96768510

CONTROL DATA CORPORATION

CDC® CYBER 18 COMPUTER SYSTEMS

CYBER 18-5
CYBER 18-5M
CYBER 18-10M
CYBER 18-20
CYBER 18-25
CYBER 18-30

CUSTOMER:

SITE PLANNING KIT

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REVISION RECORD

REVISION	DESCRIPTION
01	Preliminary release.
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A	Manual released. Obsoletes all previous editions.
(1/77)	
B	Manual revised; includes ECO 14814, defining the new magnetic tape subsystems. This revision is included in the revision C
(6/77)	printing.
C	Manual revised; includes former publications 96768650, 96768660 and 96768670, the site preparation manuals, which are
(6/77)	obsolete. This printing obsoletes all previous editions.
D	Manual revised; includes ECO DS14972, correcting heat dissipation values for the processors. This revision is included in the
(4/78)	revision E printing.
E	Manual revised; includes ECO DS21155, adding CYBER 18-5M system, phase-encoded magnetic tape subsystem, buffered
(7/78)	communication line adapter, and synchronous data link control communication line adapter data. Miscellaneous additions
	and corrections are included.
F	Manual revised; includes ECO DS21169, providing a new CLA-to-modem signal cable.
(12/78)	
G	Manual revised; includes ECO DS21173, releasing new paper tape/card punch equipment.
(12/78)	
H	Manual revised; includes ECO DS21396, changing the power conversion transformer minimum input voltage to a practical value.
(4/79)	
J	Manual revised; includes ECO DS21316, correcting invalid part numbers and miscellaneous data.
(4/79)	
K	Manual revised; includes ECO DS21303, adding CT104-D printer information
(4/79)	
L	Manual revised; includes ECO DS21473, adding auto restart loader data.
(4/79)	
M	Manual revised; includes new products, and improved manual format. Obsoletes all previous editions.
(12/79)	
N	Manual revised; includes ECO DS21879, adding new products.
(3/80)	
P	Manual revised; includes ECO DS21967, adding new products.
(7/80)	
R	Manual revised; includes ECO DS021975, providing 722-10/CC628 display terminal information and a revised 10445-2 description.
(11/80)	
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(1/81)	
T	Record change only. Revision T is the same as revision S.
(8/81)	

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or use Comment Sheet in the back of this manual.

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U	Manual revised; includes ECO DS022116, providing revised band line printer information and miscellaneous corrections.
(8/81)	
V	Manual revised; includes ECO DS015601, providing a new appendix for customer-fabricated cable assemblies.
(1/82)	
W	Manual revised; includes ECO DS022253, providing an FCC EMI tested/complies warning label.
(3/83)	

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LIST OF EFFECTIVE PAGES

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1866-12/14-1	M
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1867-1/2/3/4-1	M
1867-1/2/3/4-2	M
1867-10/20-1	M
1867-10/20-2	M
1867-40-1	M
1867-40-2	U
1868-1-1	N
1868-1-2	N
1887-4-1	M
1887-4-2	M
1887-5-1	N
1887-5-2	N
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PREFACE

The Control Data CYBER 18 Computer Systems Site Planning Kit is a valuable reference during the site planning phase. This manual is required for complete documentation and for preparation of the site prior to delivery and installation of a CYBER 18 system. The reader should note that some of the equipments discussed in this manual are not released products.

The manual is intended for initial use by the customer and/or his data processing manager for planning. Then, under the direction of the customer, the manual is to be used by the mechanical and electrical facility personnel as a guide in preparing the site for system installation.

For information on the installation of equipments that the CYBER 18 computer systems may comprise, refer to the following CDC installation manuals.

Publication	Publication Number
CYBER 18 Computer Systems with Core Memory Installation Manual	39451500
CYBER 18 Computer Systems with MOS Memory Installation Manual	96768360

WARNING

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

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TABLE

Thoughtful, detailed planning and preparation are essential for the successful installation of any computer system. Since the completion of each planned step in the site preparation is assumed by the following step, it is imperative that the customer formulate and adhere to a carefully planned and sequenced schedule. Prior to establishing a schedule, the customer must be thoroughly familiar with this site planning kit (SPK).

Because a computer system represents a significant investment, it is important to have a smooth-running, trouble-free installation, which can be accomplished through carefully planned, detailed, and executed site preparation. Thus, Control Data strongly recommends that the customer pay strict attention to detail and not endeavor to minimize any installation requirement. The site planning kit provides the customer with the systems technical information, site requirements, and recommendations necessary to prepare the site properly.

This manual includes tables, charts, work sheets, questionnaires, and a standard format data sheet for each product or piece of equipment. Where practical, step-by-step procedures are used.

The following text provides the customer with a brief explanation of each major section of the manual and how it assists the customer in his site planning process.

SITE PLANNING/INSTALLATION FLOWCHART

The site planning and installation flowchart (figure 1-1) illustrates the installation sequence from the initial signing of the purchase order to the installation and checkout of the computer system. The flowchart also provides an overview of the major sections of this manual.

SITE VISIT AND CUSTOMER PLANNING DOCUMENT

This section explains the customer's and Control Data's responsibilities for site planning and preparation. It also includes the system work sheet, room measurement grid, floor plan grid, and customer planning questionnaire. All of these must be properly filled out and used by the customer in preparing his site. It is recommended that the customer read the entire manual before filling out these forms.

SITE PLANNING

This section sets forth general site planning information, considerations, and recommendations designed to assist the customer in planning the space, layout, and configuration of the system.

Certain site requirements, such as environmental control, power and grounding, and system layout restrictions, are set forth in detail in this section.

PRODUCT DESCRIPTIONS

This section consists of a table that briefly describes each CYBER 18 product and indicates its cabinet housing (that is, whether it is a stand-alone unit, a tabletop-mounted unit, or a product that mounts in another product cabinet).

This table is used in conjunction with the system work sheet to determine those products for which an equipment data sheet exists. Several products, such as controllers and/or memory expansion, mount inside the CYBER 18 central processing unit chassis and, therefore, do not have site planning requirements.

EQUIPMENT SPACE REQUIREMENTS AND DATA SHEETS

With a few exceptions, such as the 1867-7x/9x tape transports which mount in an 1887-4 Equipment Cabinet, data sheets exist only for stand-alone or tabletop-mounted equipments.

The data sheets are not page numbered sequentially as part of the manual, but are arranged in ascending numerical order by product number so that the customer may locate them easily.

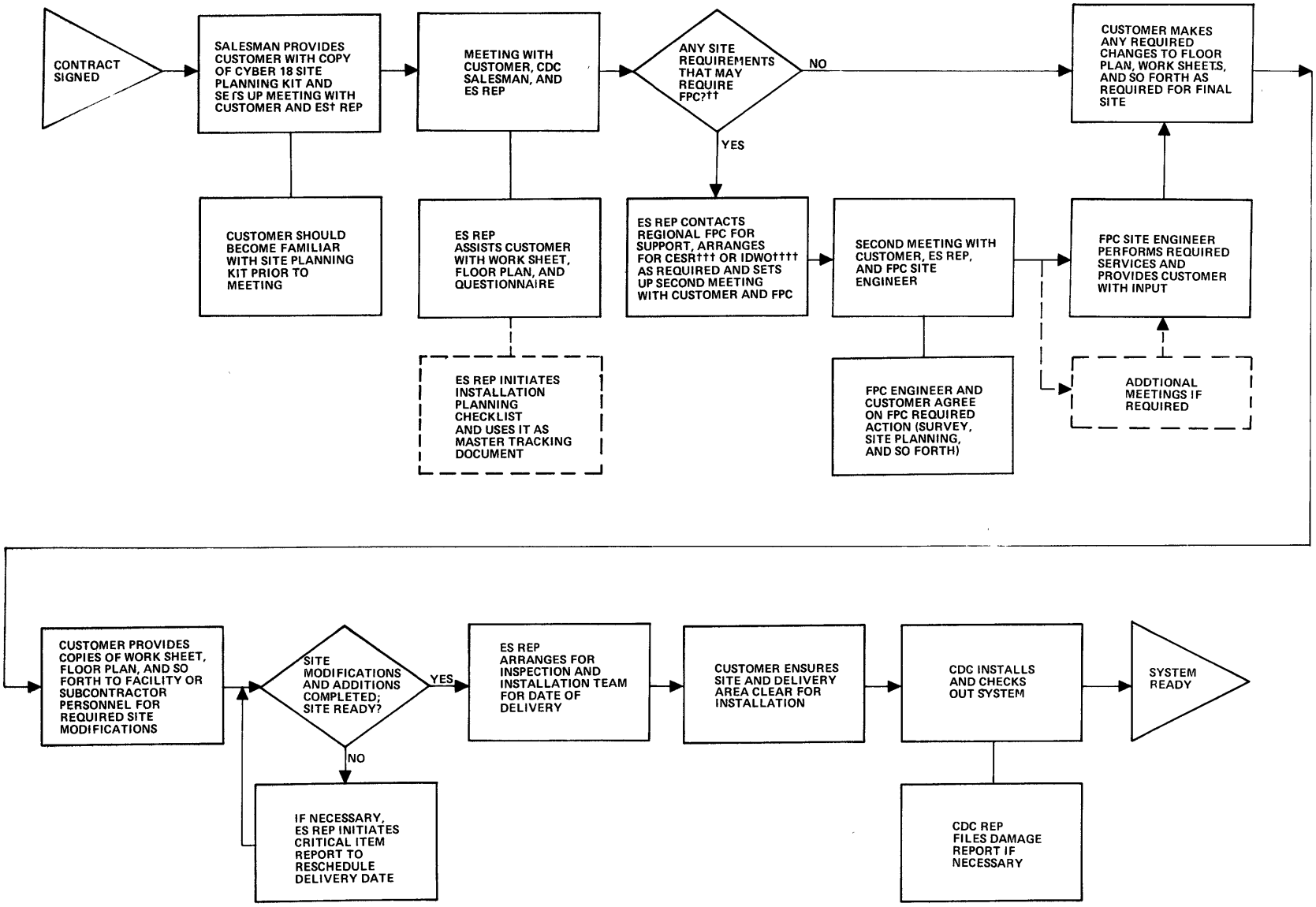
Each data sheet consists of two pages (both sides of a single sheet). Side 1 provides a front 3/4 pictorial view of the product and three drawings: front, side, and plan views. The plan view shows the bottom of the cabinet (as viewed from above) and indicates signal cable entry cutouts and equipment access door swings, along with specific dimensions (such as door swing clearance). Each drawing also indicates overall equipment dimensions.

Side 2 of the data sheet provides all physical, environmental, and power requirements (that is, dimensions, weight, operating and storage temperature ranges, power and associated circuit breaker requirements, heat dissipation, and so forth). Also included are intercabinet signal cabling information and restrictions.

APPENDIXES

A - EQUIPMENT/INTERRUPT NUMBER ASSIGNMENT FORM

This form should be filled out by the Engineering Services (ES) representative and/or the Programming Services Department (PSD) programming representative. When filled out, it identifies the specific interrupts associated with the various equipments as they are tailored to the customer's installation.



†ENGINEERING SERVICES
††CONTROL DATA'S FACILITY PLANNING AND CONSTRUCTION DIVISION
†††CUSTOMER ENGINEERING SERVICE REPORT
††††INTERDIVISIONAL WORK ORDER

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Figure 1-1. Site Planning and Installation Flowchart

B - EQUIPMENT TEMPLATES

This appendix contains cutout equipment templates for use by the customer in making a scaled site floor plan layout.

Several templates exist for each stand-alone or tabletop product in the CYBER 18 line. The templates, along with the floor plan grids in section 2, are scaled at 1/4 inch to the foot.

C - EQUIPMENT REMOVAL/RELOCATION

This appendix provides procedures to follow when the customer wishes to relocate or remove his equipment from the present site.

D - SAMPLE WORK SHEET AND FLOOR PLAN

This appendix contains a sample work sheet and floor plan for a typical CYBER 18-20 system.

In order to ensure a smooth and orderly installation, after receipt of the order a meeting is held between the customer and the Engineering Services (ES) branch manager or his representative. This meeting may also be attended by any additional customer and/or CDC personnel required for proper site preparation or installation. The customer may wish his facilities people to attend.

This is the only customer/CDC site visit and meeting prior to the installation unless unusual circumstances or site requirements exist (that is, poor site power, potential EMI/RFI problems, and so forth); in the case of special circumstances, a second or interim site visit may be scheduled.

RESPONSIBILITIES

This section of the manual must be initiated (and, where possible, completed) during the initial site visit between the ES representative and the customer.

Included in this section are the system work sheet, room measurement grid, floor plan grid, and customer planning questionnaire. All of these should remain in this manual for use and reference by the customer. They should be completed in the following order:

1. System work sheet
2. Room measurement grid
3. Floor plan grid
4. Customer planning questionnaire

The customer may wish to complete these documents prior to the initial meeting and have them ready for review at that time.

CONTROL DATA

The ES representative's responsibilities are as follows:

1. Meet with the customer at the initial site planning visit.
2. Assist the customer (at the initial site planning visit) with completing and/or reviewing the customer planning questionnaire and system work sheet, provide recommendations on system layout, and answer customer questions.
3. Initiate and complete the activities set forth in the installation planning checklist. The installation planning checklist is not included in this manual. It is a CDC internal form used by the CDC representative as the master tracking document for the customer's installation.
4. Assign a CDC representative to be on site and sign acceptance of equipment at the time of delivery. This representative should check for damage, file reports, and so forth as specified in the ES procedure entitled Equipment Delivery and Inspection.

CUSTOMER

The customer's responsibilities regarding site preparation, equipment usage, completing the system work sheet, meeting electrical and mechanical requirements, and completing a floor plan layout are listed below.

Site Preparation

Site preparation responsibilities are as follows:

1. Complete the system work sheet, room measurement grid, floor plan grid, and customer planning questionnaire.
2. Notify the ES representative of any items affecting or delaying the system installation.
3. Ensure that all mechanical, electrical, and space allocation requirements are met as specified in this site planning kit.
4. Provide and install any mechanical or electrical equipment necessary for site preparations (as specified in the system work sheet and as required by the ES representative).
5. Ensure that the system site area and delivery path (corridor) are totally free of all movable equipment prior to installation.
6. On the delivery date, ensure that the parking lot/driveway access to the delivery door area is clear to permit the delivery truck to maneuver and unload the equipment.

The installation team must have a free, open system area in which to work during the installation. Therefore, all desks, files, storage and trash containers, and so forth planned for the system area should not be moved into the area until after system installation. If such items are already in the area, they must be moved prior to installation.

Equipment Usage

If the equipment is either leased to the customer or maintained by CDC, the following restrictions apply:

- The customer may not alter the equipment (hardware).

- The customer may not remove or relocate the equipment himself. If he desires to have the equipment removed or relocated, he should refer to appendix C, Equipment Removal or Relocation Procedure.

If the equipment is owned and maintained by the customer and he wishes to relocate it, CDC can provide services from the minimum shipment of packaging materials and instructions to complete responsibility for the relocation. Appendix C provides detailed information on this procedure.

System Work Sheet

To properly use the system work sheet (figure 2-1), refer to appendix D for a sample work sheet for a typical CYBER 18-20 system. Then proceed as follows, completing each step before moving to the next.

1. In the product column, list each equipment by its product number.
2. In the quantity column, fill in the quantity of each product.
3. Refer to the CYBER 18 product descriptions table in section 4 to determine whether the products are stand-alone or tabletop-mounted units, or equipments that mount in another unit. Put a dash line (–) in each of the corresponding columns (A†, kVa, NEMA, and so forth) for any product that mounts in the central processing unit (CPU).
4. Refer to the data sheets. Take the first product from the information on the data sheet; fill in the per unit amperes, kVa, required NEMA/Hubbell receptacle, and per unit Btu/hr. Go to the next product data sheet and do the same; continue until each product's per unit columns are filled in.
5. Go back to the top of the work sheet. For each product, multiply the quantity column by amps and fill in the total amps column. Repeat for kVa and Btu/hr.
6. Add the total A column entries, and record the result at the bottom of the column.
7. Repeat step 6 for total kVa and for total Btu/hr.
8. Provide a copy of the work sheet to the mechanical and electrical facilities or contract personnel for their use in preparing the site.

Electrical Requirements

From individual equipment and total power requirements, determine the following:

- Need for additional main power
- Need for individual branch circuits/breakers for those units with high power consumption. (For example, the CYBER 18-20 at 12 amperes would require an individual, dedicated circuit.)

NOTE

In order to avoid possible interference, such as induction from fluorescent light fixtures, Control Data recommends that all single and duplex outlets for the system and/or test equipment be supplied from a dedicated branch circuit and breaker panel.

- Need for single versus duplex outlets (for example, Hubbell 5261 versus 5262) to avoid an accidental equipment shutdown due to potential circuit overloading. For instance, the CYBER 18-10 at a 9-ampere load could be tripped off the line accidentally by a janitor's plugging a commercial vacuum cleaner (6- to 13-ampere load) into the same outlet or branch circuit.
- Need for separate maintenance outlets for customer engineering test equipment (oscilloscopes and so forth)

NOTE

Because of timing and synchronization requirements, maintenance outlets should be fed from the same feeder that supplies the computer equipment breaker panels.

Mechanical Requirements

From heat dissipation totals, determine the adequacy of the site to maintain a proper environment or the need for the following:

- Additional supply and return ducts
- Additional cooling (that is, main or add-on site air conditioning)

Room Measurement

Complete the room measurement grid (figure 2-2) to provide an accurate reflection of the configuration of the room in which the equipment is to be installed. The grid is scaled at 1/4 inch to the foot. When completed, the grid will help determine equipment placement.

Floor Plan Layout

When completed, the floor plan grid (figure 2-3) should provide valuable facility planning data, such as maintenance or access clearance, floor cutouts where applicable, location of power receptacles, door swing, chassis slideouts, casters, and leveling pad locations (if any).

† A = amperes

SYSTEM WORK SHEET

Product	Qty	Maximum Power Required 50/60 Hz kVa				Required Connector Receptacle		Maximum Heat Dissipated Btu/Hr (Watts)	
		Per Unit		Total		NEMA or Hubbell			
		A	kVa	A	kVa			Per Unit	Total
Totals									
	System Power			A	kVa			System Heat Dissipation	Btu/Hr (Watts)

NOTES:

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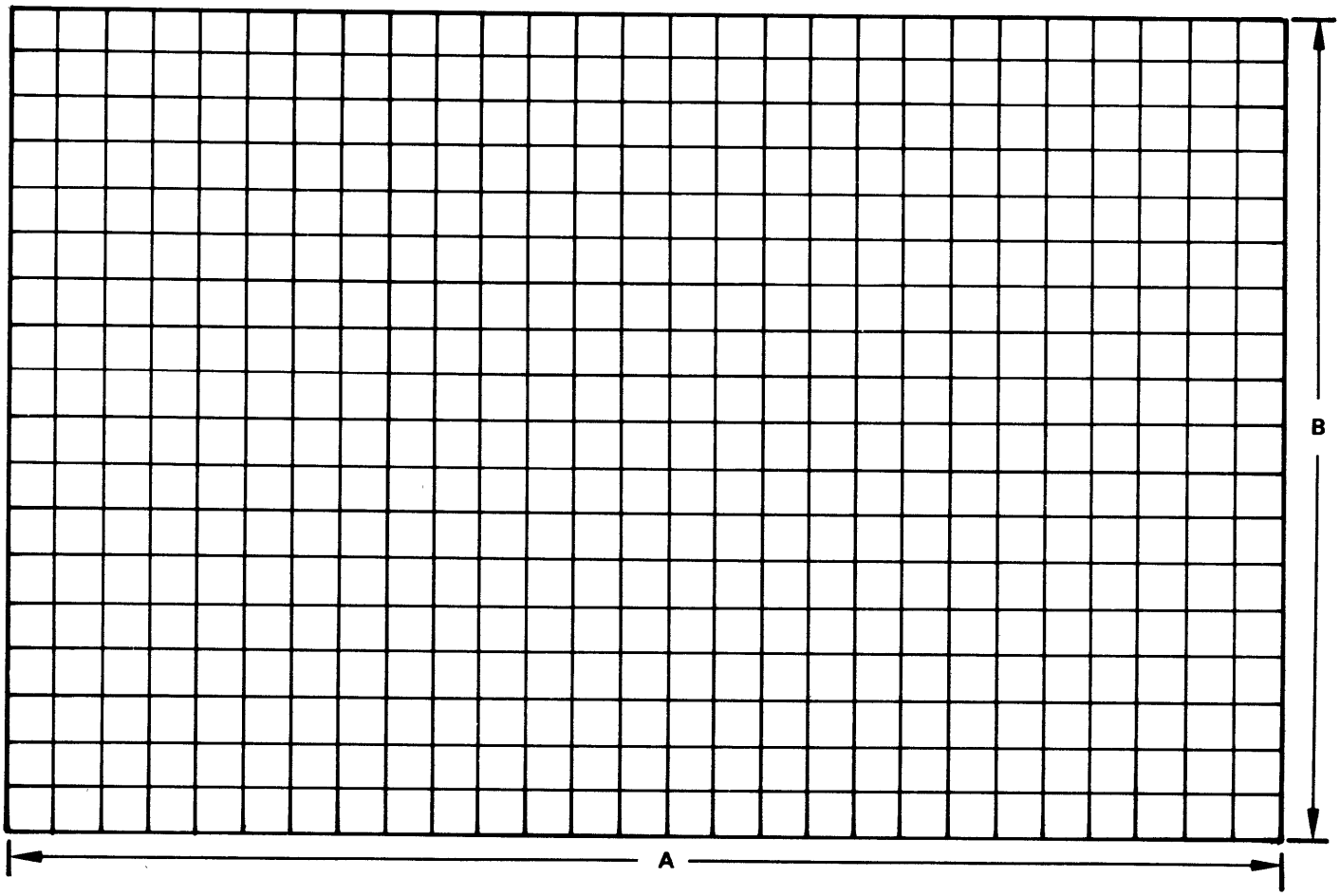
Figure 2-1. System Work Sheet



A =_____ **FEET/METERS** **SCALE: 1/4 INCH = 1 FOOT**

B =_____ **FEET/METERS**

HEIGHT =_____ **FEET/METERS**

INDICATE THE LOCATION OF:

DOORS

WINDOWS

DUCTING AND/OR SHAFT(S) RUNNING ALONG WALLS (VERTICAL ONLY)

PILLARS (IF ANY)

OBSTRUCTIONS OF ANY NATURE AFFECTING THE LOCATION OF THE EQUIPMENT IN THE ROOM

THE PLANNED EQUIPMENT CONFIGURATION, INCLUDING ALL DESKS, BOOKCASES, AND/OR WORKTABLES

POWER RECEPTACLES (EXISTING AND PLANNED)

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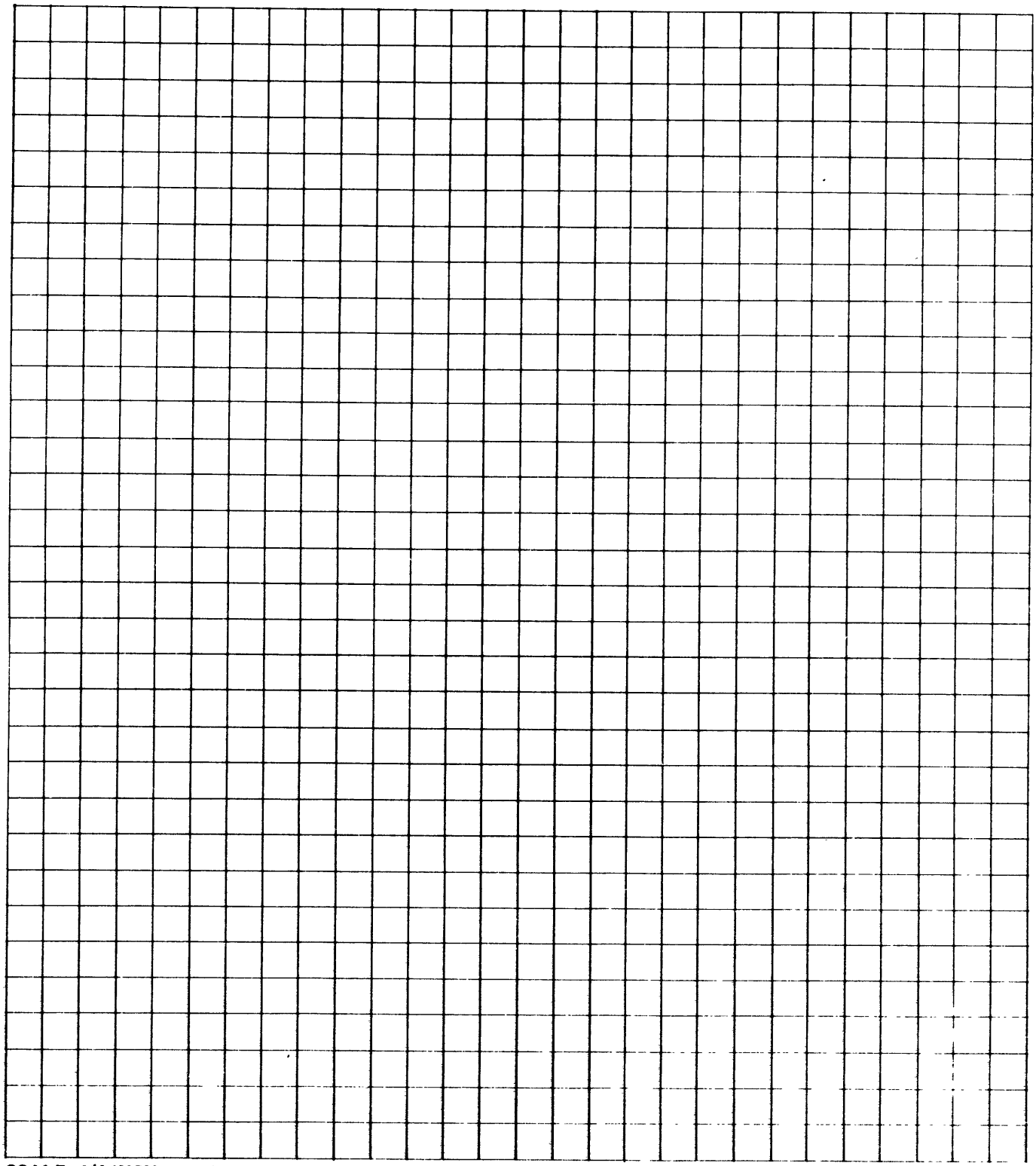
Figure 2-2. Room Measurement Grid



SCALE: 1/4 INCH = 1 FOOT
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Figure 2-3. Floor Plan Grid

If a raised floor is not being used, pay special attention to the routing of cables between the different equipments. It is recommended that, if a raised floor is not used, a cable trough or cover be provided to protect the power and data cables. The power and data cables must not be run adjacent to each other in the same trough.

When considering distances between equipments, keep in mind the vertical distance required to route the cable from the equipment internal connection locations to the cable trough, or to the floor under the raised floor.

Refer to the cable length computations, equipment descriptions, and floor space requirements in section 5 to assist with completing an accurate sketch of the site.

The floor plan grid is provided to accommodate various system configurations. Like the room measurement grid, it is scaled at 1/4 inch to the foot. Appendix B contains scaled floor plan templates for all stand-alone and tabletop products. When the wording on the template is right-side up, the front of the cabinet is at the bottom.

To devise a floor plan, refer to appendix D for a sample layout of a typical CYBER 18-20 system. Then complete the following:

1. Sketch (to scale) all walls, doors, windows, pillars, existing power receptacles, and so forth.
2. Sketch required additional (new) power receptacles. Mark existing receptacles that should be supplied from a dedicated breaker panel.
3. Cut out the required number of templates from the template sheet in appendix B.
4. Set the templates on the floor plan grid; move them around as necessary to accommodate the desired system layout, taking into consideration the following:
   a. Cable length restrictions (note particularly the signal-cable daisy-chain† arrangements)
   b. Visibility of units
   c. Aesthetic and functional layout
5. When all requirements have been satisfied, tape or glue the templates on the grid to provide an accurate floor plan.

