



CONTROL DATA  
CORPORATION

---

**CDC<sup>®</sup> HOST COMMUNICATIONS  
PROCESSOR**

**2550-2**

**NETWORK PROCESSOR UNIT**

**2551-1**

**2551-2**

**2552-2**

---

**SECTION 2-SYSTEM AND PERIPHERAL  
EQUIPMENT DATA  
SITE PREPARATION MANUAL**



# LIST OF EFFECTIVE PAGES

New features, as well as changes, deletions, and additions to information in this manual, are indicated by bars in the margins or by a dot near the page number if the entire page is affected. A bar by the page number indicates pagination rather than content has changed.

PAGE	REV	PAGE	REV	PAGE	REV	PAGE	REV
Cover	-						
Title Page	-						
ii thru iv	D						
v/vi	B						
vii	D						
viii	B						
1-1 thru							
1-5	D						
1-6	B						
1-7 thru							
1-10	D						
1-11 thru							
1-19	B						
1-20	D						
1-21 thru							
1-24	C						
1-25, 1-26	B						
2-1, 2-2	D						
2-3, 2-4	B						
2-5	D						
2-6 thru							
2-28	B						
3-1	D						
3-2	B						
3-3 thru							
3-5	D						
3-6	B						
3-7	D						
A-1	B						
Comment							
Sheet	-						
Mailer	-						
Back Cover	-						



## PREFACE

---

This manual provides site engineering design data for installation of the CONTROL DATA® 2550-2 Host Communications Processor (HCP), and 2551-1, 2551-2, and 2552-2 Network Processor Units (NPU). The data is provided by Control Data's Computer Facility Planning and Construction Division to assist in preparing a site for installation of a communications system.

The required documents for the 2550X system site preparation consists of two manuals published by Control Data Corporation. These are site preparation manuals, section 1 and section 2, as follows:

Section 1 - General Information,  
Large- and Medium-Scale Computer  
Systems, Publication No. 60275100

Section 2 - Host Communications  
Processor 2550-2, Network Processor  
Units 2551-1, 2551-2, and 2552-2,  
System and Peripheral Equipment  
Data; Publication No. 74641200  
(this manual).

The section 1 manual details those aspects of site preparation that are common to medium- and large-scale computer systems.

This manual includes site selection, site engineering procedures, equipment layout, signal cabling layout and location requirements, and building and environmental requirements.

The section 2 manual contains specifications, equipment data sheets, and electrical diagrams for the 255X HCP and NPU. The physical configurations include potential expansion and upgrading so that equipment repositioning after system installation should be minimal. This manual also contains data sheets applicable to peripheral equipment used with the HCP and NPU.

The user is urged to consult local authorities to determine whether the requirements specified in this manual conflict with local building codes, fire ordinances, or other local regulations. Any deviations from the procedures or requirements must be approved by the CDC Computer Facility Planning and Construction Division. Therefore, contemplated changes to the procedures should be brought to their attention.

The site preparation manuals are obtainable from the CDC Literature and Distribution Services, Minneapolis, Minnesota.



# CONTENTS

<p><b>1. SYSTEM DESCRIPTION</b> 1-1</p> <p>System Description 1-1</p> <p>System Configuration 1-1</p> <p style="padding-left: 20px;">HCP 1-1</p> <p style="padding-left: 20px;">NPU 1-1</p> <p style="padding-left: 20px;">Expansion 1-1</p> <p style="padding-left: 20px;">Terminal Support 1-9</p> <p>System Installation Requirements 1-9</p> <p style="padding-left: 20px;">Environment 1-9</p> <p style="padding-left: 20px;">Electromagnetic and Other Interferences 1-9</p> <p style="padding-left: 20px;">Physical Room Requirements 1-9</p> <p style="padding-left: 20px;">Provisions for Future Expansion 1-9</p> <p style="padding-left: 20px;">Signal and Power Cables 1-20</p> <p><b>2. EQUIPMENT AND DATA SHEETS</b> 2-1</p> <p>HCP and NPU Cabinets 2-1</p> <p>Peripheral Equipment 2-1</p> <p style="padding-left: 20px;">Communications Consoles 2-1</p> <p style="padding-left: 20px;">Line Printers (HCP Only) 2-1</p> <p style="padding-left: 20px;">Card Readers - Desktop Modules (HCP Only) 2-1</p> <p>2556-10 Loop Multiplexer Expansion Cabinet Equipment Characteristics 2-3</p> <p>2550-2 HCP Equipment Characteristics 2-3</p> <p>2551-X NPU Equipment Characteristics 2-5</p> <p>2552-2 NPU Equipment Characteristics 2-7</p> <p>713-10 Conversational Display Terminal 2-9</p>	<p>752-10 Conversational Display Terminal 2-11</p> <p>1711-4 KSR Teletypewriter 2-13</p> <p>1711-5 KSR Teletypewriter 2-15</p> <p>1713-4 33 ASR Teletypewriter 2-17</p> <p>1713-5 35 ASR Teletypewriter 2-19</p> <p>2570-1 Line Printer (Used With 2550-2 Only) 2-21</p> <p>2570-2 Line Printer (Used With 2550-2 Only) 2-24</p> <p>2572-1 and 2572-2 Card Readers (Used With 2550-2 Only) 2-25</p> <p>2580-1 Upgrade Kit Equipment Characteristics 2-27</p> <p><b>3. POWER REQUIREMENTS, DATA SHEETS AND DISTRIBUTION PROGRAMS</b> 3-1</p> <p>Electrical Power 3-1</p> <p style="padding-left: 20px;">HCP 3-1</p> <p style="padding-left: 20px;">NPU 3-1</p> <p>Power Distribution 3-1</p> <p style="padding-left: 20px;">HCP 3-1</p> <p style="padding-left: 20px;">NPU 3-1</p> <p>Main Power Requirements 3-6</p> <p style="padding-left: 20px;">HCP 3-6</p> <p style="padding-left: 20px;">NPU 3-6</p> <p style="padding-left: 20px;">Uninterrupted Power Supply 3-6</p> <p>Power Responsibility 3-6</p> <p>Grounding Requirements and Responsibility 3-6</p>
---	--

**Glossary**

## APPENDIX

A-1

## FIGURES

<p>1-1 2550-2 Host Communications Processor Cabinet 1-2</p> <p>1-2 2551-1 Network Processor Unit Cabinet 1-3</p> <p>1-3 2551-2 Network Processor Unit Cabinet 1-4</p> <p>1-4 2552-2 Network Processor Unit Cabinet 1-5</p> <p>1-5 Configuration Expansion for 255X NPU Systems 1-6</p> <p>1-6 2580-1 Add-On Cabinet 1-7</p> <p>1-7 2556-10 Stand-Alone Cabinet 1-8</p> <p>1-8 Typical Host Computer and 255X Communications Processor Configuration 1-21</p> <p>1-9 Typical Host Computer and Dual 255X Communications Processor Configuration 1-22</p> <p>1-10 Typical Dual Host Computer and Dual 255X Communications Processor Configuration 1-23</p> <p>1-11 Communications or CYBER Coupler Cables for CYBER 70/170 and CDC 6000 1-24</p> <p>1-12 3000L Computer and 2550-2 Host Communications Processor Configuration 1-26</p> <p>2-1 2556-10 Loop Multiplexer Expansion Cabinet 2-2</p>	<p>2-2 2550-2 Host Communications Processor Cabinet 2-4</p> <p>2-3 2551-1 and 2551-2 Network Processor Unit Cabinet 2-6</p> <p>2-4 2552-2 Network Processor Unit Cabinet 2-8</p> <p>2-5 713-10 Conversational Display Terminal 2-10</p> <p>2-6 752-10 Conversational Display Terminal 2-12</p> <p>2-7 1711-4 KSR Teletypewriter 2-14</p> <p>2-8 1711-5 KSR Teletypewriter 2-16</p> <p>2-9 1713-4 33 ASR Teletypewriter 2-17</p> <p>2-10 1713-5 35 ASR Teletypewriter 2-20</p> <p>2-11 2570-1 Line Printer (Used With 2550-2 Only) 2-22</p> <p>2-12 2570-2 Line Printer (Used With 2550-2 Only) 2-24</p> <p>2-13 2572-1 and 2572-2 Card Readers (Used With 2550-2 Only) 2-26</p> <p>2-14 2580-1 Upgrade Kit (2551-1 to 2551-2) 2-28</p> <p>3-1 2550-2 (Double Bay) Typical Electrical Power Input Configuration Standard and Options 3-2</p> <p>3-2 Standard CDC Power Transformer for HCP Systems 3-3</p> <p>3-3 NPU Power Distribution Box Power Input Facilities 3-3</p> <p>3-4 Typical Grounding Arrangement (A Version) 3-4</p> <p>3-5 Typical Grounding Arrangement (B Version) 3-5</p>
---	--

## **TABLES**

1-1	Standard Product/Model System Configuration	1-10	1-4	Environmental Summary	1-25
1-2	Optional Product/Model System Configuration	1-12	3-1	Standard Wiring Conventions for Power Transformer and Power Connections	3-6
1-3	CLA/Modem Interconnect Cable Summary	1-20			



The CONTROL DATA® 2550-2 Host Communications Processor (HCP) and 2551-1, 2551-2, and 2552-2 Network Processor Units (NPU) provide a product line of communications equipment. The HCP provides data communications handling functions for CONTROL DATA® 6000, 3000L, CYBER 70, and CYBER 170 series computer systems. The NPU provides data communications handling functions for CONTROL DATA CYBER 170 series computer systems. The NPU may be modified, with the appropriate optional coupler, to provide communications handling functions for a 6000, 3000L or CYBER 70 series computer system. These 255X processors consist of modular hardware and software components and optional products, that can be specifically configured to meet customer requirements and specifications.

## SYSTEM DESCRIPTION

The HCP and NPU are composed of basic and expansion hardware elements. The basic elements are the communications or CYBER coupler, communications processor, multiplex loop interface adapter (MLIA), and loop multiplexer (LM). The expansion elements are the communications line adapters (16 per communications line expansion - CLE). These elements function as follows:

1. Communications coupler or CYBER coupler provides the input/output interface between the HCP or NPU and the host computer.
2. Communications processor provides the buffer storage for input and output data, also the storage and execution of various firmware and software programs. It includes the hardware interface to both the host computer and the communications multiplexing subsystem.
3. Multiplex loop interface adapter (MLIA) provides the hardware interface between the loop multiplexer input/output data loops and the communications processor micro-program.
4. Loop multiplexer (LM) provides the hardware interface between the communications line adapters and the demand-driven MLIA.

5. Communications line adapters (CLAs) provide the communication input/output interface between the loop multiplexer and communications lines that are connected to the customer supplied terminals and/or modems.

## SYSTEM CONFIGURATION

### HCP

The model 2550-2 is the basic configuration of the HCP. This model is supplied in a standard two-bay cabinet (figure 1-1) and includes one communications processor, loop multiplexer, and power supplies.

### NPU

The three models of the NPU are 2551-1, 2551-2, and 2552-2. Models 2551-1 and 2551-2 are both housed in a standard single-bay cabinet. The 2551-1 (figure 1-2) includes one communications processor, one loop multiplexer, and one power supply. The 2551-2 (figure 1-3) includes one communications processor, two loop multiplexers, and one power supply. The 2552-2 (figure 1-4) includes two communications processors (basic and multiplex), two loop multiplexers, and two power supplies that are housed in a basic cabinet and bolt-on cabinet that are bolted together (to facilitate cross-coupling of processor memories). The solid lines (in each figure) indicate the base system components and the dashed lines indicate the optional system expansion components. The B version cabinet contains a cable enclosure assembly and other cable grounding features.

### EXPANSION

The NPU systems can be expanded (figure 1-5) by adding standard modular components (cabinets, communications line expansion units, communications processors, and communications line adapters). The 2551-1 can be modified to a 2551-2 by the addition of loop multiplexer expansion product 2580-3. The 2551-2 can be modified to a 2552-2 system by application of bolt-on cabinet 2580-1

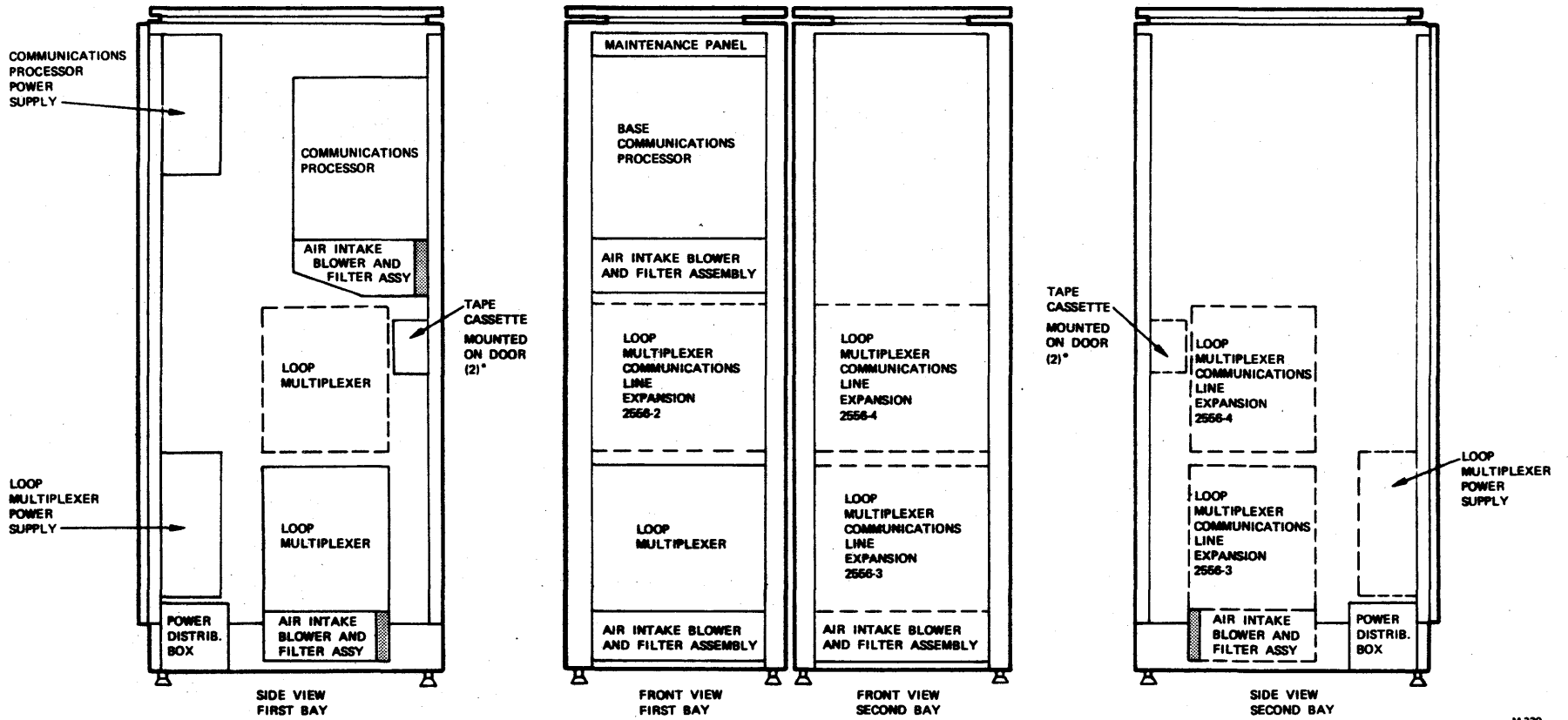


Figure 1-1. 2550-2 Host Communications Processor Cabinet

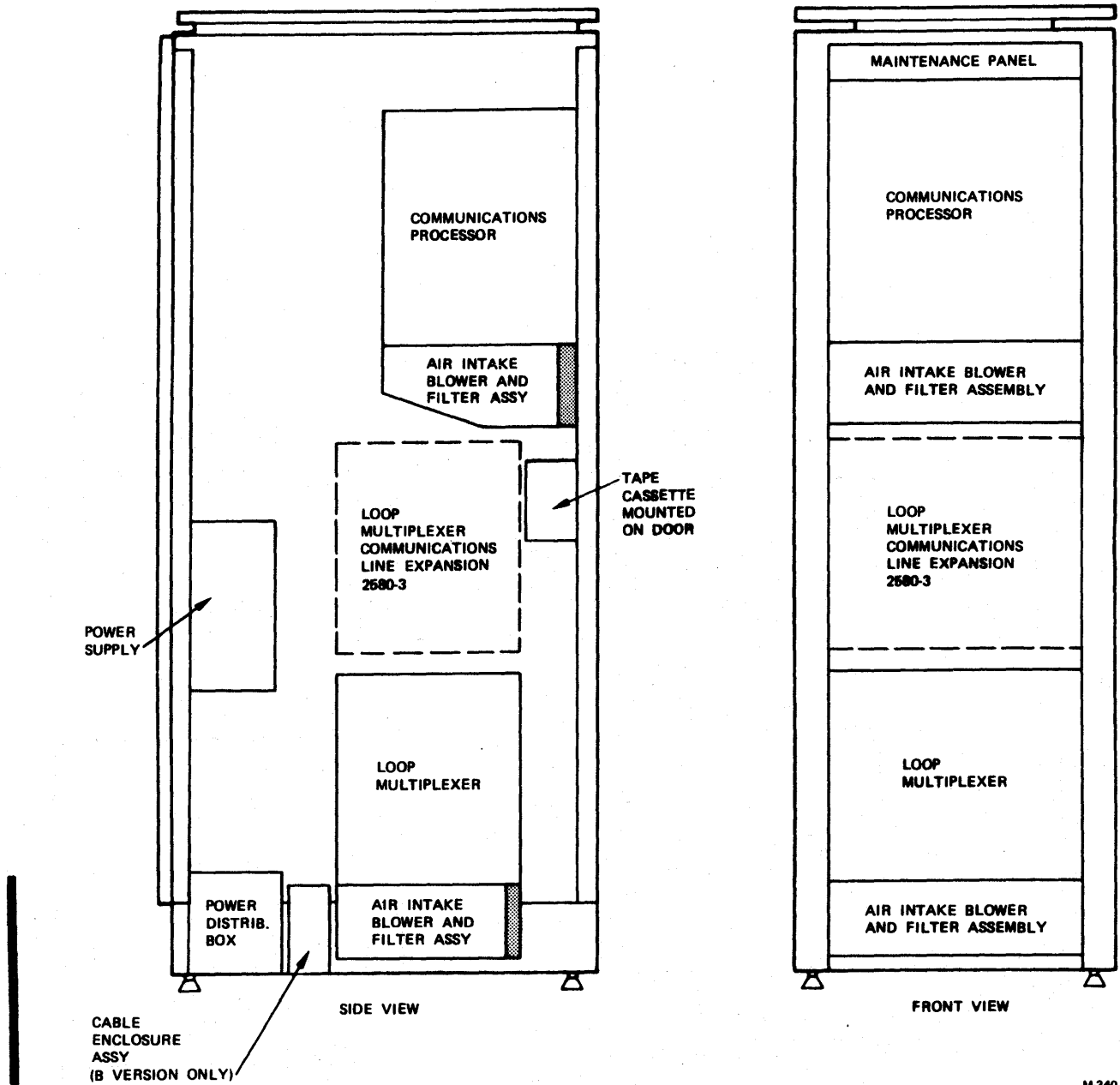


Figure 1-2. 2551-1 Network Processor Unit Cabinet

(figure 1-6). The 2580-1 includes the multiplex communications processor, power supply, and facilities for adding two communications line expansion (CLE) modules 2556-11, which provide facilities for an additional 32 CLAs. The peripheral communications capabilities of the 2551-2 and 2552-2 systems can be expanded further by the addition of loop multiplexer expansion, stand-alone cabinets 2556-10

(figure 1-7) and CLEs (2556-11). These additions provide either system a maximum capacity of 128 communications line adapters, thereby providing a system capability of up to 254 peripheral interfaces (terminal or modem) depending upon the CLAs selected (half-duplex or full-duplex).

