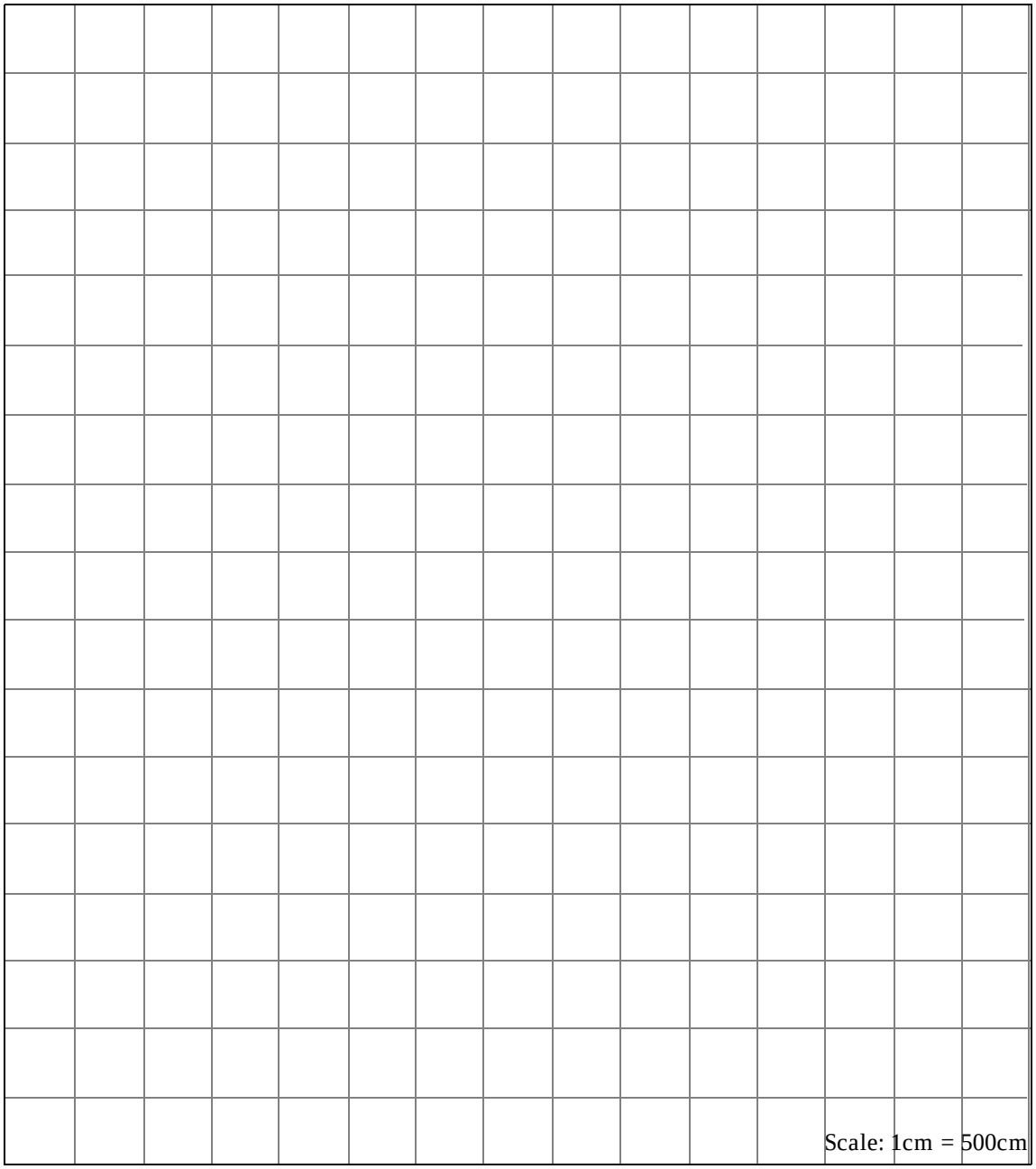

Figure 5-2 Metric Room Layout

Site Preparation

The following customer supplied circuits are necessary for the proper installation and operation of the Scalar 1000 library.

Power Circuits

Refer to *Electrical Specifications* on page 3-5

Note
This information must be conveyed to the customer to enable site preparation before installation.

_____ 120 VAC circuit terminated in a L5-20 receptacle (North America).

_____ 230 VAC circuit terminated in a host country receptacle (Europe, Africa, United Kingdom, others)

North American Building Layout

Sketch the building layout that indicates the route from the loading dock to equipment final destination. Indicate obstructions. Use Figure 5-3.