CUSTOMER PLANNING QUESTIONNAIRE

The customer planning questionnaire that follows must be completed by the customer. It is intended to ensure that the site is ready to receive the system, and it also makes the customer aware of provisions that must be made and potential site problems that must be corrected prior to system installation.

When the questionnaire has been completed and all requirements have been met, the site will provide a satisfactory operating environment and allow a trouble-free installation.

NOTE

In order for this questionnaire to fulfill its purpose, it is essential that each question and/or step be carefully analyzed, correctly answered, and acted upon.

The customer planning questionnaire is designed to question the customer about the following aspects of the proposed site:

- General site/installation data
- Power and cooling
- Potential EMI/RFI/grounding problems

Each question is to be answered yes or no, with a check in the appropriate box provided. The questions are worded so that yes answers require action or corrective procedures. A space is designated for sign-off when the corrective action has been taken and completed.

Use of the questionnaire provides the customer with a quick reference as to the status of his site prior to installation.

†A daisy chain is a cable arrangement wherein the signal cables run from one cabinet to the next, and so forth, with the maximum daisy-chain length being the sum of all the cables between the cabinets in the chain.

Query and Action Items	No	Yes
Site Characteristics		
1. Is the altitude where the equipment will operate over 6000 feet (1829 meters)? Action: Inform the ES representative of the altitude. Date:_____ Name:_____		
2. Is it necessary to make arrangements for entry into the building and/or computer room (security clearances, locked site, and so forth) for delivery? Action: Date and sign when arrangements have been made. Date:_____ Name:_____		
3. Is the computer or building floor carpeted, or does it have a rough or unusual surface (such as ceramic or imported tile)? Action: Arrange to have plywood sheeting available to protect the surface from heavy equipments when they are rolled in during installation. Date:_____ Name:_____		
4. Are required modems and/or telephone lines yet to be installed? Action: Order modems and required telephone lines, and ensure their installation prior to system installation (CDC will define requirements). Date:_____ Name:_____		
5. Are there any unusual air contamination problems, such as hydrogen sulphide, acetylene gases, acid or alkaline vapor, or an extreme amount of salt air, in the area of the computer building site? Action: Inform the ES representative of the contamination. Date:_____ Name:_____		
Power and Cooling		
1. Are the site power receptacles (room outlets) duplex (two-plug) type? Action: Refer to the equipment data sheets to determine power and/or recommended receptacle types. Many equipments require single-outlet receptacles. The facility personnel and/or site electrician should correct any problems. Date:_____ Name:_____		

Query and Action Items	No	Yes
Power and Cooling (Contd)		
2. Will more than one equipment be connected on the same branch circuit (circuit breaker)? Action: Refer to the system work sheet and/or equipment data sheets to determine the power requirements to ensure that circuits are not overloaded. Several equipments require dedicated circuits. The facility personnel and/or site electrician should correct any problems. Date:_____ Name:_____		
3. Are there any suspected or frequent power disturbances to the building or site (lights dim, brighten, or go out momentarily on occasion)? Action: Inform the ES representative; the ES branch manager should then contact CDC's Facility Planning and Construction site planners. Date:_____ Name:_____		
4. Is the existing room cooling system to be used for the computer system? Action: Contact your facilities people, and provide them with the total heat dissipation figures to determine the need for additional outlets and/or cooling equipment. Date:_____ Name:_____		
EMI/RFI/Grounding		
1. Are any power, television, radio and/or microwave stations within one-half mile of the site location? Are any high-power radar transmitters within one mile of the site location? Are any electro-engraving or X-ray labs located in the same building as the site location? Is there any commercial ARC (RF) welding in the industrial/scientific/medical (ISM) band? Action: Inform the ES representative; the ES representative should then contact CDC's Facility Planning and Construction site planners. Date:_____ Name:_____		
2. Is the system being installed in a site with an existing computer system? Action: Inform the ES representative; special EMC grounding may be required. Date:_____ Name:_____		

To achieve optimum performance, the completed computer site must meet the environmental and operational requirements established by Control Data Corporation. However, the execution of proper site preparation is the responsibility of the customer.

While normally not involved in a CYBER 18 installation, Control Data's Facility Planning and Construction (FPC) Division is available to provide the customer with information and assistance in preparing his site should unusual or specific site requirements be involved (that is, poor quality power, possible EMI/RFI interference and/or grounding problems, and so forth). Depending upon the type of assistance required, the service of the site planning personnel may be either at no cost or a contracted additional cost to the customer.

FPC urges the customer 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 deviation from the manual procedures or requirements for reasons other than complying with local authority regulations must be approved by the FPC Division. It is recommended that all changes to the manual procedures be brought to the attention of the FPC Division; any CDC recommended site preparation and installation procedures changed without consulting Control Data Corporation are made at the customer's own risk.

SYSTEM GENERAL SITE REQUIREMENTS

Control Data suggests that, in preparing the computer site, the following factors be considered by the customer and his computer personnel and building engineer:

- Size and shape of the computer area
- Layout of the computer
- Existence of other computer systems in the area
- Provisions for future expansion
- Location of windows, columns, and doors
- Maximum length of signal cables
- Building and personnel environmental requirements
- Traffic flow, visibility, and ease of operation
- Clearances, elevators, and areas through which equipment must move
- Power requirements and availability
- Program for installation
- Storage of data and supplies
- System protection: site security, safety, and fire protection

Not all of the previous items are necessarily applicable to every installation; the user is generally in the best position to determine which factors apply to his situation.

PROGRAM FOR INSTALLATION

The customer should develop a checklist to ensure that all aspects of site preparation are completed before moving in the computer. The following is a simple checklist giving an outline of the steps to consider and attend to:

- Site location
- Computer layout
- Accessibility
- Space type and finish
- Environmental conditions
- Storage
- Electrical requirements
- Loss prevention (fire, flood, and so forth)

SITE PLANNING SUPPORT

The CDC representative has literature available concerning every part of the computer system to facilitate ease of layout. At the customer's request, Control Data will furnish any information and can also provide recommendations dealing with any aspect of the installation.

NOTE

This service is advisory only; it is the customer's responsibility to act on the information provided.

SITE PREPARATION FOR INSTALLATION

To avoid installation and operation problems, the customer should closely adhere to the customer planning questionnaire as a checklist to ensure that all aspects of site preparation are satisfactorily completed prior to system delivery. Special attention should be paid to the environmental, grounding, and power requirements set forth in this section.

EQUIPMENT LAYOUT

The object of planning a system layout is to develop a final arrangement oriented to the customer's needs and desired operational procedures within the limits of the space provided and the equipment installation requirements.

COMPUTER AREA SIZE AND SHAPE

The size of the space should be sufficient to allow for ease of operation and maintenance, with adequate clearances and ample working space. Care should be taken to allow for space to move replacement or additional equipment into and out of the area without disturbing other components. The shape of the room dictates the configuration of the equipment layout desired, but generally it should not penalize the layout.

Control Data offers the following guidelines:

Floor area required =	area taken by equipment multiplied by 5 for the CYBER 18 systems (the minimum area is multiplied by 3)

COMPUTER SYSTEM LAYOUT

Layouts of the computer system should be made using information provided in the data sheets to determine the best physical pattern within the proposed space. After cable length and other physical limitations have been considered, the arrangement of the components is generally a matter of required working pattern and individual taste. The customer should use the room measurement grid and floor plan grid in section 2 and the scaled equipment templates in appendix B to lay out the proposed system. It is suggested that dirty equipments (card readers and line printers) not be put adjacent to disk files and/or tape units.

OTHER COMPUTER SYSTEMS IN AREA

Where existing computer systems are involved, careful consideration should be given to layouts to ensure an efficient work flow pattern compatible with all systems.

Power loads must be carefully studied, grounding systems must be adequate, and the general environment must not be overloaded.

If two or more computer systems are to be considered, proper grounding is of prime importance; Control Data must be consulted.

WINDOWS

Cathode ray tubes (console displays) should not face windows because reflections make the display hard to read. Generally, windows should have shades or blinds to subdue lighting; however, if diffused properly, daylight can provide good working levels for computer operations.

Never install any computer equipment in direct sunlight. Shades or blinds should always be used on windows facing east, south, or west to reduce the solar heat gain to the area.

VISIBILITY

The most efficient operation results when an operator can visually monitor the physical activity of the computer system. Many devices have no moving parts and do not require operator supervision; however, some have lights to indicate various operating conditions. All units should be arranged so that indicating lights and conditions are easily visible to the operator.

CLEARANCES

All CYBER 18 equipment is designed to pass through standard door openings: 36 inches (914.4 millimeters) wide and 78 inches (1981 millimeters) high. Weights are not excessive, and handling is comparatively easy. However, CYBER 18 processors, 1867-xx module drives, and 1827-xx line printers are relatively heavy and are shipped on pallets. Appropriate measures must be taken to handle these devices.

The customer must consider the method of entry to the site and avoid passing through areas that provide exposure to water, dirt, dust, excessive vibration, or danger from moving machinery and equipment.

MATERIAL HANDLING

Paper handling and card punch equipment produce appreciable amounts of waste and dust that get into dust-sensitive mechanisms, such as card readers, magnetic tape transports, and disk file equipment. Waste-producing devices, therefore, should be placed as far as possible from dust-sensitive mechanisms and close to the area exhaust or return air inlets and waste containers.

Space and traffic pattern should be considered to allow ease of passage for waste containers and paper supplies. Passage directly through the computer monitoring and operating space should be avoided. Supplies of paper and cards should be located close to the operations area (in environmental conditions similiar to those of the operations area). If storage environmental conditions are different from processing environmental conditions, all paper products should be brought into the processing environment at least 24 hours before use to allow the materials to acclimate to the new environment.

In determining the layout of the computing system, the customer should consider the requirements for storing magnetic tapes and disk packs. Tape reels should be stored vertically in steel racks, and disk packs should be stored horizontally (never vertically) in steel cabinets. The reels of tape and disk packs should be stored in self-sealing cases for protection from dust and acute environmental changes.

Magnetic Tape Storage

Extremes in temperature and humidity should be avoided. Recommended conditions are 35 to 60 percent relative humidity and a temperature of 62 to 78°F (16.7 to 25.5°C). If environmental extremes occur, the tape should be brought to ambient conditions before use. The time required for reconditioning varies from 4 to 16 hours, depending upon the conditions to which the tape has been subjected. Direct heat, such as that from lamps or heating coils, should never be used to warm a tape. Errors occur less frequently if the tape storage area is at the same temperature and humidity as the computing area.

It is recommended that tape be rewound once or twice each year to release stress due to expansion and/or contraction.

CAUTION

Tape should not come in contact with any magnetic material, and reels should not be stored in cabinets having magnetic latches. Any magnetic field intensity greater than 70 gauss may cause loss of data.

Magnetic Disk Pack Storage

CAUTION

In the case of either storage or operation, recorded packs should never be exposed to any stray magnetic field intensity exceeding 50 gauss.

Disk packs (recorded or unrecorded) may be stored for up to 5 years in areas where a temperature range of -40 to 150°F (-40 to 65.5°C) and a relative humidity range of 8 to 80 percent are maintained, with a wet-bulb reading never exceeding 85°F (29.4°C).

Disk packs should be operated in ambient environmental conditions not exceeding 60 to 120°F (16.6 to 48.8°C) and 8 to 80 percent relative humidity, with a wet-bulb reading of 78°F (25.5°C). The disk pack should be conditioned in the ambient environment a minimum of two hours before use.

Magnetic Diskette Storage

A recorded diskette contains vital information; therefore, reasonable care should be exercised in storage and handling. The same storage requirements specified for magnetic disk packs should be followed. Handling procedures are basically the same, with the following exceptions:

- Do not use a writing device which deposits flakes, such as lead or grease pencils, when writing on the diskette jacket label.
- Do not fasten paper clips to the diskette jacket edges.
- Do not touch the diskette surface exposed by the jacket slot.
- Do not clean the diskette.
- Keep the diskette away from magnetic fields.
- After use, return the diskette to its protective envelope.
- Protect the diskette from all liquids, dust, and metallic substances.
- Store the diskette in a protective box or cabinet.

SIGNAL CABLE LAYOUT AND LOCATION

Maximum Signal Cable Length

All signal cables provided for any system or component are supplied in standard lengths as detailed in the system data sheets. Layouts should never exceed maximum allowable lengths. Extra cable length may be coiled under the floor or in enclosures. Power cables may be cut on site to fit installation requirements.

NOTE

Care must be taken to avoid placing equipment too far apart since signal cables cannot be extended. The vertical distance the cables must be routed within the different equipments must be considered.

Refer to figure 3-1 for a typical system cabling diagram.

Cable Trays

Careful consideration must be given to the source of main power and the interconnection cables between components set apart from each other. Exposed cables on floors are subject to damage, and safety codes do not permit power cables to lay exposed on floor surfaces unless protected.

Control Data recommends protective cable trays of interconnecting, standard lengths, together with fittings for direction changes. These trays should be fastened to the floor and have removable covers for access; all power and signal cables may be run in such trays. All wiring, cable, and tray installations should comply with local, state, and national codes. Control Data further recommends, and it is sometimes required by code, that signal and power cables be run in separate trays.

The trays are not high, but they do present a traffic hazard. When planning the site, they must be located to contain power or signal cables in locations where they are not continually walked on.

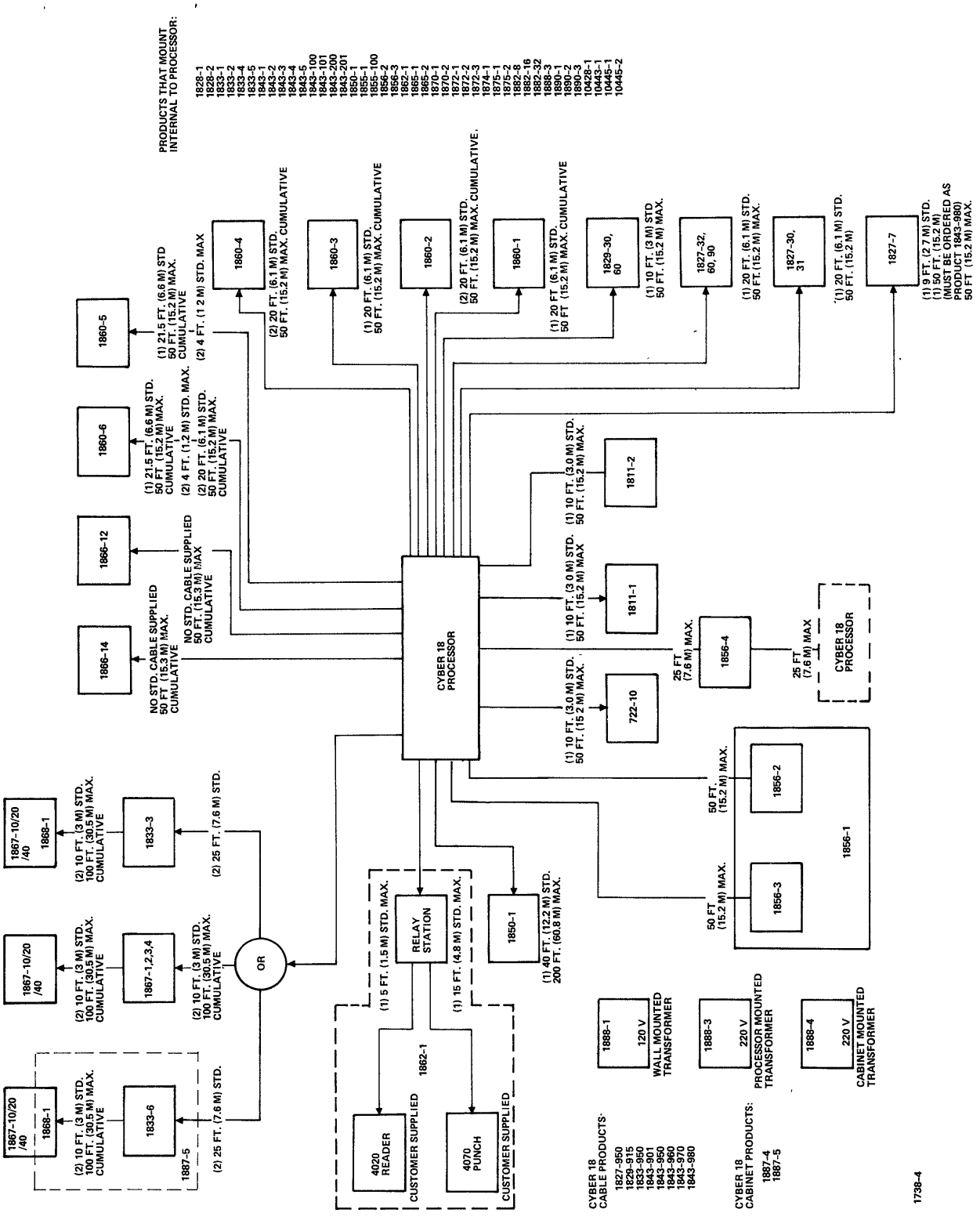


Figure 3-1. Typical System Cabling Diagram

The equipment data sheets include power and signal cable information.

Raised floor installations do not require cable trays.

ENVIRONMENTAL REQUIREMENTS

The building or area chosen to house the computer system should meet the space and convenience requirements of the equipment layout and provide for future expansion; it should also meet National Fire Protection Association Standard No. 75.

Building selection factors are as follows:

- Air conditioning and ventilation facilities
- Power availability
- External influences
- Computer room

The CYBER 18 computer systems are designed to be installed in an environment that does not require special control of close limitations. A normal, air-conditioned office environment is usually adequate; however, while the heat output of the individual equipments is relatively low, the cumulative effect of all equipments in the system must be considered. The system work sheet in section 1 helps in determining the required air circulation and cooling.

The completed work sheet should be discussed with the building maintenance people to determine the ability of the existing cooling system to handle the additional load.

In some cases, no change may be required; in many cases, a simple increase in air flow (cubic-feet-per-minute circulation) or the addition of one or two air registers may be required.

In the case of a large system with many equipments or a marginal site environment, the addition of an air-conditioning unit may be required.

If the customer is in doubt about the ability of his environment to handle the additional load, it is strongly recommended that the services of a professional consultant be obtained. Control Data provides this type of service through its Facility Planning and Construction Division. Contact the CDC salesman or the ES representative for further information.

FLOOR

A raised floor is not required for the CYBER 18 system; but, if a raised floor exists, it should be used. Signal and power cables run between enclosures can be through floor cutouts or in cable trays on the floor.

Floors should be of solid construction, level, and capable of supporting normal office equipment loads. If there is any doubt as to the loading capabilities, actual equipment weights can be found in the respective equipment data sheets in this manual.

Should a new building be planned and/or a raised floor be considered, Control Data can supply full information and recommendations for raised floor design and installation.

FLOOR COVERINGS

High-pressure laminate and vinyl asbestos tiles and/or carpeting may be used for this installation. However, the following recommendations should be observed for proper system operation:

- Waxing of the floor is not recommended since this causes wax buildup and dust.
- Buffing is not recommended since it creates dust.
- Vacuuming and damp mopping are recommended.
- Control Data suggests carpeting for its aesthetic, acoustical, and comfort properties; however, if carpeting is to be used, it must have an acceptable electrostatic rating. Control Data has a list of approved carpeting (see your CDC representative).
- Floors must be carefully maintained, and a regular cleaning system and schedule must be established. The exact degree of cleaning depends upon the conditions in the area.

TEMPERATURE AND HUMIDITY

Excessively high or low temperature and humidity conditions should be avoided, and conditions should not be outside the limits required for any component of the system. It is recommended that operating ranges be limited to 60 to 90°F (15.6 to 32.2°C) and 30 to 80 percent relative humidity. Control Data also recommends a nominal operating temperature of 72°F (22.2°C). To minimize changes in component operating characteristics due to temperature variations, excursions from the nominal operating point should be kept to a minimum. Rapid temperature changes can have a detrimental effect on components. The maximum allowable temperature gradient for CDC equipment is 12°F (7°C) per hour.

DUST

Care must be taken to avoid a dusty condition in any computer area. Floors and the computer area itself must be cleaned regularly. Air-conditioning or ventilation systems should have good filters capable of 80 percent efficiency with a particle size of 5 microns or better. Smoking should not be allowed in the computer area due to the static buildup of smoke, ash, and dust particles on paper materials and magnetic storage media (tapes or disks).

Some components have built-in fans and/or filters; these should be serviced periodically.

CORROSIVE ATMOSPHERE

No system should be installed in an area that is subject to a corrosive atmosphere; if there is any doubt as to the standard of a proposed atmosphere, Control Data should be consulted. Generally, however, atmospheres that are approved by the Occupational Safety and Health Administration (OSHA) for personnel occupancy on a full-time basis may be considered approved for a system installation.

ACOUSTICS

Electromechanical devices such as printers and card punches are generally noisier than other equipment and should, where possible, be located in an area where this level of activity is not objectionable.

ELECTROMAGNETIC INTERFERENCE

Care must be taken not to locate the computer system in the sphere of influence of extraneous electromagnetic interferences, such as radar equipment, radio broadcast facilities, X-ray equipment, electrical generators, and other field-producing equipment.

If a possibility of such interference exists, CDC Facility Planning and Construction Division personnel should be notified (via the ES representative).

GROUNDING SYSTEM

The system must be grounded to protect the equipment from damage, personnel from electrical shock, and data from spurious signals. The customer is responsible for providing the grounding system in accordance with local electrical codes and as outlined here (refer to figure 3-2).

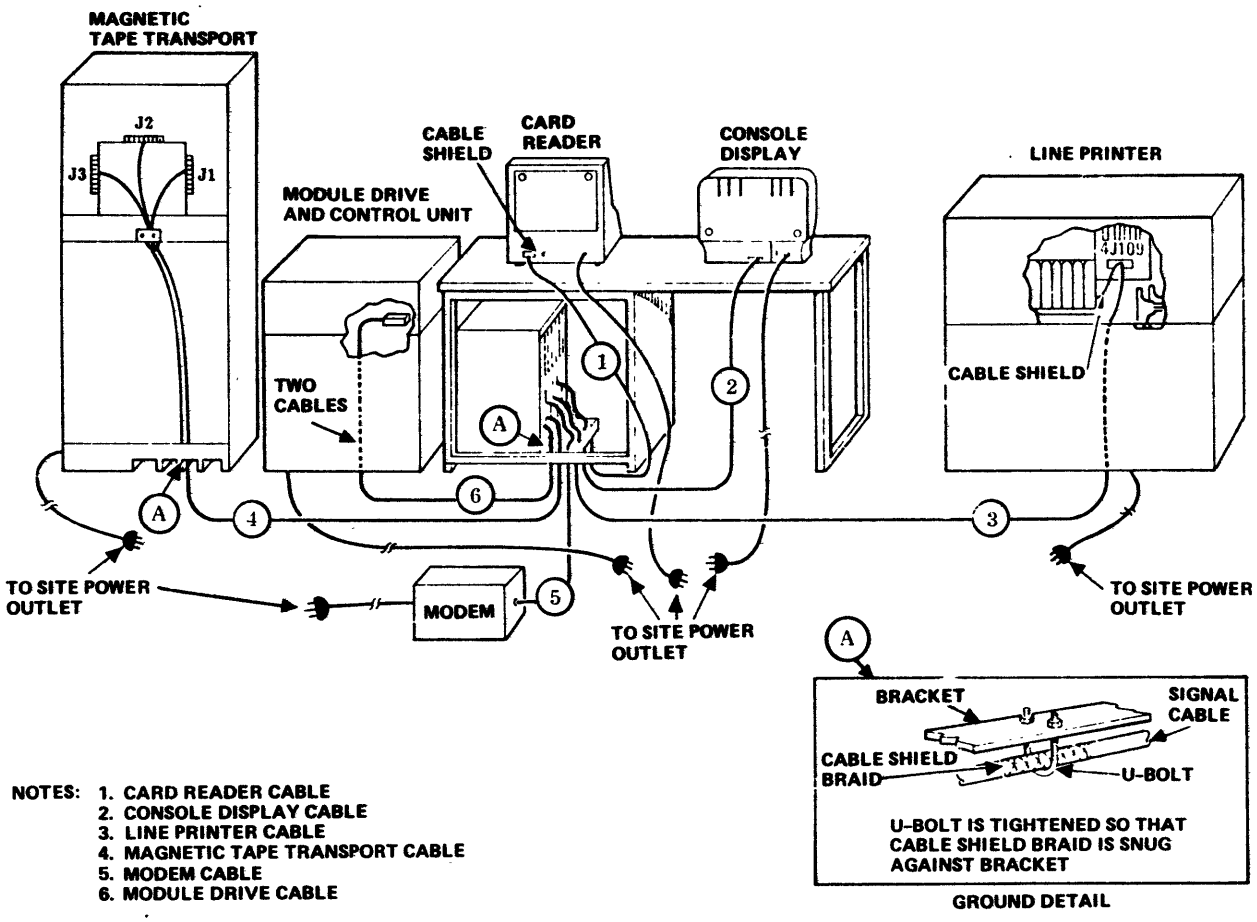


Figure 3-2. Typical Site Cabling and Signal Cable Grounding

Safety (protective) ground is provided by the ground wire in the equipment power cords. Signal ground is provided by shielded, interconnecting logic cables between equipment connected to the frame ground in each cabinet.

Most shielded cables are grounded to the frame at the connection. However, some cables are not automatically grounded through these connections; a visual inspection must be made, and ungrounded cables must be grounded as provided for in each frame.

PROTECTIVE GROUNDING

The protective grounding system must protect computer-room personnel from the potential hazard of electrical shock and protect the equipment from damage in the event of an electrical malfunction.

The grounding system must connect all of the computer system cabinets, switch boxes, frequency converters, air conditioners, and computer-related equipment to an earth ground. The conductors for the ground connections can be metallic electrical conduit or the ground wires (usually green) of the equipment power cables. Under no circumstances shall the white neutral and green ground wires of the power cables be electrically connected except at the building service entrance.

EMC GROUNDING

The computer system signal ground is normally provided by shielded interconnecting logic cables. Shielded cables should be grounded to the equipment frame during connection.

The 1867-xx module drive and its controller require additional techniques for controlling radio frequency interference and must be treated individually. The signal cables for these units are not shielded; therefore, they must be connected together in daisy-chain fashion with braided ground straps. (Ground straps are not supplied with the system.)

Installation with low signal level analog equipment or with remote display or communications equipment, or in areas of high power radio frequency radiation, should be discussed with a CDC site planning representative.

POWER REQUIREMENTS

CYBER 18 computers operate at 60 Hz or 50 Hz. The required line voltage and frequency must be specified at the time of ordering.

Details of component power consumption and requirements are shown on the equipment data sheets. A standard grounded building power system is all that is required for this system. All wiring and installations must neet all national, state, and local electrical codes.

All power loads must be totaled to determine the proper circuitry and whether sufficient independent fused circuits are available to handle all loads. Refer to the system work sheet in section 1.

NOTE

Due to the load-amperage requirements, some of the equipments specify mating single-receptacle outlets (that is, NEMA 5-15R, Hubbell 5261) rather than duplex outlets (that is, NEMA 5-15R, Hubbell 5262). This prevents accidental connection of additional equipment or gear, such as vacuum cleaners or test equipment, from being connected and possibly overloading the circuit. For example, the CYBER 18-5M, 10M, and 20 require 12 amperes (1.4 kVa at 120 V), or 80 percent of the circuit maximum load.

ELECTRICAL CHARACTERISTICS

If the site steady-state voltage is not in accordance with characteristics mentioned in the data sheets, the customer must provide and install a step transformer properly sized to accommodate the load plus 20 percent for expansion and momentary surge.

Line voltage transients must be limited to 20 percent maximum deviation from the steady-state voltage for periods of less than one-half cycle.

The line voltage waveform must be sinusoidal, with a ratio of peak voltage to rms voltage of 1.4 ± 0.1 to 1.

The line frequency requirement is 60 and/or 50 Hz, ± 1 percent.

All wiring must comply with applicable local and national codes.

The circuit breaker panels, circuit breakers, magnetic contactors, main power disconnects, junction boxes, transformers, wall outlet receptacles, and all wiring must be furnished and installed by the customer prior to the computer site preinstallation inspection.

NOTE

Power of 60 or 50 Hz must not be distributed in the same conduit or raceway as logic cables or terminator power.