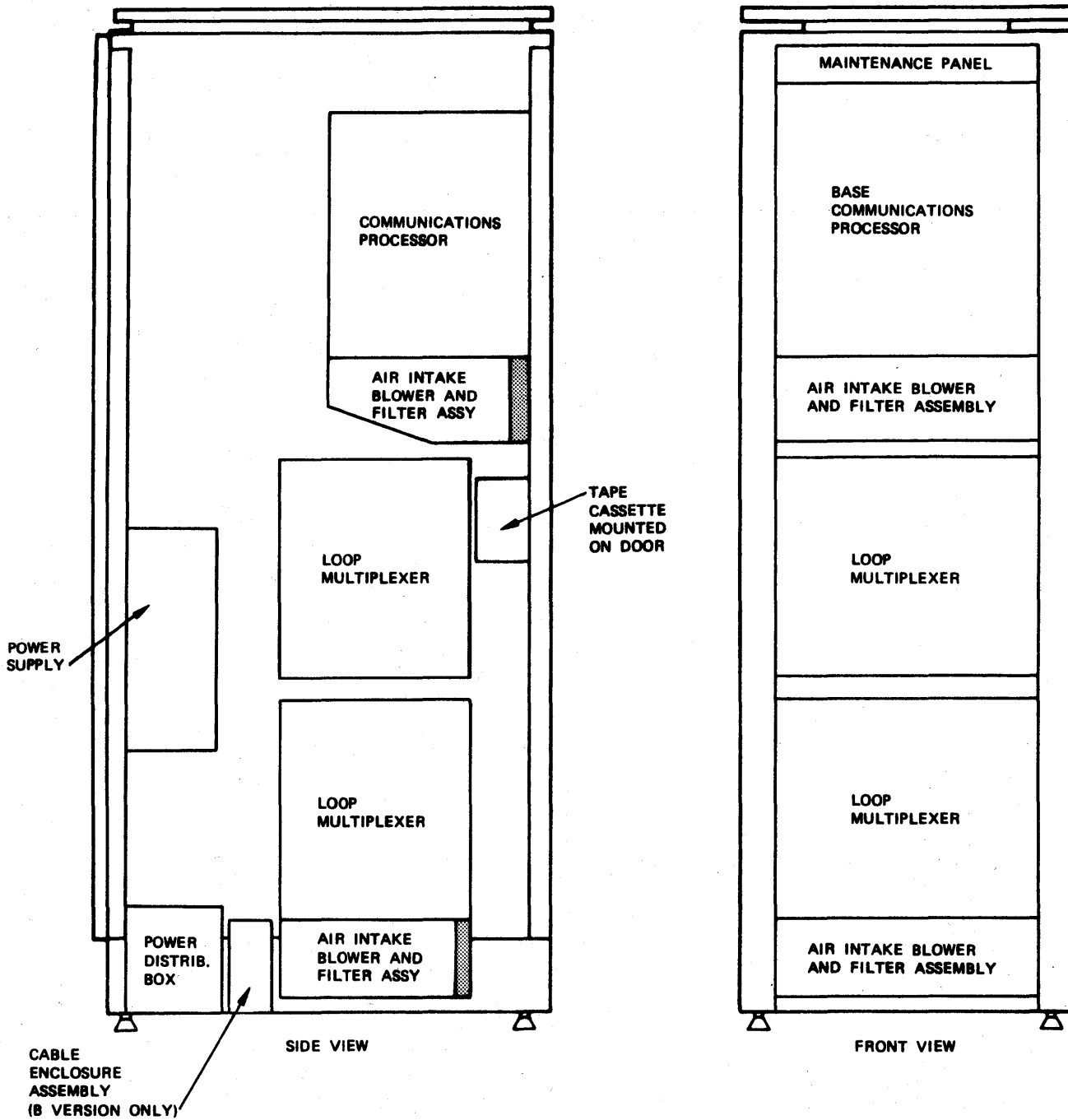


Figure 1-3. 2551-2 Network Processor Unit Cabinet

M-341

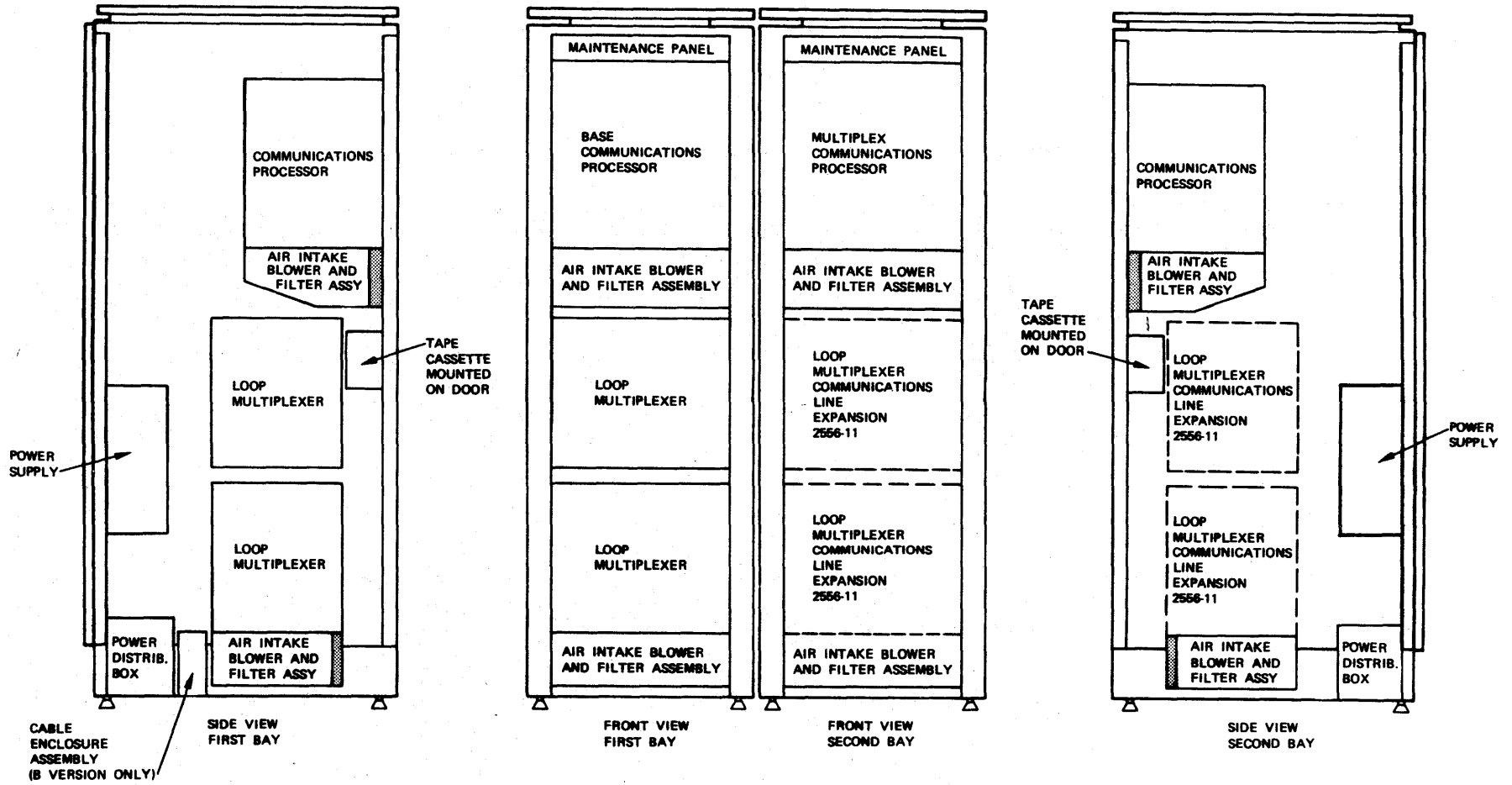
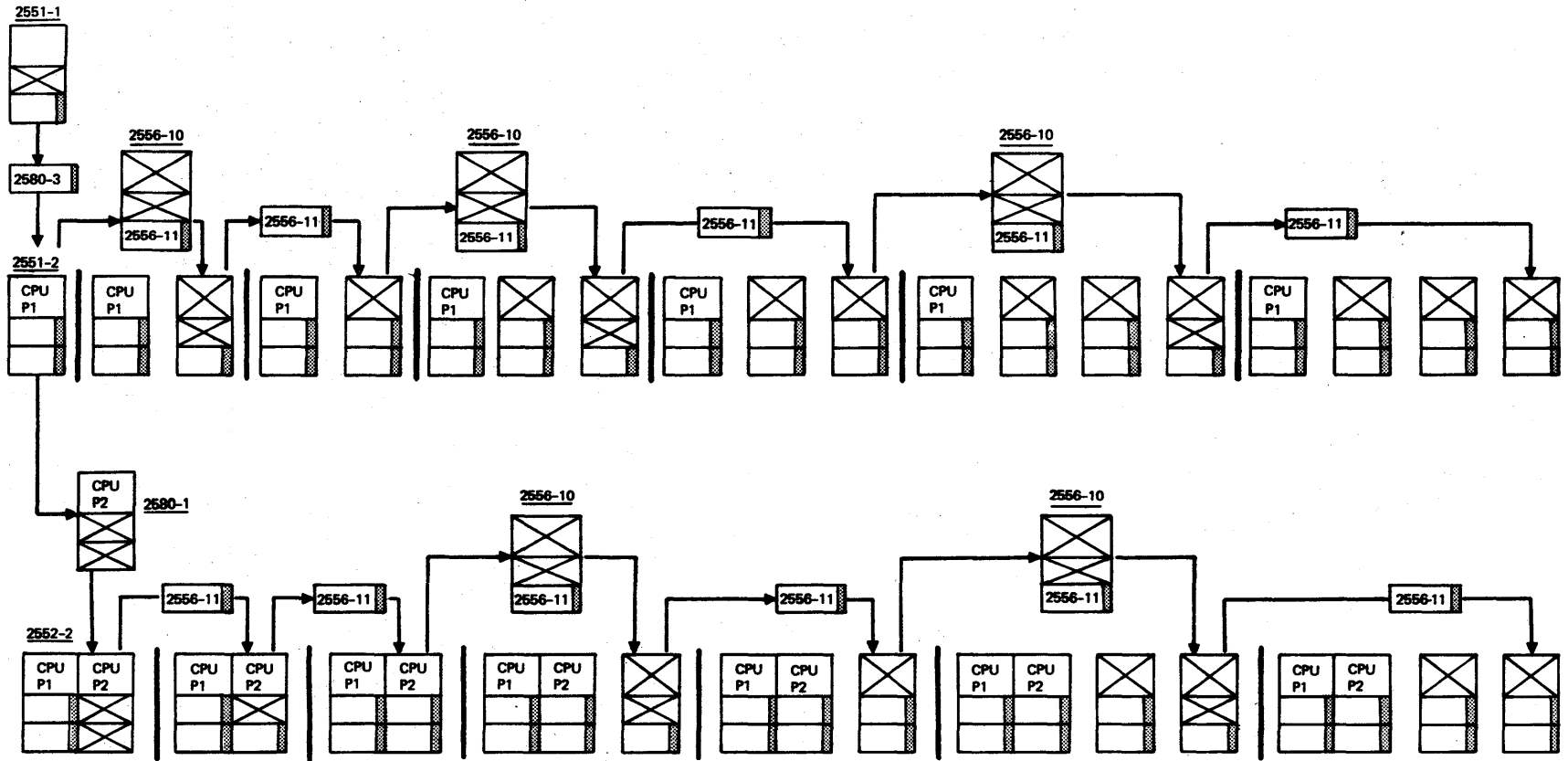


Figure 1-4. 2552-2 Network Processor Unit Cabinet



M-343

Figure 1-5. Configuration Expansion for 255X NPU Systems

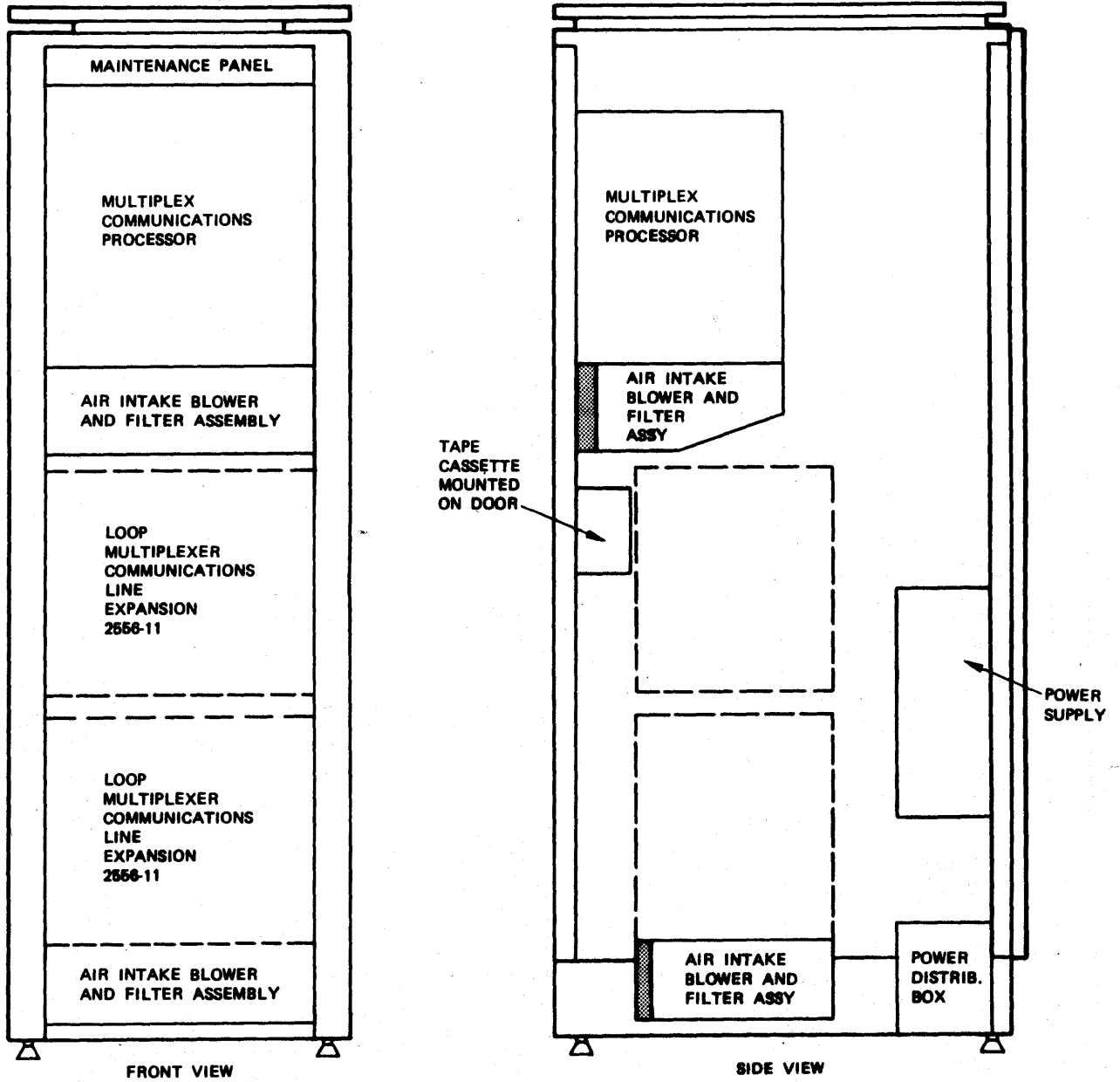


Figure 1-6. 2580-1 Bolt-On Cabinet

M-344

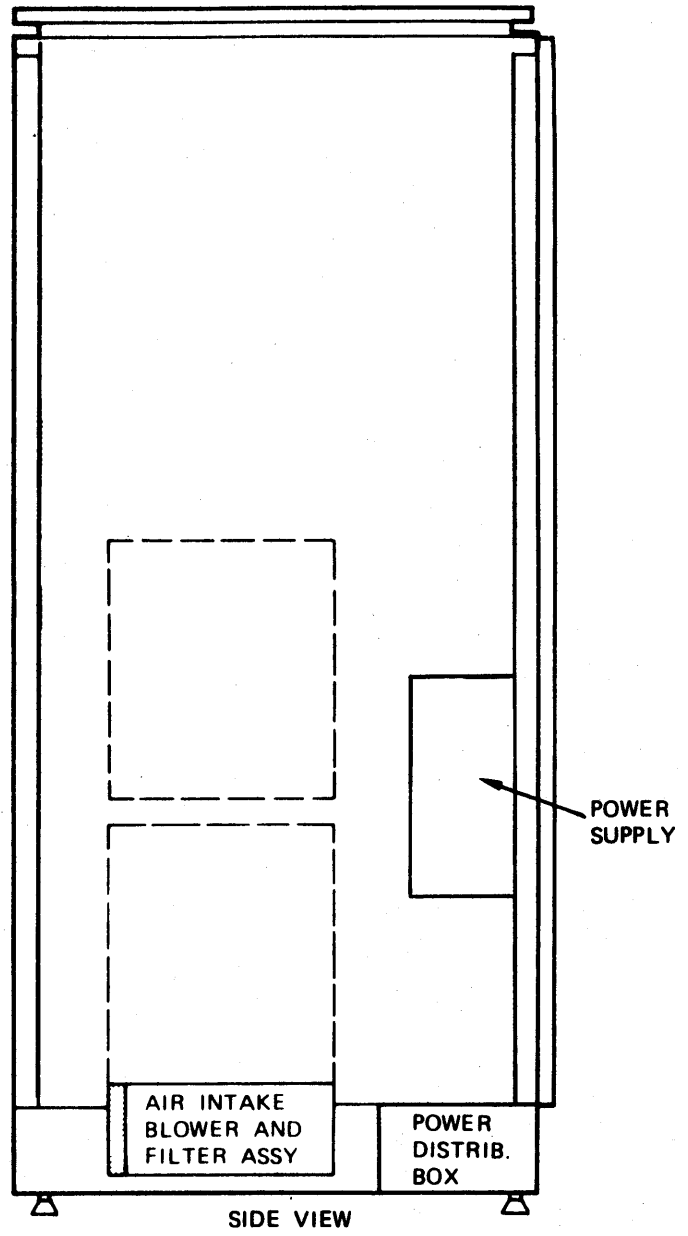
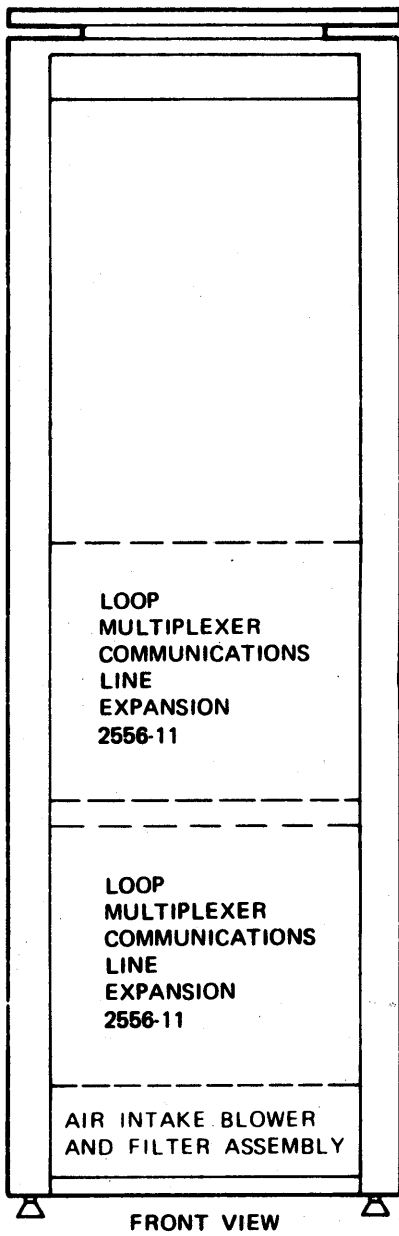


Figure 1-7. 2556-10 Loop Multiplexer Expansion Stand-Alone Cabinet



The HCP system (2550-2) can be upgraded to a 2552-2 system by the addition of Upgrade Kit 2580-2. The upgrade kit includes a multiplex communications processor with 16K words of MOS memory, tape cassette drive, and power supply. The HCP peripheral communications capability can be expanded to 64 CLAs by adding product 2556-3, loop multiplexer and power supply and product 2556-11.

Table 1-1 lists the standard product and cabinet configurations in which these products are housed. Table 1-2 lists the optional products applicable to the HCP and NPU systems. Table 1-3 lists the available communications line adapters (CLAs) and modem interface cables. System configuring and expansion is restricted by signal cable length. Specified maximum cable lengths are indicated in figures 1-8 through 1-11. The subsystems or components included in each system and the interrelationship of components within the system are also included.

#### **TERMINAL SUPPORT**

Site planning and system configuring should include a consideration of the specific configuration of communications lines, connecting modems and terminals to the HCP or NPU. Important parameters are the modem or terminal type such as number of lines, line speed, two- or four-wire lines, dedicated or switched.

### **SYSTEM INSTALLATION REQUIREMENTS**

HCP and NPU System installation requirements are minimal. The HCP and NPU equipment can be operated over a wide range of environmental conditions.

#### **ENVIRONMENT**

As with all electronic equipment, the HCP and NPU installation should be under the best environment available. In almost all cases this equipment is connected to a large CDC computer in a carefully controlled environment, and the HCP or NPU should be included in the same or similar environment. In those facilities not providing a controlled environment, the HCP or NPU does not need to be installed with an additional expense of air conditioning, raised floors, etc. In the absence of raised flooring, the routing and protection of cables could be a problem, as the HCP or NPU is designed for cable egress from the cabinet base only. Specific information on over- or under-the-floor power cabling is delineated in the Section 1 manual. See preface.

All functional parts of the HCP and NPU are cooled by one or more (as necessary) sets of internal blowers or fans. All of the heat is dissipated through the cabinet louvers to the ambient air.

Table 1-4 briefly summarizes the required operational and nonoperational environment.

Most of the other functional units in a system, e.g., console and peripherals, are cooled by ambient room air. Normally the air is drawn into each cabinet through openings near the floor or unit base and is exhausted into the room.

Temperature and relative humidity in the room must be controlled within the limits required by the most restrictive cabinet (or equipment) in the system. Refer to the standard and optional equipment data sheets in this manual and also to the data sheets given in the host computer (CDC 6000, CYBER 70/170) System Data Manual.

#### **ELECTROMAGNETIC AND OTHER INTERFERENCES**

Electromagnetic compatibility measures are included as part of the 2550 series equipment design. However, care must be taken not to locate the communications system in the sphere of influence of strong extraneous electromagnetic interferences such as radar or X-ray equipment, radio broadcast facilities, electrical generators, and other electromagnetic field-producing equipment. If such interference is expected or unavoidable, Control Data Computer Facility Planning and Construction Division should be consulted.

#### **PHYSICAL ROOM REQUIREMENTS**

Physical room requirements should provide for power service (60 Hz or 50 Hz) and sufficient air-conditioning for personnel, peripheral devices, controllers, and other additional equipment; for example, test equipment or lighting. In addition, ample space must be provided for equipment cabinets, test equipment, and movement of personnel and equipment among the cabinets. Refer to the Section 1 manual. Floor layout templates have been provided to show maximum equipment sizes with door extended.

#### **PROVISIONS FOR FUTURE EXPANSION**

In allocating space for this communications system, consideration should be given to anticipated expansion. Included in these considerations are space, power, and environmental standards and limitations. The addition of future loads may place a strain on the existing system, and any current design on these systems should include consideration for possible additional loads.