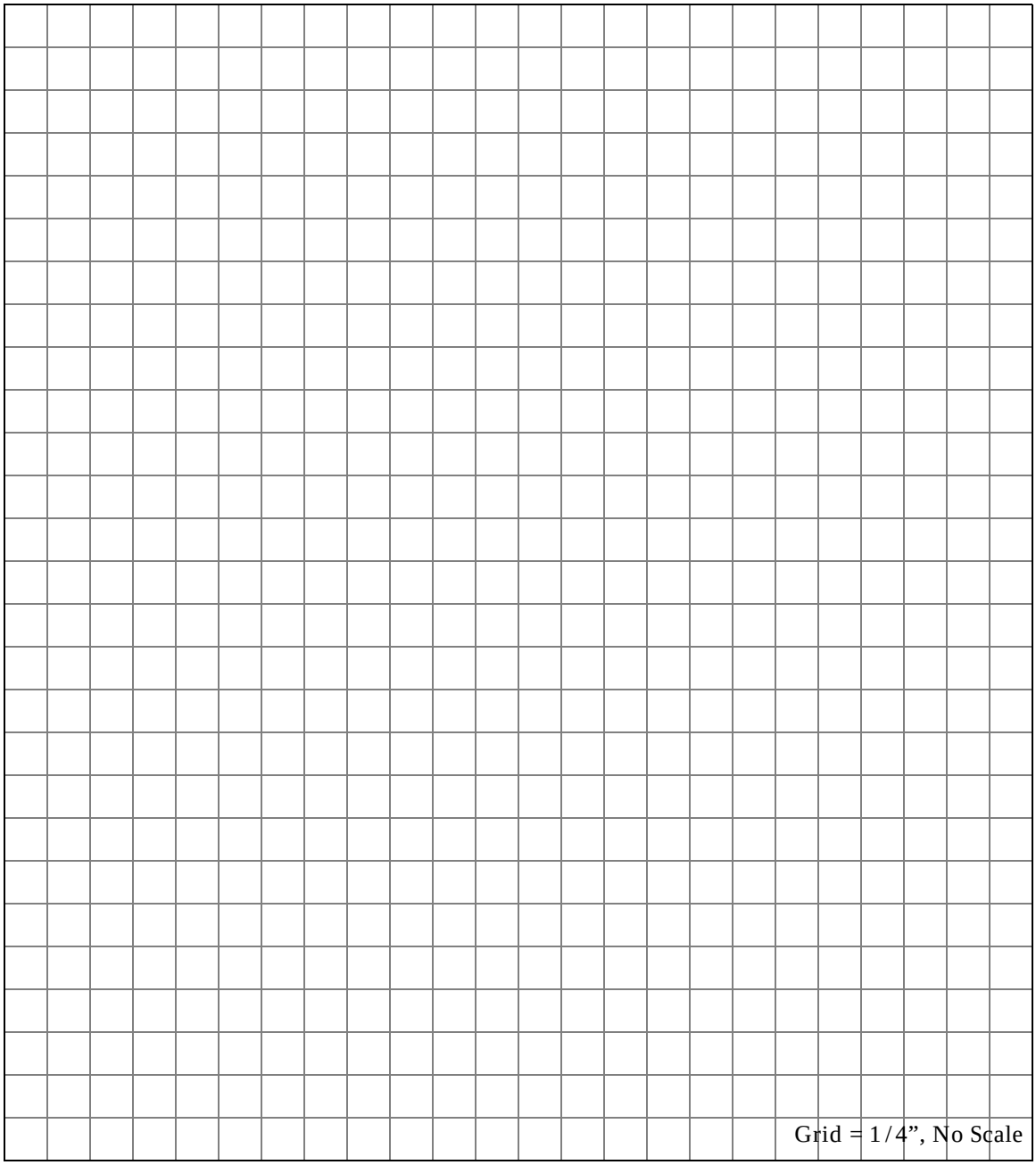

Figure 5-3 North American Building Layout

Metric Building Layout

Sketch the building layout that indicates the route from the loading dock to equipment final destination. Indicate obstructions. Use Figure 5-4.