CONVENIENCE OUTLETS

One or more convenience outlets should be located in the computer room. The convenience outlets may be located in the perimeter walls and/or in raised floor panels. The receptacles should be of the single-phase, grounded type and should be connected to the same power source that supplies 60 or 50 Hz power to the computer. In some cases, electrical receptacles are located within the equipment cabinets that contain a power distribution assembly.

LOSS PREVENTION

Control Data assumes no liability for damage by any fire control or prevention system.

Fire protection in the computer room should be predicated on the following facts:

- The hardware in a computer system presents no fire hazard since all items are made of noncombustible or flame-retardant materials.
- The system is extremely sensitive to heat and smoke damage, particularly those components with magnetic recording surfaces.
- The system is extremely sensitive to water damage if the power is on.
- Computer input/output media are combustible. Materials such as line printer paper or cards stored in large quantities present a hazard.
- Most computer rooms are air conditioned, which presents the hazard of spreading a fire from an unrelated area into the computer room. Fire dampers should be installed between the computer room and other unrelated spaces.

In the event of a fire within the system, components should be immediately de-energized and the fire fought with dry chemical or carbon dioxide (CO_2) hand extinguishers. There should be at least two 10-pound extinguishers located visibly in an easily accessible place.

NOTE

CO_2 extinguishers may cause thermal shock damage to the warm circuit chips and thus are not as desirable as the dry chemical type.

Table 4-1 contains information pertaining to CDC product equipment numbers, descriptions, and location aspects of the system configuration. Where a product consists of multiple stand-alone or tabletop units, equivalent product numbers are provided to lead the customer to the appropriate data sheets and templates for electrical and space requirements. (Descriptions and functions of the equivalent products are not necessarily correct in this case.)

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS

Product	Description	Cabinet
CYBER 18-5	Batch Terminal Controller, comprising: Memory interface Arithmetic logical unit I/O-TTY controller 16K bytes of magnetic core read/write memory Card reader/line printer controller Communication line adapter Power supply Desk-type cabinet	Stand-alone unit
	Basic operator's panel	Tabletop mounted
	Console display (equivalent to 1811-1)	Tabletop mounted
CYBER 18-5M	Batch Terminal Controller, comprising: Memory interface Arithmetic logical unit I/O-TTY controller 32K bytes of MOS read/write memory Card reader/line printer/communication line adapter controller Power supply Desk-type cabinet	Stand-alone unit
	Basic operator's panel	Tabletop mounted
	Console display (equivalent to 722-10 or 1811-1)	Tabletop mounted

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
CYBER 18-10M	Processor, comprising: Operator's panel Memory interface Arithmetic logical unit I/O-TTY controller Flexible disk drive controller Flexible disk drive Power supply Desk-type cabinet	Stand-alone unit
CYBER 18-20	Processor, comprising: Operator's panel Memory interface Arithmetic logical unit I/O-TTY controller Flexible disk drive controller Flexible disk drive Power supply Desk-type cabinet	Stand-alone unit

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
CYBER 18-25	Processor, including:	Stand-alone unit
	Main processor - CPU I and peripherals, comprising:	
	Memory interface	
	Arithmetic logical unit	
	I/O-TTY controller	
	2K-instruction micro memory	
	Flexible disk drive controller	
	Flexible disk drive	
	Power supply	
	Communication processor - CPU II and peripherals, comprising:	
	Memory interface	
	Arithmetic logical unit	
	I/O-TTY controller	
	2K-instruction micro memory	
	Flexible disk drive controller	
	Flexible disk drive	
	Power supply	
	Multiplexer loop interface adapter	
	Loop multiplexer	Stand-alone unit (equivalent to 10431-1)
CYBER 18-30	Main/Communication processor, including:	Stand-alone system
	Main processor - CPU I and peripherals, comprising:	
	Memory interface	
	Arithmetic logical unit	
	I/O-TTY controller	
	2K-instruction micro memory	
	128K bytes main MOS memory	
	Tape cassette subsystem	
	Magnetic tape subsystem (equivalent to 1860-x)	Stand-alone unit
	Module drive subsystem (equivalent to 1867-2)	Stand-alone unit
	Card reader (equivalent to 1829-30)	Tabletop mounted
	Line printer (equivalent to 1827-32)	Stand-alone unit
	Communication processor - CPU II and peripherals, comprising:	
	Memory interface	
	Arithmetic logical unit	
	I/O-TTY controller	
	2K-instruction micro memory	
	96K bytes main MOS memory	
	Tape cassette subsystem	
	Multiplexer loop interface adapter	
	Loop multiplexer	Mounted in magnetic tape subsystem cabinet
	Shared console display (equivalent to 1811-1)	Tabletop mounted

CPU = Central processing unit (the computer main logic chassis)

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
722-10	Console Display/Display Terminal - Cathode ray tube display unit with keyboard. Provides character-at-a-time transmission of full- or half-duplex rate in page or scroll mode. Data rate selectable from 110 to 9600 baud.	Tabletop mounted
752-30/40	Display Terminal - Single-station, teletypewriter-compatible display terminal. Includes 1920-character display (24 lines of 80 characters per line) and 128 ASCII character set. Choice of keyboard layout. Detachable keyboard, including: numeric pad, highlighting, cursor addressing, and character-at-a-time transmission. Half or full duplex Switch-selectable data rates from 110 to 9600 bits per second. The communication interface meets RS232-C and CCITTV-24 standards and includes a 10.5-ft (3.2-M) modem cable. The 752-30 is a 60 Hz unit, and the 752-40 is a 50 Hz unit.	Tabletop mounted
752-202/204	International Keyboard - International layout. This is a special 80-key keyboard specifically designed to meet the 752 requirements. The 752-202 is a designed ISO layout keyboard unit used with an FTZ terminal.	Tabletop mounted
752-270/271	Data Entry Keyboard - Special-purpose keyboard, specifically designed to meet 752 requirements for a key punch layout keyboard capable of being used with an FTZ listed terminal. The 752-270 is an 84-key, 029 keypunch layout unit, and the 752-271 is a 95-key typewriter with a numeric pad layout unit.	Tabletop mounted

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1811-1	Console Display - Cathode ray tube display unit with keyboard. May be used as a remotely located I/O device capable of character-by-character, block, or line-at-a-time transmission.	Tabletop mounted
1811-2	Console Display - Cathode ray tube display unit with keyboard. Provides character-at-a-time transmission of full- or half-duplex rate in page or scroll mode. Data rate selectable from 110 to 9600 baud.	Tabletop mounted
1827-7	Impact Printer - 7 by 7 or 9 by 7 dot matrix printer. Produces up to 132 columns at a nominal speed of 70 lines per minute. Product uses 64 ASCII symbol.	Tabletop mounted
1827-30/31	Line Printer - 300-line-per-minute drum printer in a quietized cabinet. Full line buffer capability, 136-column print line, and 64-character print drum. The 1827-30 is a 60 Hz unit, and the 1827-31 is a 50 Hz unit.	Stand-alone unit

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1827-32	Line Printer - 300-line-per-minute band printer in a quietized cabinet. A 64 ASCII character print set, up to 136 columns of 10 characters per inch and 6 to 8 lines per inch. Operates on 50 or 60 Hz.	Stand-alone unit
1827-60	Line Printer - 600-line-per-minute band printer in a quietized cabinet. A 64 ASCII character print set, up to 136 columns of 10 characters per inch and 6 to 8 lines per inch. Operates on 50 or 60 Hz.	Stand-alone unit
1827-90	Line Printer - 900-line-per-minute band printer in a quietized cabinet. A 64 ASCII character print set, up to 136 columns of 10 characters per inch and 6 to 8 lines per inch. Operates on 50 or 60 Hz.	Stand-alone unit
1827-950	Line Printer Interface Cable - 50-ft. (15.2-M) shielded cable that provides interface between the 1827-30/31 or 1827-32/60/90 Line Printer and the 1828-1/2 Line Printer Controller	Mounts on the CPU backplane

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1828-1	Card Reader/Line Printer Controller - Logic PWA that provides two independent controllers for connecting one card reader and/or one line printer to the CYBER 18 processor	Mounts in the CPU
1828-2	Card Reader/Line Printer/Communication Line Adapter Controller - Logic PWA that provides two independent controllers for connecting one card reader and/or one line printer to a CYBER 18 processor. Also provides a one-channel asynchronous/synchronous communication line adapter.	Mounts in the CPU
1829-30/60	Card Reader - 1000-card hopper/stacker capability, 80-column card input medium with light/dark read-check facility. Operates from 120/240 V, 50/60 Hz. The 1829-30 is a 300-card-per-minute unit; the 1829-60 is a 600-card-per-minute unit.	Tabletop mounted
1829-915	Card Reader Cable - 15-ft. (4.5-M) shielded cable for interfacing a card reader to the 1828-1/2 Card Reader Controller	Mounts on the CPU backplane

PWA = printed wiring assembly

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1833-1	Module Drive Interface - Logic PWA that provides single-CPU A/Q channel interface to the 1833-3 Module Drive Control Unit	Mounts in the CPU
1833-2	Module Drive Interface - Logic PWA that provides dual-CPU A/Q channel interface to the 1833-3 Module Drive Control Unit	Mounts in the CPU
1833-3	Module Drive Control Unit - Connects to the 1833-1/2 and up to eight 1867-xx module drives in any mix 25-/50-megabyte units. Comes with own power supply and mounting hardware.	Mounts in the first module drive cabinet
1833-4	Cartridge Disk Drive Controller - Logic PWA that provides a single DMA channel connection and controls up to four 1866-xx cartridge disk drives.	Mounts in the CPU

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1833-5	Flexible Disk Drive Controller - Logic PWA that provides single-CPU A/Q-DMA channel interface for one or two 1865-xx flexible disk drives. Capable of read/write in either IBM 3740 or CDC 1700 rotating storage formats.	Mounts in the CPU
1833-6	Module Drive Controller - Provides an interface unit and a control unit for connecting module drive mass-memory devices to the A/Q-DMA channels of the processor. The interface requires one DMA position in the processor and connects to the control unit with 25-ft. (7.6-M) cables. The control unit handles up to eight module drive units of any mix of types. Operates on 50 or 60 Hz.	Control unit mounts in a 1887-5 Module Drive Enclosure. Interface unit mounts in the CPU.
1833-950	Module Drive Interface Cable Option - Provides 50-ft. (15.2-M) bus in and bus out cable assemblies for the connection between one 1833-1 and one 1833-3	Mounts on the CPU backplane
1843-1	Dual-Channel Communication Line Adapter - Logic PWA that provides control for multiplexed dual-channel interface, permits connection of two synchronous or asynchronous modems that conform to CCITT recommendations V.24 or EIA RS232-C standards. Permits selection of 110/150/300/600/1200/2400/4800/9600 and 19,200 asynchronous or 1200/2400/4800 and 9600 synchronous baud rates. Permits software-selectable, half- or full-duplex operation; character codes may be 5, 6, 7, or 8 bits.	Mounts in the CPU
1843-2	Eight-Channel Communication Line Adapter - Logic PWA that provides interface for up to eight asynchronous communication devices that conform to CCITT recommendations V.24 or EIA RS232-C standards. Provides baud rates of 75/110/150/300/600/1200 and 9600 with switch-selectable, half- or full-duplex mode. Includes program-selectable word length of 5, 6, 7, or 8 data bits.	Mounts in the CPU
1843-3	Primary Buffered Communication Line Adapter - Provides for six asynchronous communication devices that have EIA RS232-C or CCITT V.24 compatible interface. Each channel has program-selectable baud rate (between 50 and 19,200 bits per second), character length (5, 6, 7 or 8 bits), stop bit length (1,1.5, or 2 units), parity type (odd, even or none), and up to 10 end-of-text characters per channel. Modem control (RTS, CTS, DSR, DTR, and DCD) permits program control of connect/disconnect with modems having an automatic answer feature. The buffered communication line adapter (BCLA) requires one DMA position in the processor and all I/O connections are via RS232-C connectors. External cables are not included.	Mounts in the CPU
1843-4	Expansion Buffered Communication Line Adapter - Expands the 1843-3 Primary Buffered Communication Line Adapter from 6 channels to 16 channels. All channels have the same features as described for the 1843-3 System. Only two 1843-3 and two 1843-4 units may be installed in CYBER 18-10M, 18-20, 18-25 or 18-30 Processors. Occupies A/Q or open slot in the processor; must not be plugged into an A/Q-DMA slot. Must be installed adjacent to the slot occupied by the primary BCLA (1843-3).	Mounts in the CPU

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1843-5	Synchronous Data Link Control Communication Line Adapter - Provides two independent communication ports for synchronous data link control line discipline plus interface for one automatic dial unit (Bell 801 or equivalent). Synchronous data link control flag field generation/recognition, secondary address recognition, "zero bit" insertion/deletion, and cyclic redundancy check generation/check are hardware implemented. Port interface signals are compatible with RS232-C or CCITT V.24 standards. These interface signals include modem (Bell 201/208 or equivalent) status/control signals (DSR, DTR, DCD, CTS and RTS) and support data rates up to 20K baud per second. Communication ports may be conditioned to allow downline load/dump and control of a secondary station processor by the primary station processor. The 1843-200/201 Local Link Coupler units may be used in lieu of modems to implement local multi-drop connections at increased data rates. If these units are used in this way, one AQ/DMA position is required in the processor.	Mounts in the CPU
1843-100	Current Loop Adapter - Provides independent conversion for two I/O ports, and converts RS232 send/receive data signals into a twenty milliampere, unipolar, full-duplex, current loop. Permits 752 displays with the current loop interface to be connected to the 1843-3 and 1843-4, using cables up to 3000 feet (914 meters) long. Includes current loop power supply, and conversion expansion with the 1843-101. Mounts on the communication I/O connector panel of the CYBER 18-10M or 18-20. Terminal cables are not included.	Mounts on the CPU I/O connector panel
1843-101	Current Loop Adapter - Provides two additional independent channels of RS232-to-current loop conversion. Requires an 1843-100 in the system. Mounts on the communication I/O connector panel of the CYBER 18-10M or 18-20. A maximum of one 1843-100 and fifteen 1843-101s may be installed in a system. Terminal cables are not included.	Mounts on the CPU I/O connecotr panel
1843-200	Local Link Coupler - Provides an optically-isolated data coupler for channel 1 of the 1843-5 Synchronous Data Link Control Communication Line Adapter. This allows connection of the communication line adapter as a local multi-drop network with one primary station and up to 15 secondary stations. Data transmission rates of 62.5K, 125K, 250K, or 500K baud per second are selectable. Requires station-to-station connection consisting of one four conductor cable; 50 ft, (15M) which is included. The maximum cable length in a multi-drop network is 3000 feet (914 meters). One 1843-200 or 1843-201 Local Link Coupler is required for each station on the network.	Mounts on the CPU I/O connector panel
1843-201	Local Link Coupler - Provides an optically-isolated data coupler for channel 2 of the 1843-5 Synchronous Data Link Control Communication Line Adapter. It is functionally identical to the 1843-200 Local Link Coupler.	Mounts on the CPU I/O connector panel

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1843-901	Terminal Adapter Cable - Modem cable adapter that enables interfacing a data terminal directly to the dual-channel communication line adapter. Connects to the modem cable.	Mounts on the CPU backplane
1843-950	Modem Cable - 50-ft. (15.2-M) shielded cable that interfaces a modem to the dual-channel communication line adapter	Mounts on the CPU backplane
1843-960	CRT Cable - 50-ft. (15.2-M) shielded cable that connects one 722-10, 752-30/40 or 1811-2 CRT to one channel of the 1843-2 Communication Line Adapter	Mounts on the CPU backplane
1843-970	Modem/Punch Cable - 50-ft. (15.2-M) shielded cable that connects one customer-supplied modem or TAB 560-56 Card Punch to one channel of the 1843-2 Communication Line Adapter	Mounts on the CPU backplane
1843-980	Printer Cable - 50-ft. (15.2-M) shielded cable that connects one 755-11 or 1827-7 Impact Printer to one channel of the 1843-2 Communication Line Adapter	Mounts on the CPU backplane
1850-1	1500 Series Equipment Adapter - PWA that provides an interface to the 1750-1 Computer Interface Unit and accomodates all 1500 Series IOM equipment normally installed in the 1750-1. A terminator power supply (part number 39397000) is also supplied.	Mounts in the CPU. Power supply mounts in the 1887-4 Equipment Cabinet.
1855-1	Auto Restart Loader - A multifunctional unit that provides restart load/control, stall alarm and digital I/O. The restart load/control function loads bootstrap programs, and controls the CPU from the user-supplied programmable read-only memory. The restart load function is actuated manually, by power-on, an A/Q function, or an external signal. The stall alarm function generates an interrupt signal and an output to the 1855-100 Stall Alarm Panel. The digital I/O interface provides two, 16-bit programmable channels that can be used for input or output to external devices. The auto-restart loader occupies one A/Q position in the CPU.	Mounts in the CPU
1855-100	Stall Alarm Panel - Used in conjunction with the 1855-1 to provide an audible alarm, contact closure output, and visual indication of a CPU stall condition. Mounts in the tape cassette location of the processor equipment cabinet and includes a 5-foot (1.5-meter) cable for connection to the 1855-1.	Mounts in the CPU cabinet

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1856-1	I/O Expansion Unit - Provides the capabilities for expansion of the CYBER 18 AQ and DMA buses to a remotely located I/O expansion chassis. The I/O expansion chassis provides 8 AQ and 8 DMA controller slots. The I/O expansion unit is limited to a maximum of 8 selected I/O controllers. Hardware includes one I/O expansion chassis, one multiple output power supply, one 136 position RS232-C connection panel and associated mounting hardware. Fifty-foot (15.2-M) cables are provided with 1856-2 and 1856-3. Requires 1856-2 for DMA bus expansion, 1856-3 for AQ bus expansion, 1856-4 for dual CYBER 18 processor access to the I/O expansion unit, and 1887-4 vertical rack for mounting.	Mounts in 1887-4 equipment cabinet
1856-2	DMA Extender - Provides for expansion interface of the CYBER 18 DMA buses to up to 8 selected DMA peripheral controllers housed in the I/O expansion unit (1856-1). Hardware includes two 50-foot (15.2-M) I/O expansion cables and one expansion connect cable. Supports dual CPU access when used in pairs with dual mode access option (1856-4). Requires AQ extender (1856-3) for control.	One PWA mounts in the CPU and one PWA mounts in the I/O expansion unit (1856-1).
1856-3	AQ Extender - Provides for expansion interface of CYBER 18 AQ buses to up to 8 selected AQ/DMA peripheral controllers housed in the I/O expansion unit (1856-1). The extender provides expansion of all AQ address, data, and control lines. Deadstart operation is not extended to the I/O expansion unit. Hardware includes three 50-foot (15.2-M) I/O expansion cables. Supports dual CPU access when used in pairs with dual mode access option (1856-4).	One PWA mounts in the CPU and one PWA mounts in the I/O expansion unit (1856-1).
1856-4	Dual Mode Access Option - Provides for external manual switch selection of access to the I/O expansion unit (1856-1) by either of two CYBER 18 processors. The hardware includes one dual mode access switch box with two 25-foot (7.6-M) interface cables and one 50-foot (15.2-M) dual access cable. Requires that two AQ extenders be included in the I/O expansion subsystem.	Switch box may be set in any convenient location within the 25-ft (7.6 M) cable limits.

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1860-x	Magnetic Tape Subsystems - 1860-x subsystems include the mounting cabinet and power supply, installation kit (as required), one or two magnetic tape transports, and a magnetic tape controller as follows: 1860-1 Cabinet One magnetic tape controller One magnetic tape transport (7 track, 25 in/s) One installation kit Cabinet front door 1860-2 Cabinet One magnetic tape controller Two magnetic tape transports (7 track, 25 in/s) Two installation kits 1860-3 Cabinet One magnetic tape controller One magnetic tape transport (9 track, 25 in/s) One installation kit Cabinet front door 1860-4 Cabinet One magnetic tape controller Two magnetic tape transports (9 track, 25 in/s) Two installation kits 1860-5 One controller Cabinet One magnetic tape transport (9 track, 50 in/s) One installation kit 1860-6 One controller Cabinet Two magnetic tape units (9 track, 50 in/s) Two installation kits	Stand-alone units

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1860-72	Magnetic Tape Transport - 7-track transport that operates in NRZI recording mode at the following: 800 b/i, 25 in/s (20K 6-bit characters per second). Rewinds at 150 in/s. Optional 1887-4 Power Conversion Transformer is necessary for 220 V operation.	Mounts in the 1887-4 Equipment Cabinet. Requires either 1860-200 (upper) or 1860-201 (lower) Installation Kit for mounting.
1860-92	Magnetic Tape Transport - 9-track transport that operates in NRZI recording mode at the following: 800 b/i, 25 in/s (20K 8-bit characters per second). Rewinds at 150 in/s. Requires optional 1887-4 Power Conversion Transformer for 200 V operation.	Mounts in the 1887-4 Equipment Cabinet. Requires either 1860-200 (upper) or 1860-201 (lower) Installation Kit for mounting.
1860-95	Magnetic Tape Transport - 9-track transport that operates in either of the following: NRZI - 800 b/i, 50 in/s (40K 8-bit characters per second) Phase encoded (PE) - 1600 b/i, 50 in/s (80 K 8-bit characters per second) Rewinds at 160 in/s	Mounts in the 1887-4 Equipment Cabinet. Requires either 1860-200 (upper) or 1860-201 (lower) Installation Kit for mounting.

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1860-200	Upper Magnetic Tape Installation Kit - Provides brackets and hardware required to install one tape drive	Mounts in the 1887-4 Equipment Cabinet
1860-201	Lower Magnetic Tape Installation Kit - Provides brackets, hardware, and a cabinet front panel to install one drive below the upper magnetic tape	Mounts in the 1887-4 Equipment Cabinet
1862-1	Paper Tape Reader/Punch Controller - PWA and relay station that controls paper tape input and output to and from a FACIT 4020 Paper Tape Reader/4070 Paper Tape Punch (non-CDC device)	PWA mounts in the CPU. Relay station mounts in the 1887-9 Equipment Cabinet.
1865-1/2	Flexible Disk Drive - Random-access device using removable magnetic diskettes for storage. Capacity of 256K bytes in IBM 3740 format (128 bytes/sector) or 280K bytes using CDC 1700 rotating mass-storage format (192 bytes/sector). Transfer rate of 31.2K bytes per second. Average access time of 343 milliseconds. The 1865-1 is the first drive (unit 0); the 1865-2 is the second drive (unit 1). Connects to the flexible disk drive controller. Includes power supply and cooling fans.	Mounts in the CPU

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1860-72	Magnetic Tape Transport - 7-track transport that operates in NRZI recording mode at the following: 800 b/i, 25 in/s (20K 6-bit characters per second). Rewinds at 150 in/s. Optional 1887-4 Power Conversion Transformer is necessary for 220 V operation.	Mounts in the 1887-4 Equipment Cabinet. Requires either 1860-200 (upper) or 1860-201 (lower) Installation Kit for mounting.
1860-92	Magnetic Tape Transport - 9-track transport that operates in NRZI recording mode at the following: 800 b/i, 25 in/s (20K 8-bit characters per second). Rewinds at 150 in/s. Requires optional 1887-4 Power Conversion Transformer for 200 V operation.	Mounts in the 1887-4 Equipment Cabinet. Requires either 1860-200 (upper) or 1860-201 (lower) Installation Kit for mounting.
1860-95	Magnetic Tape Transport - 9-track transport that operates in either of the following: NRZI - 800 b/i, 50 in/s (40K 8-bit characters per second) Phase encoded (PE) - 1600 b/i, 50 in/s (80 K 8-bit characters per second) Rewinds at 160 in/s	Mounts in the 1887-4 Equipment Cabinet. Requires either 1860-200 (upper) or 1860-201 (lower) Installation Kit for mounting.

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1860-200	Upper Magnetic Tape Installation Kit - Provides brackets and hardware required to install one tape drive	Mounts in the 1887-4 Equipment Cabinet
1860-201	Lower Magnetic Tape Installation Kit - Provides brackets, hardware, and a cabinet front panel to install one drive below the upper magnetic tape	Mounts in the 1887-4 Equipment Cabinet
1862-1	Paper Tape Reader/Punch Controller - PWA and relay station that controls paper tape input and output to and from a FACIT 4020 Paper Tape Reader/4070 Paper Tape Punch (non-CDC device)	PWA mounts in the CPU. Relay station mounts in the 1887-9 Equipment Cabinet.
1865-1/2	Flexible Disk Drive - Random-access device using removable magnetic diskettes for storage. Capacity of 256K bytes in IBM 3740 format (128 bytes/sector) or 280K bytes using CDC 1700 rotating mass-storage format (192 bytes/sector). Transfer rate of 31.2K bytes per second. Average access time of 343 milliseconds. The 1865-1 is the first drive (unit 0); the 1865-2 is the second drive (unit 1). Connects to the flexible disk drive controller. Includes power supply and cooling fans.	Mounts in the CPU

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1866-12	Cartridge Disk Drive - Magnetic disk recording device. Stores 2.2 million bytes on a fixed disk and 2.2 million bytes on a removable disk. 29 sectors per track; 96 words per sector. Average positioning time is 35 milliseconds; transfer rate is 156K words per second.	Stand-alone unit
1866-14	Cartridge Disk Drive - Same characteristics as the 1866-12, but stores 4.4 million bytes on a fixed disk and 4.4 million bytes on a removable disk	Stand-alone unit
1867-1/2/3/4	Module Drive Subsystem - Random-access mass-memory subsystem using removable disk packs as the storage medium. The 1867-1/3 has a formatted data capacity of 25 million 8-bit bytes, and the 1867-2/4 has a formatted data capacity of 50 million 8-bit bytes, with a transfer rate of 1.2 million 8-bit bytes per second. Uses 877 Disk Pack (not included). Operates on 50 or 60 Hz.	Stand-alone unit

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1867-10	Module Drive - Random-access magnetic recording device using removable disk packs. Formatted capacity of 25 million bytes; transfer rate of 1.2 million bytes per second. Uses 877 Disk Pack (not included). The 1867-10 operates from 120 V ac, 60 Hz or from 220 V ac, 50 Hz.	Stand-alone unit
1867-20	Module Drive - Same characteristics as the 1867-10/11, but with formatted capacity of 50 million bytes. The 1867-20 operates from 120 V ac, 60 Hz or from 220 V ac, 50 Hz.	Stand-alone unit
1867-40	Module Drive - Disk storage device with a removable disk pack. Has a formatted capacity of 188 megabytes and a maximum data transfer rate of 1.2 million bytes per second. Requires a 9883-91 Disk Pack (not included).	Stand-alone unit
1868-1	Mini-Module Drive - Disk storage device with a fixed medium, moving- and fixed-head (head-per-track) capabilities. The moving head has a formatted capacity of 15.7 million 8-bit bytes, and the fixed head storage formatted capacity is 589K bytes. The maximum data transfer rate is 1.2 million bytes per second. Operates on 50 or 60 Hz.	Mounts in the 1887-5 Module Drive Enclosure
1870-1	512-Instruction Micro Memory - PWA storage device for 512 32-bit micro instructions	Mounts in the CPU

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1870-2	2048-Instruction Micro Memory - PWA storage device for 2048 32-bit micro instructions	Mounts in the CPU
1872-3	Scientific/Commercial Expansion - Provides single-/double-precision floating point and a commercial data processing capability. Consists of a 2K read/write micro-memory module to accommodate the new micro-instruction set. Access to the micro-instructions is permitted via a new enable/disable instruction series. The micro-instruction set is dynamically loaded at startup time via a new enhanced CYBER 18 operating system bootstrap. May require Standard Product Option (STO) 10428-1.	Mounts in the CPU
1874-1	ECC MOS Array - PWA storage device that provides 5-bit error correction code (ECC) for up to 192K 8-bit bytes of 1882-16/32 MOS Memory. ECC facility corrects single-bit errors and detects double-bit errors. (When used, there is a memory size restriction.)	Mounts in the CPU
1875-1	Breakpoint Controller - PWA that provides the breakpoint halt register for both micro memory and main memory for program debug.	Mounts in the CPU