TABLE 1-1. STANDARD PRODUCT/MODEL SYSTEM CONFIGURATION

Product/Model	Description	Configuration
<p>Host Communications Processor (HCP) 2550-2 (see figure 1-1)</p>	<p>Host communications processor with capability for expansion.</p> <ul style="list-style-type: none"> <li>- 32K words of 16-bit MOS memory. Option: Memory expandable to 64K words; requires use of 2554-16 or 2554-32 MOS memory expansion module.</li> <li>- Interfaces from one to 32 communications lines via communications line adapters.</li> <li>- Expandable to 128 lines by adding 2556-2, 2556-3 and 2556-4 communications line expansion (CLE) units.</li> <li>- HCP may be upgraded to an NPU 2552-2 using upgrade kit 2580-2.</li> <li>- Interface to one host: CDC 6000, CYBER 70/170. Option: one additional interface of 6671/6676 emulator (2558-2), another CDC 6000, CYBER 70/170 (2558-1), or a 3000L coupler (10344).</li> </ul>	<p>Housed in a double-bay wired cabinet. System includes a communications processor, memory, multiplex loop interface adapter, communications coupler with cables, loop multiplexer, maintenance panel, tape cassette, cyclic encoder, power supplies, blower assemblies and console signal cable.</p> <p>Requires a communications console: 713-10 or 1711-4 or -5, or 1713-4, or customer-provided equivalent.</p> <p>Used with communications line adapters 2560-1, -2, -3; 2561-1 and CLA cables.</p> <p>Optional: line printers 2570-1 or -2; card readers 2572-1 or -2 and communications coupler (2558-1, 2558-2 or 10344).</p>
<p>Network Processor Unit 2551-1 (see figure 1-2)</p>	<p>Network processor unit with capability for expansion.</p> <ul style="list-style-type: none"> <li>- 32K words of 16-bit MOS memory. Option: Memory expandable to 128K words; requires use of 2554-16 and/or 2554-32 MOS memory expansion module.</li> <li>- Interface from one to 32 communication lines using communications line adapters.</li> <li>- Expandable to 2551-2 using upgrade kit 2580-3 that provides for interface of 33 to 64 communication lines.</li> <li>- One or two couplers for CYBER 70/170, 6000, or 3000L.</li> </ul>	<p>Housed in a single-bay wired cabinet. System includes a communications processor, memory, multiplex loop interface adapter, maintenance panel, cyclic encoder, tape cassette, blower assemblies, power supply and loop multiplexer.</p> <p>Requires a communications console: 752-10, 1711-4 or -5, 1713-4 or -5, or customer provided equivalent. Used with communication line adapters 2560-X, 2561-X, and CLA cables 10400-X, 10401-X, 10402-1, and 10403-1.</p>
<p>Network Processor Unit 2551-2 (see figure 1-4).</p>	<p>Network processor unit with capability for expansion.</p> <ul style="list-style-type: none"> <li>- 32K words of 16-bit MOS memory. Option: Memory expandable to 128K words; requires one or more 2554-16 and/or 2554-32 MOS memory expansion module(s).</li> <li>- Interfaces from one to 64 communications lines via communications line adapters.</li> <li>- Expandable to 2552-2 using bolt-on cabinet 2580-1.</li> </ul>	<p>Housed in a single-bay wired cabinet. System includes a communications processor, memory, multiplex loop interface adapter, maintenance panel, cyclic encoder, tape cassette, blower assembly, power supply, and two loop multiplexers.</p> <p>Requires a communications console: 752-10, 1711-4 or -5, 1713-4 or -5, or customer provided equivalent.</p> <p>Used with communications line adapters 2560-X, 2561-X and CLA cables 10400-X, 10401-X, 10402-1, and 10403-1.</p>

TABLE 1-1. STANDARD PRODUCT/MODEL SYSTEM CONFIGURATION (Contd)

Product/Model	Description	Configuration
<p>Network Processor Unit 2551-2 (cont'd) (see figure 1-4)</p>	<ul style="list-style-type: none"> <li>- Expandable to 128 CLAs by using loop multiplexers expansion cabinet 2556-10 and loop multiplexer expansion chassis 2556-11.</li> <li>- One or two couplers for CYBER 70/170, 6000, or 3000L.</li> </ul>	
<p>Network Processor Unit 2552-2 (see figure 1-4)</p>	<p>Network processor unit (NPU) with capability for expansion.</p> <ul style="list-style-type: none"> <li>- Base communications processor with 32K words of 16-bit MOS memory. Option: Memory expandable to 128K words; requires use of 2554-16 and/or 2554-32, MOS memory expansion module.</li> <li>- Mux communications processor with 16K words of 16-bit main memory. Capable of expansion but not usually required.</li> <li>- Interface from one to 64 communications lines using 256X communications line adapter (CLA) cards.</li> <li>- Expandable to 128 communications lines with addition of up to two communications line expansion (CLE) units 2556.</li> <li>- Interface to one host: CDC 6000, CYBER 70/170. Option: one additional interface of 6671/6676 emulator (2558-4), another CDC 6000, CYBER 70/170 (2558-3).</li> </ul>	<p>Housed in a double-bay wired cabinet. System includes two cross-linked communications processors (base, mux) with cross-coupled MOS main memory, multiplex loop interface adapter, two loop multiplexer, two maintenance panels, two tape cassette units, cyclic encoders, power supplies, blower assemblies, console switch (to select processors) and console signal cable.</p> <p>Requires communications console: 752-10, or 1711-4 or -5, or 1713-4 or -5, or customer provided equivalent.</p> <p>Used with communications line adapters 2560-1, -2 or -3, 2561-1, 2562-1, 2563-1, and CDC CLA cable.</p> <p>Uses one (or two) host couplers: 2558-3 and 2558-4.</p>
<p>Peripheral - Communications Console</p>	<p>A communications console CDT or TTY (three standard products listed, or customer provided equivalent) is required for all 2550 series HCP and NPU systems. The interface provided is EIA RS-232-C for CDT, and 20-ma current loop for TTY, at signaling rates up to 9600 bits per second, asynchronous, using ASCII TTY protocol.</p>	<p>Three standard products are available.</p> <ul style="list-style-type: none"> <li>- Desktop 713-10 or 752-10 Conversational Display Terminal, variable speed up to 30 characters per second. Has various options including hardcopy output.</li> <li>- With stand Model 1711-4 or -5 Teletype.</li> <li>- With stand Model 1713-4 or -5 Teletype.</li> </ul> <p>15-foot (4.5 m) signal cable is provided with the HCP; cable is required for NPU.</p>

TABLE 1-2. OPTIONAL PRODUCT/MODEL SYSTEM CONFIGURATION

Product/Model	Description	Configuration	Equipment Application																																						
<p>MOS Memory Expansion Module 2554-16 (16K) 2554-32 (32K)</p>	<p>Standard 16K and 32K MOS, 475/550 nanoseconds (18 bits/word) memory module, 11 by 14 inches. Each word in memory word provides 16 data bits, one memory protect bit, and one parity bit. Maximum storage capacity for the HCP or NPU communications processor is 128K words in 32K word increments.</p>	<p>Housed in 2550-2, 2551-1, or 2551-2 communications processor chassis in addition to the basic 32K:</p> <table border="0"> <thead> <tr> <th>Words</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td>48K</td> <td>(1) 2554-16</td> </tr> <tr> <td>64K</td> <td>(1) 2554-32</td> </tr> </tbody> </table> <p>Housed in 2552-2 communications base processor chassis in addition to the basic 32K:</p> <table border="0"> <thead> <tr> <th>Words</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td>48K</td> <td>(1) 2554-16</td> </tr> <tr> <td>64K</td> <td>(1) 2554-32</td> </tr> <tr> <td></td> <td>or</td> </tr> <tr> <td></td> <td>(2) 2554-16</td> </tr> <tr> <td>80K</td> <td>(1) 2554-16</td> </tr> <tr> <td></td> <td>(1) 2554-32</td> </tr> <tr> <td></td> <td>or</td> </tr> <tr> <td></td> <td>(3) 2554-16</td> </tr> <tr> <td>96K</td> <td>(2) 2554-32</td> </tr> <tr> <td></td> <td>or</td> </tr> <tr> <td></td> <td>(2) 2554-16</td> </tr> <tr> <td></td> <td>(1) 2554-32</td> </tr> <tr> <td>112K</td> <td>(1) 2554-16</td> </tr> <tr> <td></td> <td>(2) 2554-32</td> </tr> <tr> <td>128K</td> <td>(3) 2554-32</td> </tr> </tbody> </table>	Words	Model	48K	(1) 2554-16	64K	(1) 2554-32	Words	Model	48K	(1) 2554-16	64K	(1) 2554-32		or		(2) 2554-16	80K	(1) 2554-16		(1) 2554-32		or		(3) 2554-16	96K	(2) 2554-32		or		(2) 2554-16		(1) 2554-32	112K	(1) 2554-16		(2) 2554-32	128K	(3) 2554-32	<p>HCP and NPU</p> <p>HCP and NPU</p> <p>NPU</p>
Words	Model																																								
48K	(1) 2554-16																																								
64K	(1) 2554-32																																								
Words	Model																																								
48K	(1) 2554-16																																								
64K	(1) 2554-32																																								
	or																																								
	(2) 2554-16																																								
80K	(1) 2554-16																																								
	(1) 2554-32																																								
	or																																								
	(3) 2554-16																																								
96K	(2) 2554-32																																								
	or																																								
	(2) 2554-16																																								
	(1) 2554-32																																								
112K	(1) 2554-16																																								
	(2) 2554-32																																								
128K	(3) 2554-32																																								
<p>Communications Line Expansion (CLE) Unit 2556-2 thru -4</p>	<p>Provides one each additional loop multiplexers that each support an additional 32 communications lines. Sixteen CLA card slots are provided with each unit, two CLAs per card.</p> <ul style="list-style-type: none"> <li>- 2556-2 supports from 33 to 64 lines on 2550-2; uses power and air cooling from basic loop multiplexer.</li> <li>- 2556-3 supports from 65 to 96 lines on 2550-2; includes a power supply and air blower assembly that can also power and cool the 2556-4.</li> <li>- 2556-4 supports from 97 to 128 lines on 2550-2; uses power and air cooling from 2556-3.</li> </ul>	<p>Housed in the basic cabinet. Consists of a wired card enclosure, one loop multiplexer logic card, interconnect loop cable with connectors for rack mounting. (2556-3 also includes a power supply wiring harness, and air blower assembly.)</p> <p>The 2550-2 systems come with one loop multiplexer and are expandable to four.</p> <p>CLE does not include any communications line adapters 2560-1, -2, -3; 2561-1; 2562-1 or CDC CLA cables.</p>	<p>HCP</p>																																						
<p>Loop Multiplexer Expansion Cabinet 2556-10 (see figure 1-7)</p>	<p>Provides for two additional loop multiplexer line expansion chassis 2556-11. Each 2556-11 supports 1 to 32 communications lines (16 CLAs). May be added to 2551-2 and/or 2552-2.</p>	<p>Stand-alone cabinet; includes power supply, blower assembly, and power distribution box. Cabinet houses two loop multiplexer line expansion chassis.</p>	<p>NPU</p>																																						

TABLE 1-2. OPTIONAL PRODUCT/MODEL SYSTEM CONFIGURATION (Contd)

Product/Model	Description	Configuration	Equipment Application
Loop Multiplexer Line Expansion 2556-11	Provides one each additional loop multiplexer and chassis that supports an additional 1 to 32 communications lines. Sixteen CLA card slots are provided with each unit. Power and air cooling are obtained from 2556-10 cabinet facilities.	Housed in basic, stand-alone, and expansion cabinet. Consists of a wired card enclosure, one loop multiplexer logic card, and interconnect loop cable.  Expansion chassis does not include any communications line adapters, but these can be added in future expansion.	NPU
Communications Coupler 2558-1	This coupler provides bi-directional interface between the HCP and a CDC 6000 or CYBER 70/170 series computer system. The equivalent of one 2558-1 is included as a standard part of the 2550-2 HCP unit.	Housed in the communications processor chassis of a 2550-2. The coupler consists of three circuit cards, one set of channel coaxial cables, and one internal +5 V jumper.  All coaxial cables required to connect the coupler to a second CDC 6000, CYBER 70/170 or another 2550-X are included with this equipment (i.e., CDC 6000/CYBER 70 has two 5-foot (1.5 m) cables and two 70-foot (21.3 m) cables; the CYBER 170 has four 5-foot (1.5 m) and two 65-foot (19.8 m) cables).	HCP
667X Emulation Coupler 2558-2	The 2558-2 hardware provides the second of two 667X emulation couplers required when the 2550-100 operates in the expanded dual coupler mode. The 2550-100 product supplies one of the couplers required plus the coaxial cables required for the second coupler (2558-2).	The 667X emulation coupler is housed in the communications processor unit of a 2550-2.  The emulation coupler consists of two circuit cards, three ribbon cables, one rear panel jumper and one +5 V jumper.	HCP
6671/6676 Emulation Module 2550-100	This module provides the hardware and controlware necessary to emulate one to a maximum of four 6671 or 6676 Data Set controllers. The hardware/controlware together accommodate data interchange between one (expandable to two) CYBER 70/170 data channel and a maximum of 128 modems (lines).  If the site requires the 2550-100 product to operate in the expanded dual coupler mode, the addition of the 2558-2 product is required.	The hardware portion of this product is the 667X emulation coupler. The coupler is housed in the communications processor unit of the 2550-2. The emulation coupler consists of two printer circuit cards, three ribbon cables, one rear panel jumper cable and one rear panel +5 V jumper.  The 2550-100 also provides the coaxial cables required for a second emulation coupler when the product operates in the expanded coupler mode. The coaxial cables include	HCP

TABLE 1-2. OPTIONAL PRODUCT/MODEL SYSTEM CONFIGURATION (Contd)

Product/Model	Description	Configuration	Equipment Application
6671/6676 Emulation Module 2550-100 (continued)	The 2550-100 product plus the 2558-2 product (dual couplers) will emulate one to a maximum of four 6671 or 6676 Data Set controllers. The hardware/controlware together accommodate data interchange between two CYBER 70/170 data channels and a maximum of 128 modems (lines).	four 5-foot (1.5 m) coupler drop cables and two 65-foot (19.8 m) or two 5-foot (1.5 m) and two 70-foot (21.3 m) cables. Selection of the 65 or 70-foot (19.8 or 21.3 m) cables depends on the type of host computer to which the couplers are connected. If the host is a CYBER 170, the 65-foot (19.8 m) cable is used. If the host is a CDC 6000 or CYBER 170, the 70-foot (21.3 m) cable is used.	
CYBER 7X/17X/6000 Host Computer Coupler 2558-3	This coupler provides bi-directional interface between the 255X and a CDC 6000 or CYBER 70/170 series computer system.	Housed in the communications processor chassis of a 255X. Includes three circuit cards, four 5-foot (1.5 m) drop cables, two 5-foot (1.5 m) CYBER channel cables, and one backplane jumper.	HCP and NPU
CYBER 7X/17X/6000 Host Computer Coupler and 6671/ 6676 Emulator 2558-4	This product provides bi-directional interface between the 255X and a CYBER 170/70 or CDC 6000. It also provides hardware that enables the 2550 system to emulate up to four 6671 and/or 6676 multiplexers. Regardless of the number of multiplexers simulated, one 2558-4 system is limited to a maximum of 128 communications lines.	Housed in the communications processor chassis of a 255X. The hardware includes two circuit cards, four 5-foot (1.5 m) drop cables, two 65-foot (19.8 m) CYBER channel cables, two 5-foot (1.5 m) CYBER channel cables, and one backplane jumper cable. Requires the 2550-10X emulation controlware that includes one controlware cassette and one utility cassette.	HCP and NPU
Communications Line Adapters 2560-1 thru -3, 2561-1 and 2563-1	These printed circuit boards, 11 inches by 14 inches, interface the HCP and NPU to various types of communications lines listed or equivalent via a modem or set.  Each CLA card (except 2562-1) has two circuits and thus requires two cables if both circuits are used.	Housed in a communications line expansion unit (2556-2 thru -4), or loop multiplexer line expansion (2556-11).  CLA cables must be ordered separately per the shown product number, listed in the standard options section of the CDC pricing manual. Depend on customer's terminal/modem.	HCP and NPU

TABLE 1-2. OPTIONAL PRODUCT/MODEL SYSTEM CONFIGURATION (Contd)

Product/Model	Description	Configuration	Equipment Application
3000L Communications Coupler 10344-1	The coupler provides bi-directional interface between the HCP and one of the lower CDC 3000 series computers.	<p>The hardware portion of the 3000L coupler is housed in the communications processor unit of the 2550-2. The coupler consists of three circuit cards, a 3000L terminator panel and cables. The panel contains a -6 V power supply and cable terminator connectors.</p> <p>The coupler plugs directly into three specially wired slots in the communications processor and connects to the 3000L data channel via the 3000L terminator panel.</p> <p>Terminator power (40 V) is obtained from the 3000L host.</p>	HCP and NPU
Synchronous CLAS 2560-1 thru -3	The synchronous CLA cards feature software selection and control of half-duplex or full-duplex, 5-, 6-, 7-, or 8-bit code lengths, frame synchronization, and loopback capabilities.		HCP and NPU
- Synchronous CLA RS-232-C, 2560-1	Provides connection of HCP or NPU to two synchronous modems or terminals conforming to EIA RS-232-C or CCITT recommendation V.24 interface standards at speeds up to 10,800 bits/sec. Compatible with AT&T 201, 203, and 208 Data Sets.	Requires selection of two CLA cables (10401-1 thru -4) per CLA.	HCP and NPU
- Synchronous CLA Coaxial 2560-2	Provides for connection via modems compatible with AT&T 302/303 Data Sets of two communications lines at speeds up to 50,000 bits per second.	Requires selection of two CLA cables (10402-1) per CLA.	HCP and NPU
- Synchronous CLA Differential Drive 2560-3	Provides for connection of two communications lines or facilities conforming to CCITT recommendation V.35 (including AT&T digital data system) at speeds up to 56,000 bits per second.	Requires selection of two CLA cables (10403-1) per CLA.	HCP and NPU
Asynchronous CLA RS-232-C, 2561-1	Provides connection of HCP or NPU to two asynchronous communications terminals or modems conforming to EIA RS-232-C or CCITT recommendation V.24 interface standard at speeds up to 9600 bits per second. The asynchronous CLA cards feature software selection	Local connection of asynchronous terminals is provided by required selection of two CLA cables (10400-1 thru -3) per CLA.	HCP and NPU

TABLE 1-2. OPTIONAL PRODUCT/MODEL SYSTEM CONFIGURATION (Contd)

Product/Model	Description	Configuration	Equipment Application
Asynchronous CLA RS-232-C, 2561-1 (contd)	and control of half-duplex, full-duplex and echoplex operation, code lengths of 5, 6, 7 or 8 bits, variable input/output speeds, even, odd or no character parity checking and generation, stop bit duration of 1.0, 1.5, or 2 bits, and loopback capabilities. Compatible with AT&T 103/113/202 Data Sets.		
Trunk (SDLC) CLA 2563-1	Provides for connection of one trunk circuit utilizing CDC SDLC protocol.	Requires selection of one CLA cable (10401-1 thru -4).	NPU
Peripheral Line Printers 2570-1 or 2570-2	<p>At user's option, one of two line printers may be used (300 or 1200 line per minute speeds).</p> <p>Features a 136-column full-line buffering, 12 VFU channels for form control, 64 character print set, and choice of 6 or 8 lines per inch vertical spacing under program control.</p>	<p>Two free-standing, quietized cabinets are standard products and are available with 15-foot (4.5 m) signal cables, both require peripheral controller 2571-1; if not already obtained with card reader capability.</p> <ul style="list-style-type: none"> <li>- 2570-1, 300 line-per-minute printer employing a drum printing mechanism for low cost.</li> <li>- 2570-2, 1200 line-per-minute printer employing a train printing mechanism for high-quality, high-volume printouts. Several CDC train cartridge options are available; Models 595-1 thru 595-6.</li> </ul>	HCP
Peripheral Controller 2571-1	This printed circuit board, 11 inches (280 mm) by 14 inches (356-mm) interfaces one 2570 line printer and/or one 2572 card reader to the HCP.	Housed in the slot "j" channel position in communications processor. Interface signal cables are included as part of the line printer or card reader units.	HCP
Communications Line Adapter Cables	<p>The CLA cables provide the physical connection of CLAs to modems and terminals. All cables are 50 feet (15.2 m) maximum each. RS-232 limits the length.</p> <p>All CLA cables are designed to be compatible with customer modem/terminal connectors as specified or equivalent interface.</p> <p style="text-align: center;">NOTE</p> <p>CDC CLA cables are required; only the choice of specific type is optional.</p>	<p>Constructed with overall shielded and insulated 24-conductor signal cable (10400-X, 10401-X only), with CLA connectors and modem/terminal compatible.</p> <p>Depending on customer's terminal/modem, the CLA cables must be ordered separately per the product number listed in the standard options section of the CDC pricing manual.</p>	HCP and NPU



TABLE 1-2. OPTIONAL PRODUCT/MODEL SYSTEM CONFIGURATION (Contd)

Product/Model	Description	Configuration	Equipment Application
<p>Asynchronous RS-232-C CLA Cables</p> <p>- 10400-1</p>	<p>Provides the connection of asynchronous CLAs to associated modem. Cable is compatible with AT&amp;T Data Sets 103A/E, 113B, 202 C/D (without reverse channel) and any other manufacturer's modem which duplicates AT&amp;T interface.</p>	<p>This cable is 50 feet (15.2 m) long.</p>	<p>HCP and NPU</p>
<p>- 10400-2</p>	<p>Provides connection of asynchronous CLAs to a local terminal without use of a modem. Cable is compatible with any terminal having an RS-232-C interface capable of operating into AT&amp;T 102A/E or 202 Data Sets or their equivalent.</p>	<p>This cable is 50 feet (15.2 m) long.</p>	
<p>- 10400-3</p>	<p>Provides connection of asynchronous CLAs to its associated modem. Cable is compatible with AT&amp;T 103F or 202R Data Sets, CDC 362 telegraphic level converters and any other manufacturer's modem which duplicates with AT&amp;T interface.</p>	<p>This cable is 50 feet (15.2 m) long.</p>	
<p>- 10400-4</p>	<p>Provides connection of asynchronous CLAs to associated modem. Cable is compatible with AT&amp;T 202 Data Set with reverse channel option.</p>		
<p>Synchronous RS-232-C</p>	<p>Cable is compatible with AT&amp;T Data Sets 201A/B/C, 203B, and 208B and any other manufacturer's modem which duplicates this AT&amp;T interface.</p>	<p>This cable is 50 feet (15.2 m) long.</p>	<p>HCP and NPU</p>
<p>- 10401-1</p>			
<p>- 10401-2</p>	<p>Cable is compatible with AT&amp;T 208B and 209 Data Sets.</p>	<p>Discontinued (see 10401-1)</p>	
<p>- 10401-3</p>	<p>Cable is compatible with AT&amp;T 203A Data Sets and any other manufacturer's modem which duplicates this AT&amp;T interface.</p>	<p>Discontinued (see 10401-1)</p>	
<p>- 10401-4</p>	<p>Cable is compatible with terminals having an RS-232-C interface capable of operating into an AT&amp;T 201 or 208B Data Set or equivalent. A cable switch allows selection of 2400, 4800, or 9600 bits-per-second operation.</p>	<p>This cable is 50 feet (15.2 m) long (special order length up to 500 feet (152 m) available).</p>	

TABLE 1-2. OPTIONAL PRODUCT/MODEL SYSTEM CONFIGURATION (Contd)