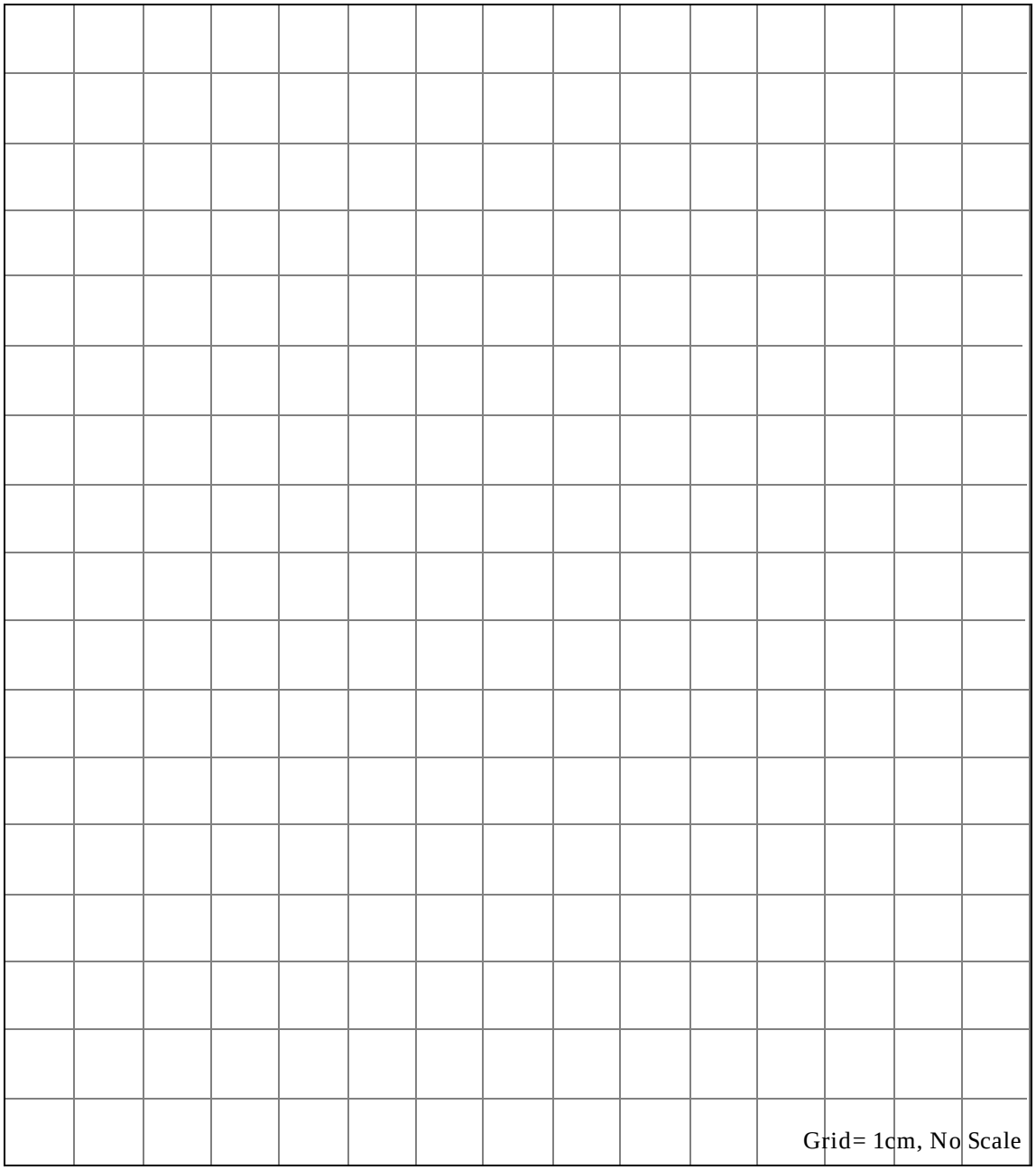

Figure 5-4 Metric Building Layout

Access Conditions

Access to Scalar 1000 library room (elevator, stairs, door widths, etc.):

_____

_____

_____

_____

_____

Dimensions and Location of Smallest Door or Opening:

_____

_____

_____

_____

_____

Loading Dock Specifications (dock height, type of ramps, weather protection, etc.):

_____

_____

_____

_____

_____

Semitrailer Accessibility (Y or N): _____

Preferred / Required Local Carrier Company:

_____

_____

_____

_____

_____

Where Can Trailer Be Left for Staging?

Availability of Material Handling Equipment:

Location for Uncrating:

Preferred Time of Day for Unloading and Moving Materials:

Off Hours / Weekends Accessibility for Installation Team:

Procedure for Obtaining Building Passes:

Procedure for Scheduling the Elevator, Loading Dock, etc.:

Waste Disposal Considerations:

Bargaining Unit Considerations:

Other Considerations:

Additional Comments

Record any additional information from other pages. For reference purposes, note the page number with the information. Add and number additional sheets as necessary.

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