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1875-2	Breakpoint Panel - Indicator panel for breakpoint visual readout	Mounts in the CPU
1882-8	16K Core Main Memory Storage - Provides 16K 8-bit bytes of magnetic core storage. 750-nanosecond cycle time.	Mounts in the CPU
1882-16	32K MOS Main Memory Storage - Provides 32K 8-bit bytes of metal oxide semiconductor memory. 750-nanosecond cycle time.	Mounts in the CPU

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1882-32	64K MOS Main Memory Storage - Same characteristics as the 1882-16, but provides 64K 8-bit bytes of storage	Mounts in the CPU
1887-4	Equipment Cabinet - Empty cabinet for housing one or two magnetic tape transports, expansion units of the CYBER 18-25/30 Communication Processor or any other EIA standard, rack-mounted equipment. Comes with power distribution box, air filter, and convenience outlets. (Choice of door heights depending on application.)	Stand-alone unit
1887-5	Module Drive Enclosure - Provides housing for mini-module drive units and module drive controller devices that require a rack mounting. Accommodates one 1833-6 Module Drive Controller and/or one 1868-1 Mini-Module Drive.	Stand-alone unit
1888-1	Power Conversion Transformer - Enables 120 V ac, single-phase, 50/60 Hz equipments to operate from 95, 105, 115, 220, 240, or 250 V ac, 50 Hz source. Includes mounting enclosure (no cable supplied).	Wall-mounted unit

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1888-3	Power Conversion Transformer - Enables operation of a CYBER 18 processor from 95, 105, 220, 230, or 250 V ac, 50 Hz sources. Includes mounting enclosure, circuit breaker, and cables.	Mounts in the CYBER 18 processor cabinet
1888-4	Power Conversion Transformer - Same characteristics as the 1888-3, except conversion is provided for one tape subsystem cabinet or one 1887-4 Equipment Cabinet	Mounts in the 1887-4 Equipment Cabinet
1890-1	200UT Emulation Option - Provides 200 user terminal (MODE 4A) emulation controlware (loaded via the card reader). Communication is synchronous, 2 wire or 4 wire, 1200 to 9600 baud. The interface is RS232-C/ CCITT V.24 compatible.	None
1890-2	2780 Emulation Option - Provides IBM 2780 (MODE 1) Emulation controlware (loaded via the card reader). Communication is synchronous, 2-way alternate, 2 wire or 4 wire, 1200 to 9600 baud.	None

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
1890-3	3780 Emulation Option - Provides IBM 3780 Emulation controlware (loaded via the card reader). Communication is synchronous, 2-way alternate, 2 wire or 4 wire, 1200 to 9600 baud.	None
1890-4	HASP RJE Workstation Controlware - Card media - Provides access to a host processor utilizing HASP multileaving protocol. Communication is synchronous over a dedicated or dial-out line, 200 to 9600 baud. If micro memory is installed (CYBER 18-10M, 18-20 only) the maximum baud rate is 19,200 baud.	None
1890-5	HASP RJE Workstation Controlware - Flexible Disk media - Identical to the 1890-4 except the load media is the flexible disk.	None
10428-1	Extended CYBER 18 Transform - Provides the new extended transform board and enhancements to the CYBER 18 for the 1872-3. Applicable to CYBER 18-10M/20/25/30.	Mounts in the CPU
10430-1	Panel - I/O Connector Mounting - Required in processors using 1843-3, 1843-4, or 1843-5 communications line adapter. Installs in processor cabinet and provides mounting for RS232-C I/O connectors, or options 1843-100, 1843-101, 1843-200, and 1843-201.	Mounts in the CPU
10431-1	Communication Multiplexer Expansion - Expands the communication multiplexer line handling capability from 32 to 64 lines. Applicable to CYBER 18-25/30.	Stand-alone unit
10442-1	Character Mode ADT/Page Memory - Enables the use of page memory when a program is operating in character mode auto-data transfer (ADT). Consists of an enhanced transform board. Applicable to the following processors: CYBER 18-20 below serial no. 3102 and CYBER 18-25/30 below serial no. 2027.	Mounts in the CPU

TABLE 4-1. CYBER 18 PRODUCT DESCRIPTIONS (Contd)

Product	Description	Cabinet
10445-1	Module Drive Subsystem Upgrade - Provides field upgrade of the 1833-1 Module Drive Interface or the interface portion of the 1867-1/2 to allow use of the 1867-40. Resulting capabilities are equivalent to the interface portion of the 1867-3/4.	Mounts in the CPU
10445-2	Module Drive Dual CPU Access Option - Provides AQ/DMA channel interface for the second CPU-SMD subsystem. The interface handles all control and status operations via the A/Q channel and all data transfers via the DMA channel. The interface supports the control unit connections of up to eight drives in any mix. Connection to the first computer's SMD interface is via two 25 foot (7.62 meters) cable assemblies. The interface occupies one AQ/DMA position within the processor unit. In addition, this option can provide an upgrade feature to an 1833-2 to allow its use with an 1867-40 SMD. It requires that the 10445-1 MD upgrade option be installed in the first CPU.	Mounts in the CPU

This section includes data sheets for the stand-alone and tabletop-mounted CYBER 18 products. The data sheets provide information concerning space, environmental and power requirements, height, depth, width, and weight. The required space permits access for servicing, cable installation, preventive maintenance, and adequate air circulation. Space requirements for the controller boards and printed wiring assemblies (PWAs) are not given since such items are installed within the existing cabinets or units and do not affect the system space requirements.

When configuring CYBER 18 products and computing intercabinet spacing is computed, it is necessary to subtract from the usable cable length both the height X of the processor cable access and the height X' of the peripheral cable access (refer to figure 5-1).

If a raised floor is used, its height also must be added to both X and X'. The difference between the total length and the usable length of a cable is the length of the cable internal to the units.

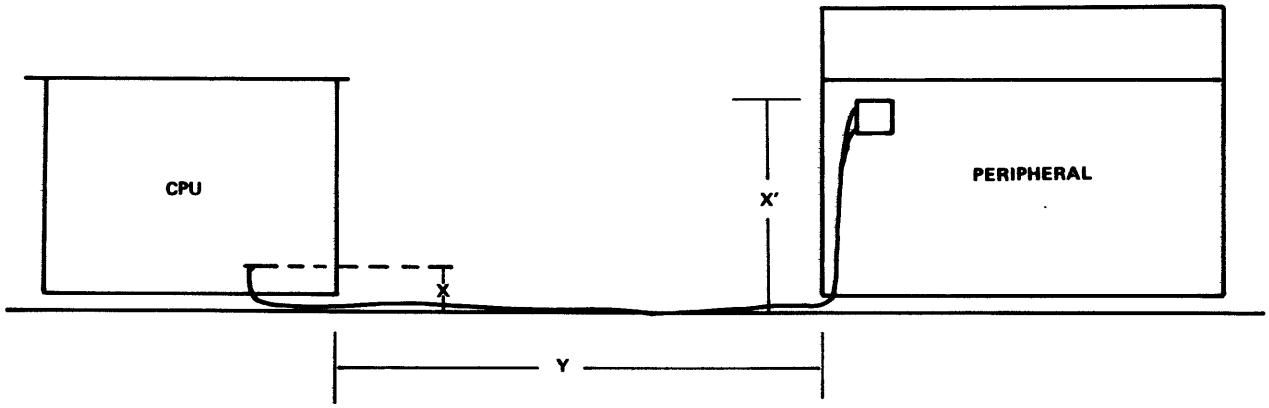
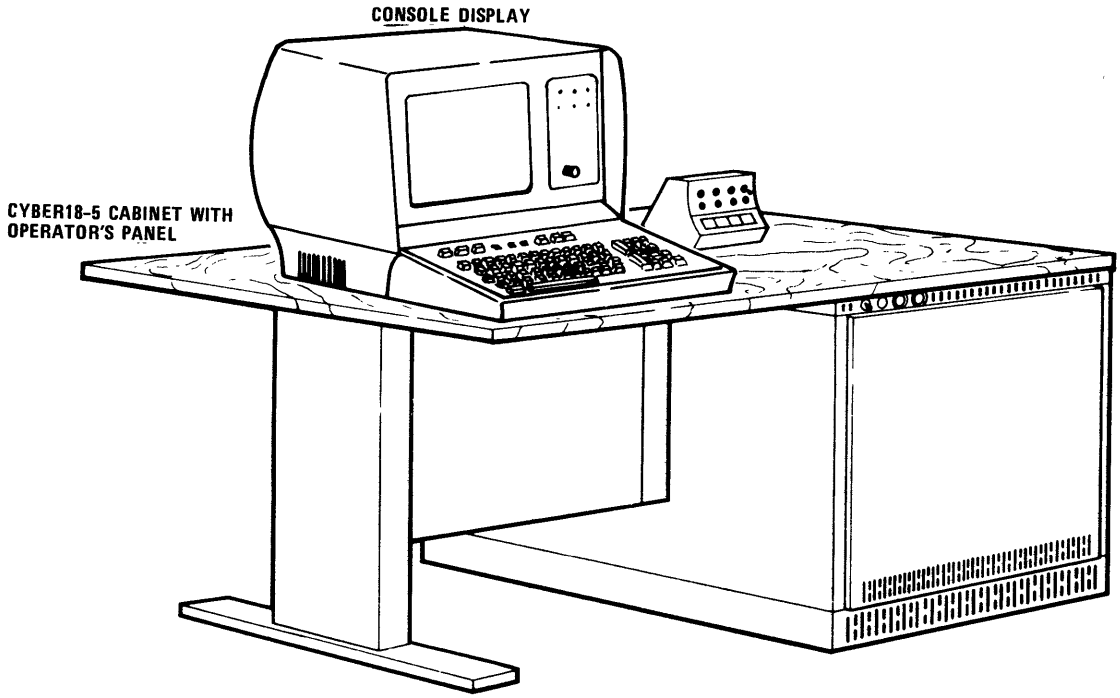
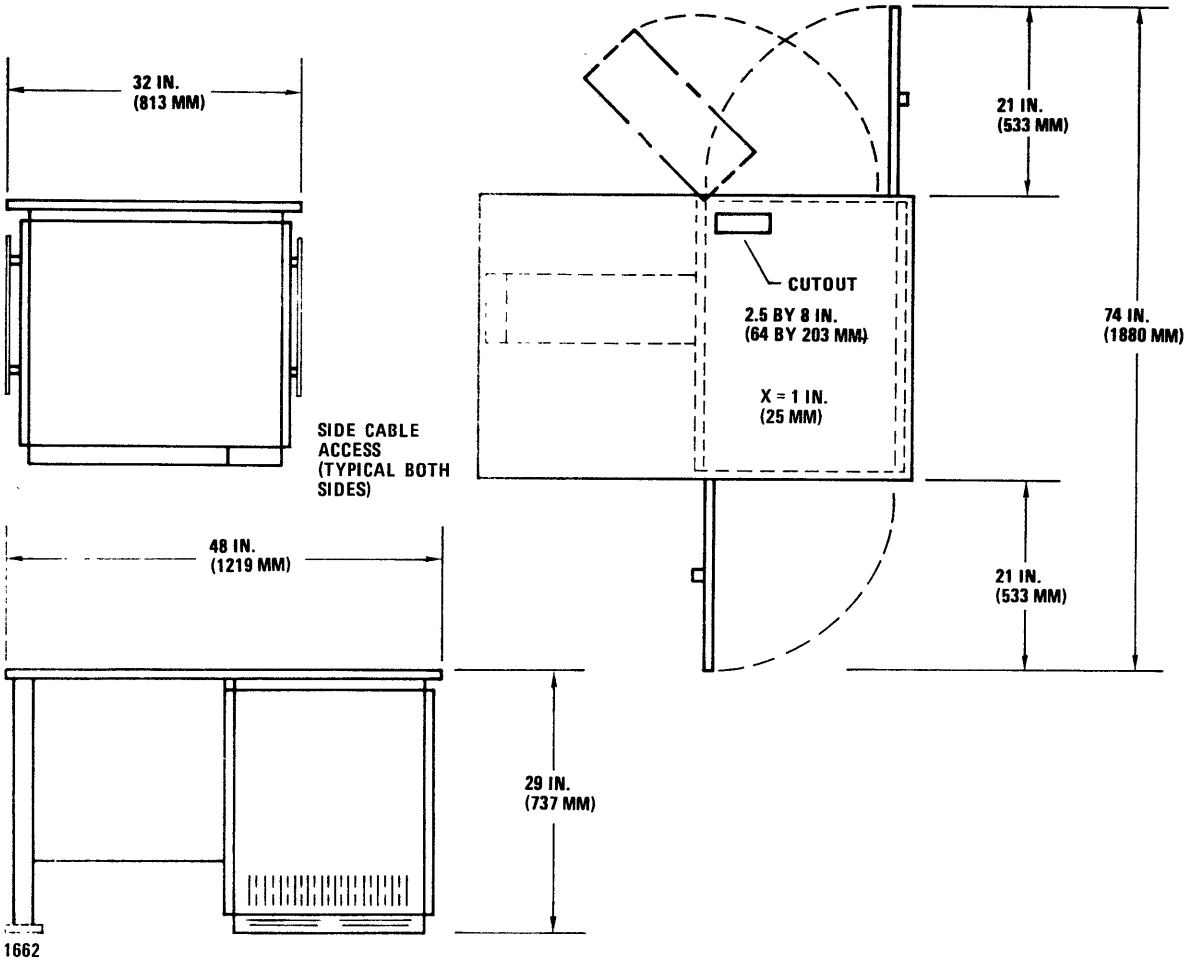


Figure 5-1. Cable Length Computation

CYBER 18-5 PROCESSOR





CYBER 18-5 PROCESSOR

Width: 48 inches (1219 millimeters)
Depth: 32 inches (813 millimeters)
Height: 29 inches (737 millimeters)

Weight: 375 pounds (170 kilograms)
Support: 6 leveling pads

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum (includes the basic processor with a full complement of boards and controllers):

60 Hz, 120 V, 1 phase, 1.2 kVa (10 amperes)
or
50 Hz, 120 V, 1 phase, 1.2 kVa (10 amperes)

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
CLA to modem	1	20 feet (6.1 meters)	18 feet (5.5 meters)
CYBER 18-5 to console display	1	10 feet (3.05 meters)	7 feet (2.1 meters)

Environmental considerations:

Type of cooling: Forced air (internal blowers)

Source of cooling: Ambient air

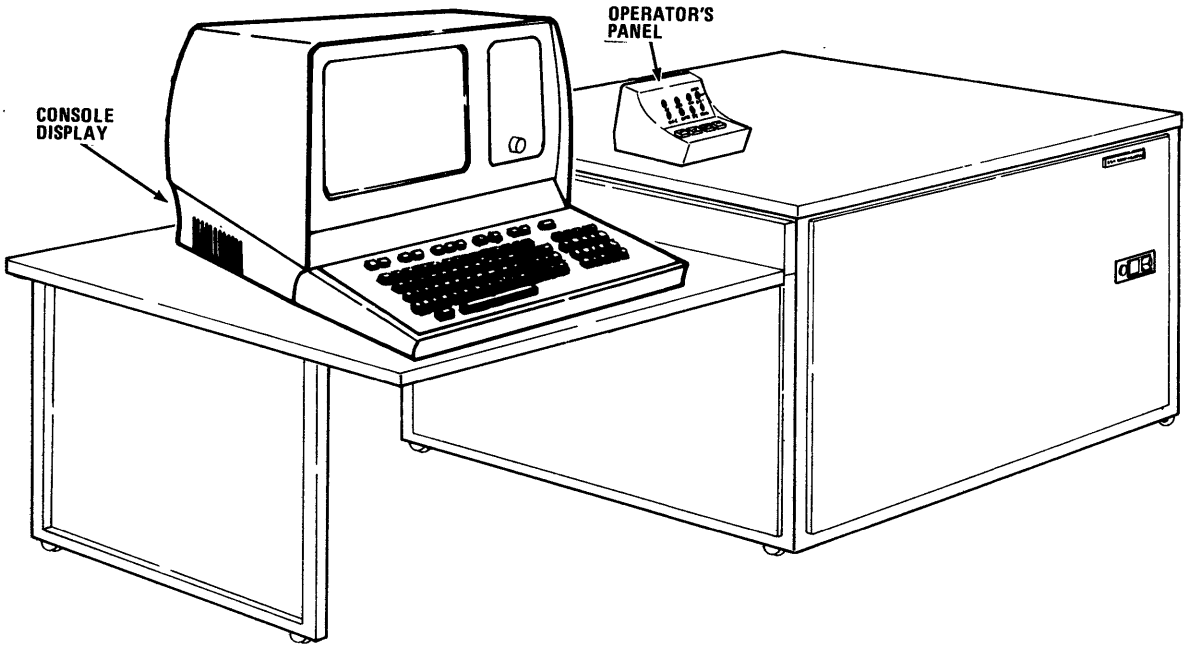
Heat rejection rate, maximum, to air: 3311 Btu/hour (970 watts)

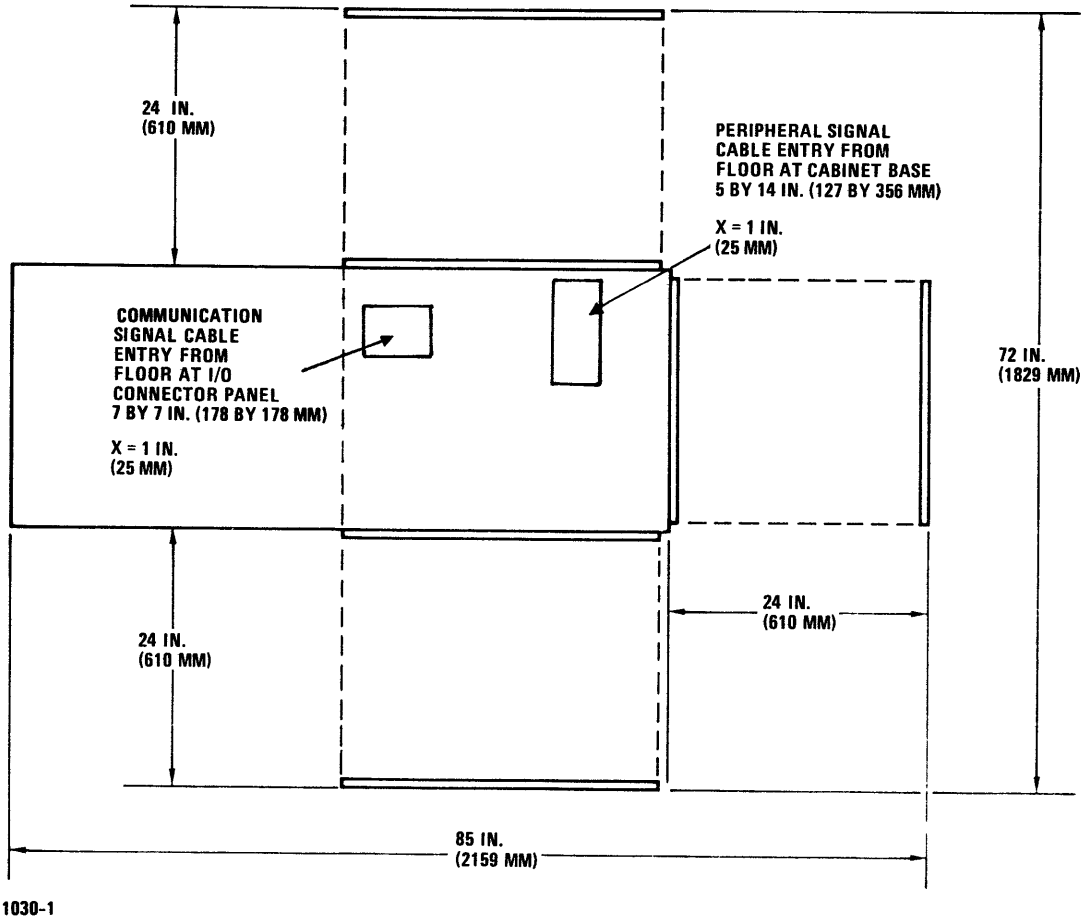
Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F	72°F	60°F	Minimum 25°F Maximum 79°F
	(35°C)	(22.2°C)	(15.6°C)	Minimum -4°C Maximum 26°C
Storage temperature	122°F		14°F	
	(50°C)		(-10°C)	

†Maximum cable length between cable accesses

CYBER 18-5M PROCESSOR





1030-1

CYBER 18-5M PROCESSOR

Width: 61 inches (1549 millimeters)
Depth: 31 inches (787 millimeters)
Height: 29 inches (737 millimeters)

Weight: 455 pounds (207 kilograms)
Support: 6 leveling pads

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum (includes the basic processor with a full complement of boards and controllers):

60 Hz, 120 V, 1 phase, 1.4 kVa (12 amperes) or 50 Hz, 120 V, 1 phase, 1.4 kVa (12 amperes)	Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-pront connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Processor to console display	1	10 feet (3.05 meters)	7 feet (2.1 meters)
CYBER 18-5M to modem	1	20 feet (6.1 meters)	18 feet (5.5 meters)

Environmental considerations:

Type of cooling: Forced air (internal fans)

Source of cooling: Ambient air

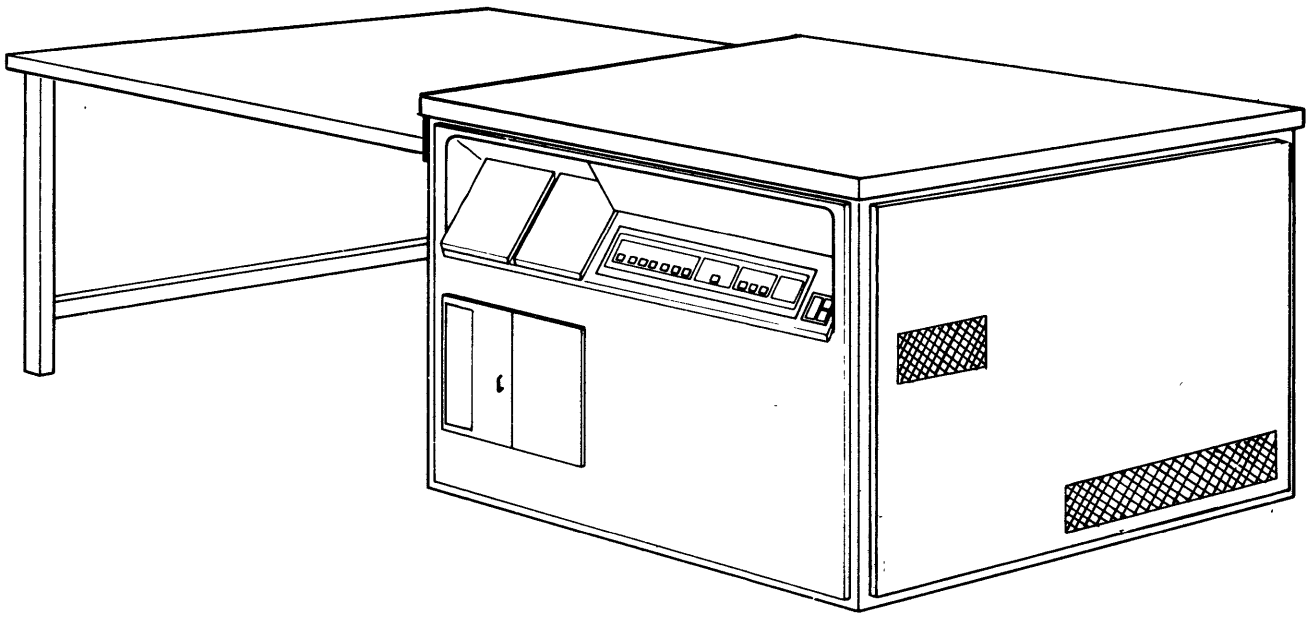
Heat rejection rate, maximum, to air: 3824 Btu/hour (1120 watts)

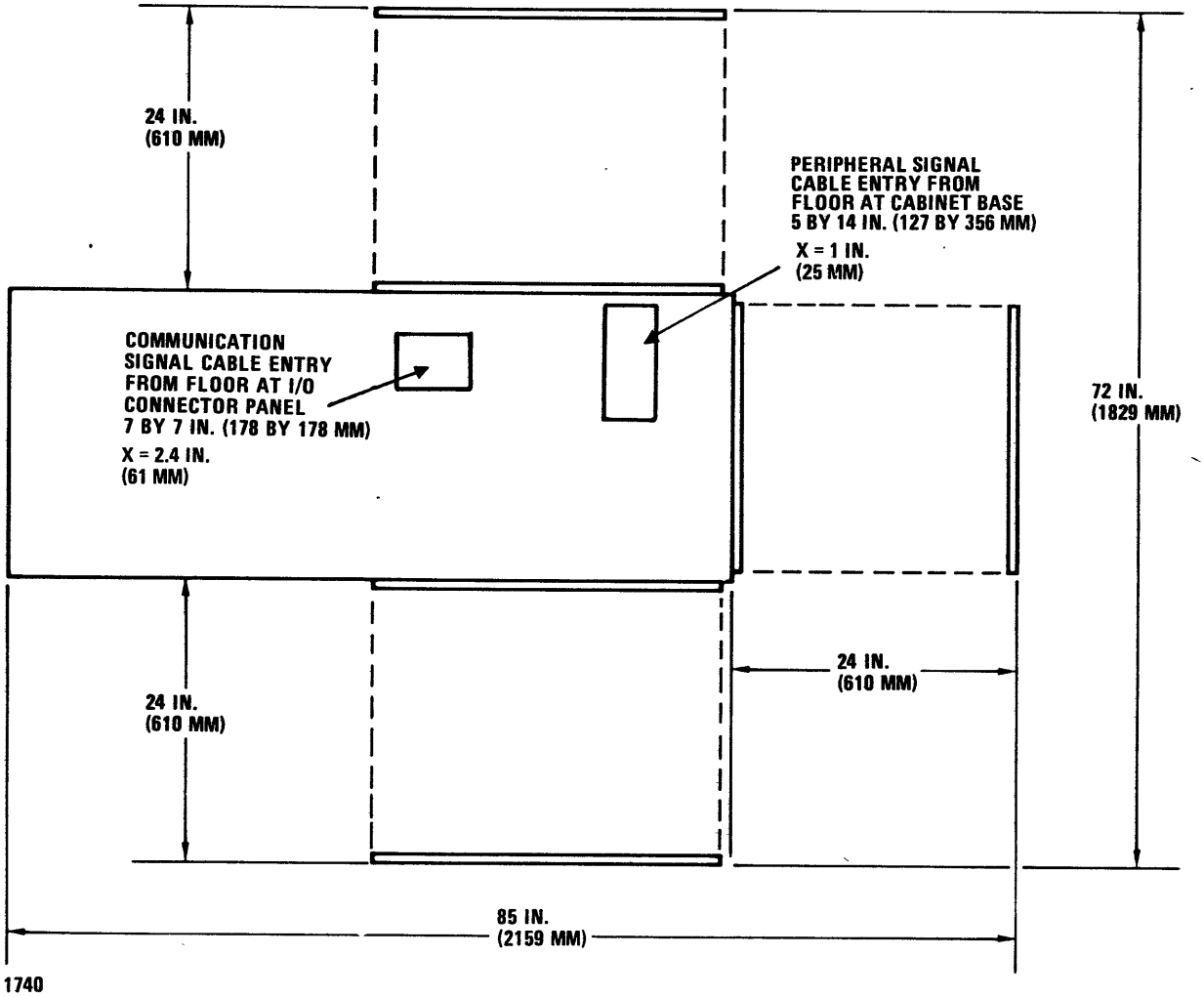
Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F	72°F	60°F	Minimum 25°F Maximum 79°F
	(35°C)	(22.2°C)	(15.6°C)	Minimum -4°C Maximum 26°C
Storage temperature	122°F (-50°C)		14°F (-10°C)	

†Maximum cable length between cabinet cable accesses

CYBER 18-10M PROCESSOR





CYBER 18-10M PROCESSOR

Width: 64 inches (1549 millimeters)
Depth: 31 inches (787 millimeters)
Height: 29 inches (737 millimeters)

Weight: 475 pounds (215 kilograms)
Support: 6 leveling pads

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum (includes the processor with a full complement of boards and controllers):

60 Hz, 120 V, 1 phase, 1.4 kVa (12 amperes)
or
50 Hz, 120 V, 1 phase, 1.4 kVa (12 amperes)

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

(Refer to the associated peripheral products.)