Product/Model	Description	Configuration	Equipment Application
Synchronous Coaxial CLA Cables - 10402-1	Provides connection of synchronous coaxial CLA to its associated modem. Cable is compatible with AT&T 301/303 Data Sets and any other manufacturer's modem which duplicates this AT&T interface.	Constructed with coaxial signal cable, 50 feet (15.2 m) long.	HCP and NPU
Synchronous Differential Drive CLA Cables - 10403-1	Provides connection of synchronous CLA differential drive to its associated modem. Cable is compatible with CCITT recommendation V.35 or equivalent (including AT&T digital data system for 56K bits-per-second operation).	Constructed with differential pair signal cable, 50 feet (15.2 m) long.	HCP and NPU
Communications Cables	Various communications cables are required and are included as part of products listed earlier, i.e., coupler, peripheral, console, etc. (See figures 1-9 and 1-10.)	If allowable, longer or shorter cables may be ordered specially.	HCP and NPU
Power Cables	Various power cables are included as part of each product.	External cabling utilizes field wiring terminals for all units. Optional flexible cables may be used where permitted by local codes (and UL/CSA/VDE, etc.)	HCP and NPU
Power Conversion Transformer NR 10299-22 (see figure 3-2)	For installations not having local power source of 60 Hz, 208/120 V, 3 phase, 30 amp, an external design power transformer is required.	<ul style="list-style-type: none"> <li>- Input various voltage single phase (see figure 3-2).</li> <li>- Output: 115 V, single phase</li> <li>- Accepts 50 Hz or 60 Hz</li> <li>- Weight is 104-lb (47.3 kg)</li> <li>- Capacity 4.5 kVA on secondary side</li> </ul>	HCP 50 Hz
Peripheral Card Readers 2572-1 or -2	At user's option, one of two card readers may be used (300 or 600 cards per minute). Both feature an 80-column photoelectric reader mechanism with light/dark checking, 1500 card stacker, and 1000-card input hopper.	<p>Two desktop standard products and are available with 15-foot (4.5 m) signal cables. Both require peripheral controller 2571-1, if not already obtained with line printer capability.</p> <ul style="list-style-type: none"> <li>- 2572-1, 300 cards per minute</li> <li>- 2572-2, 600 cards per minute</li> </ul>	HCP

TABLE 1-2. OPTIONAL PRODUCT/MODEL SYSTEM CONFIGURATION (contd)

Product/Model	Description	Configuration	Equipment Application
Upgrade Kit (2551-2 to 2552-2) 2580-1	Converts a 2551-2 NPU into a functional and physical 2552-2 NPU	Conversion hardware consists of a single-bay bolt-on cabinet containing a communications processor, 16K words (16-bit) of MOS memory, maintenance panel, tape cassette drive and controller, cyclic encoder, power supply, and interconnect cable assemblies. This conversion is field installable.	NPU
Upgrade Kit (2550-2) 2580-2	Converts a 2550-2 HCP into a functional and physical equivalent of 2552-2 NPU	The conversion hardware includes a communications processor, 16K words of MOS memory, maintenance panel, tape cassette drive and controller, cyclic encoder, power supply, and interconnect cable assemblies. This conversion is field installable.	HCP
Upgrade Kit (2551-1 to 2551-2) 2580-3	Converts a 2551-1 NPU into a functional and physical equivalent of 2551-2.	The conversion hardware includes a card cage for one thru 16 CLAs, loop multiplexer, and interconnect cable for interface with communications processor.	NPU
System Autostart Module Cassette 2580-4	Provide capability to sense that a system failed, reload the system software (from tape cassette) and restart the system.	The hardware includes a logic module, mounting enclosure, and interconnect cable.	NPU
CYBER 70/6000 Channel Conversion Kit 2580-70	Converts an HCP from a CYBER 170 communications channel to a CYBER 70/CDC 6000 channel.	The conversion hardware includes one set of interconnecting cables.	HCP
CYBER 170 Channel Conversion Kit 2580-170	Converts an HCP from a CYBER 70/CDC 6000 communications channel to a CYBER 170 channel.	The conversion hardware includes one set of interconnecting cables.	HCP

TABLE 1-3. CLA/MODEM INTERCONNECT CABLE SUMMARY

CLA	Modem	Interface	Cable Equip. No.		Product
			Version A	Version B	
2560-1 2562-1	208A/209	RS-232-C	XA129-A	YA224-A	10401-2
2560-1 2562-1	201ABC/ 203A <sup>†</sup> / 208B	RS-232-C	XA130-A	YA225-A	10401-1
2560-1	Terminal	RS-232-C	XA132-A	YA227-A	10401-4
2560-2	301/303	Coax.	XA136-A	YA227-A	10402-1
2560-3	CCITT V.35	Sync. Diff.	XA137-A	YA231-A	10403-1
2561-1	103AE/ 113B/ 202CD <sup>††</sup>	RS-232-C	XA133-A	YA228-A	10400-1
2561-1	103F/202R CDC 362 TLL	RS-232-C	XA134-A	YA229-A	10400-3
2561-1	Terminal <sup>†††</sup> 103AE/202	RS-232-C	XA135-A XA135-B	YA230-A	10400-2 10400-5
2561-1	202 <sup>††††</sup>	RS-232-C	XA229-A	YA234-A	10400-4

<sup>†</sup>without monitor signal  
<sup>††</sup>without reverse channel  
<sup>†††</sup>some terminals, such as the 713, require the XA135-B cable  
<sup>††††</sup>with reverse channel

Included should be:

- Lighting
- Power/grounding (operating power and utility outlet power)
- Communications (phone and intercom)
- Ventilation and air conditioning
- Space limitations
- Additional personnel provisions (customer engineering work area, office, parts and test equipment storage, etc.)
- Operational procedures

In general, study for future expansion is an extension of planning for the initial installation.

**SIGNAL AND POWER CABLES**

Control Data provides all signal cables (except CLA to modem cables) in standard lengths required for the communications system (see figure 1-9). However, longer or shorter lengths, if allowable, must be ordered specially. The CLA cables must be selected and ordered to meet the specific customer configuration. Layouts should never exceed those maximum allowable lengths. A complete set of communications coupler data channel cables is supplied with the 255X to insure availability of correct types and lengths to attach to either CDC 6000 or CYBER 70/170 computers (see figure 1-11).

Cables and cords egress through the bottom of each cabinet and may be coiled under the floor or in enclosures but should be ordered with the correct lengths to fit the installation requirements. Power cables may be cut on site to fit installation and electrical requirements.

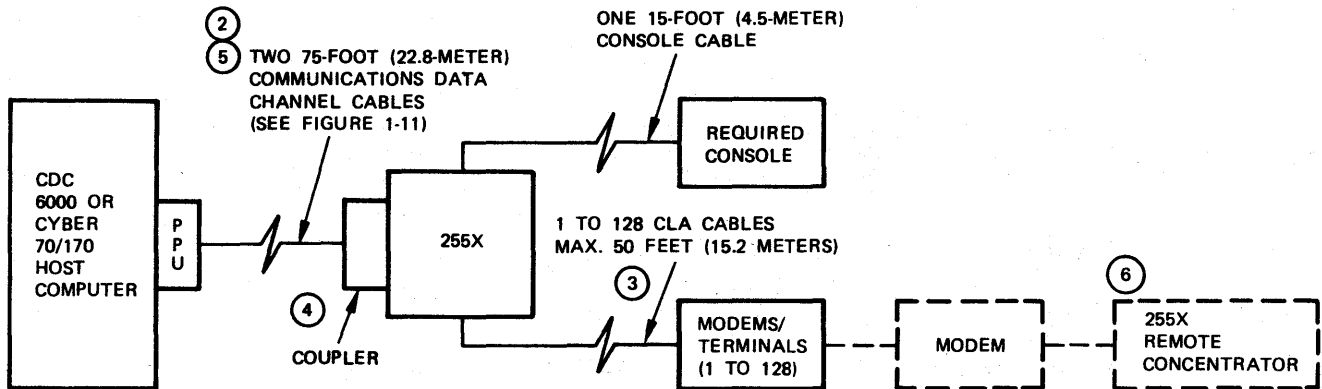
**NOTE**

Signal cable lengths indicated on the equipment data sheets of this manual are, in some cases, maximum lengths and include that portion of cable that would be inside a cabinet. The dimension given is not the distance between cabinets. Care must be taken to avoid placing equipment too far apart since some signal cable extensions are not possible.

Figures 1-10 and 1-11 show the typical signal cable types and limitations as they apply to the type and quantity of signal cables between cabinets. Maximum cable lengths in some cases are also indicated. Additional information on signal cable lengths is found in the equipment data sheets of this manual.

**NOTE**

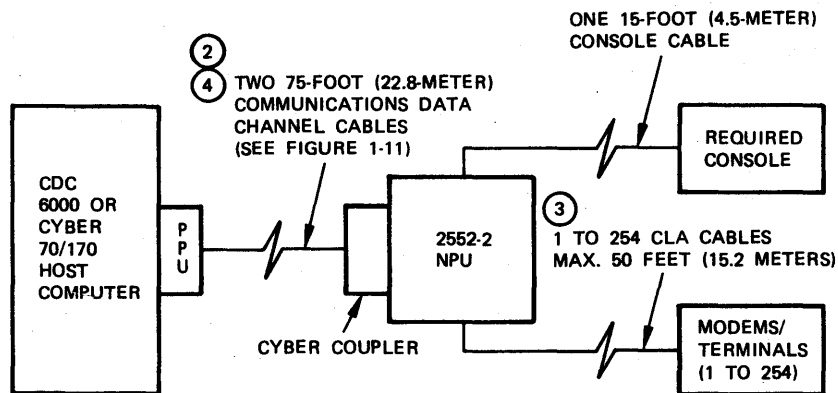
Outlets must be provided for the console, peripherals (if any), and test equipment.



NOTES:

- ① TYPICAL; LENGTH DEPENDS ON PERIPHERAL SELECTED. FOR OTHER CABLES AVAILABLE SEE TABLES 1-1, 1-2, AND 1-3.
- ② FOR CDC 6000 AND CYBER 70, EACH SET CONSISTS OF ONE 70-FOOT (21.3-METER) CABLE (ATTACHED TO THE PPU CHANNEL) AND ONE 5-FOOT (1.5-METER) CABLE ATTACHED TO THE 2550 COUPLER. FOR CYBER 170, EACH SET CONSISTS OF ONE 5-FOOT CABLE (ATTACHED TO THE PPU CHANNEL), ONE 5-FOOT CABLE ATTACHED TO THE 2550 COUPLER, AND ONE 65-FOOT (19.8-METER) EXTENSION CABLE INTERCONNECTING THE TWO
- ③ RS-232-C STANDARD LIMITS THE LENGTHS TO 50 FEET. LONGER LENGTHS CAN BE PROVIDED ON A QSE BASIS.
- ④ COMMUNICATIONS COUPLER USED WITH HCP; CYBER COUPLER USED WITH NPU
- ⑤ FOR 3000L COUPLER CABLING, REFER TO 3000L INSTALLATION MANUAL AND FIGURE 1-12.
- ⑥ WHEN THE 255X IS USED AS A REMOTE CONCENTRATOR, NO COUPLER IS REQUIRED. THE REMOTE CONCENTRATOR (255X) IS CONNECTED TO THE FRONT END (255X) VIA A MODEM LINK AS SHOWN.

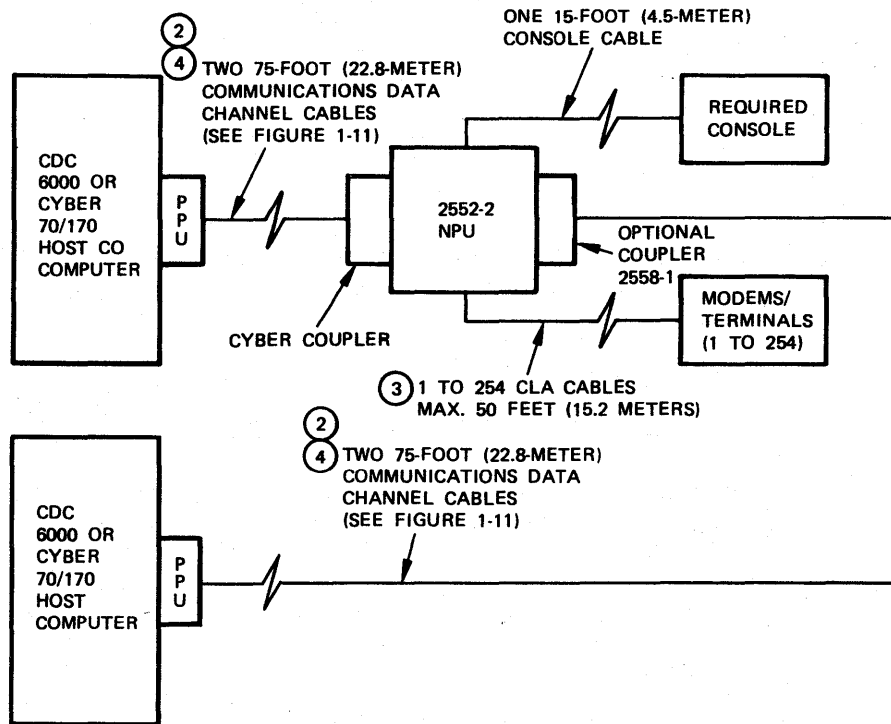
Figure 1-8. Typical Host Computer and 255X Configurations



NOTES:

- ① TYPICAL; LENGTH DEPENDS ON PERIPHERAL SELECTED. FOR OTHER CABLES AVAILABLE SEE TABLES 1-1, 1-2, AND 1-3.
- ② FOR CDC 6000 AND CYBER 70, EACH SET CONSISTS OF ONE 70-FOOT (21.3-METER) CABLE (ATTACHED TO THE PPU CHANNEL) AND ONE 5-FOOT (1.5-METER) CABLE ATTACHED TO THE COUPLER. FOR CYBER 170, EACH SET CONSISTS OF ONE 5-FOOT CABLE (ATTACHED TO THE PPU CHANNEL), ONE 5-FOOT CABLE ATTACHED TO THE COUPLER, AND ONE 65-FOOT (19.8-METER) EXTENSION CABLE INTERCONNECTING THE TWO.
- ③ RS-232-C STANDARD LIMITS THE LENGTHS TO 50 FEET. LONGER LENGTHS ARE PROVIDED ON A QSE BASIS.
- ④ FOR 3000L COUPLER CABLING, REFER TO 3000L INSTALLATION MANUAL AND FIGURE 1-12.

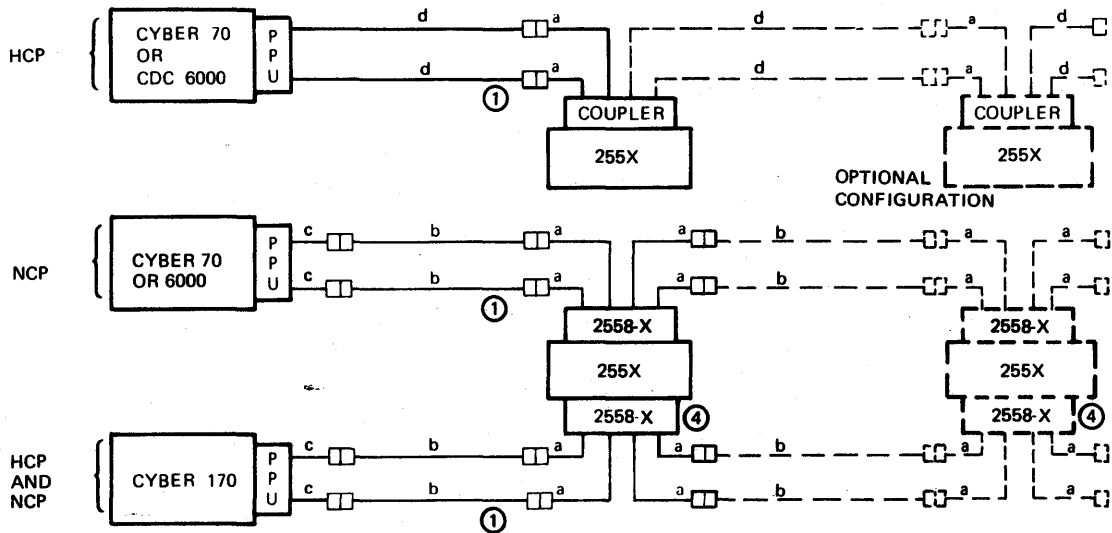
Figure 1-9. Typical Host Computer and 2552-2 Dual Communications Processor Configuration



NOTES:

- ① TYPICAL; LENGTH DEPENDS ON PERIPHERAL SELECTED. FOR OTHER CABLES AVAILABLE SEE TABLES 1-1, 1-2, AND 1-3.
- ② FOR CDC 6000 AND CYBER 70, EACH SET CONSISTS OF ONE 70-FOOT (21.3-METER) CABLE (ATTACHED TO THE PPU CHANNEL) AND ONE 5-FOOT (1.5-METER) CABLE ATTACHED TO THE COUPLER. FOR CYBER 170, EACH SET CONSISTS OF ONE 5-FOOT CABLE (ATTACHED TO THE PPU CHANNEL), ONE 5-FOOT CABLE ATTACHED TO THE COUPLER, AND ONE 65-FOOT (19.8-METER) EXTENSION CABLE INTERCONNECTING THE TWO.
- ③ RS-232-C STANDARD LIMITS THE LENGTHS TO 50 FEET. LONGER LENGTHS CAN BE PROVIDED ON A QSE BASIS.
- ④ FOR 3000L COUPLER CABLING, REFER TO 3000L INSTALLATION MANUAL AND FIGURE 1-12.

Figure 1-10. Typical Dual Host Computer and 2552-2 Dual Communications Processor Configuration



COMMUNICATIONS COUPLER CABLES SUPPLIED WITH 2550 OR 2558-1 PRODUCTS

TYPE	CABLE DESCRIPTION
a	5-FT (1.5-M) DROP CABLES FROM CYBER COUPLER
b	65-FT (19.8-M) CABLES
c	5-FT (1.5-M) DROP CABLES TO CYBER 170 OR CDC 6000 COMPUTER
d	70-FT (21.3-M) CABLES TO CYBER 70 OR CDC 6000 COMPUTER

NOTES:

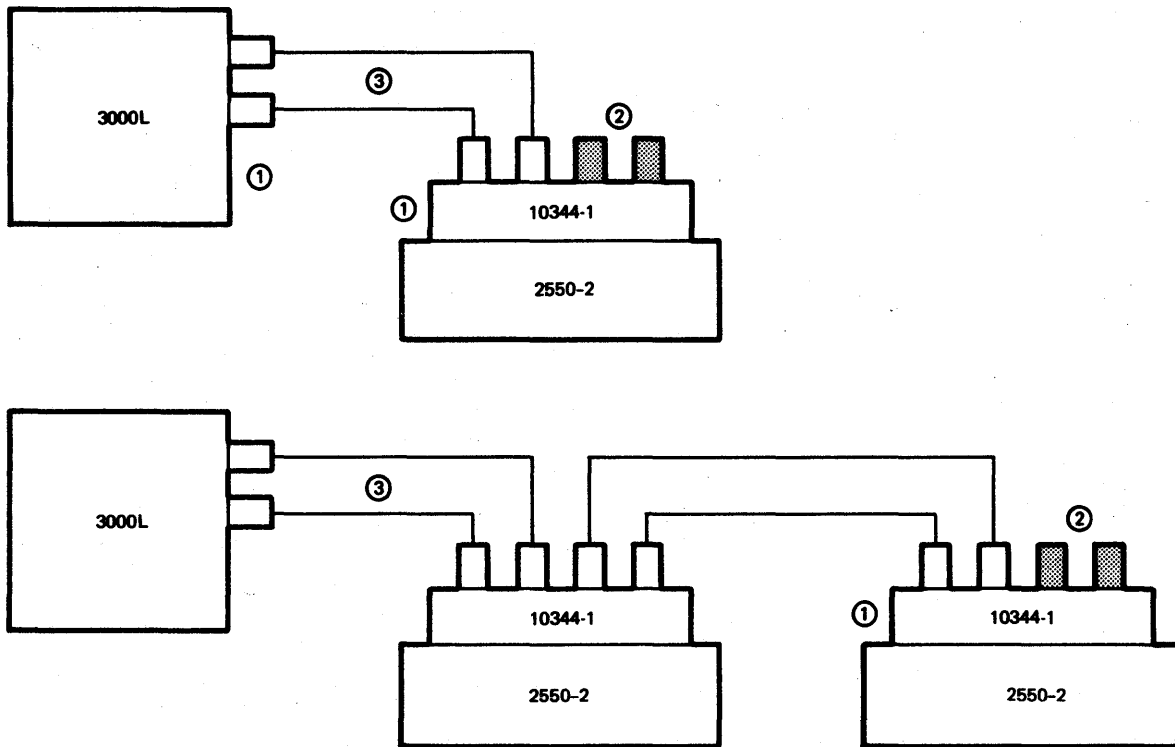
1. COMMUNICATIONS DATA CHANNEL REQUIRES TWO CABLES. EACH IS COMPRISED OF 19 COAXIAL SIGNAL LINES. UNDER NO CIRCUMSTANCES WILL THE TOTAL CABLE LENGTH (INPUT OR OUTPUT) EXCEED OR BE LESS THAN THE REQUIRED "TUNED" 75-FOOT (22.9-METER) LENGTH.
2. THE LISTED CABLES SUPPLIED WITH 255X OR 2558X PRODUCTS COVER ALL POSSIBLE CONFIGURATIONS TO CONNECT TO A CDC 6000 OR CYBER 70/170 COMPUTER OR A SECOND 255X.
3. CABLE TYPE C IS NOT REQUIRED FOR CYBER 170 SYSTEMS. EXISTING CYBER 70 OR CDC 6000 SYSTEMS MAY ALREADY HAVE 70-FOOT CABLES CONNECTED TO THE PPU.
4. ALSO VALID FOR 2558-2 (2550-100) EMULATION COUPLER SYSTEMS.

Figure 1-11. Communications or CYBER Coupler Cables for CYBER 70/170 and CDC 6000



TABLE 1-4. ENVIRONMENTAL SUMMARY

NONOPERATING	RESTRICTION
<p>Altitude</p> <p>Temperature</p> <ul style="list-style-type: none"> <li>● Room Temperature</li> <li>● Thermal Shock</li> </ul> <p>Humidity</p> <p>Shock</p> <ul style="list-style-type: none"> <li>● Impact</li> <li>● Vibration</li> </ul>	<p>1000 ft (305 m) below sea level to 15,000 ft (4570 m) above sea level</p> <p>-30°F to +150°F (-34°C to +66°C)            +80°F (+27°F) to -30°F (-34°C)            +80°F (+27°C) to +150°F (+66°C)            +20°F/h (11°C/h) maximum</p> <p>5% to 95% (no condensation)</p> <p>18 impacts of 5g +10% over 11 + 1 ms with maximum g force at 5.5 ms (i.e., 3 impacts located at each major axis)</p> <p>+0.005-in. at 5 to 60 Hz, 2g at 60 - 500 Hz when packed for shipment</p>
OPERATING	RESTRICTION
<p>Altitude</p> <p>Local ambience</p> <ul style="list-style-type: none"> <li>● Room Temperature Range</li> <li>● Recommended Room Temperature</li> <li>● Thermal Shock</li> <li>● Humidity</li> <li>● Humidity Excursion</li> <li>● Particulate Contamination</li> </ul>	<p>1000 ft (305 m) below sea level to 6000 ft (1830 m) above sea level</p> <p>+50°F (+10°C) to +95°F (+35°C)            +72°F (+22°C)            +18°F/h (+10°C/h) maximum</p> <p>20% to 80% (no condensation)            +10% per hour (maximum)</p> <p>1 micron size 4 x 10<sup>7</sup>/cubic meter            1.5 micron size 4 x 10<sup>6</sup>/cubic meter            5 micron size 4 x 10<sup>5</sup>/cubic meter</p>



**NOTES:**

- ① 10344-1 COUPLERS RECEIVE  $40 \pm 20$  VOLT POWER FROM 3000L (6 AMP DC MAX). CONNECTS TO BARRIER STRIP BY FLEXIBLE CORD (TYPE SV, SJ, OR SO) PROVIDED, OR OTHER CABLE AS REQUIRED BY LOCAL CODES.
- ② TERMINATOR CANS (SUPPLIED WITH 3000L) USED ON LAST EQUIPMENT ON CHANNEL.
- ③ ORDER STANDARD 3000L CHANNEL CABLES AS NEEDED.