Environmental considerations:

Type of cooling: Forced air (internal fans)

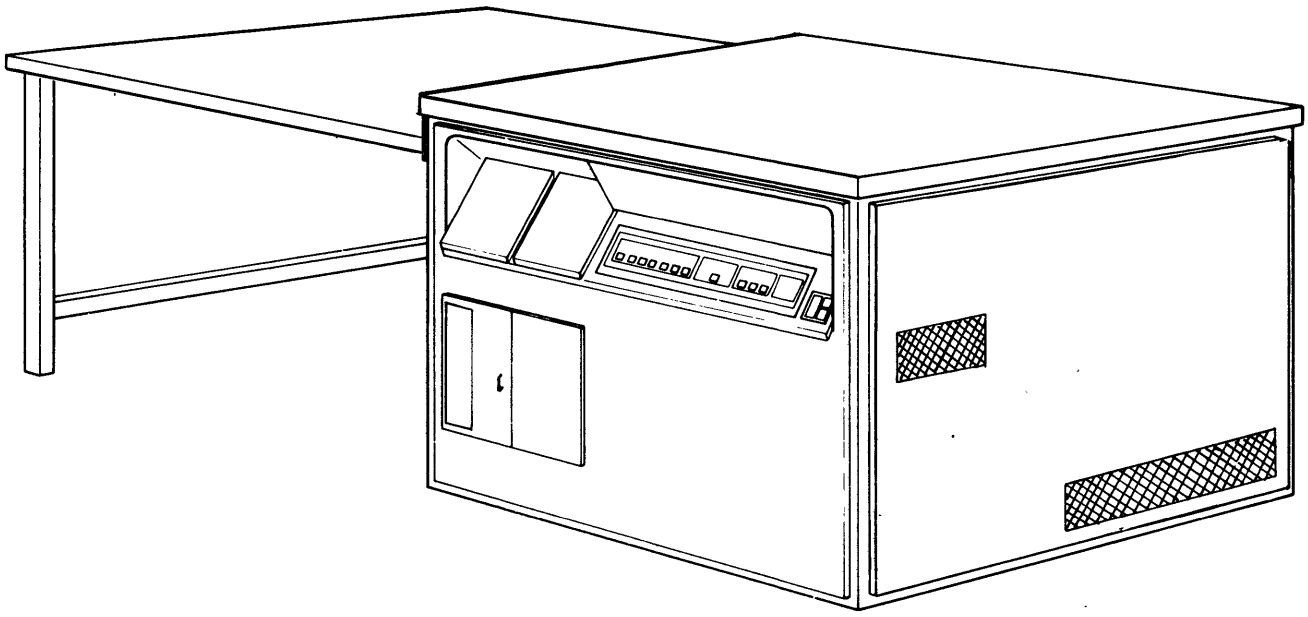
Source of cooling: Ambient air

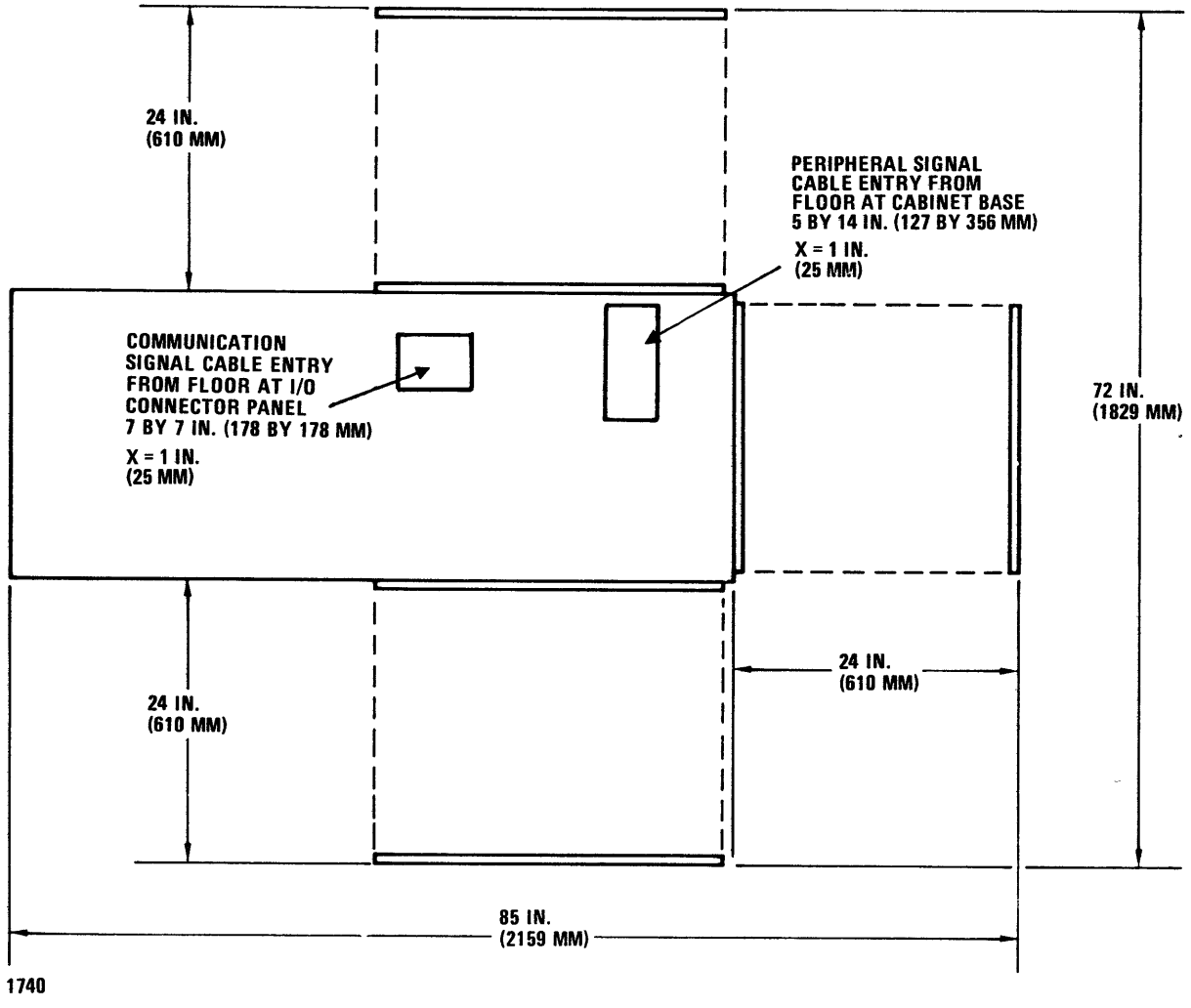
Heat rejection rate, maximum, to air: 3824 Btu/hour (1120 watts)

Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F	72°F	60°F	Minimum 25°F Maximum 79°F
	(35°C)	(22.2°C)	(15.6°C)	Minimum -4°C Maximum 26°C
Storage temperature	122°F (-50°C)		14°F (-10°C)	

CYBER 18-20 PROCESSOR





CYBER 18-20 PROCESSOR

Width: 61 inches (1549 millimeters)
Depth: 31 inches (787 millimeters)
Height: 29 inches (737 millimeters)

Weight: 475 pounds (215 kilograms)
Support: 6 leveling pads

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum (includes the basic processor with a full complement of boards and controllers):

60 Hz, 120 V, 1 phase, 1.4 kVa (12 amperes)
or
50 Hz, 120 V, 1 phase, 1.4 kVa (12 amperes)

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Processor to console display	1	10 feet (3.05 meters)	7 feet (2.1 meters)

(Refer to the associated peripheral products for others.)

Environmental considerations:

Type of cooling: Forced air (internal fan)

Source of cooling: Ambient air

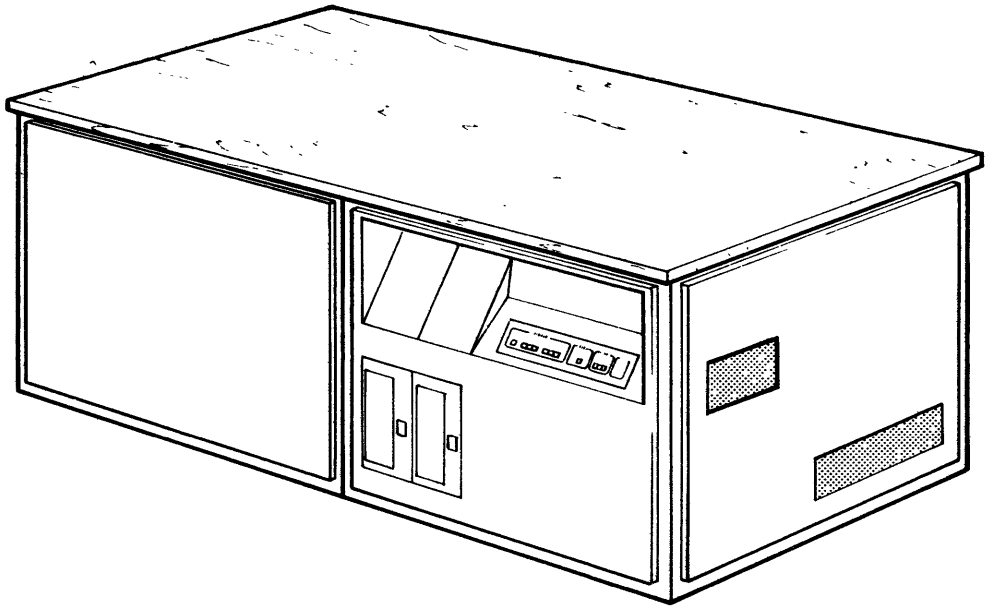
Heat rejection rate, maximum, to air: 3824 Btu/hour (1120 watts)

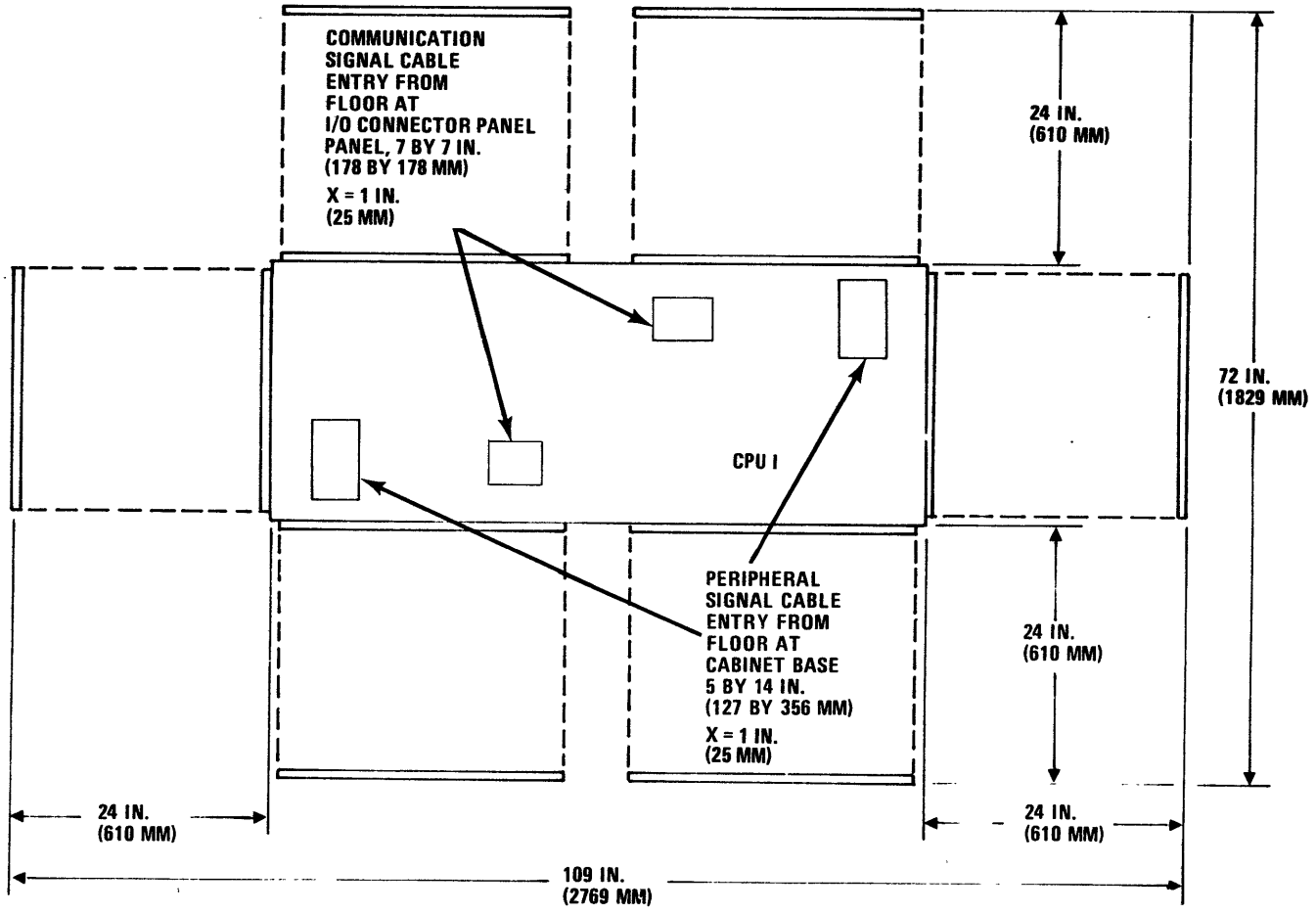
Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F	72°F	60°F	Minimum 25°F Maximum 79°F
	(35°C)	(22.2°C)	(15.6°C)	Minimum -4°C Maximum 26°C
Storage temperature	122°F (-50°C)		14°F (-10°C)	

†Maximum cable length between cable accesses

CYBER 18-25 PROCESSOR





1032-1

CYBER 18-25 PROCESSOR

Width: 61 inches (1549 millimeters)
Depth: 31 inches (787 millimeters)
Height: 29 inches (737 millimeters)

Weight: 950 pounds (431 kilograms)
Support: 6 leveling pads

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, 2.4 kVa (20 amperes)
or
50 Hz, 120 V, 1 phase, 2.4 kVa (20 amperes)

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-20P, 3-prong connector that requires mating to a NEMA 5-20R or Hubbell 5361 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 30 amperes, 1 phase
or
50 Hz, 30 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Processor to loop multiplexer	1	11 feet (3.6 meters)	5 feet (1.5 meters)
Processor to console display	1	10 feet (3.05 meters)	7 feet (2.1 meters)

(Refer to the associated peripheral products for others.)

Environmental considerations:

Type of cooling: Forced air (internal fan)

Source of cooling: Ambient air

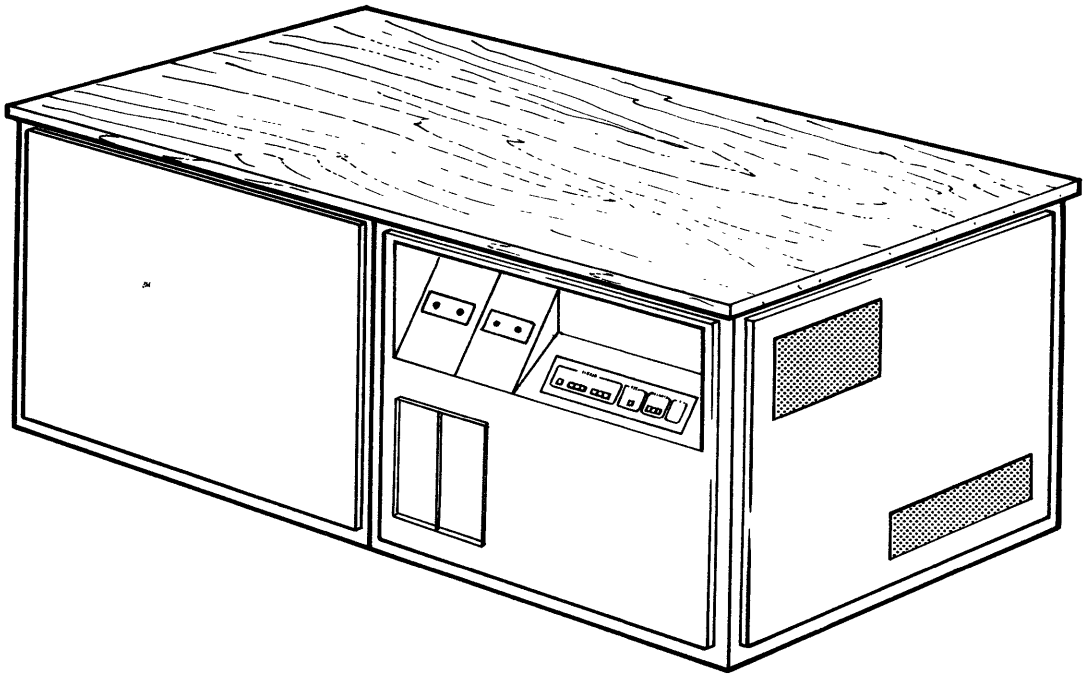
Heat rejection rate, maximum, to air: 6556 Btu/hour (1920 watts)

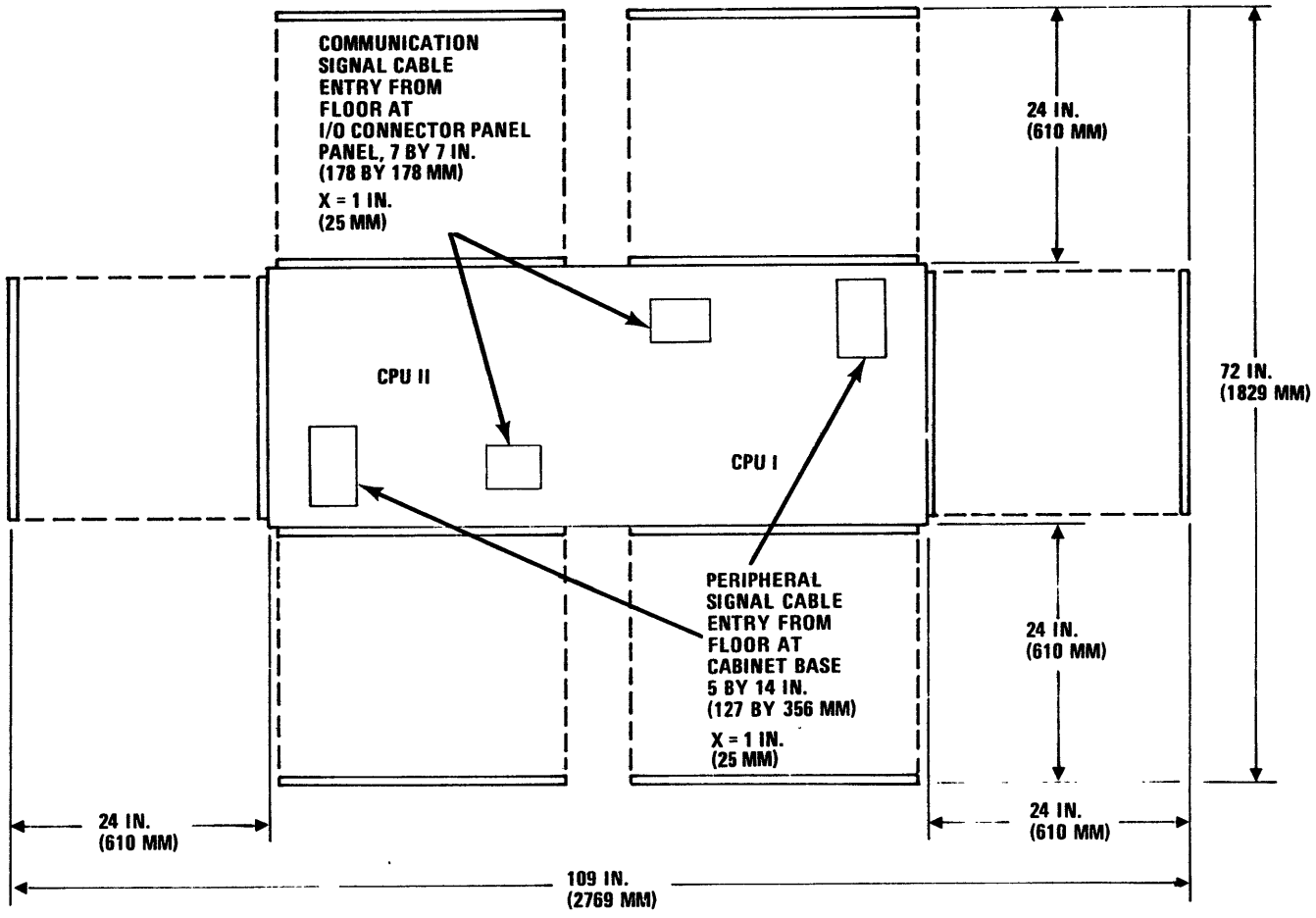
Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F	72°F	60°F	Minimum 25°F Maximum 79°F
	(35°C)	(22.2°C)	(15.6°C)	Minimum -4°C Maximum 26°C
Storage temperature	122°F (50°C)		14°F (-10°C)	

†Maximum cable length between cable accesses

CYBER 18-30 PROCESSOR





1032-1

CYBER 18-30 PROCESSOR

Width: 61 inches (1549 millimeters)
Depth: 31 inches (787 millimeters)
Height: 29 inches (737 millimeters)

Weight: 950 pounds (431 kilograms)
Support: 6 leveling pads

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum (includes the basic processor with a full complement of boards and controllers):

60 Hz, 120 V, 1 phase, 2.4 kVa (20 amperes)
or
50 Hz, 120 V, 1 phase, 2.4 kVa (20 amperes)

Supplied with a 10-foot (3.05-meter power cord. The 60 Hz system is supplied with a NEMA 5-20P, 3-prong connector that requires mating to a NEMA 5-20R or Hubbell 5361 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 30 amperes, 1 phase
or
50 Hz, 30 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Processor to loop multiplexer	1	11 feet (3.6 meters)	5 feet (1.5 meters)
Processor to console display	1	10 feet (3.05 meters)	7 feet (2.1 meters)

(Refer to the associated peripheral products for others.)

Environmental considerations:

Type of cooling: Forced air (internal fan)

Source of cooling: Ambient air

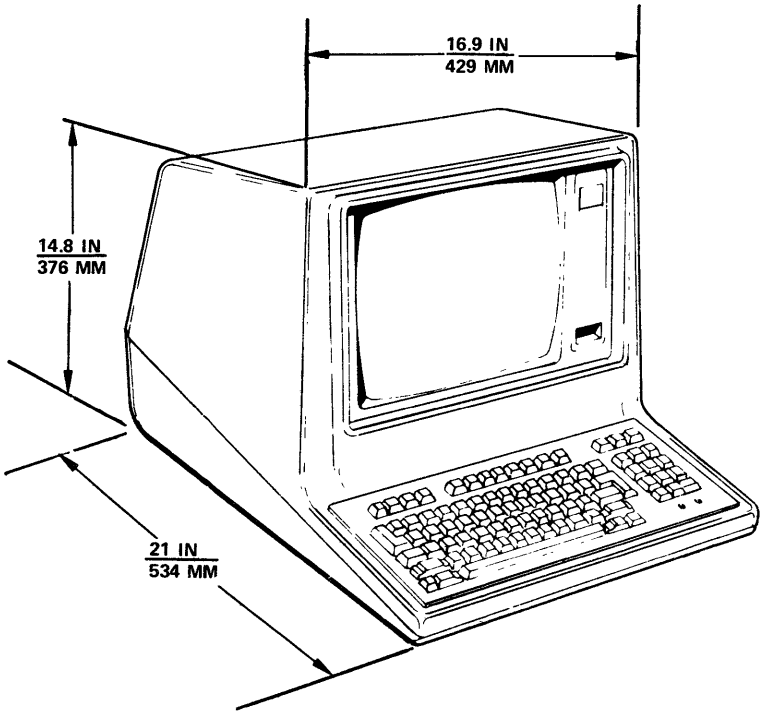
Heat rejection rate, maximum, to air: 6556 Btu/hour (1920 watts)

Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F	72°F	60°F	Minimum 25°F Maximum 79°F
	(35°C)	(22.2°C)	(15.6°C)	Minimum -4°C Maximum 26°C
Storage temperature	122°F (50°C)		14°F (-10°C)	

†Maximum cable length between cable accesses

722-10 CONSOLE DISPLAY/DISPLAY TERMINAL



722-10 CONSOLE DISPLAY/DISPLAY TERMINAL

Width: 16.9 inches (429 millimeters)
Depth: 21 inches (534 millimeters)
Height: 14.8 inches (376 millimeters)

Weight: 37 pounds (16.78 kilograms)
Support: 4 rubber feet
Table-/desk-top model

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, .75 A
or
50 Hz, 220 V, 1 phase, .5 A
or
50 Hz, 240 V, 1 phase, .5 A

Supplied with a 9-foot (2.7-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity†	Total Length	Usable Length††
CLA (in processor) to display (remote terminal)	1	50 feet (15.2 meters)	45 feet (13.7 meters)
Processor to console display		(Refer to the appropriate processor data sheet)	

Environmental considerations:

Type of cooling: Convection

Source of cooling: Ambient air

Heat rejection rate, maximum, to air: 270 Btu/hour (79 watts) maximum

Relative humidity: 20 to 80 percent

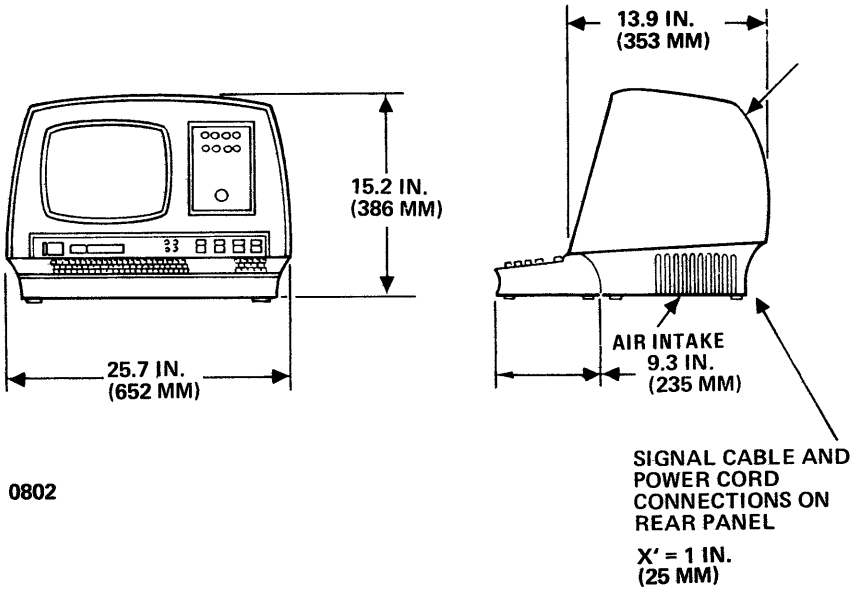
	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	104°F (40°C)	72°F (22.2°C)	50°F (10°C)	N/A
Storage temperature	140°F (60°C)		-40°F (-40°C)	

†One cable for each console display

††Maximum cabinet separation between cable accesses

1811-1 CONSOLE DISPLAY

A057



0802

1811-1 CONSOLE DISPLAY

Width: 21.7 inches (551 millimeters)
Depth: 20.5 inches (521 millimeters)
Height: 15.2 inches (386 millimeters)

Weight: 60 pounds (27 kilograms)
Support: 4 rubber feet
Table-/desk-top model

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, 0.22 kVa (1.8 amperes)
or
50 Hz, 120 V, 1 phase, 0.22 kVa (1.8 amperes)

Supplied with a 6-foot (1.8-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Processor to console assembly	1	(Refer to the appropriate processor data sheet.)	

Environmental considerations:

Type of cooling: Forced air (internal fan)

Source of cooling: Ambient air

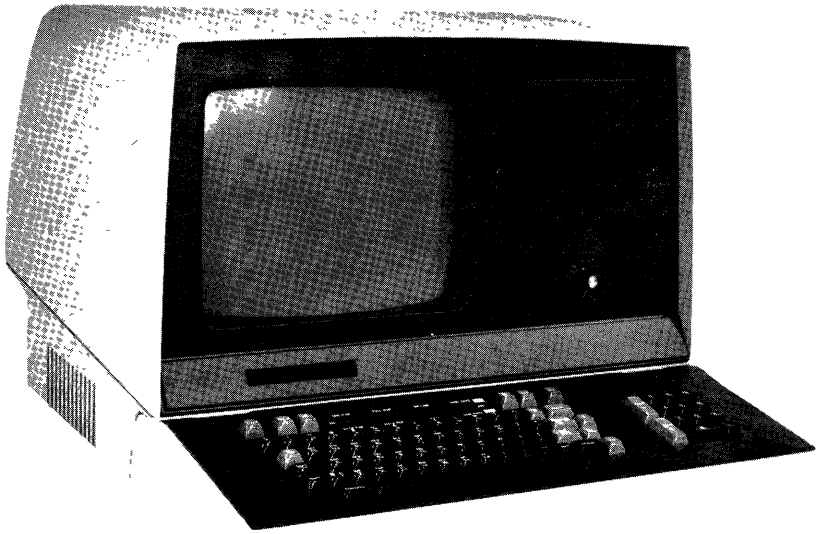
Heat rejection rate, maximum, to air: 751 Btu/hour (221 watts)

Relative humidity: 20 to 80 percent

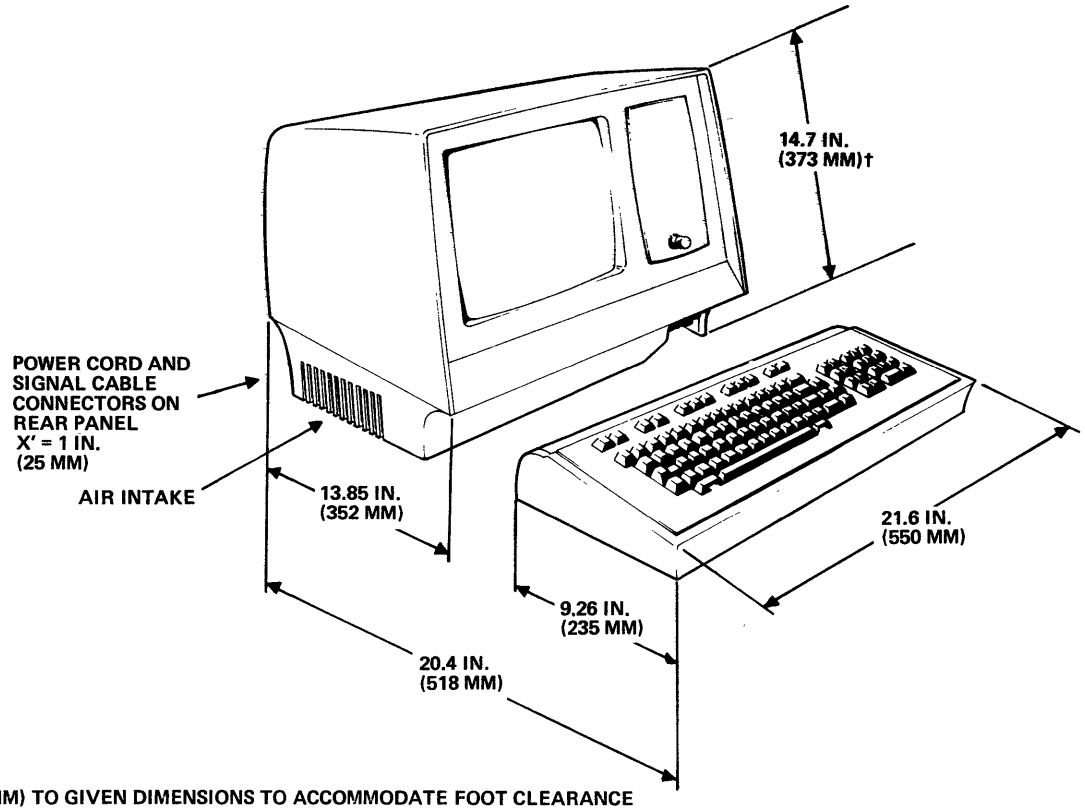
	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

†Maximum cabinet separation between cable accesses

1811-2 CONSOLE DISPLAY



A067



†ADD 0.50 IN. (13 MM) TO GIVEN DIMENSIONS TO ACCOMMODATE FOOT CLEARANCE

0803-2

1811-2 CONSOLE DISPLAY
OR
752-30/40 DISPLAY TERMINAL
WITH 752-202/204 KEYBOARD
OR 752-270/271 KEYBOARD

Width: 21.7 inches (551 millimeters)
Depth: 20.5 inches (521 millimeters)
Height: 15.2 inches (386 millimeters)

Weight: 51 pounds (23 kilograms)
Support: 4 rubber feet
Table-/desk-top model

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, 0.12 kVa (1 ampere)
or
50 Hz, 220 V, 1 phase, 0.12 kVa (0.55 ampere)

Supplied with a 9-foot (2.7-meter) power cord. The 60 Hz system is supplied with a NEMA 15P, 3-prong connector that requires mating to a NEMA 5-15R receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity†	Total Length	Usable Length††
CLA (in processor) to display (remote terminal)	1	50 feet (15.2 meters)	45 feet (13.7 meters)
Processor to console display		(Refer to the appropriate processor data sheet)	

Environmental considerations:

Type of cooling: Forced air (internal fan)

Source of cooling: Ambient air

Heat rejection rate, maximum, to air: 50 Hz - 331 Btu/hour (97 watts)
60 Hz - 191 Btu/hour (56 watts)

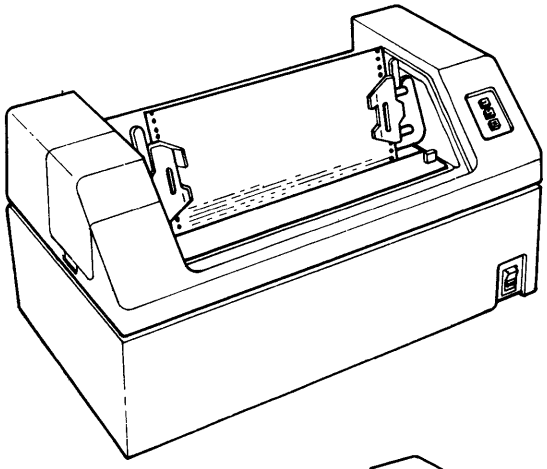
Relative humidity: 20 to 80 percent

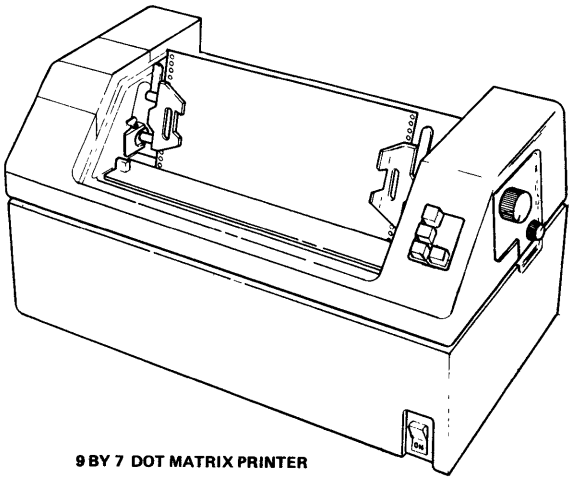
	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

†One cable for each console display

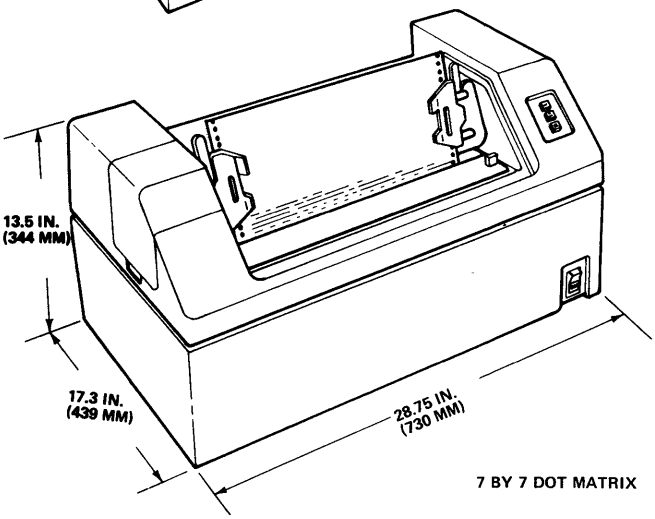
††Maximum cabinet separation between cable accesses

1827-7 IMPACT PRINTER

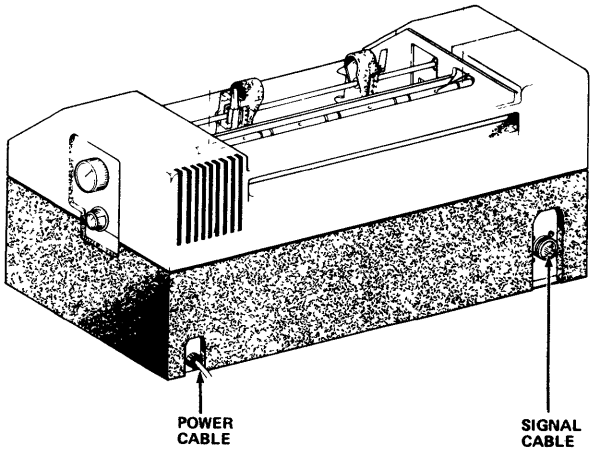




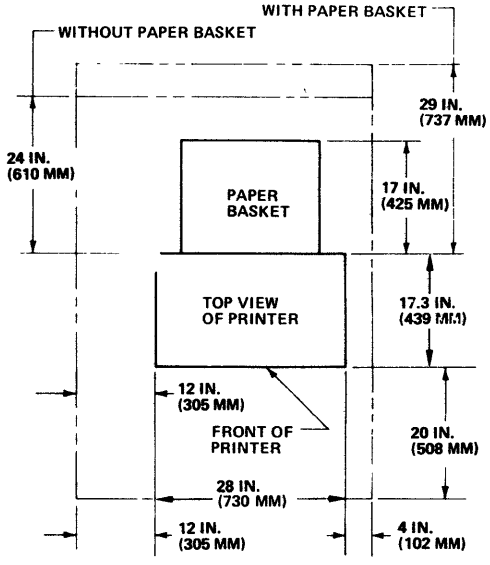
9 BY 7 DOT MATRIX PRINTER



7 BY 7 DOT MATRIX



X = 5 IN.
(127 MM)



1663

1827-7 IMPACT PRINTER

Width: 28.75 inches (730 millimeters)
Depth: 17.3 inches (439 millimeters)
Height: 13.5 inches (343 millimeters)

Weight: 98 pounds (44 kilograms)
Support: 4 rubber feet
Table-/desk-top model

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, 0.34 kVa (2.8 amperes)
or
50 Hz, 220 V, 1 phase, 0.34 kVa (1.5 amperes)

Supplied with a 9-foot (2.7-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length
Processor to printer	1	50 feet (15.2 meters)	45 feet (13.7 meters)†

Environmental considerations:

Type of cooling: Forced air (internal fan)

Source of cooling: Ambient air

Heat rejection rate, maximum, to air: 929 Btu/hour (272 watts)

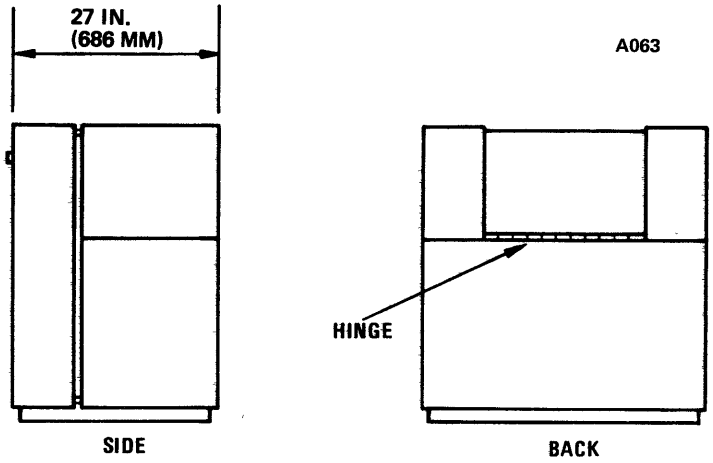
Relative humidity: 20 to 80 percent

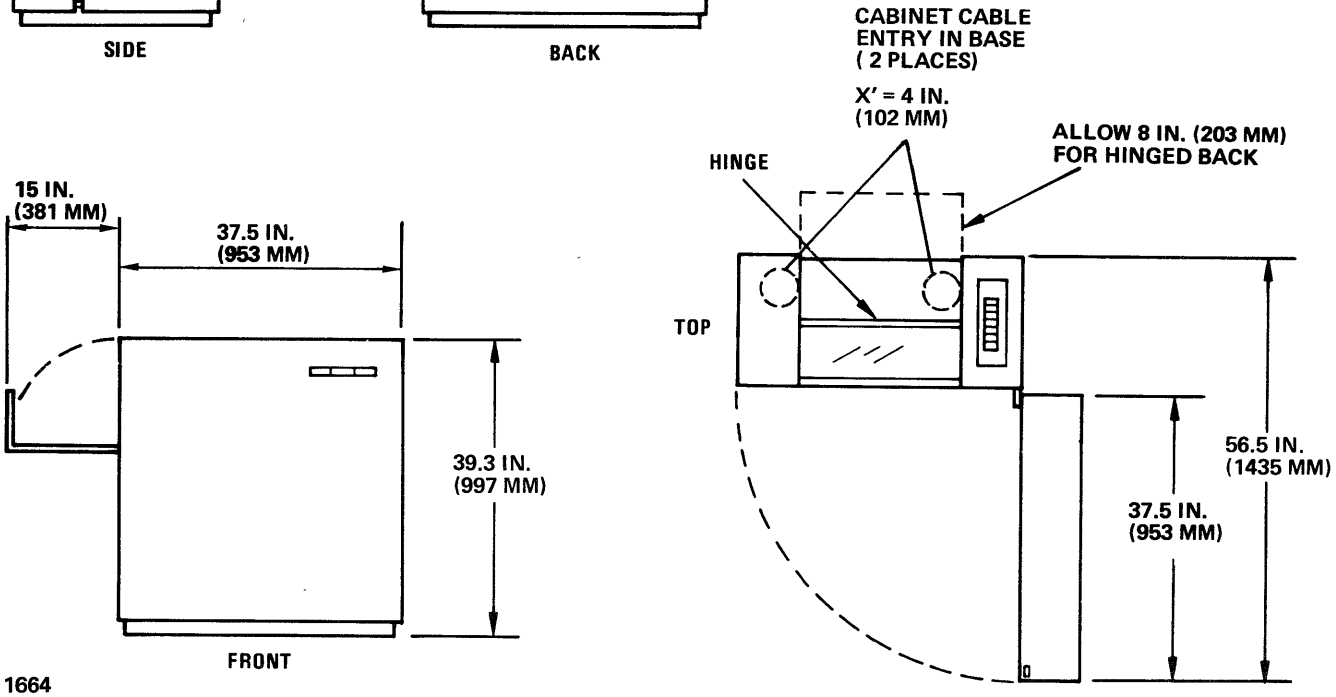
	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

†Maximum cabinet separation between cable accesses

1827-30/31 LINE PRINTER

A063





1664

1827-30/31 LINE PRINTER

Width: 37.5 inches (593 millimeters)
Depth: 27.0 inches (686 millimeters)
Height: 39.3 inches (998 millimeters)

Weight: 500 pounds (227 kilograms)
Support: 4 adjustable casters

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

1827-30 - 60 Hz, 120 V, 1 phase, 0.72 kVa (6 amperes)
or
1827-31 - 50 Hz, 220 V, 1 phase, 0.66 kVa (3 amperes)

The 1827-30/31 is supplied with a 15-foot (4.6-meter) power cord. The 1827-30 is supplied with a NEMA 5-20P, 3-prong connector that requires mating to a NEMA 5-20R receptacle. The 1827-31 is supplied with a NEMA 6-20P connector that requires mating to a NEMA 6-20R receptacle.

Circuit breakers:

1827-30 - 60 Hz, 15 amperes, 1 phase
or
1827-31 - 50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Controller to line printer	1	20 feet (6.1 meters)	13 feet (4 meters)

Environmental considerations:

Type of cooling: Forced air (internal fans)

Source of cooling: Ambient air

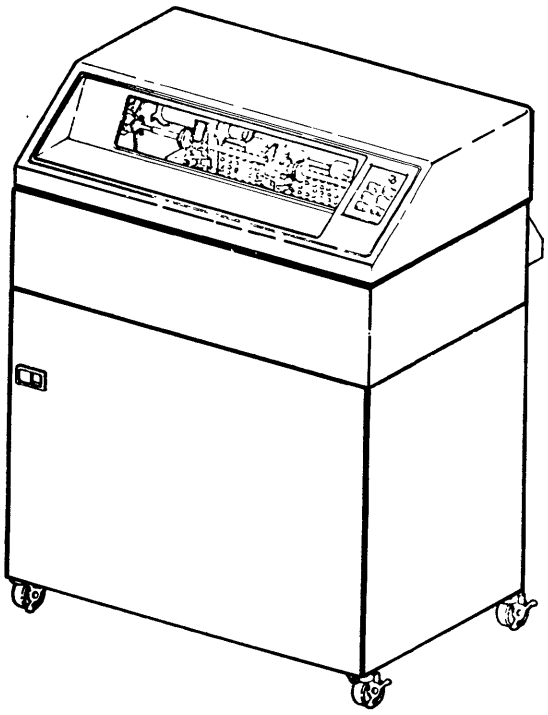
Heat rejection rate, maximum, to air: 60 Hz - 1967 Btu/hour (576 watts), 1827-30
50 Hz - 1803 Btu/hour (528 watts), 1827-31

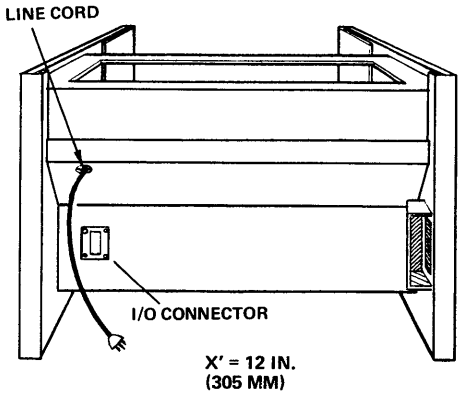
Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

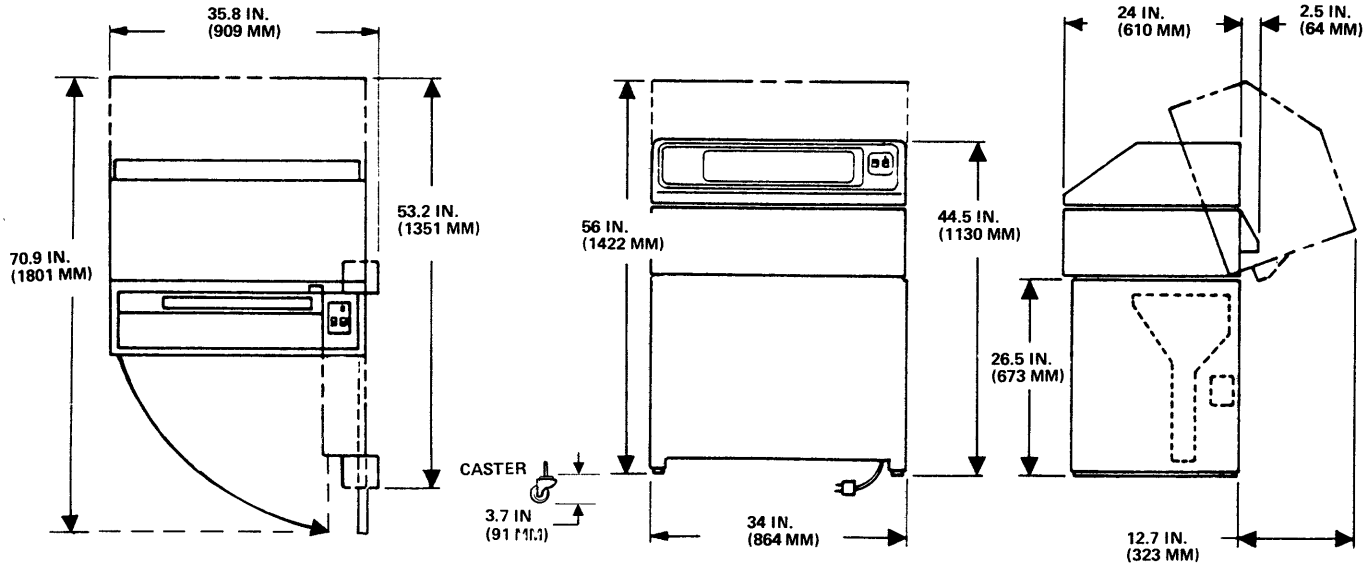
†Maximum cabinet separation between cable accesses

1827-32/60/90 BAND LINE PRINTER





REAR VIEW OF PEDESTAL



0806-2

1827-32/60/90 BAND LINE PRINTER

Width: 34 inches (864 millimeters)
Depth: 24 inches (610 millimeters)
Height: 44 inches (1130 millimeters)

Weight: 300 pounds (136 kilograms)
Support: 4 adjustable casters

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

50/60 Hz, 120 V, 1 phase, 1.2 kVa (10 amperes)
or
50/60 Hz, 220 V, 1 phase, 1.1 kVa (5 amperes)

Supplied with a 15-foot (4.6-meter) power cord. The 60 Hz system is supplied with a NEMA 5-20P, 3-prong connector that requires mating to a NEMA 5-20R receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Controller to printer	1	20 feet (6.1 meters)	18 feet (5.5 meters)

Environmental considerations:

Type of cooling: Forced air (internal fan)

Source of cooling: Ambient air

Heat rejection rate, maximum, to air: 3278 Btu/hour (960 watts)

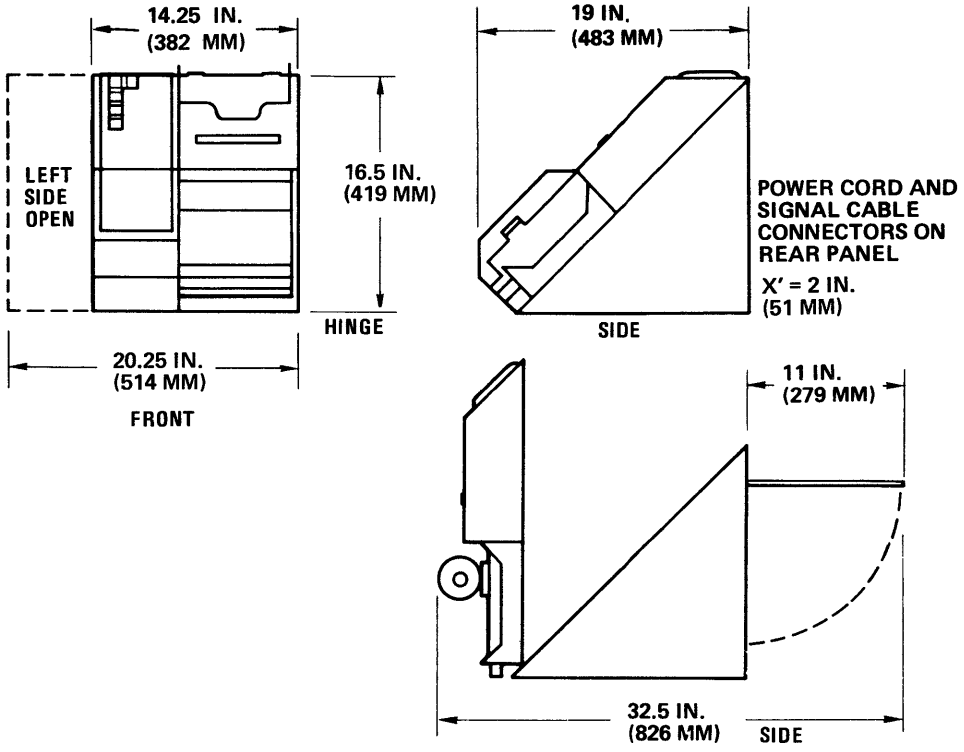
Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

†Maximum cabinet separation between cable accesses

1829-30/60 CARD READER

A015



0807-2

1829—30/60 CARD READER

Width: 14.25 inches (362 millimeters)
Depth: 19 inches (483 millimeters)
Height: 16.5 inches (419 millimeters)

Weight: 55 pounds (25 kilograms)
Support: 4 rubber feet
Table-/desk-top model

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, 0.48 kVa (4 amperes)
or
50 Hz, 120 V, 1 phase, 0.48 kVa (4 amperes)

Supplied with a 6-foot (1.8-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Controller to card reader	1	10 feet (3.05 meters)	8 feet (2.4 meters)

Environmental considerations:

Type of cooling: Forced air (internal fan)

Source of cooling: Ambient air

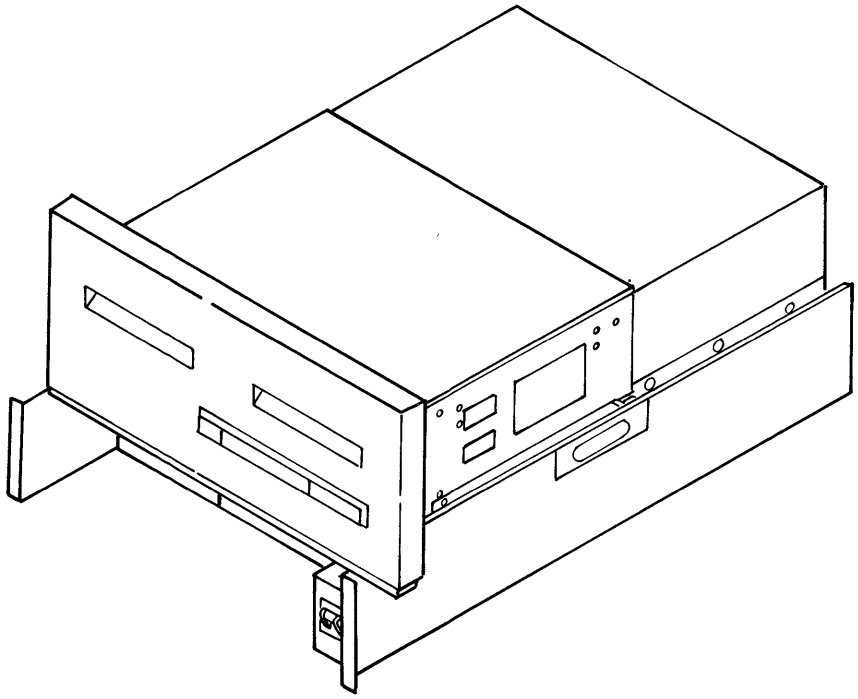
Heat rejection rate, maximum, to air: 1311 Btu/hour (394 watts)

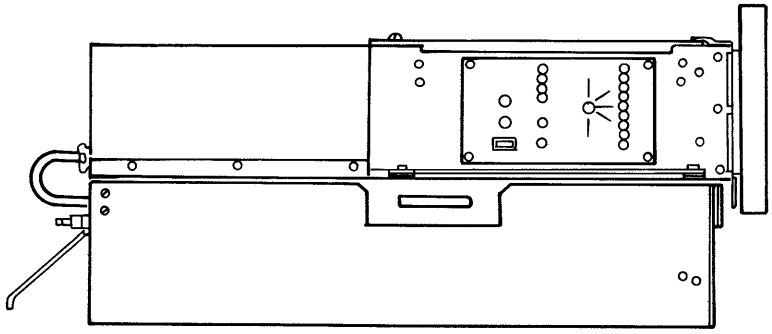
Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

†Maximum cabinet separation between cable accesses

1833-3 MODULE CONTROL UNIT





1833-3 MODULE CONTROL UNIT

Width: 17 inches (431 millimeters)
Depth: 24 inches (609 millimeters)
Height: 12 inches (304 millimeters)