Figure 1-12. 3000L Computer and 2550-2 Host Communications Processor Configuration

The following data sheets and figures, provide physical dimensions, power and signal characteristics, and environmental requirements for the 255X HCP and NPU cabinets and peripheral equipment.

### HCP AND NPU CABINETS

The HCP and NPU data sheets illustrate and detail the characteristics for the typical 2550-2, 2551-1, 2551-2, and 2552-2 equipment cabinets. Typical system configuration expansion is illustrated in figure 2-1.

### PERIPHERAL EQUIPMENT

#### COMMUNICATIONS CONSOLES

Conversational Display Terminal  
(desktop model)

- 713-10 HCP
- 752-10 NPU

Teletypewriter (with stand models)

- 1711-4, or -5
- 1713-4, or -5 (not illustrated)

#### LINE PRINTERS (HCP ONLY)

- 2570-1 300 lines per minute
- 2570-2 1200 lines per minute

#### CARD READER - DESKTOP MODELS (HCP ONLY)

- 2572-2 300 cards per minute
- 2572-2 600 cards per minute

#### NOTE

Care must be taken to order peripherals with the correct power line frequency rating, i. e., either 60 or 50 Hz.

In addition to the above, the following optional equipment for the 713-10 is available:

711-100 CRT Expanded Memory - Expands the CRT display capacities to provide a total of 16 lines of 80 characters (adds 640 character positions). Features include an increase of 640 more buffer locations, MCS semiconductor memory, and an easy field installation.

713-120 Nonimpact Printer Station - Provides hardcopy on 8.5-inch (216-mm) wide heat-sensitive paper. Up to eight display terminals may be connected to one printer. A maximum total cable footage is then 1500 feet (458 m). Small desktop unit features a print rate of 30 characters per second, 80-column lines, uses a 5 by 7-dot matrix, and prints 96 ASCII coded character sets. A 10-foot signal cable is provided.

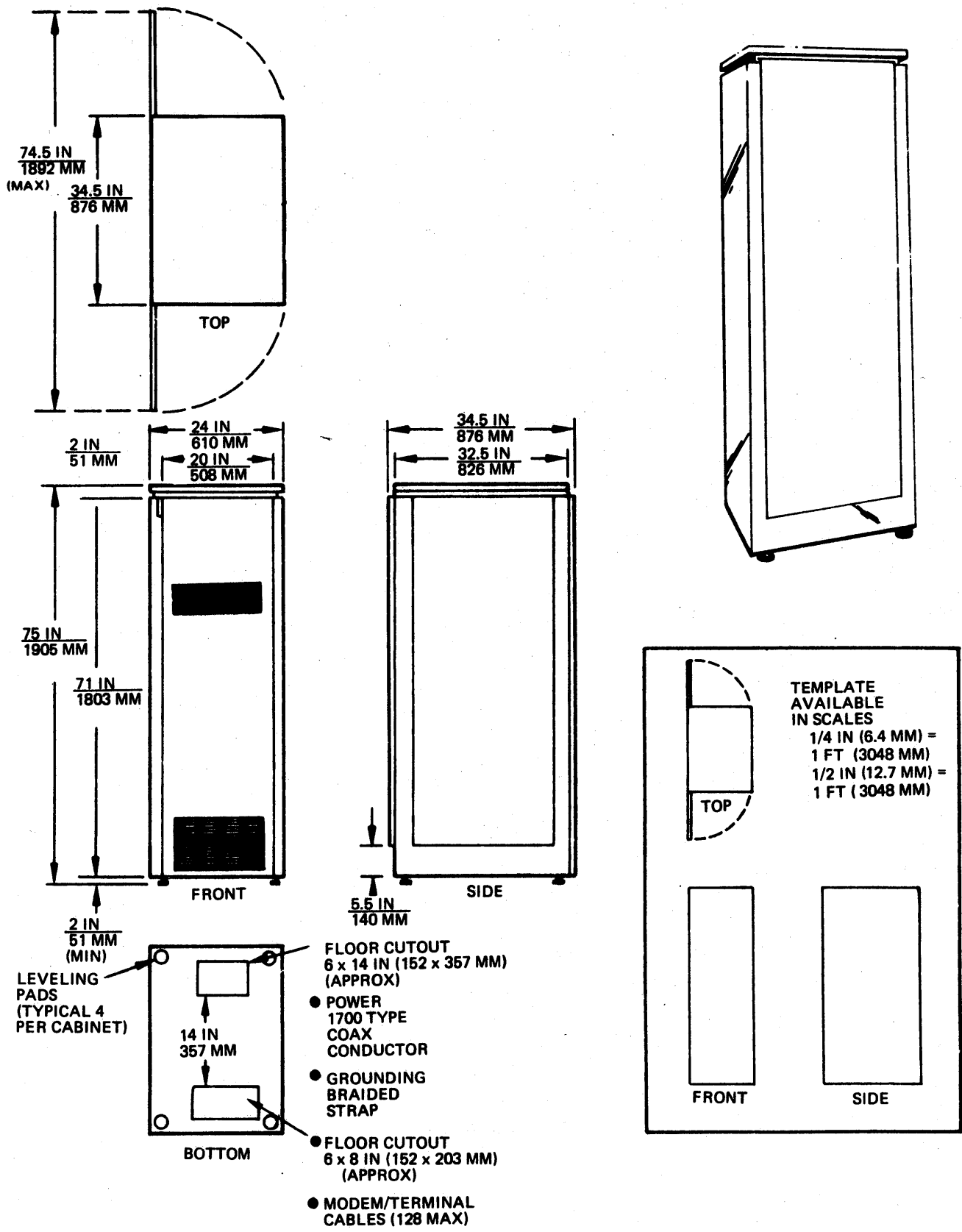


Figure 2-1. 2556-10 Loop Multiplexer Expansion Stand-Alone Cabinet

## 2556-10 LOOP MULTIPLEXER EXPANSION CABINET EQUIPMENT CHARACTERISTICS

Width	24 in (610 mm)
Depth <sup>†</sup>	74.5 in (1892 mm)
Height	75 in (1905 mm)
Weight	500 lb (227 kg)
Power Source	120/220/230/240/250 V, Single phase, 3-wire
Cabinet Circuit Breaker	20 A
Cooling-fans (internal)	800 cfm
Temperature Range	+50°F (+10°C) to +95°F (+35°C)
Recommended Temperature	+72°F (+22°C)
Humidity	20% to 80% (noncondensing)

## 2550-2 HCP EQUIPMENT CHARACTERISTICS

Width <sup>†</sup>	48 in (1219 mm)
Depth <sup>†</sup>	74.5 in (1892 mm)
Height	75 in (1905 mm)
Weight (est maximum - all options present; supported by level- ing pads)	950 lbs (431 kg)
Heat Dissipation (est)	13,300 Btu/h
Power (maximum)	3.9 kVA
Consumption	Varies with exact configuration
Power <sup>††</sup>	
60 Hz <sup>†††</sup>	208 V, 120 V, 3-phase, 20 A
50 Hz	120 V, single-phase, 40 A
Cabinet Circuit Breaker (60 Hz) (phases parallel for 50 Hz)	20 A, 3-phase, Wye, 5-wire
CLA Signal Cables (50 ft, 15.2 m max.)	1 through 128
Cooling-fans (internal, room ambient)	1200 cfm
Temperature Range	+50°F (+10°C) to +95°F (+35°C)
Recommended Temperature	+72°F (+22°C)
Humidity	20% to 80% (noncondensing)

<sup>†</sup>For maximum width and depth, all doors extended, see cabinet illustration.

<sup>††</sup>See figures 3-1 and 3-2 for optional power sources.

<sup>†††</sup>Can also be wired for 120/240 30 A service.

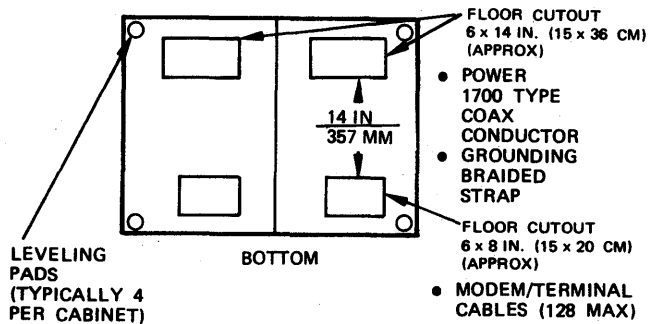
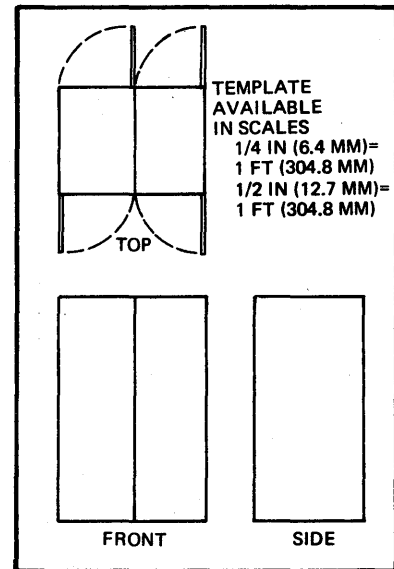
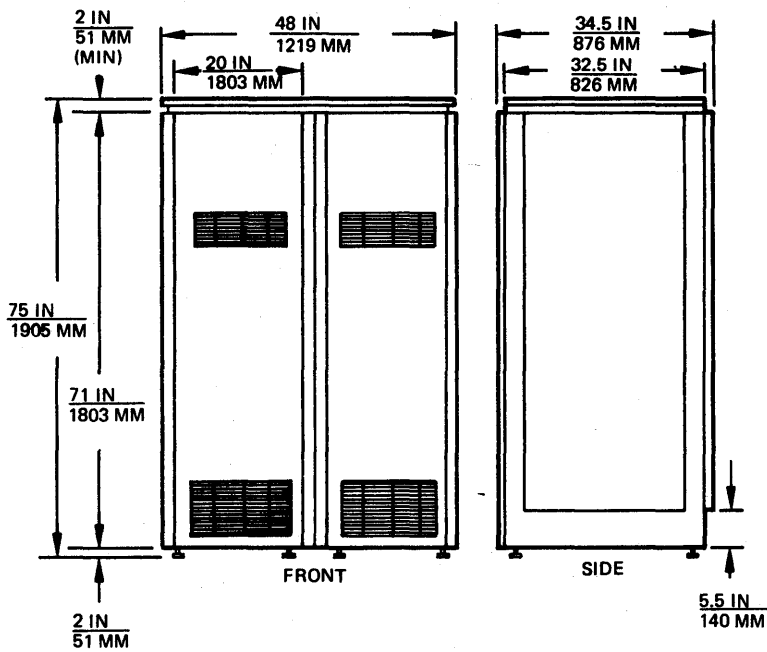
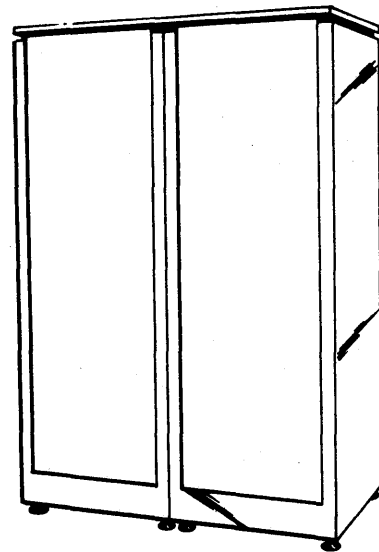
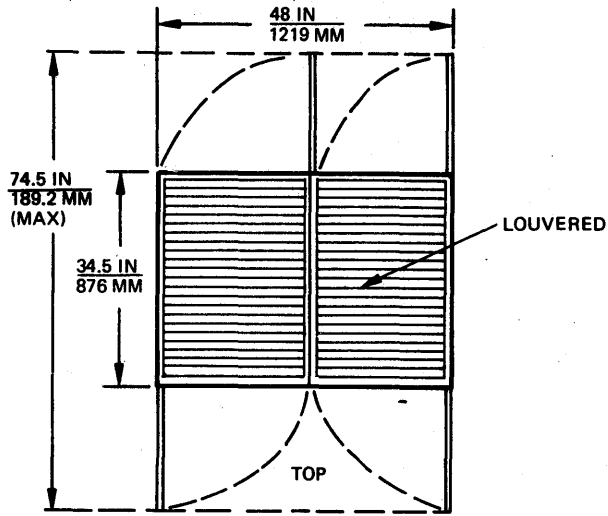


Figure 2-2. 2550-2 Host Communication Processor Cabinet

## 2551-1 AND 2551-2 NPU EQUIPMENT CHARACTERISTICS

	<u>2551-1</u>	<u>2551-2</u>
Width	24 in (610 mm)	24 in (610 mm)
Depth <sup>†</sup>	74.5 in (1892 mm)	74.5 in (1892 mm)
Height	75 in (1905 mm)	75 in (1905 mm)
Weight (est maximum, all options present; supported by leveling pads)	700 lb (318 kg)	750 lb (340 kg)
Heat Dissipation (est)	6489 Btu/h	6860 Btu/h
Power (maximum)	1.9 kVA	2.0 kVA
Power Source 50/60 Hz	120/220/230/240/250 V Single Phase, 3-wire	120/220/230/240/250 V Single Phase, 3-wire
Cabinet Circuit Breaker 50/60 Hz	20 A	20 A
Cooling-fans (internal room ambient)	800 cfm	800 cfm
Temperature Range	+50°F (+10°C) to +95°F (+35°C)	+50°F (+10°C) to +95°F (+35°C)
Recommended Temperature	+72°F (+22°C)	+72°F (+22°C)
Humidity	20% to 80% (noncondensing)	20% to 80% (noncondensing)

---

<sup>†</sup> Maximum with doors open, see cabinet illustration

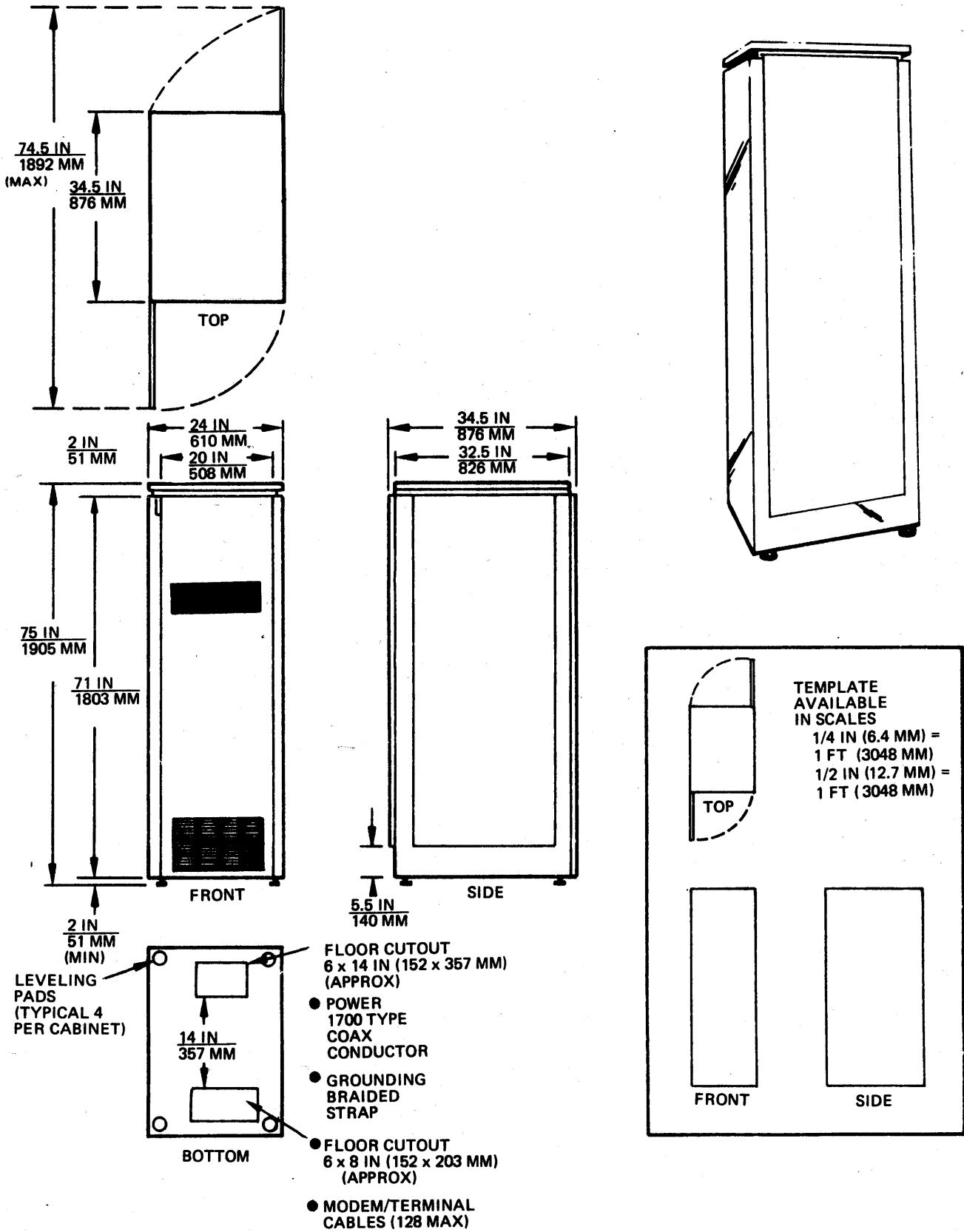


Figure 2-3. 2551-1 and 2551-2 Network Processor Unit Cabinet



## 2552-2 NPU EQUIPMENT CHARACTERISTICS

Width <sup>†</sup>	48 in (1219 mm)
Depth <sup>†</sup>	74.5 in (1892 mm)
Height	75 in (1905 mm)
Weight (est maximum - all options present; supported by leveling pads)	1100 lb (499 kg)
Heat Dissipation (est)	13,660 Btu/h
Power (maximum)	4.0 kVA (2 kVA/Bay)
Consumption	Varies with exact configuration
Power (each bay)	120/220/230/240/250/, 50/60 Hz, 3-wire
Cabinet Circuit Breakers	2-20 A
Cooling-fans (internal, room ambient)	900 cfm
Temperature Range	+50°F (+10°C) to +95°F (+35°C)
Recommended Temperature	+72°F (+22°C)
Humidity	20% to 80% (noncondensing)

<sup>†</sup>For maximum width and depth, all doors extended, see cabinet illustration

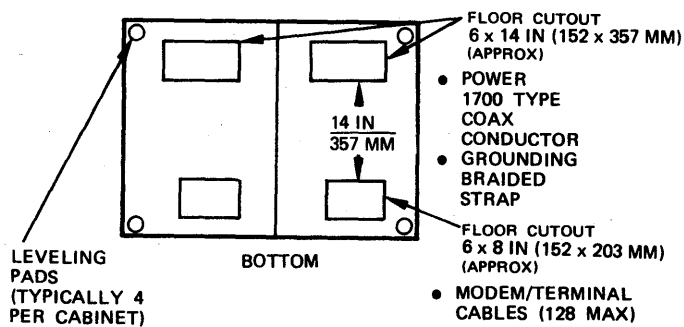
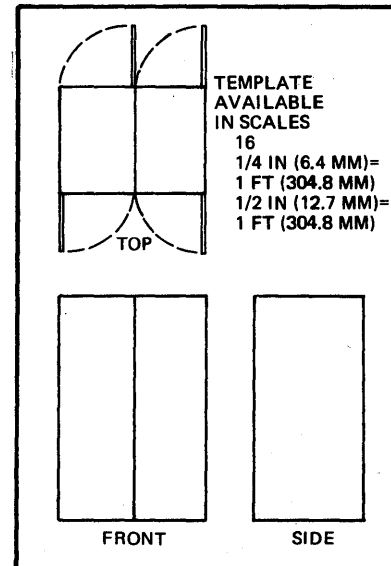
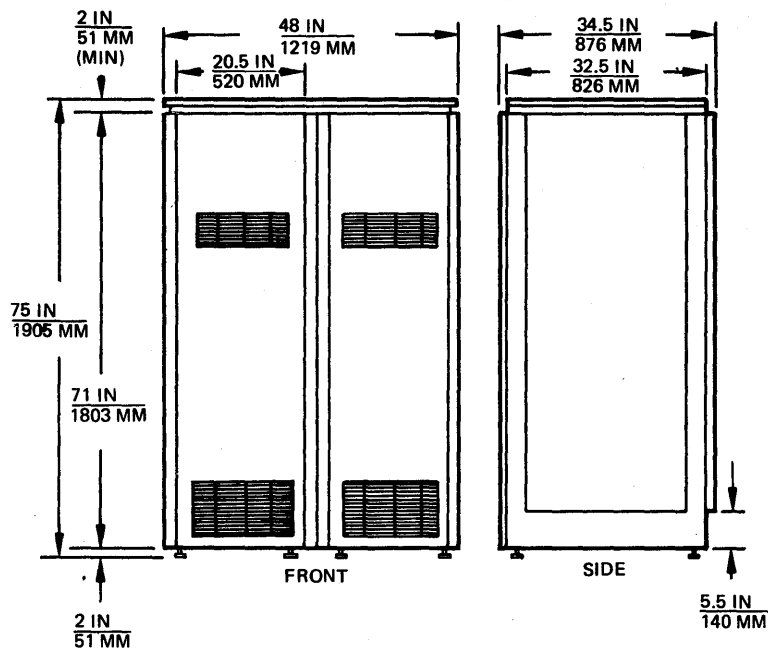
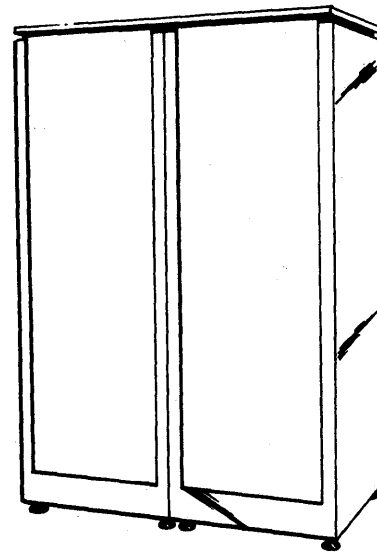
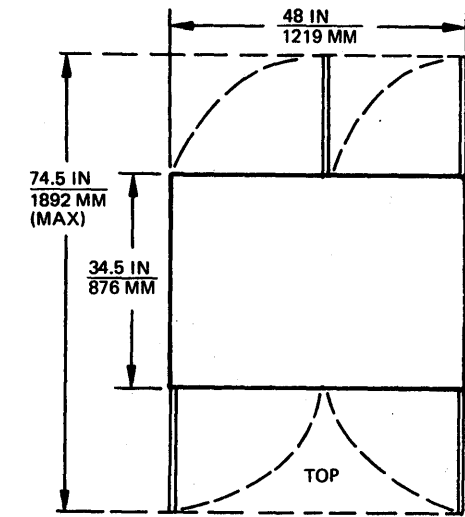


Figure 2-4. 2552-2 Network Processor Unit Cabinet

## 713-10 CONVERSATIONAL DISPLAY TERMINAL

Width	18 in	(457 mm)
Depth	20.75 in	(527 mm)
Height	17.5 in	(445 mm)
Weight (maximum)	65 lb	(19.5 kg)
Power kVA (maximum)	0.2	-
Heat Rejection Rate (maximum)	680 Btu/h	
Circuit Breakers Required	10 amp, 1 phase	
Power Consumption (nominal)	Variable	
Power Connector Type	Rubber-covered cable with standard 3-prong 115 V straight connector	
Power Cable Length (from egress point in cabinet)	8 ft	(2.5 m)
Attaches to 255X via one signal cable -		
- Length of signal cable furnished	15 ft	(4.5 m)
- Maximum signal cable length allowed	50 ft	(15.2 m)
(Additional cable may be purchased from CDC)		

### OPERATING ENVIRONMENT

<u>Environment</u>	<u>Maximum</u>	<u>Minimum</u>
Temperature	+90°F (+32°C)	+40°F (+4°C)
Relative Humidity (without condensation)	90%	10%

### Summary of Features

#### Features of Model 713-10 Include:

- Cursor control - up, down, right and left
- Home, start, stop
- Inverse video (black on white)
- Roll or page format
- Nondestructive blinking cursor
- Dot matrix 5 by 9 having standard 525-line TV raster
- 60 Hz refresh rate
- MOS semiconductor memory
- Trilevel keyboard
- Character size (nominal) 0.25 in (6.4 mm) high, 0.125 in (3.2 mm) wide and provision for hardcopy

713-10 CONVERSATIONAL DISPLAY TERMINAL

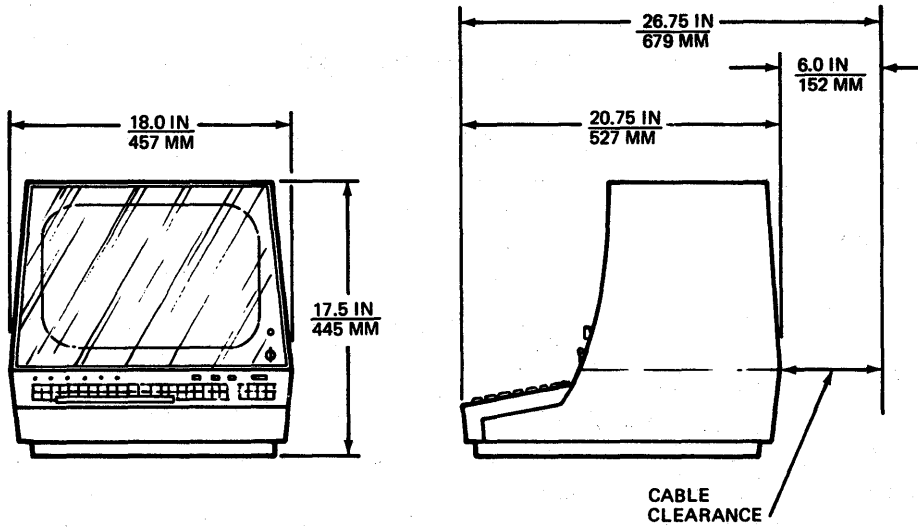
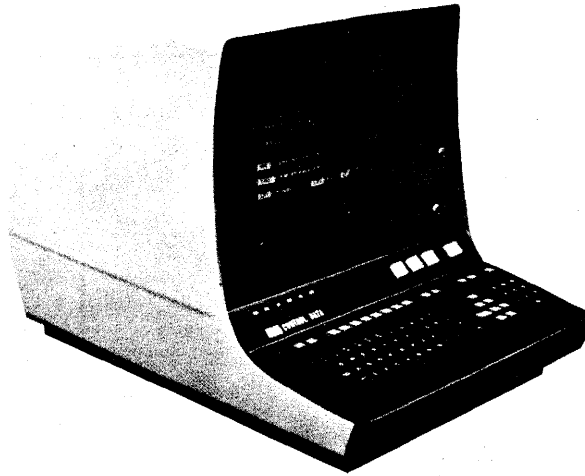


Figure 2-5. 713-10 Conversational Display Terminal

## 752-10 CONVERSATIONAL DISPLAY TERMINAL

Width	21.7 in	(551 mm)
Depth	20.5 in	(520 mm)
Height	15.2 in	(386 mm)
Weight	51 lb	(23.1 kg)
Power	.090 kVA	-
Power Dissipation (approximate)	307 Btu/h	(77 kg)
Power Source		
60 Hz	120 V, 1.0 A nominal	
50 Hz	220/240 V, 0.55 A nominal	
Power Cord Length (from egress point in cabinet)	8 ft	(2.4 m)
Power Cord Type	Rubber cord, 3-prong plug	
Signal Cable -		
- Length of signal cable furnished	15 ft	(4.5 m)
- Maximum signal cable length allowed	50 ft	(15.2 m)

(Additional cable may be purchased from CDC)

### OPERATING ENVIRONMENT

Temperature	+50°F (+10°C) to +104°F (+40°C)
Temperature Change (per hour)	18°F (10°C)
Relative Humidity (noncondensing)	10% to 90%
Humidity Change (per hour)	10%

### Features of Model 752-10 include:

- Cursor Control - up, down, right, and left
- Blinking Cursor - marks position of next character entry
- End of line warning - audible sound at 73 character position
- Interface - available with either voltage level communication facility or current loop
- Display Format - 24 lines of 80 characters
- Character Codes - alphanumeric corresponding with recommended ANSI codes
- Control Codes - keyboard access to all 33 ASCII control codes
- Hard Copy rear panel connector for attachment of nonimpact printer, or impact printer
- Keyboard Selection -
  - On-line or off-line operating mode
  - Choice of routing keyed in data to communications channel; display and printer; or display, printer, and communications channel
  - Choice of any two communications line baud rates in addition to the present 300 baud; 110, 150, 200, 300, 600, 1200, 1800, 2400, 4800, or 9600
  - Odd, even, or no parity

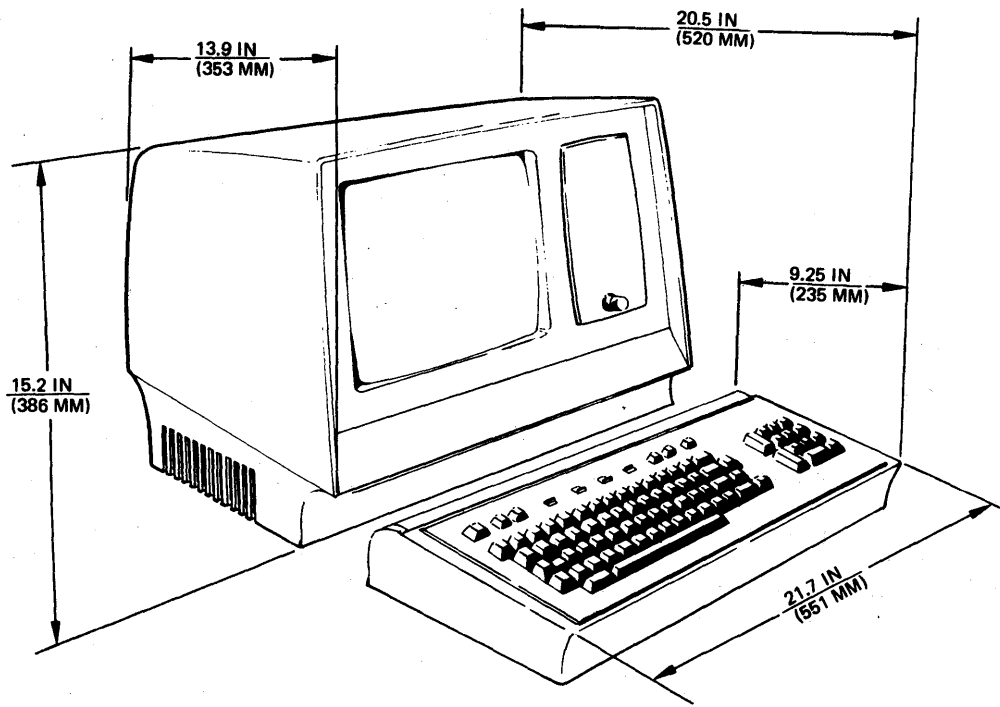


Figure 2-6. 752-10 Conversational Display Terminal

## 1711-4 KSR TELETYPEWRITER

Width	18-5/8 in	(473 mm)
Depth	18-1/2 in	(470 mm)
Height	33 in	(838 mm)
Weight	56 lb	(25 kg)
Power kVA (Running)	.22	-
Heat Rejection Rate (Running)	700 Btu/h	(176 Kcal/hr)
Circuit Breaker Required	15 A, 1 phase, 60 Hz or 50 Hz	
Power Connector	Rubber-covered cable with standard 3-prong, 115 V, 60 Hz straight connector	
Power Cable Length (from egress point in cabinet)	8 ft	(2.4 m)
The 255X is attached via one signal cable -		
- Length of signal cable furnished	15 ft	(4.5 m)
- Maximum signal cable length allowed	50 ft	(15.2 m)
(Additional cable may be purchased from CDC)		

### OPERATING ENVIRONMENT

Temperature	+40°F (+4°C) to +110°F (+43°C)
Relative Humidity (noncondensing)	10% to 90%
Relative Humidity (with paper tape) (noncondensing)	40% to 60%

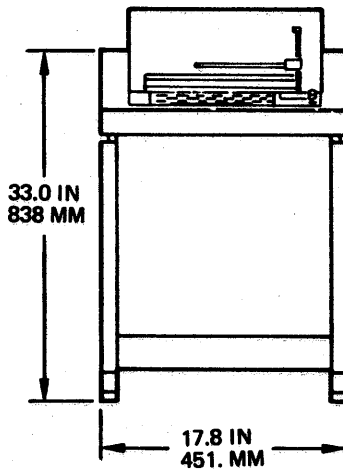
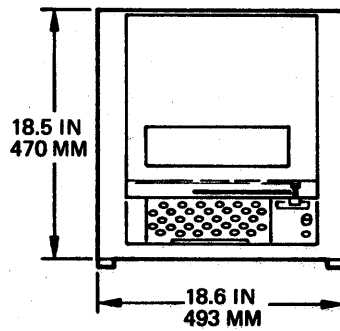
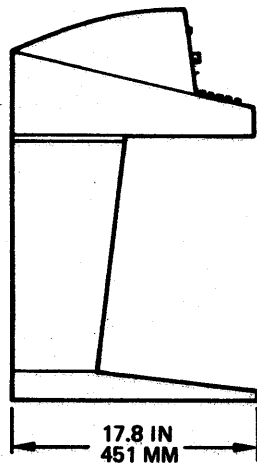
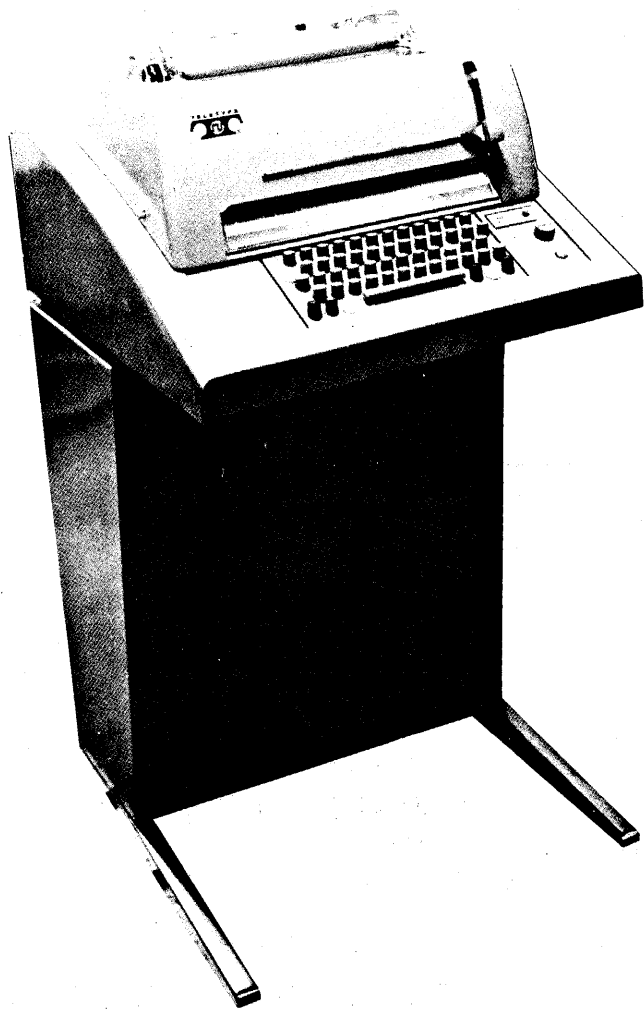


Figure 2-7. 1711-4 KSR Teletypewriter



## 1711-5 KSR TELETYPEWRITER

Width	20 in.	(508 mm)
Depth	24 in	(610 mm)
Height	38.5 in	(978 mm)
Weight	136 lb	(61.6 kg)
Power kVA (Running)	.31	-
Heat Rejection Rate (Running)	1000	
Circuit Breaker Required	15 A, 1 phase, 60 Hz or 50 Hz	
Power Connector	Rubber-covered cable with standard 3-prong, 115 V 60 Hz straight connector	
Power Cable Length (from egress point in cabinet)	8 ft	(2.4 m)
The 255X is attached via one signal cable -		
- Length of signal cable furnished	15 ft	(4.5 m)
- Maximum signal cable length allowed	50 ft	(15.2 m)
(Additional cable may be purchased from CDC)		

### OPERATING ENVIRONMENT

Temperature	+40°F (+4°C) to +100°F (+43°C)
Relative Humidity (noncondensing)	10% to 90%
Relative Humidity (with paper tape) (noncondensing)	40% to 60%

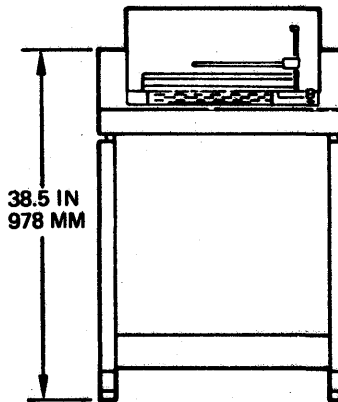
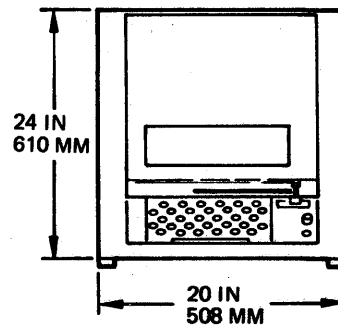
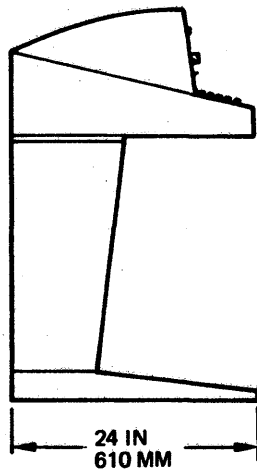
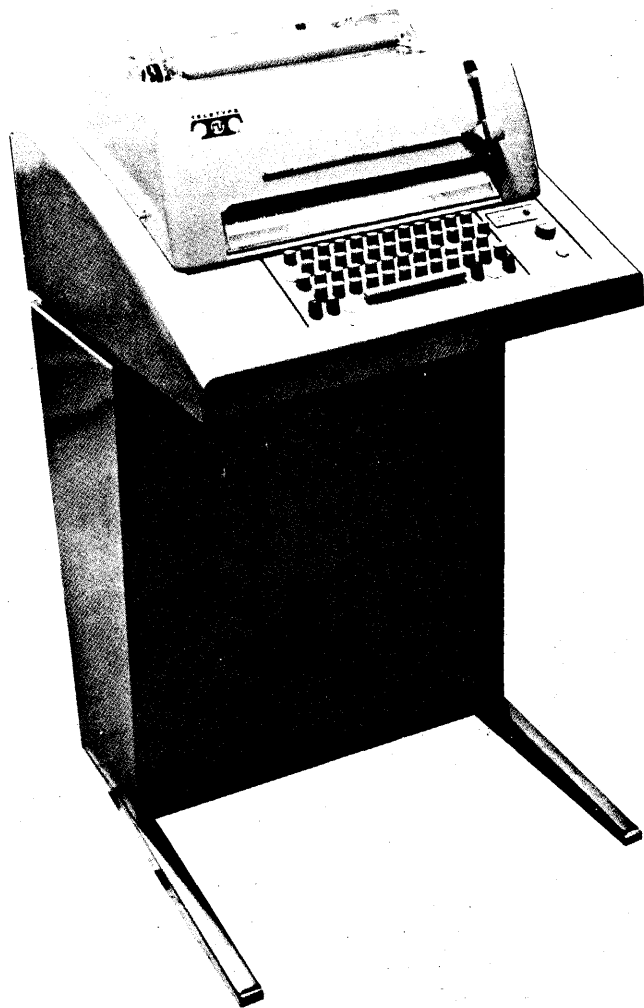


Figure 2-8. 1711-5 KSR Teletypewriter

# 1713-4 33 ASR TELETYPEWRITER

Width	22 in	(559 mm)
Depth	18.5 in	(470 mm)
Height	33 in	(838 mm)
Weight	56 lb	(25 kg)
Power kVA (Running)	.22	-
Heat Rejection (Running)	700 Btu/h	(176 Kcal/hr)
Circuit Breaker Required	15 A, 1 phase, 60 Hz or 50 Hz	
Power Connector	Rubber-covered cable with standard 3-prong, 115 V, 60 Hz straight connector	
Power Cable Length (from egress point in cabinet)	8 ft	(2.4 m)
The 255X is attached via one signal cable -		
- Length of signal cable furnished	15 ft	(4.5 m)
- Maximum signal cable length allowed	50 ft	(15.2 m)
(Additional cable may be purchased from CDC)		

## OPERATING ENVIRONMENT

Temperature	+40°F (+4°C) to +110°F (+43°C)
Relative Humidity (noncondensing)	10% to 90%
Relative Humidity (with paper tape) (noncondensing)	40% to 60%

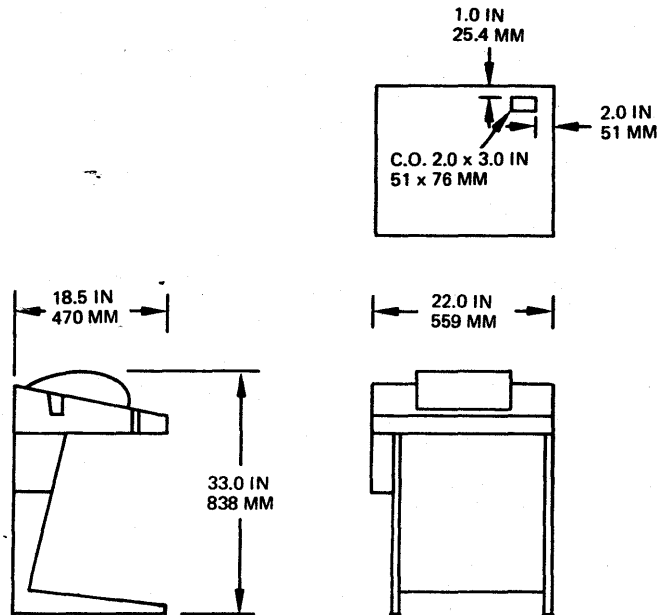


Figure 2-9. 1713-4 33 ASR Teletypewriter



## 1713-5 35 ASR TELETYPEWRITER

Width	40 in.	(1016 mm)
Depth	24 in	(610 mm)
Height	38.5 in	(979 mm)
Weight	225 lb	(102 kg)
Power kVA (Running)	.414	-
Heat Rejection Rate (Running)	1300 Btu/h	(327 Kcal/hr)
Circuit Breaker Required	15 A, 1 phase, 60 Hz or 50 Hz	
Power Connector	Rubber-covered cable with standard 3-prong, 115 V, 60 Hz straight connector	
Power Cable Length (from egress point in cabinet)	8 ft	(2.4 m)
The 255X is attached via one signal cable -		
- Length of signal cable furnished	15 ft	(4.5 m)
- Maximum signal cable length allowed	50 ft	(15.2 m)
(Additional cable may be purchased from CDC)		

### OPERATING ENVIRONMENT

Temperature	+40°F (+4°C) to +110°F (+43°C)
Relative Humidity (noncondensing)	10% to 90%
Relative Humidity (with paper tape) (noncondensing)	40% to 60%

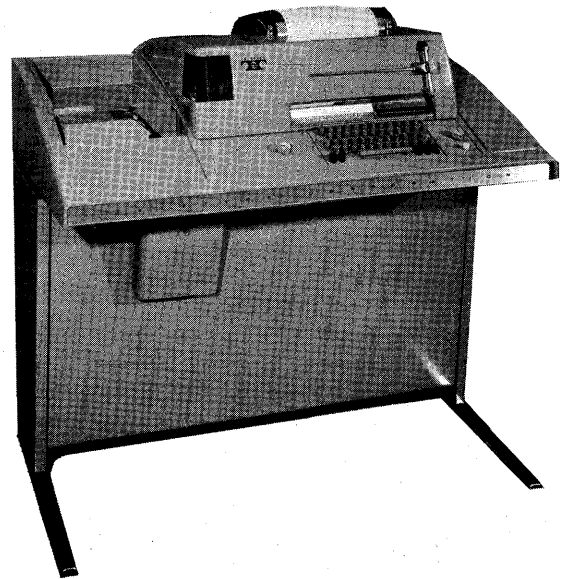
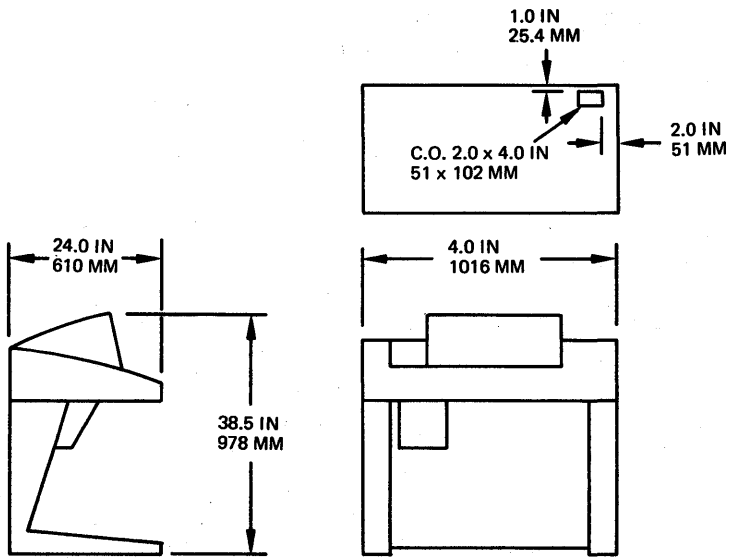


Figure 2-10. 1713-5 35 ASR Teletypewriter

## 2570-1 LINE PRINTER (USED WITH 2550-2 ONLY)

Width	37.5 in	(950 mm)
Depth	27.0 in	(690 mm)
Height	39.2 in	(996 mm)
Weight (maximum) Supported by 4 casters	500 lb	(227 kg)
Heat Rejection Rate (maximum) Controller and Line Printer combined	2900 Btu/h	
Power kVA (maximum)	1.15	
Circuit Breakers Required:		
60 Hz	15 amp, 1 phase, 115 V	
50 Hz	10 amp, 1 phase, 220 V	
Power Connector Types:		
60 Hz	CDC P/N 24531601	
50 Hz	CDC P/N 15099500	
Power Cable Length (from egress point in cabinet)	8 ft	(2.4 m)
Attaches to 255X via one signal cable -		
- Length of signal cable furnished	15 ft	(4.5 m)
- Maximum signal cable length allowed	15 ft	(4.5 m)

Requires a peripheral controller card (2571-1) which must be installed in the communications processor to operate this line printer.