Weight : 120 pounds (54 kilograms)
Bracket mounting in 1867 Module Drive

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, 0.36 kVa
or
50 Hz, 220 V, 1 phase, 0.36 kVa

Supplied with a 4-foot (1.2-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 3 amperes, 1 phase
or
50 Hz, 3 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Control unit to first module drive††	1	4 feet (1.2 meters)	--
Adapter (in processor) to control unit†††	2	25 feet (7.6 meters)	20 feet (6.1 meters)

Environmental considerations:

Type of cooling: Forced air (internal fans)

Source of cooling: Ambient air

Heat rejection rate, maximum, to air: 60 Hz - 1967 Btu/hour (576 watts)
50 Hz - 1803 Btu/hour (528 watts)

Relative humidity: 20 to 80 percent

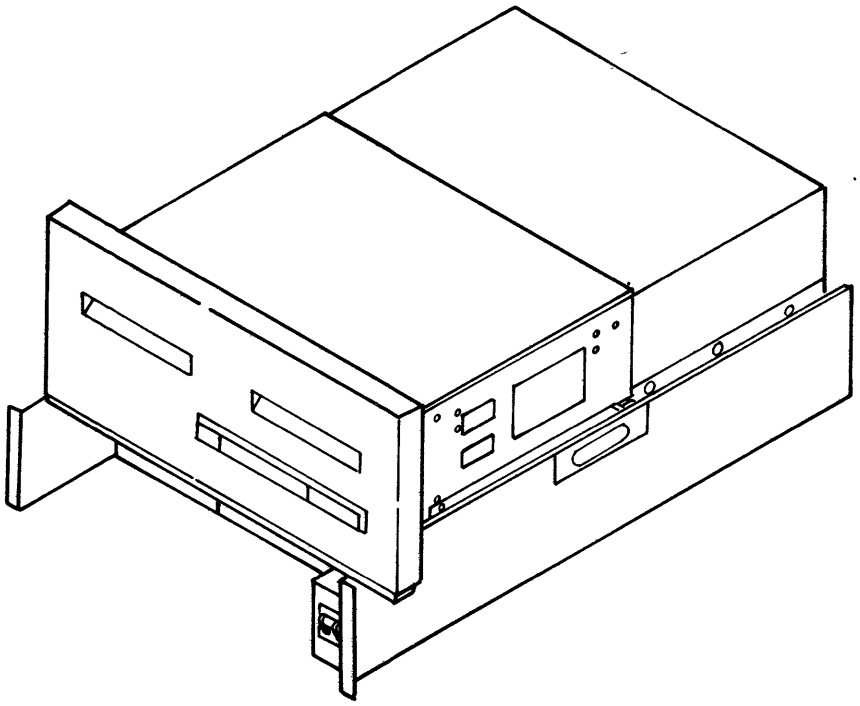
	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

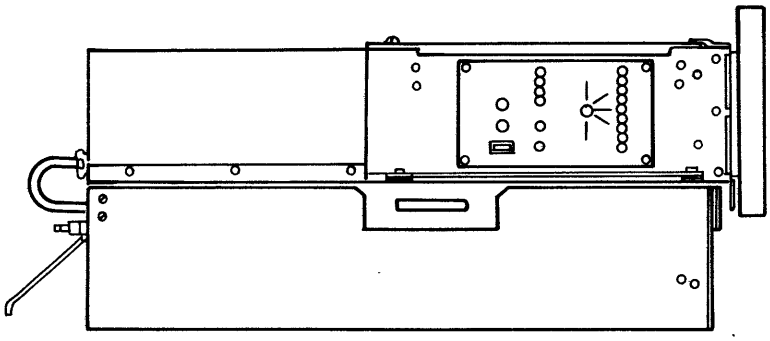
†Maximum cabinet separation between cable accesses

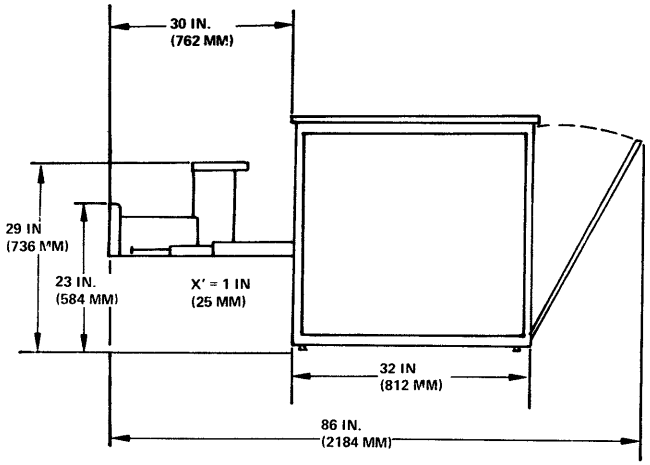
††Internal to 1867 drive unit

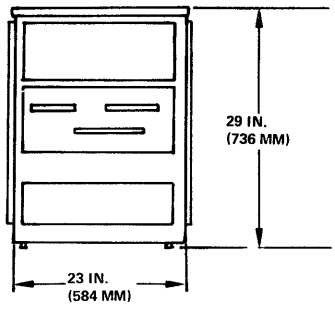
†††Cables are part of the adapter, not part of the control unit.

1833-6 MODULE DRIVE CONTROLLER









1752-1

LEFT SIDE VIEW

FRONT VIEW

1833-6 MODULE DRIVE CONTROLLER

Width: 17 inches (431 millimeters)
Depth: 24 inches (609 millimeters)
Height: 12 inches (304 millimeters)

Weight (of drive): 120 pounds (54 kilograms)
Bracket mounting in 1867 Module Drive

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, (3.0 amperes)
or
50 Hz, 220 V, 1 phase, (1.6 amperes)

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Adapter (in processor) to control unit	2	25 feet (7.6 meters)	20 feet (6.1 meters)
Control unit to drive††	1	10 feet (3.05 meters)	5 feet (1.5 meters)

Environmental considerations:

Type of cooling: Forced air (internal fans)

Source of cooling: Ambient air

Heat rejection rate, maximum, to air: 60 Hz - 1967 Btu/hour (576 watts)
50 Hz - 1803 Btu/hour (528 watts)

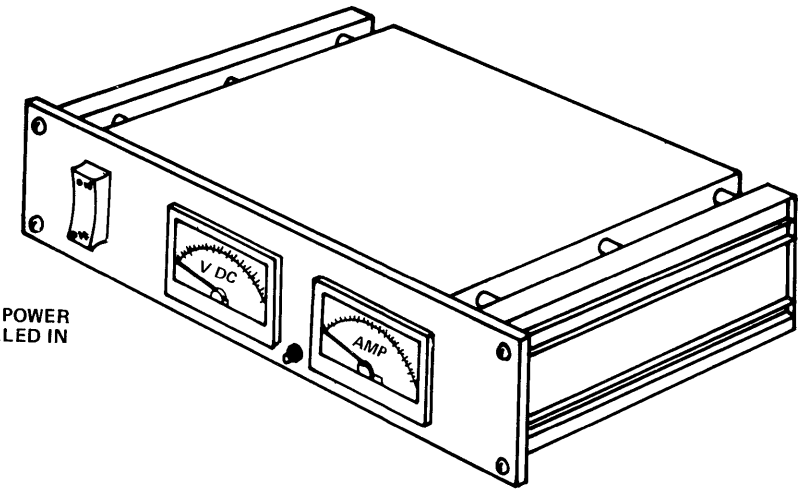
Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

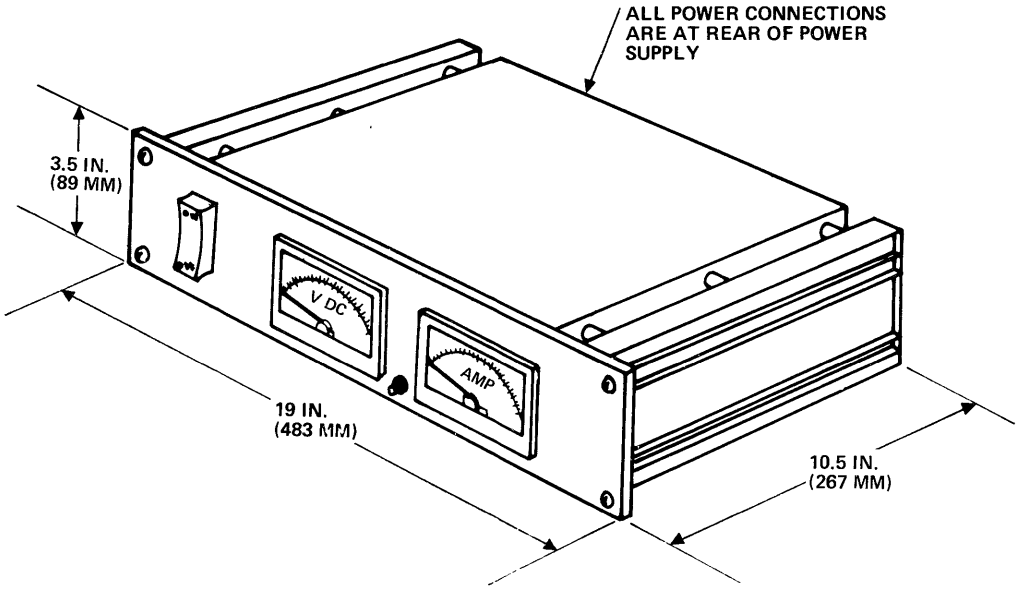
†Maximum cabinet separation between cable accesses. Assumes the control unit is located near the bottom of its cabinet. Deduct for additional mounting height within the cabinet.

††This cable can be internal to the cabinet and is listed here for reference. It is not part of the controller.

1850-1
1500 SERIES EQUIPMENT ADAPTER
TERMINATOR POWER SUPPLY



1850-1 TERMINATION POWER SUPPLY TO BE INSTALLED IN THE 1887-4 VERTICAL EQUIPMENT CABINET



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1850-1
1500 SERIES EQUIPMENT ADAPTER
TERMINATOR POWER SUPPLY

Width: 19.5 inches (496 millimeters)
Depth: 10.5 inches (276 millimeters)
Height: 3.5 inches (89 millimeters)

Weight: 15 pounds (0.7 kilograms)
Rack mounts in 1887-4 Equipment Cabinet

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, 0.36 kVa (3 amperes)
or
50 Hz, 220 V, 1 phase, 0.36 kVa (1.5 amperes)

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

N/A

External terminator power connection output: 40 V dc

Environmental considerations:

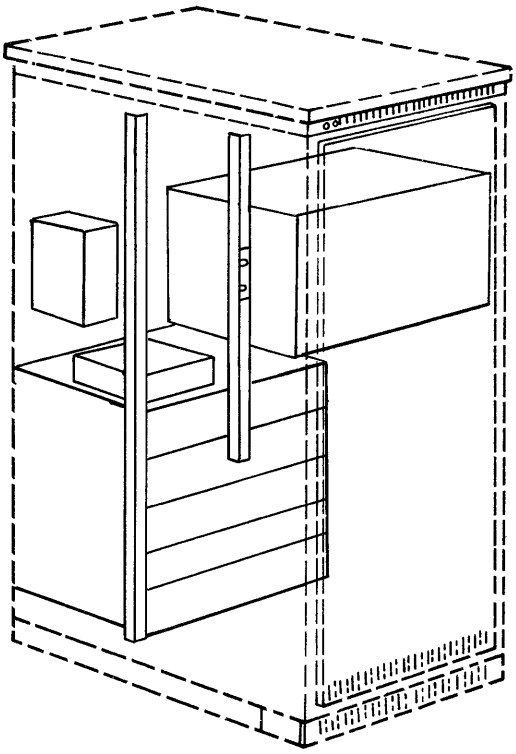
Type of cooling: Forced air (internal fans in mounting cabinet)

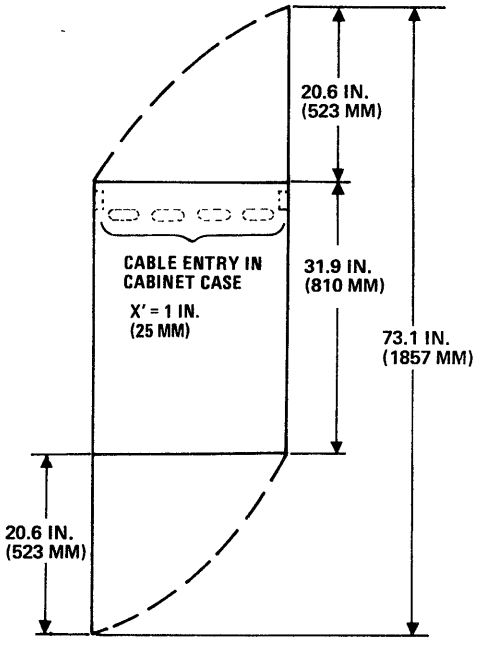
Source of cooling: Ambient room air

Heat rejection rate, maximum, to air: 785 Btu/hour (230 watts)

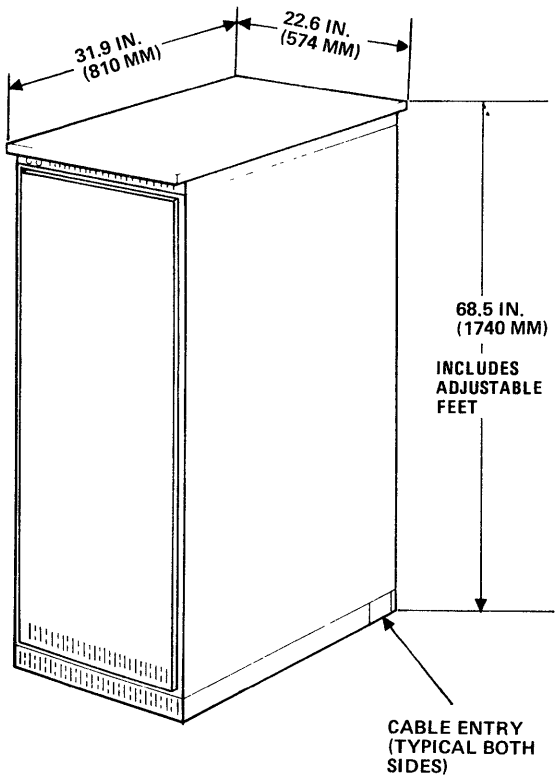
	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

1856-1 I/O EXPANSION UNIT





0813-2



1856-1 I/O EXPANSION UNIT

When the 1856-1 is installed in an 1887-4 cabinet, the following data applies:

Width: 22.6 inches (574 millimeters)
Depth: 31.9 inches (810 millimeters)
Height: 67.8 inches (1722 millimeters)

Weight: 350 pounds (158.7 kilograms)
Support: 4 adjustable rubber pads

Vertical mounting space: 59.5 inches (1511 millimeters)

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, 1.2 kVa (10.0 amperes)
or
50 Hz, 120 V, 1 phase, 1.2 kVa (10.0 amperes)

Supplied with a 10-foot (3.05-meter) power cord.† The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R receptacle. The 50 Hz system requires a connector, which is supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase (on cabinet power distribution box)
or
50 Hz, 5 amperes, 1 phase (on cabinet power distribution box)

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length
I/O expansion unit to CPU (AQX)	3	50 feet (15.2 meters)	45 feet (13.7 meters)
I/O expansion unit to CPU (DMAX)	2	50 feet (15.2 meters)	45 feet (13.7 meters)

External terminator power connection required: No

Environmental considerations:

Type of cooling: Forced air (internal fan)

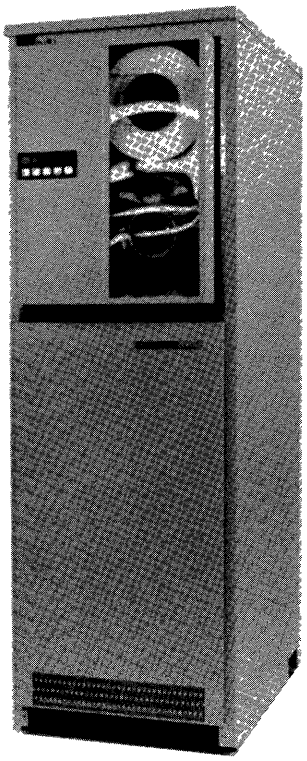
Source of cooling: Ambient air

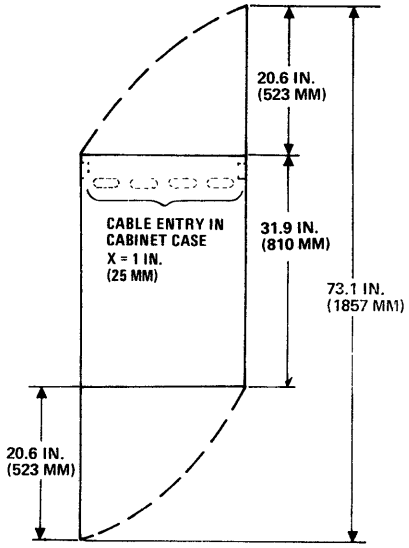
Heat rejection rate, maximum:

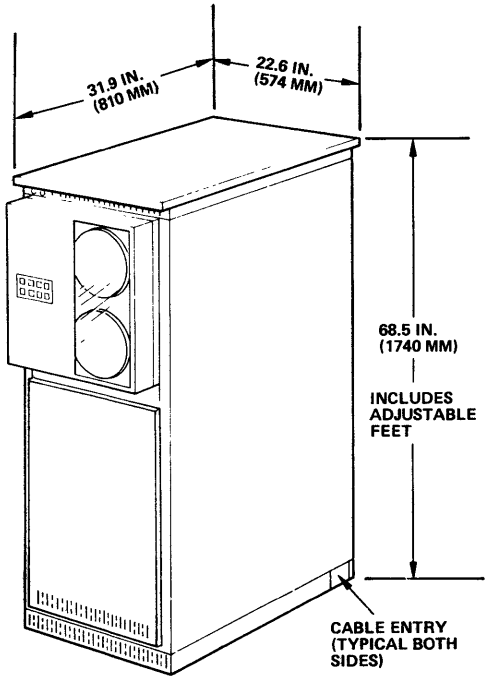
	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

†Transformer for 220 V ac/120 V ac conversion (1888-4) is not installable.

1860-1/3 MAGNETIC TAPE SUBSYSTEM







0813-1

1860-1/3 MAGNETIC TAPE SUBSYSTEM

Width: 22.6 inches (574 millimeters)
Depth: 31.9 inches (810 millimeters)
Height: 67.8 inches (1722 millimeters)

Weight: 385 pounds (165.9 kilograms)
Support: 4 adjustable feet with rubber pads

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, 0.75 kVa (6.25 amperes)
or
50 Hz, 120 V, 1 phase, 0.75 kVa (6.25 amperes)

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Controller to translator (at transport)	1	19 feet (5.8 meters)	11 feet (3.4 meters)

Environmental considerations:

Type of cooling: Forced air (internal fans)

Source of cooling: Ambient air

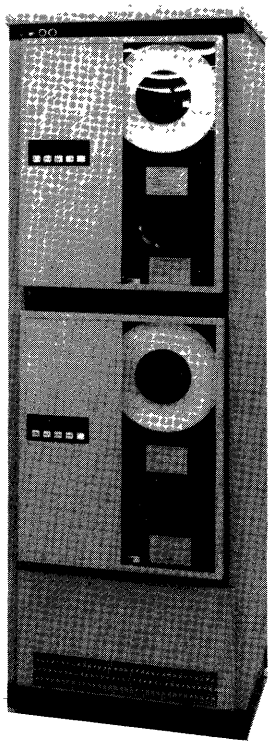
Heat rejection rate, maximum, to air: 2049 Btu/hour (600 watts)

Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

† Maximum cabinet separation between cable accesses

1860-2/4 MAGNETIC TAPE SUBSYSTEM



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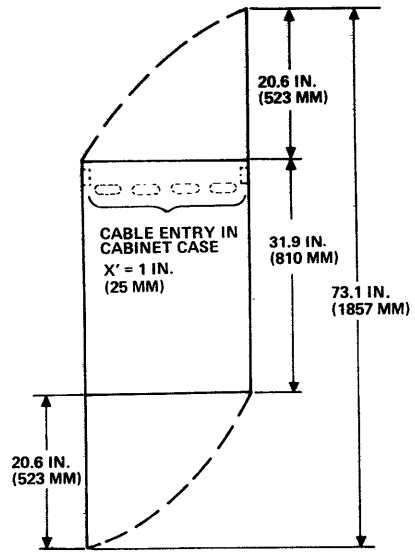

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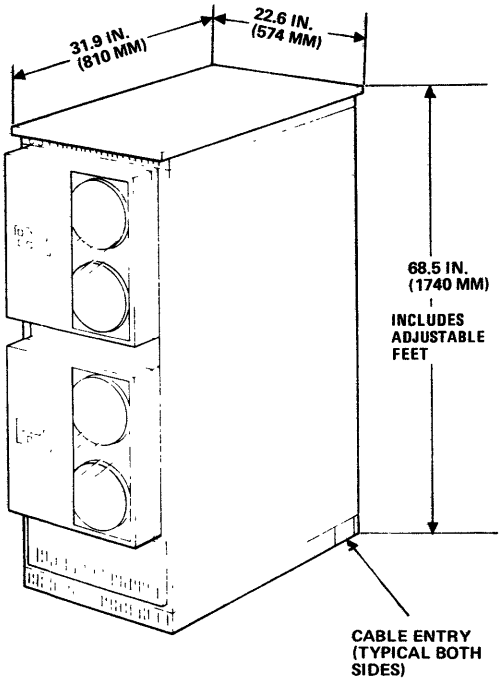


1860-2/4 MAGNETIC TAPE SUBSYSTEM

Width: 22.6 inches (574 millimeters)
Depth: 31.9 inches (810 millimeters)
Height: 67.8 inches (1722 millimeters)

Weight: 505 pounds (229.5 kilograms)
Support: 4 adjustable feet with rubber pads

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, 1.5 kVa (12.5 amperes)
or
50 Hz, 120 V, 1 phase, 1.5 kVa (12.5 amperes)

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Controller to translator (at first transport)	1	19 feet (5.8 meters)	11 feet (3.4 meters)

Environmental considerations:

Type of cooling: Forced air (internal fans)

Source of cooling: Ambient air

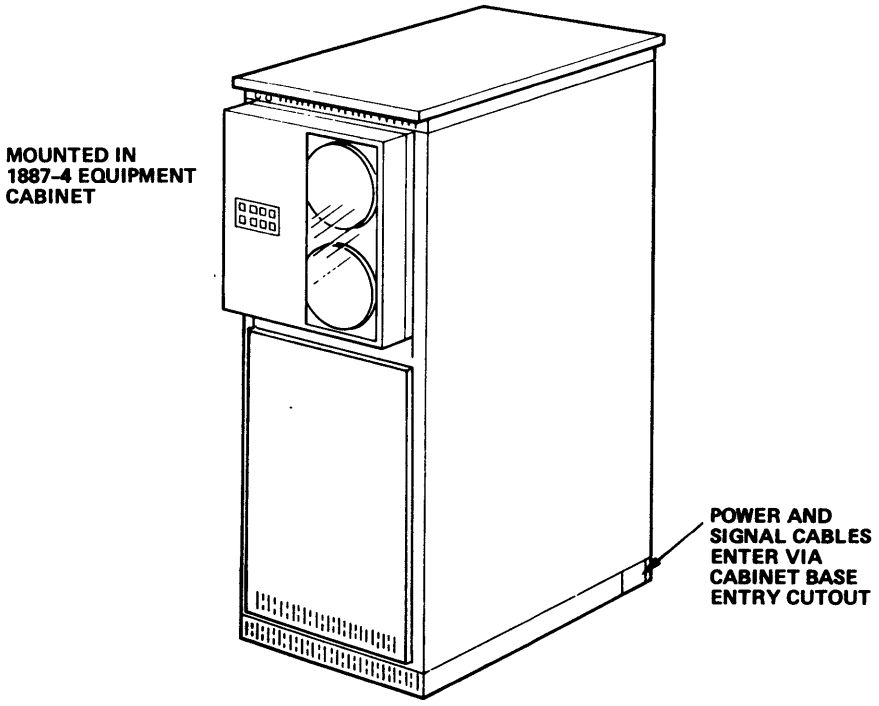
Heat rejection rate, maximum, to air: 4098 Btu/hour (1200 watts)

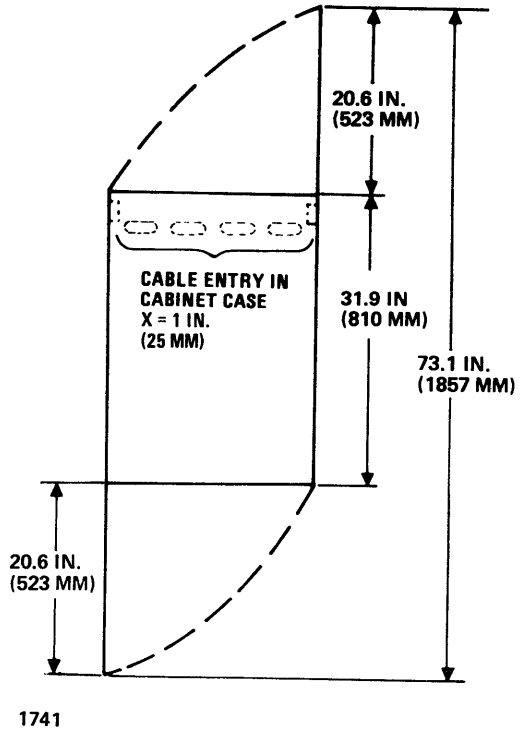
Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

†Maximum cabinet separation between cable accesses

1860-5 MAGNETIC TAPE SUBSYSTEM
(SINGLE NRZI/PE)





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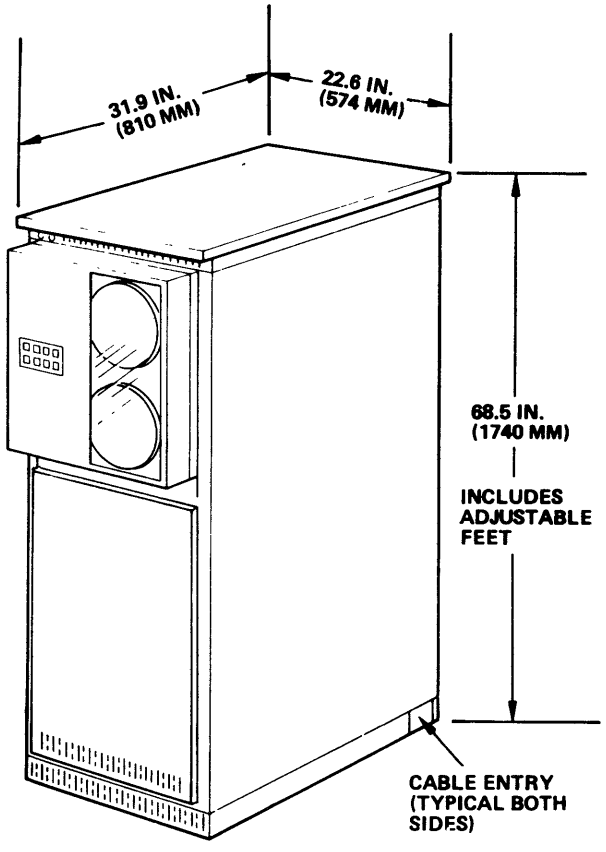


1860-5 MAGNETIC TAPE SUBSYSTEM (SINGLE NRZI/PE)

Width: 22.6 inches (574 millimeters)
Depth: 31.9 inches (810 millimeters)
Height: 67.8 inches (1722 millimeters)

Weight: 410 pounds (186.4 kilograms)
Support: 4 adjustable feet with rubber pads

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, 1.17 kVa (9.7 amperes)
or
50 Hz, 120 V, 1 phase, 1.17 kVa (9.7 amperes)

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Controller to formatter	1	21.5 feet (6.6 meters)	13 feet (4 meters)

Environmental considerations:

Type of cooling: Forced air (internal fan)