Model 2570-1 is template No. 241 (available in 4 scales).

### OPERATING ENVIRONMENT

Temperature	+40°F (+4°C) to +90°F (+32°C)
Relative Humidity (without condensation)	10% to 90%

## 2570-1 LINE PRINTER

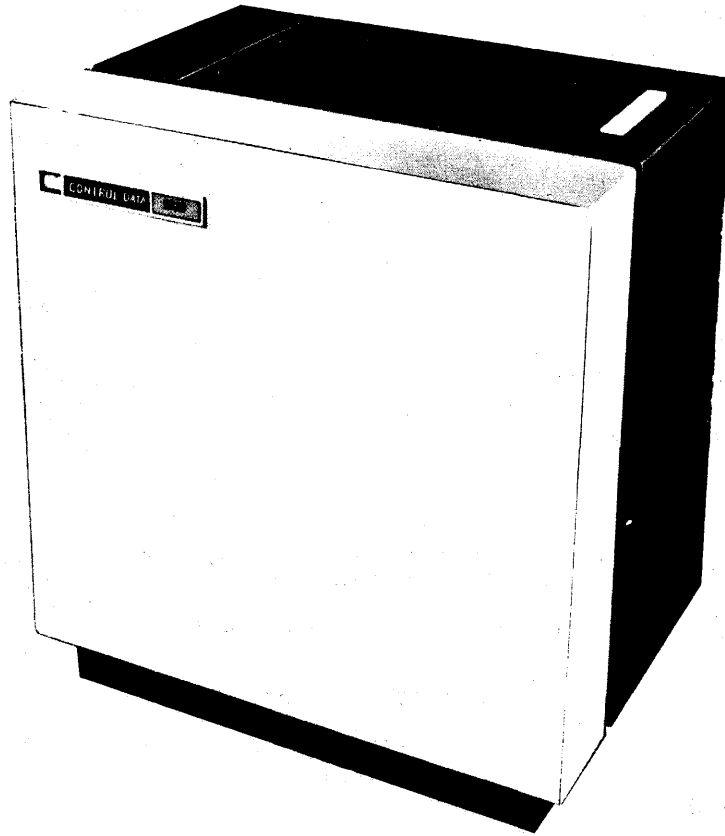


Figure 2-11. 2570-1 Line Printer (Used With 2550-2 Only)

### SPECIFICATIONS

Printing Speed:	300 Ipm, full-line buffer, with 64 character set
Paper Advance Speed:	25 milliseconds, single space; 15 ips skip rate
Sound Level:	66 dBA
Character Spacing -	
Horizontal:	10 characters per in
Vertical Format:	1 to 12-channel paper tape, 6 or 8 lines per in.
Line Width	136 columns
Forms Specification -	
Multiple Copy:	Up to six parts
Length	Up to 22 in
Width:	3½ in. to 20-5/8 in



## 2570-2 LINE PRINTER (USED WITH 2550-2 ONLY)

Width	63 in	(1600 mm)
Depth	45 in	(1140 mm)
Height	53 in	(1350 mm)
Weight (maximum)	1400 lb	(635 kg)
Supported by 4 casters		
Heat Rejection Rate (maximum) Controller and Line Printer combined	8000 Btu/h	(2000 Kcal/hr)
Power kVA (maximum)	4.32	-
Circuit Breakers Required:		
60 Hz	20 amp, 3 phase, 208 V	
50 Hz	20 amp, 3 phase, 220 V	
Power Cable Length (from egress point in cabinet)	8 ft	(2.5 m)
Attaches to 255X via one signal cable -		
- Length of signal cable furnished	15 ft	(4.5 m)
- Maximum signal cable length allowed	15 ft	(4.5 m)

Peripheral controller card (2571-1) is required and must be installed in the communications processor to operate this line printer.

Model 2570-2 is template No. 190 (available in 4 scales).

### OPERATING ENVIRONMENT

Temperature	+60°F (+15°C) to +90°F (+32°C)
Relative Humidity (without condensation)	10% to 90%

## 2570-2 LINE PRINTER

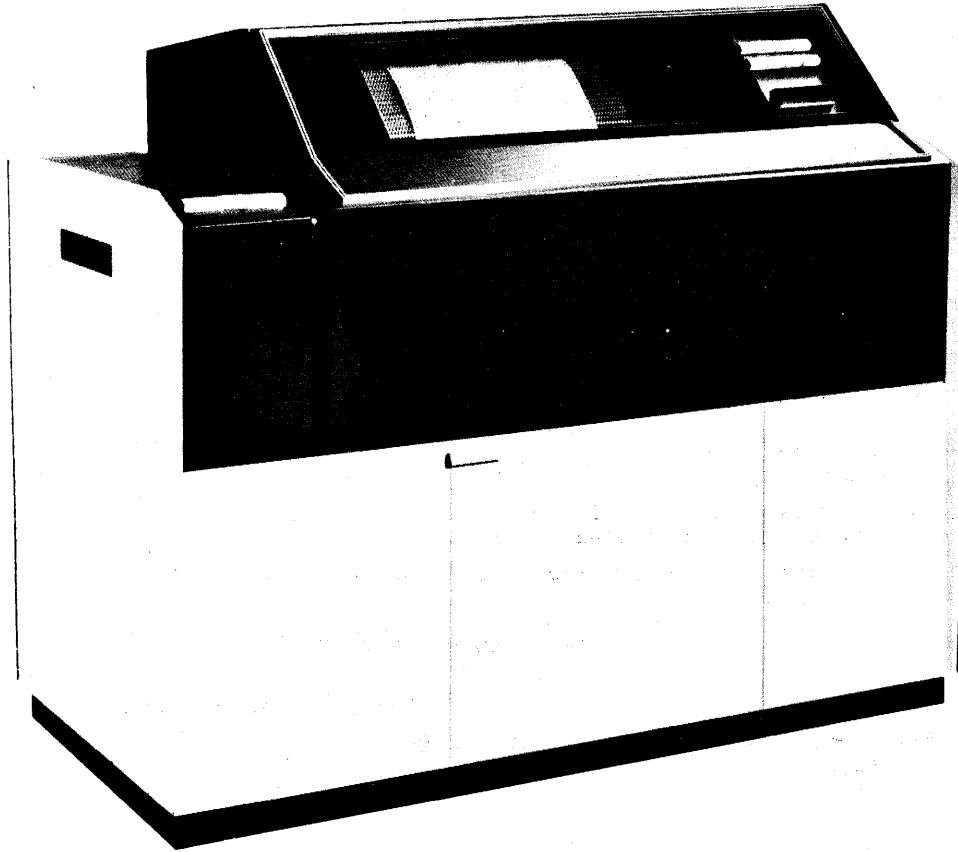


Figure 2-12. 2570-2 Line Printer (Used With 2550-2 Only)

### SPECIFICATIONS

Paper Advance Speeds -	
Single Space:	13 msec
Skip:	70 ips
Character Set:	64
Character Pitch -	
Horizontal:	10 characters per in
Vertical:	6 or 8 lines per in
Forms Specifications -	
Single Copy:	15 lb minimum with maximum card thickness of 0.006 in (0.15 mm)
Multiple Copy:	Original and 5 copies
Width:	4 in (101.6 mm) to 20 in (508 mm) print anywhere - 15.2 in (386 mm)
Length:	22 in (558.8 mm)
Stacking Height:	15 in (381 mm) (maximum)
Forms Considerations:	Acoustic seal is maintained in stacking forms up to 14 in (355.6 mm) in length
Printing Speed:	1200 Lpm, full-line buffer, with 64 character set

## 2572-1 AND 2572-2 CARD READERS (USED WITH 2550-2 ONLY)

Width	15.8 in	(401 mm)
Depth	19.5 in	(495 mm)
Height	16.8 in	(427 mm)
Weight	55 lb	(23.9 kg)
Power kVA (maximum)	.4	-
Heat Rejection Rate (maximum)	1000 Btu/h	(252 Kcal/hr)
Circuit Breakers Required		
60 Hz	10 amp, 1 phase, 120 V	
50 Hz	10 amp, 1 phase, 220 V	
Power Cable Length (from egress point in cabinet)	10 ft	(3.0 m)
Attaches to 255X via one signal cable -		
- Length of signal cable furnished	15 ft	(4.5 m)
- Maximum signal cable length allowed	15 ft	(4.5 m)

A peripheral controller card (2571-1) is required and must be installed in the processor to operate these card readers.

Model 2572-2 is template No. 242 (available in 4 scales).

### OPERATING ENVIRONMENT

Temperature	+60°F (+15°C) to +90°F (+32°C)
Relative Humidity (without condensation)	60% to 80%

### SPECIFICATIONS

Model 2572-1:	300 CPM
Model 2572-2:	600 CPM
Punched Cards:	80-column, square or round corner, ANSI compatible cards
Hopper Capacity:	1000 cards
Stacker Capacity:	1500 cards
Read Method:	Photoelectric, using reflective light - dark checking
Configuration:	Desktop

### Operator Controls

Switches:	Power On Lamp Test
Indicators:	Power On Hopper Stack Read Check

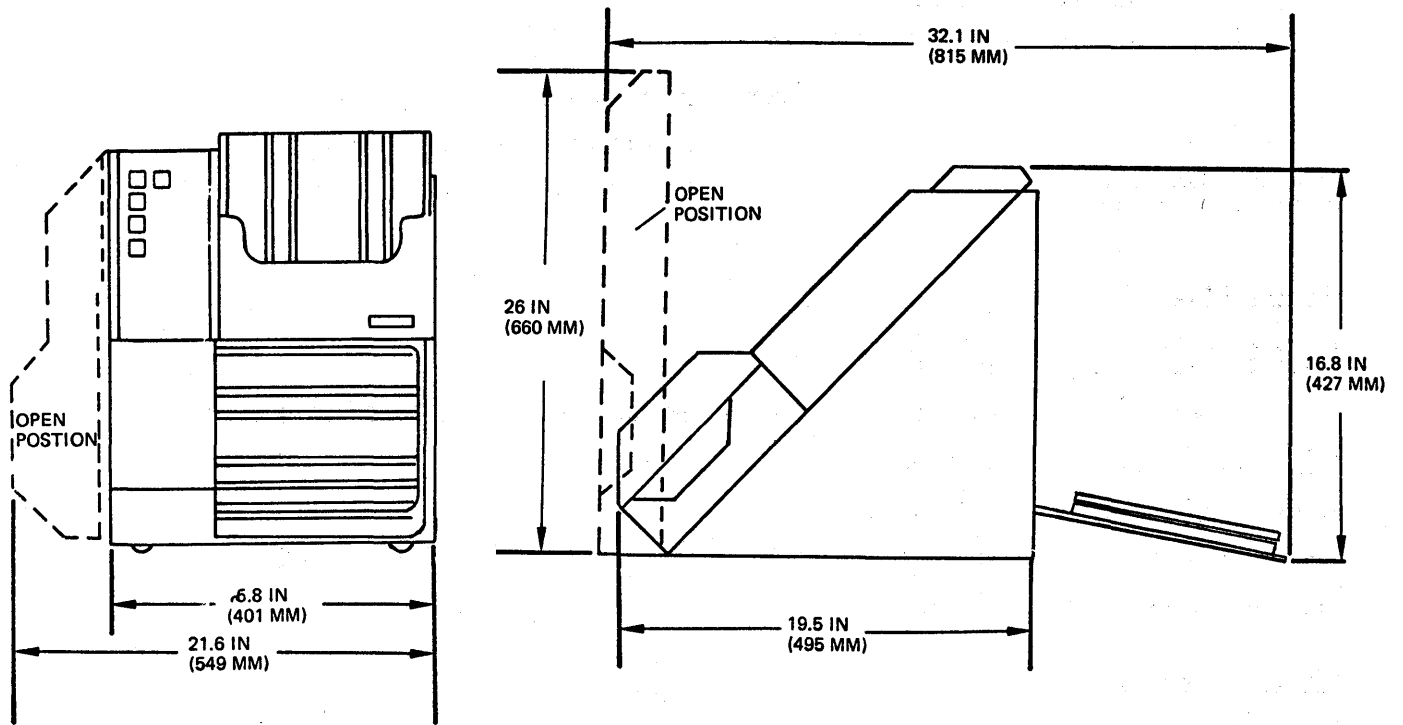
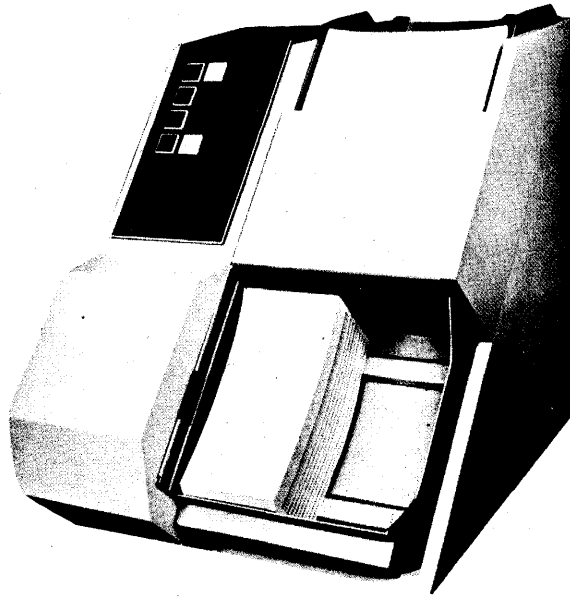


Figure 2-13. 2572-1 and 2572-2 Card Readers (Used With 2550-2 Only)

## 2580-1 UPGRADE KIT EQUIPMENT CHARACTERISTICS

Width	24 in (610 mm)
Depth <sup>†</sup>	74.5 in (1892 mm)
Height	75 in (1905 mm)
Weight (est)	605 lbs (295 kg)
Power Source 50/60 Hz	120/220/230/240/250 V Single phase, 3-wire
Cabinet Circuit Breaker 50/60 Hz	20A
Cooling-fans (Internal, room ambient)	800 cfm
Temperature Range	+50°F(+10°C) to +95°F(+35°C)
Recommended Temperature	+72°F(+22°C)
Humidity	20% to 80% (noncondensing)

---

<sup>†</sup>Maximum with all doors open, see configuration cabinet.

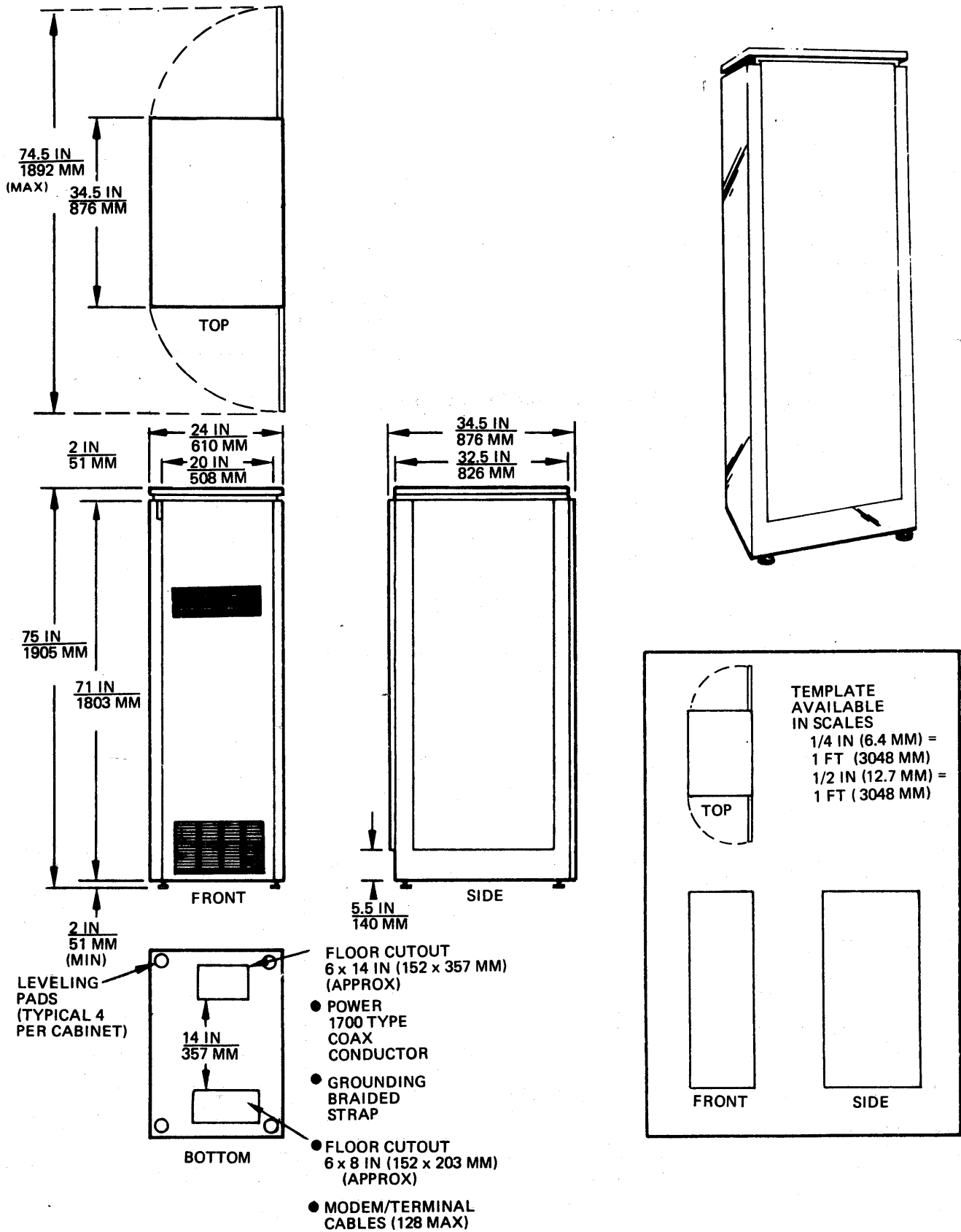


Figure 2-14. 2580-1 Upgrade Kit (2551-1 to 2551-2)

# POWER REQUIREMENTS, DATA SHEETS AND DISTRIBUTION PROGRAMS

3

## ELECTRICAL POWER

### HCP

The HCP system operates internally from either 50 Hz, 1-phase, or 60 Hz, 3-phase line voltages, which makes the system adaptable to variations in source voltage from country to country. The loads consist of a series of single phases connected to 120 V, 1-phase; or 120/240 V, 2-phase; or to 208/120 V, 3-phase power (as available).

### NPU

Each NPU system cabinet operates from 120, 220, 230, 240, or 250 volts; 50/60 Hz; 1-phase; 3-wire power source. Each cabinet contains a power distribution box that includes an autotransformer with individual power input taps. These taps allow for attachment of the variety of source voltages available in the various countries. The autotransformer converts the input voltage to 120 V at input frequency thus providing filtered 120 V ac to the cabinet internal equipment.

### WARNING

The ac common input circuit is not protected by circuit breaker/switch. Use grounded-neutral (com), 2-wire, 1-phase ac power only (U.S. 220 V ac is ungrounded).

Performance of the 255X series equipment and the attached devices depends heavily on the integrity of the electrical power supplied. In each instance the customer must weigh the cost of power stabilization against the impact of power interruption of the system equipment. In general, three levels of concern are described as follows:

1. Critical Sites - Installations where power outages cause severe disruption of service. Solution: uninterruptable power system (UPS), typically with diesel generator backup, fills this need.
2. Average Sites - Installations where power outages can cause inconvenient disruption of service. Solution: since most power outages do not exceed 1.5 seconds in duration (i.e., local utility companies switch over to alternate paths in this interval), the use of motor-generator (MG) sets, with flywheels to provide a 2.5-second ride-through, fills this need.
3. Low Critical Sites - Installations where service outages are infrequent

and tolerable. No additional conditioning, beyond the measures integral to the 255X, is required.

Most installations are level 2. Therefore, MG sets are recommended. When both the 255X equipment and the local modems (and optionally, local terminals) are connected to a suitable MG, typically 98 percent of all power outages will have no effect on the system operation. A 2.5-second ride-through can be accomplished by using a MG set (50 Hz or 60 Hz) containing a massive flywheel. However, another technique, often more cost effective, is to drive the MG set from 400 Hz computer power, which already has the 2.5-second interval built in (in most cases). Usually these facilities are provided by the local contractor. Control Data Computer Facility Planning and Construction Division is available to assist in any local situation.

The primary electrical power and heat dissipation requirements for the 255X series equipment are listed in section 2.

## POWER DISTRIBUTION

### HCP

The 255X HCP has one or two power distribution boxes for each 2-bay system. Power input is to the terminal block, as shown. A standard 5-wire power cable is provided, as a no-cost standard, with each system. This power cable can be removed and connection made directly to the terminal board, if required for compliance with the local electrical code. Power distribution is designed for ease of installation and convenience of use.

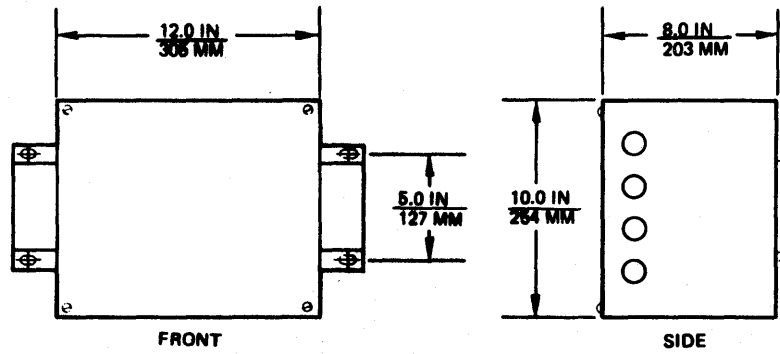
Figure 3-1 indicates the power options for the 255X HCP equipment. Figure 3-2 illustrates the standard, locking 3-phase plug provided for the customer, NEMA L21-30P. When the local customer situation requires another connector, an adapter should be used having NEMA L21-30R on the end and the customer plug on the other, using UL/CSA approved cable for the interconnect. Mating connectors are normally not provided since the connection uses the NEMA standard plug.

### NPU

Each NPU cabinet contains a power distribution box (PDB) and each PDB requires individual power connection to compatible power source (figure 3-3). The power source is connected via 3-wire cable or conduit circuit, directly to the PDB autotransformer terminal strip. A standard 3-wire







WEIGHT: 104 POUNDS (47 KILOGRAMS)

M-346

PRIMARY VOLTAGE INPUTS TAPS:

95 VOLTS	230 VOLTS
105 VOLTS	240 VOLTS
115 VOLTS	250 VOLTS
220 VOLTS	

SECONDARY: 120 VOLTS, 50/60 HZ, 40 AMPERES

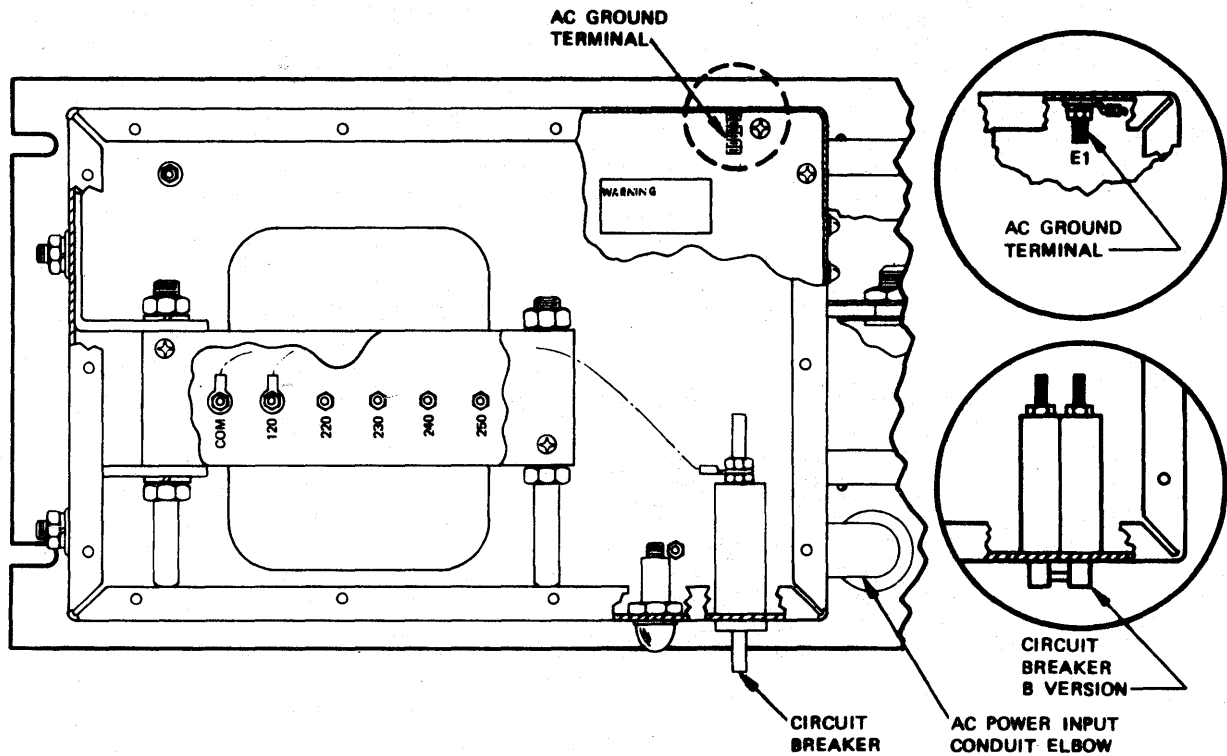
CAPACITY: 4.5 KVA ON SECONDARY SIDE

OUTPUT: 115 V, 1 Ø, 50/60 HZ

MAXIMUM OPERATING AMBIENT TEMPERATURE: 120°F (48.8°C)

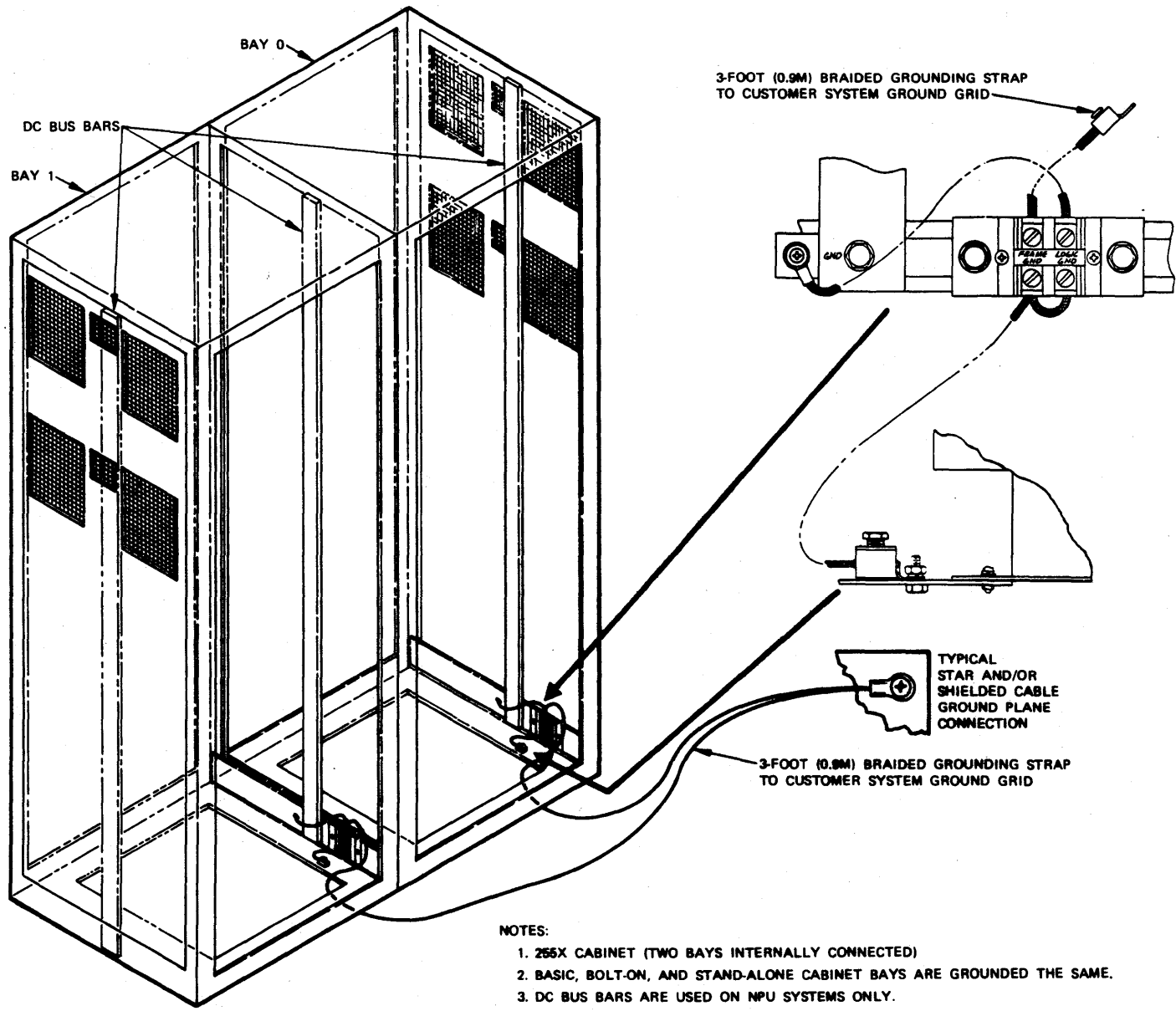
MAY BE MOUNTED ON WALL ADJACENT TO MAIN CIRCUIT BREAKERS.  
PERFORATED ENCLOSURE AND NEMA MOUNTING PLATE ARE NOT PROVIDED.

Figure 3-2. Standard CDC Power Transformer for HCP Systems



M-346

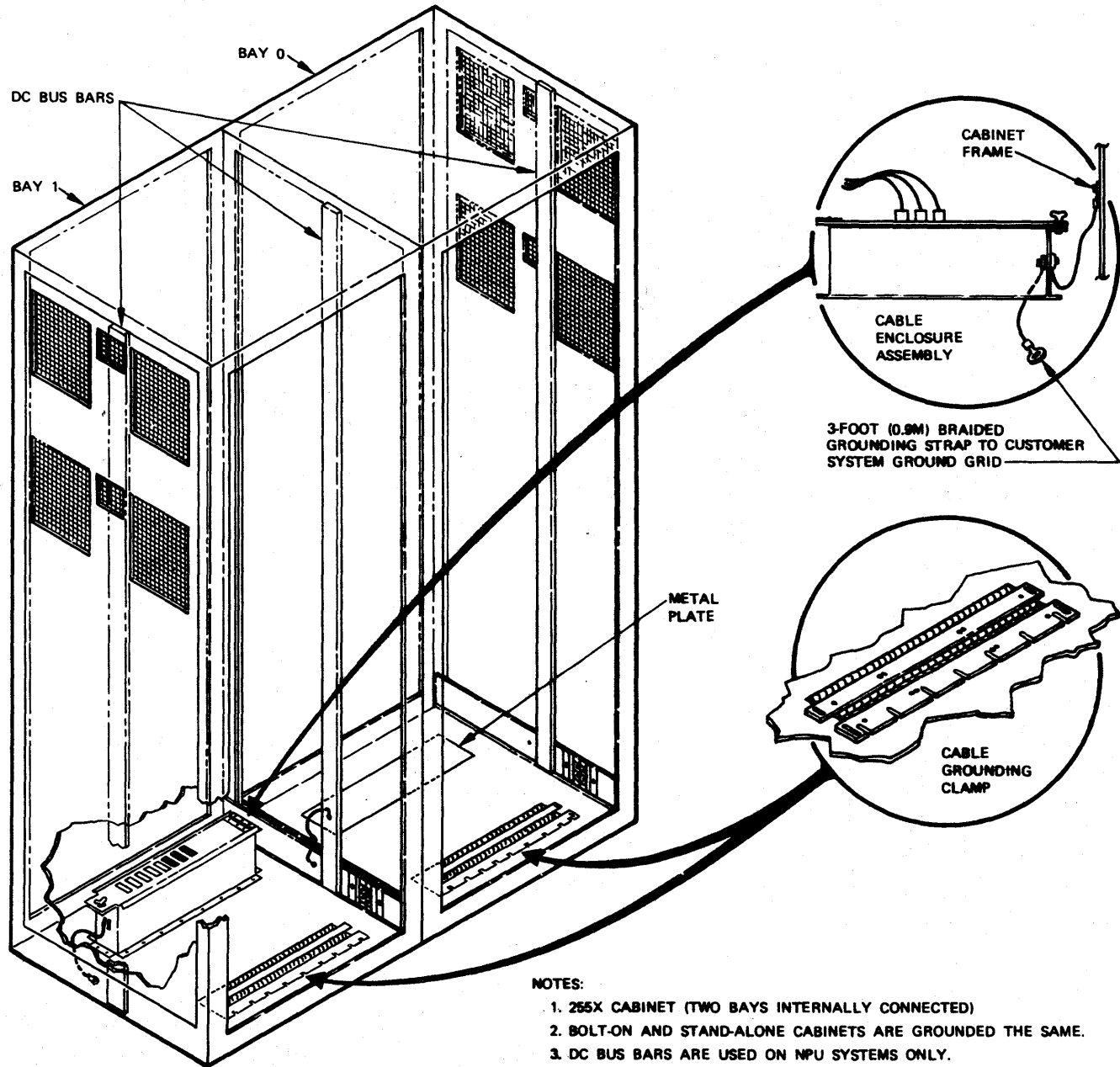
Figure 3-3. NPU Power Distribution Box Power Input Facilities



- NOTES:
- 1. 255X CABINET (TWO BAYS INTERNALLY CONNECTED)
  - 2. BASIC, BOLT-ON, AND STAND-ALONE CABINET BAYS ARE GROUNDED THE SAME.
  - 3. DC BUS BARS ARE USED ON NPU SYSTEMS ONLY.

M-347

Figure 3-4. Typical Grounding Arrangement (A Version)



M-348

Figure 3-5. Typical Grounding Arrangement (B Version)

The customer is responsible for the provision and installation of all items related to the communications system power distribution as defined here and in the section 1 manual. The customer must supply and install all primary power source circuit breakers, panels, disconnects, ducting, magnetic contractors, and all power cabling. The customer will also furnish convenience/utility outlets to permit connection of test equipment.

Power cable lengths are limited to 7 ft (2.1 m) minimum to 15 ft (4.5 m) maximum, but conductors must be heavy enough to limit the voltage drop in any power cable run to less than two percent. Typical cables use number 10 AWG flexible copper conductors. Phase conventions on the 60 Hz power need not be strictly adhered to and can be rotated for better phase balance. No other deviation is permissible lest electrical safety and proper operation of the 255X HCP and/or associated equipment be impaired.

## MAIN POWER REQUIREMENTS

### HCP

The main power supply, either a commercial line or a local generator, shall have the following regulations:

208/120 volts  $\left\{ \begin{array}{l} +6 \\ -13 \end{array} \right\}$  percent

### NPU

120 volts  $\left\{ \begin{array}{l} +6 \\ -13 \end{array} \right\}$  percent

220 thru 250 V  $\pm$  10 percent

The 255X is designed to operate within the following main power distortion:

1. Range 1 per CDC STD 1.03.207.
2. Harmonic distortion up to 3 percent for individual harmonics and 5 percent for the total of all harmonics.

3. Crest factor of  $1.41 \pm 0.10$ .

### NOTE

These main power distortions apply to inputs before switch ON.

For other than 208/120 V, 50 or 60 Hz power, a standard power transformer (typical product number 10299-22 or equivalent), shown in figure 3-2, is required. Table 3-1 provides standard wiring conventions for power transformer and power connectors.

### UNINTERRUPTED POWER SUPPLY

Installation and wiring of UPS, if used, is the responsibility of the customer. Also, see previous discussion on ride-through device.

### POWER RESPONSIBILITY

The responsibility to provide the power distribution as specified in this document lies with the customer or his designated contractor.

### GROUNDING REQUIREMENTS AND RESPONSIBILITY

It is the customer's responsibility to provide a grounding system for all equipment in the communications system. The grounding systems must meet local electrical codes. Though the intent of these codes is the same, approved methods and materials vary somewhat.

### NOTE

The 2550 series HCP and NPU equipment is designed to meet the criteria of the star ground and/or the shielded cable ground plane theories. See CDC Engineering Standard 1.30.023, Digital Computer Grounding, for further information.

TABLE 3-1. STANDARD WIRING CONVENTIONS FOR POWER TRANSFORMER AND POWER CONNECTORS

Item	60 Hz	60 Hz	60 Hz	50 Hz		50 Hz	
	1-phase	2-phase	2-phase	1-phase		3-phase	
PHASE A <sup>†</sup>	Black	Black	Black	Red	Brown	Red	Brown
PHASE B <sup>†</sup>	-	Red	Red	-	-	White	Brown
PHASE C <sup>†</sup>	-	-	Blue	-	-	Blue	Brown
NEUTRAL	White	White	White	Black	Blue	Black	
GROUND	Green or Grn/Yel	Green or Grn/Yel	Green or Grn/Yel	Green or Green/Yellow		Green or Green/Yellow	

<sup>†</sup>Alternate colors may be substituted when permitted by local codes. Ground conductor colors must follow approved conventions.

Ground cables (flat braid) must have a maximum resistance of 0.2 ohm from the farthest point of each cable to the groundplate. The ground cables from the HCP or NPU to the groundplate are supplied with each system.

NOTE

An existing grid or raised-floor grounding system, as defined in site preparation manual, section 1, part 8, satisfies the above conditions.

The 255X HCP and NPU (A version) has a single-point ground in the cabinet where loop multiplexer and communications processor logic grounds are connected to frame ground. See figure 3-4. This same point is attached to the copper plate or grid ground system via a braided metal strap.

The 255X NPU (B version) cabinet contains a cable enclosure assembly. See figure 3-5. Host cables interface with internal NPU cables at the enclosure assembly. The cable shields are electrically grounded at the cable enclosure, which is grounded to the cabinet frame by a copper braided ground strap bolted to the frame. The B version cabinets each contain a finger-type cable grounding

clamp to ground the CLA cable shields to the cabinet.

The site grounding system must be laid out to provide a low-impedance path from each piece of equipment to the building ground without creating ground loops between equipment.

If an approved grounding grid does not exist, one approved method for system grounding uses a customer-provided copper plate connected to the central building ground, nominal, 12 inches wide by 12 inches long by 1/2-inch thick (304 mm by 304 mm by 5.0 mm). This plate is large enough to accommodate at least sixteen 1/2-inch (5.0 mm) attachment points for individual grounding straps. A nominal resistance of 0.2 ohm or less shall exist between the copper plate and the single-point building power ground. The connection from the groundplate to the building ground should be made with as large a conductor as possible, but no smaller than AWG 2/0. The groundplate and its connection to the central building ground is the responsibility of the customer.

The single-point building power ground shall have a nominal resistance of not more than 3 to 5 ohms to earth ground, as measured by standard utility company methods.



This glossary furnishes definitions of certain technical terms and supplies abbreviations and their meanings.

ASCII	- American Standard Code for Information Interchange	LM	- Loop Multiplexer
CCITT	- Committee Consultive, International Telephone and Telegraphique. An international standards definition that provides common interfaces between communications facilities, their terminals and computer systems	MLIA	- Multiplex Loop Interface Adapter
CCP	- Communications Control Program	MUX	- Multiplexer
CDC	- Control Data Corporation	NOS	- Network Operating System
CLA	- Communications Line Adapter	NPU	- Network Processor Unit
CLE	- Communications Line Expansion	PPU	- Peripheral Processing Unit
CDT	- Conversational Display Terminal	TDM	- Time Division Multiplexer
DDN	- Digital Data Network	TLC	- Telegraphic Level Converter
DMA	- Direct Memory Access	TTY	- Teletypewriter
EIA RS-232-C	- A standard specifying the signal level interfaces used widely in the United States		
FDX	- Full-Duplex(ing). (1) The technique used to move data over a communications line in both directions at the same time. Always requires a full-duplex communications line. (2) A communications line so arranged to allow simultaneous 2-way data flow		
HCP	- Host Communications Processor		
HDX	- Half-Duplex(ing). The technique used to move data over a communications line in both directions, one way at a time.		
			<u>Asynchronous:</u> A technique of data transmission that encloses a data byte with framing bits so that the receiver can detect and understand each bit in its proper relationship to other bits of the byte (without common clock).
			<u>Bit:</u> The basic element of binary intelligence, which may be either a one or a zero.
			<u>Byte:</u> A series of bits in combination that either forms a basic unit of human intelligence (character) or is the basic set of bits forming an entity for processing purposes.
			<u>Cyclic Encoder:</u> Hardware and software device to generate and verify cyclic redundancy check sum.
			<u>Host Computer:</u> A device in a network where data is processed to perform user tasks. It may act as a data source or destination. (CDC 6000 or CYBER 70/170)
			<u>Modem:</u> Modulator/Demodulator - A device that converts data from a digital form to a form compatible with the communications facility being used as the data path.
			<u>Protocol:</u> The sequence of control and interaction between devices at each end of a communications line that facilitates the movement of the data efficiently and accurately.
			<u>Synchronous:</u> A technique of data transmission that provides transmission of data without framing bits for each byte. Subsequent bit locations are determined by the transmitter and receiver backing a common clock.





# COMMENT SHEET

MANUAL TITLE Host Communications Processor 2550-2,  
Network Processor Unit 2551-1, 2551-2, 2552-2  
Section 2, Site Preparation Manual

PUBLICATION NO. 74641200 REVISION D

**FROM:** NAME: \_\_\_\_\_  
BUSINESS  
ADDRESS: \_\_\_\_\_

## COMMENTS:

This form is not intended to be used as an order blank. Your evaluation of this manual will be welcomed by Control Data Corporation. Any errors, suggested additions or deletions, or general comments may be made below. Please include page number references and fill in publication revision level as shown by the last entry on the Record of Revision page at the front of the manual. Customer engineers are urged to use the TAR.

CUT ALONG LINE

PRINTED IN U.S.A.

AA3419 REV. 11/69

NO POSTAGE STAMP NECESSARY IF MAILED IN U. S. A.

FOLD ON DOTTED LINES AND STAPLE

STAPLE

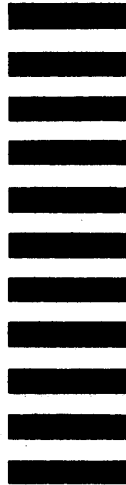
FOLD

FOLD

FIRST CLASS  
PERMIT NO. 8241  
MINNEAPOLIS, MINN.

**BUSINESS REPLY MAIL**  
NO POSTAGE STAMP NECESSARY IF MAILED IN U.S.A.

POSTAGE WILL BE PAID BY  
**CONTROL DATA CORPORATION**  
Publications and Graphics Division  
P. O. Box 4380-P  
Anaheim, California 92803



CUT ALONG LINE

FOLD

FOLD