Source of cooling: Ambient air

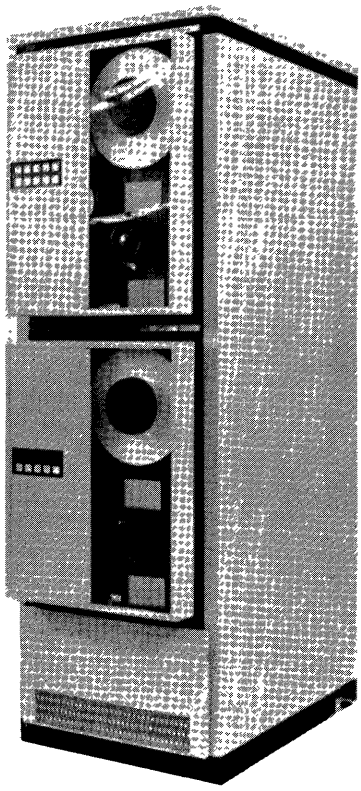
Heat rejection rate, maximum, to air: 3244 Btu/hour (950 watts)

Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

†Maximum cabinet separation between cable accesses

1860-6 MAGNETIC TAPE SUBSYSTEM
(DUAL NRZI/PE)



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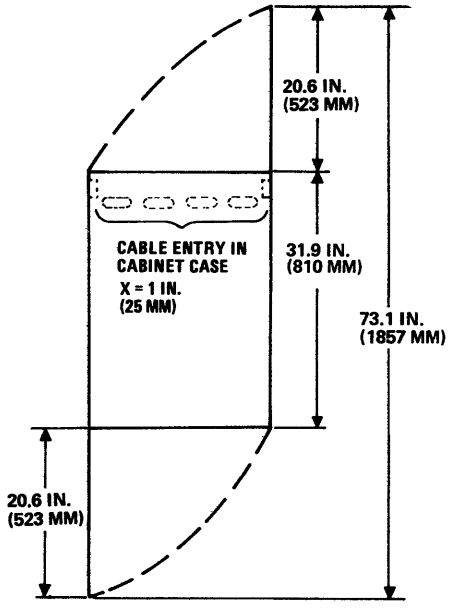

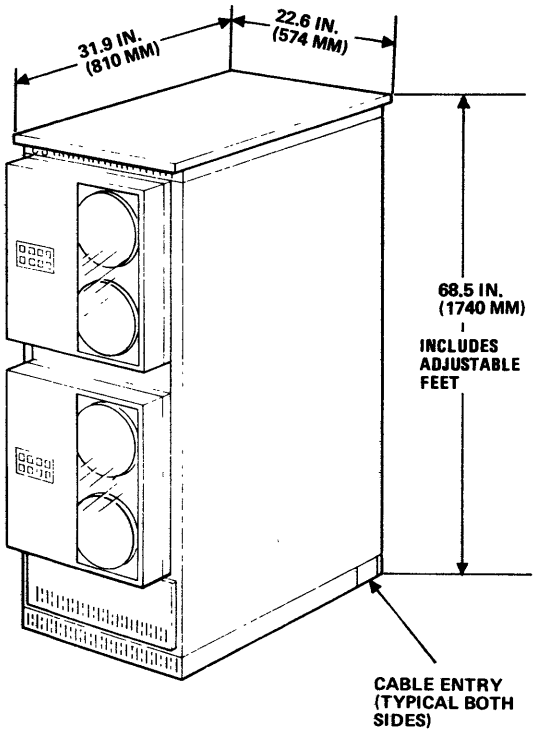

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1860-6 MAGNETIC TAPE SUBSYSTEM (DUAL NRZI/PE)

Width: 22.6 inches (574 millimeters)
Depth: 31.9 inches (810 millimeters)
Height: 67.8 inches (1722 millimeters)

Weight: 530 pounds (240.9 kilograms)
Support: 4 adjustable feet with rubber pads

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, 2.17 kVa (18 amperes)
or
50 Hz, 120 V, 1 phase, 2.17 kVa (18 amperes)

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 30 amperes, 1 phase
or
50 Hz, 30 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Standard Length
Controller to formatter	1	21.5 feet (6.6 meters)†
First tape to second tape	2	20 feet (6.1 meters)

Environmental considerations:

Type of cooling: Forced air (internal fan)

Source of cooling: Ambient air

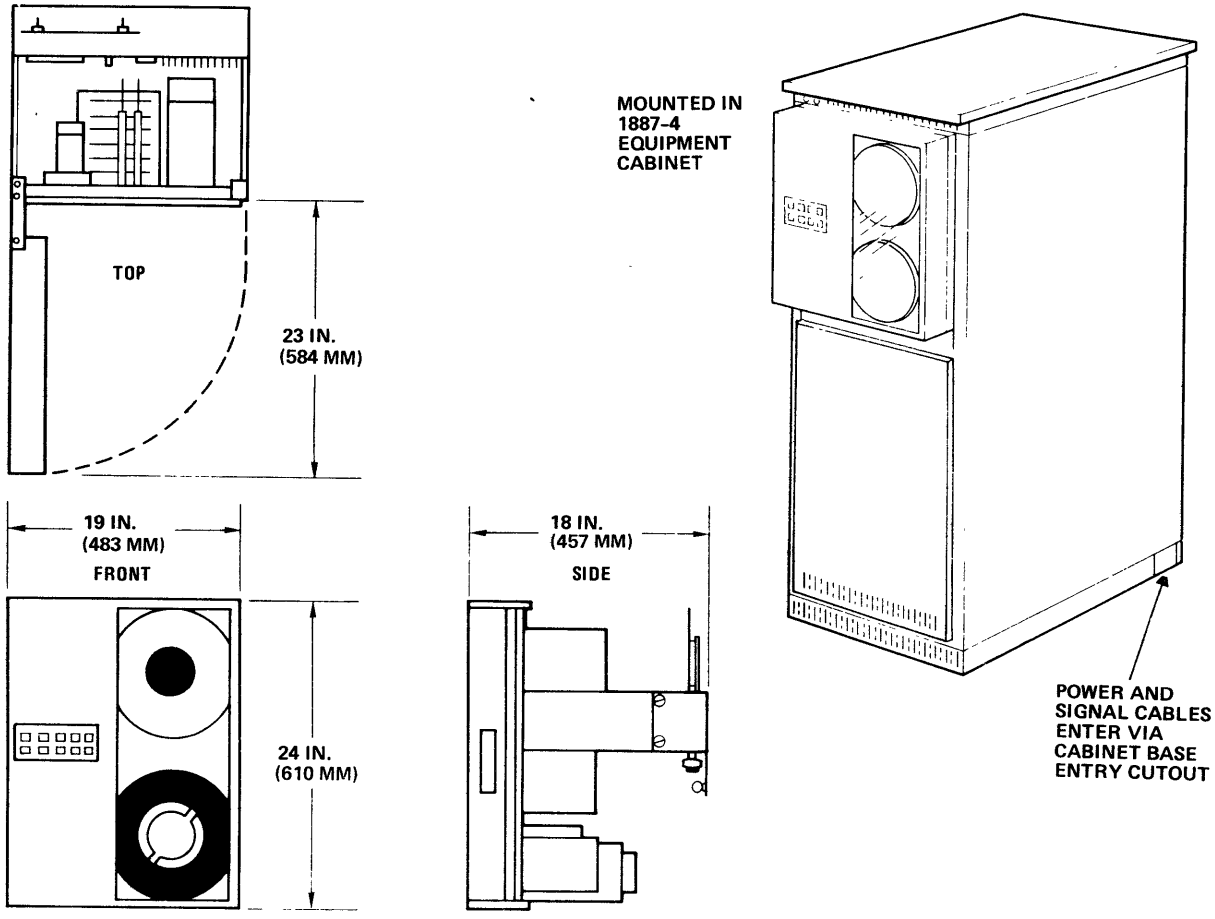
Heat rejection rate, maximum, to air: 5976 Btu/hour (1750 watts)

Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

† The maximum cabinet separation between cable accesses is 13 feet (4 meters).

1860-72/92/95 MAGNETIC TAPE TRANSPORT



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1860-72/92/95 MAGNETIC TAPE TRANSPORT

Width: 19 inches (483 millimeters)
Depth: 18 inches (457 millimeters)
Height: 24 inches (610 millimeters)

Weight: 120 pounds (54.5 kilograms)
Mounts in 1887-4 Equipment Cabinet

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

1860-72/92 - 60 Hz, 120 V, 1 phase, 0.75 kVa (6.25 amperes)
or
50 Hz, 120 V, 1 phase, 0.75 kVa (6.25 amperes)

1860-95 - 60 Hz, 120 V, 1 phase, 1.0 kVa (8.3 amperes)
or
50 Hz, 120 V, 1 phase, 1.0 kVa (8.3 amperes)

Circuit Breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length
Transport to transport	2	20 feet (6.1 meters)	8 feet (2.4 meters)†

Evnironmental considerations:

Type of cooling: Forced air (internal fans in mounting cabinet)

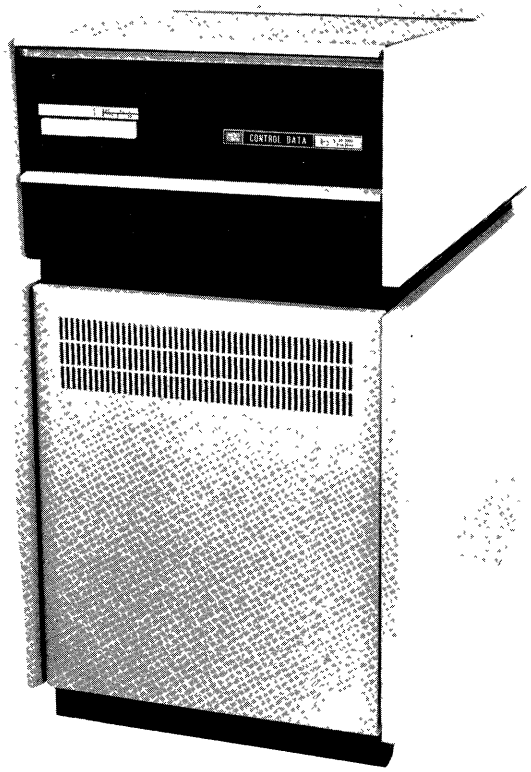
Source of cooling: Ambient room air

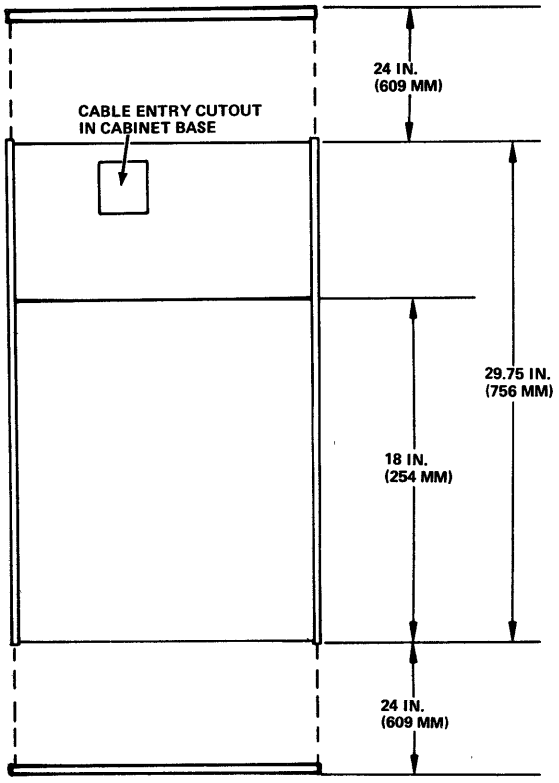
Heat rejection rate, maximum, to air: 1860-72/92 - 2049 Btu/hour (600 watts)
1860-95 - 2732 Btu/hour (800 watts)

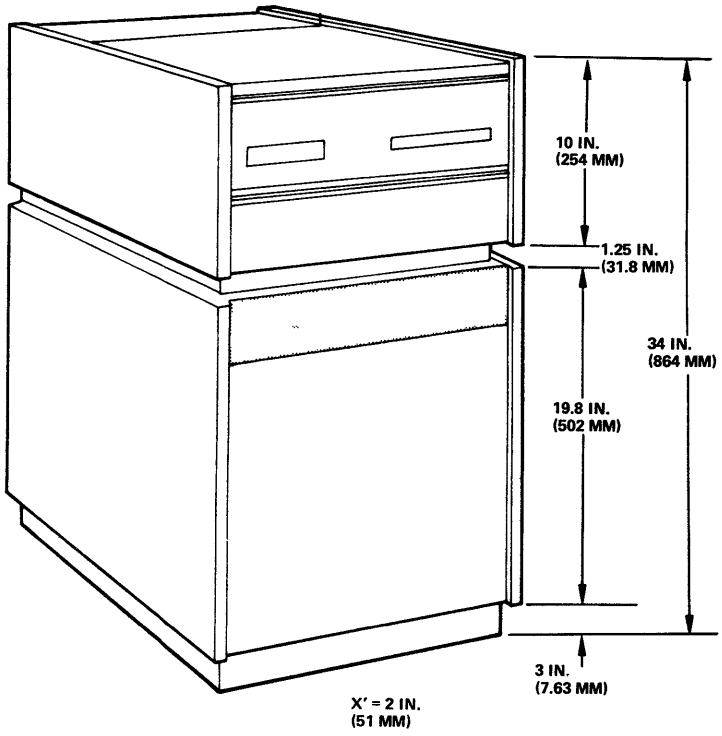
	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

†Worst case maximum cabinet separation between cable accesses

1866-12/14 CARTRIDGE DISK DRIVE







1866-12/14 CARTRIDGE DISK DRIVE

Width: 18.5 inches (470 millimeters)
Depth: 29.8 inches (757 millimeters)
Height: 34 inches (864 millimeters)

Weight: 225 pounds (102 kilograms)
Support: 4 adjustable casters

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

50/60 Hz, 100 V, 1 phase, 0.56 kVa (5.6 amperes)
or
50/60 Hz, 250 V, 1 phase, 0.58 kVa (2.3 amperes)

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Drive to drive (optional)	1	10 feet (3.05 meters)	6 feet (1.8 meters)
Controller to drive††	1	22 feet (6.7 meters)	18 feet (5.5 meters)

Environmental considerations:

Type of cooling: Forced air (internal fans)

Source of cooling: Ambient air

Heat rejection rate, maximum, to air: 1059 Btu/hour (310 watts)

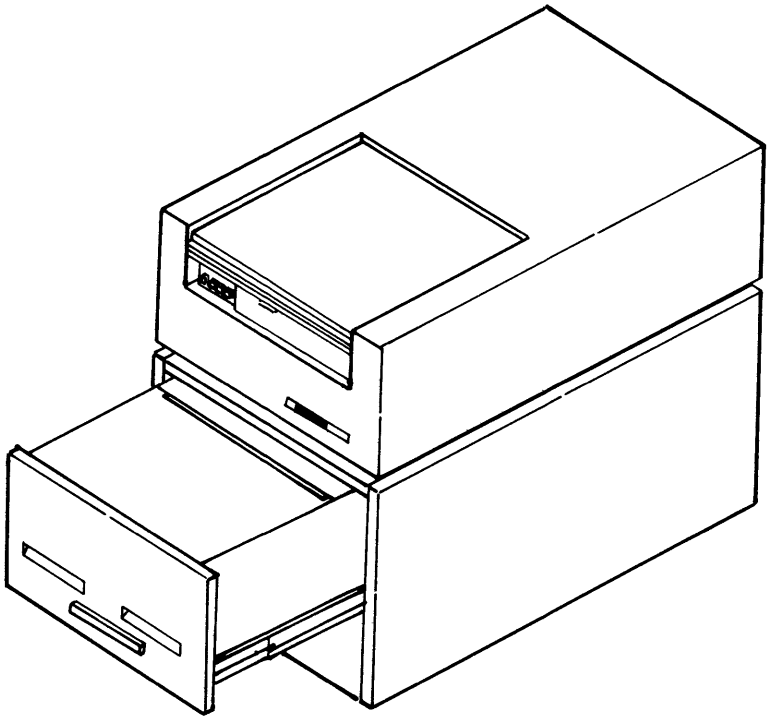
Relative humidity: 20 to 80 percent

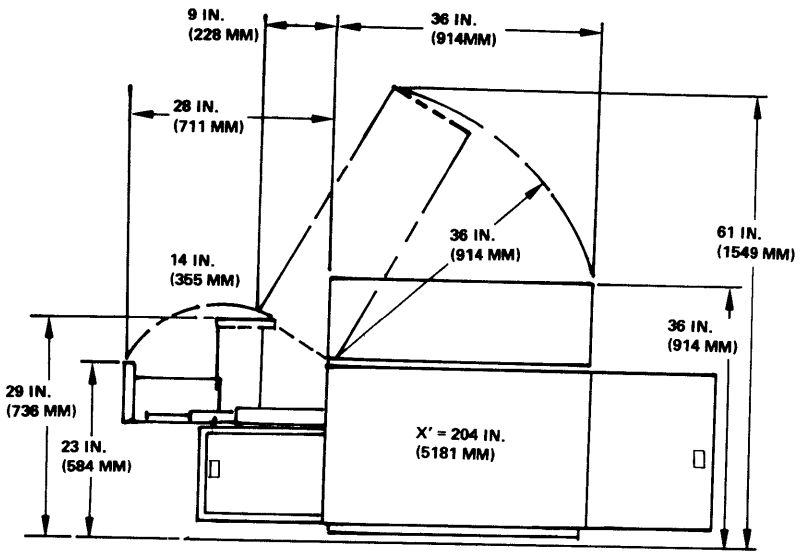
	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

†Maximum cabinet separation between cable accesses

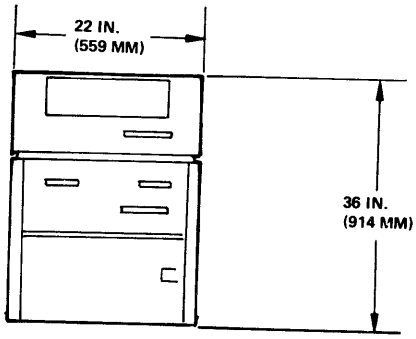
††The cable comes with the controller; it is not part of the 1866.

1867-1/2/3/4 MODULE DRIVE SUBSYSTEM





LEFT SIDE VIEW



FRONT VIEW

1744

1867-1/2/3/4 MODULE DRIVE SUBSYSTEM

Width: 22 inches (559 millimeters)
Depth: 36 inches (914 millimeters)
Height: 36 inches (914 millimeters)

Weight: Module drive: 218 pounds (99 kilograms)
Module control unit: 120 pounds (54 kilograms)
Bracket mounting in 1867 Module Drive
Support: 4 adjustable casters

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

Module drive	60 Hz, 120 V, 1 phase, 1.2 kVa (10 amperes) or 50 Hz, 220 V, 1 phase, 1.1 kVa (5 amperes)	Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.
Module control unit	60 Hz, 120 V, 1 phase, 0.36 kVa or 50 Hz, 220 V, 1 phase, 0.36 kVa	

Circuit breakers:

Module drive	60 Hz, 8.2 amperes, 1 phase or 50 Hz, 5 amperes, 1 phase
Module Control unit	60 Hz, 3 amperes, 1 phase or 50 Hz, 3 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Adapter to control unit	2	25 feet (7.6 meters)	20 feet (6.1 meters)
Control unit to module drive††	1	4 feet (1.2 meters)	--
Control unit to module drive†††	1	10 feet (3.05 meters)	--

Environmental considerations:

Type of cooling: Forced air (internal fan)

Source of cooling: Ambient air

Heat rejection rate, maximum, to air:

Module Drive	60 Hz - 3278 Btu/hour (460 watts) 50 Hz - 3005 Btu/hour (880 watts)
Module Control Unit	60 Hz - 1967 Btu/hour (576 watts) 50 Hz - 1803 Btu/hour (528 watts)

Relative humidity: 20 to 80 percent

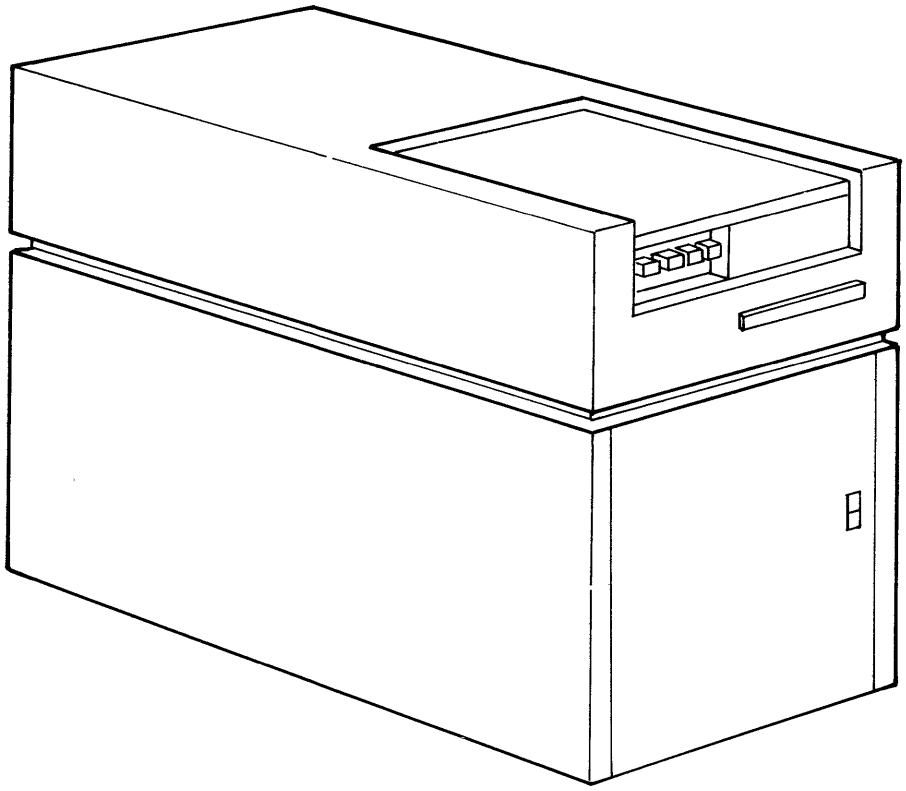
	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

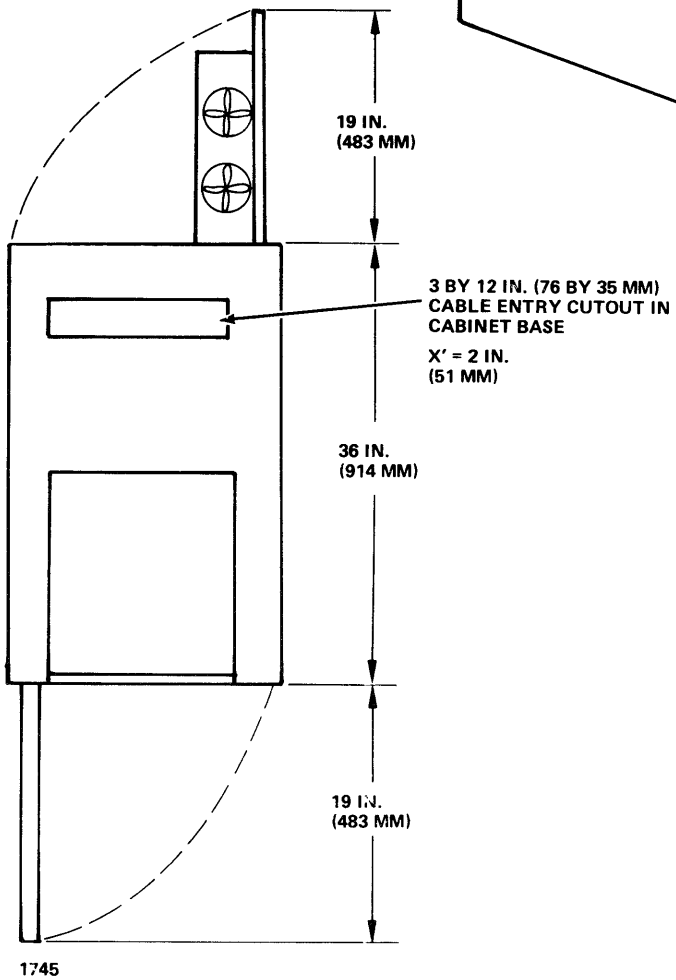
†Maximum cabinet separation between cable accesses

††Internal to module drive unit (1867-1/2 only)

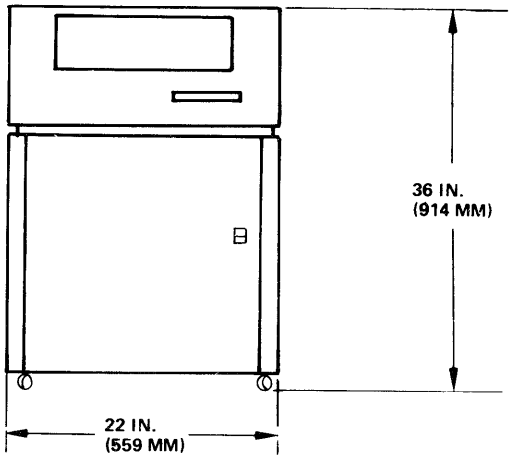
†††Internal to module drive unit (1867-3/4 only)

1867-10/20 MODULE DRIVE





1745



1867-10/20 MODULE DRIVE

Width: 22 inches (559 millimeters)
Depth: 36 inches (914 millimeters)
Height: 36 inches (914 millimeters)

Weight: 218 pounds (99 kilograms)
Support: 4 adjustable casters

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

1867-10/20 - 60 Hz, 120 V, 1 phase, 1.2 kVa (10 amperes)
or
1867-11/21 - 50 Hz, 220 V, 1 phase, 1.1 kVa (5 amperes)

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Total Length	Usable Length†
Module drive to module drive	1	10 feet (3.05 meters)	4 feet (1.2 meters)

Environmental considerations:

Type of cooling: Forced air (internal fan)

Source of cooling: Ambient air

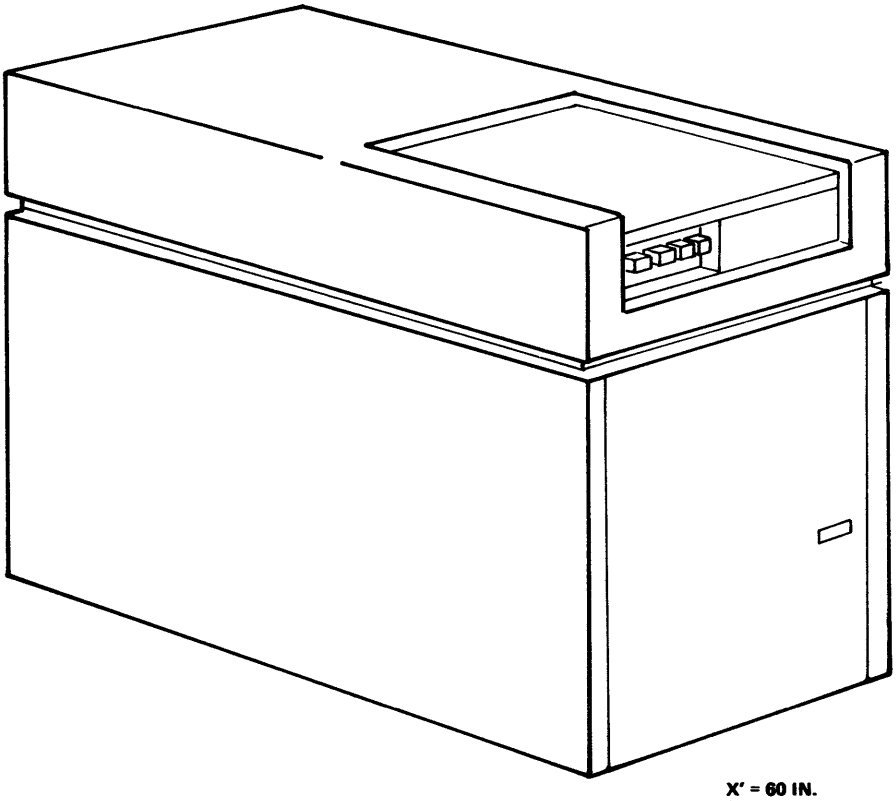
Heat rejection rate, maximum, to air: 60 Hz - 3278 Btu/hour (960 watts)
50 Hz - 3005 Btu/hour (880 watts)

Relative humidity: 20 to 80 percent

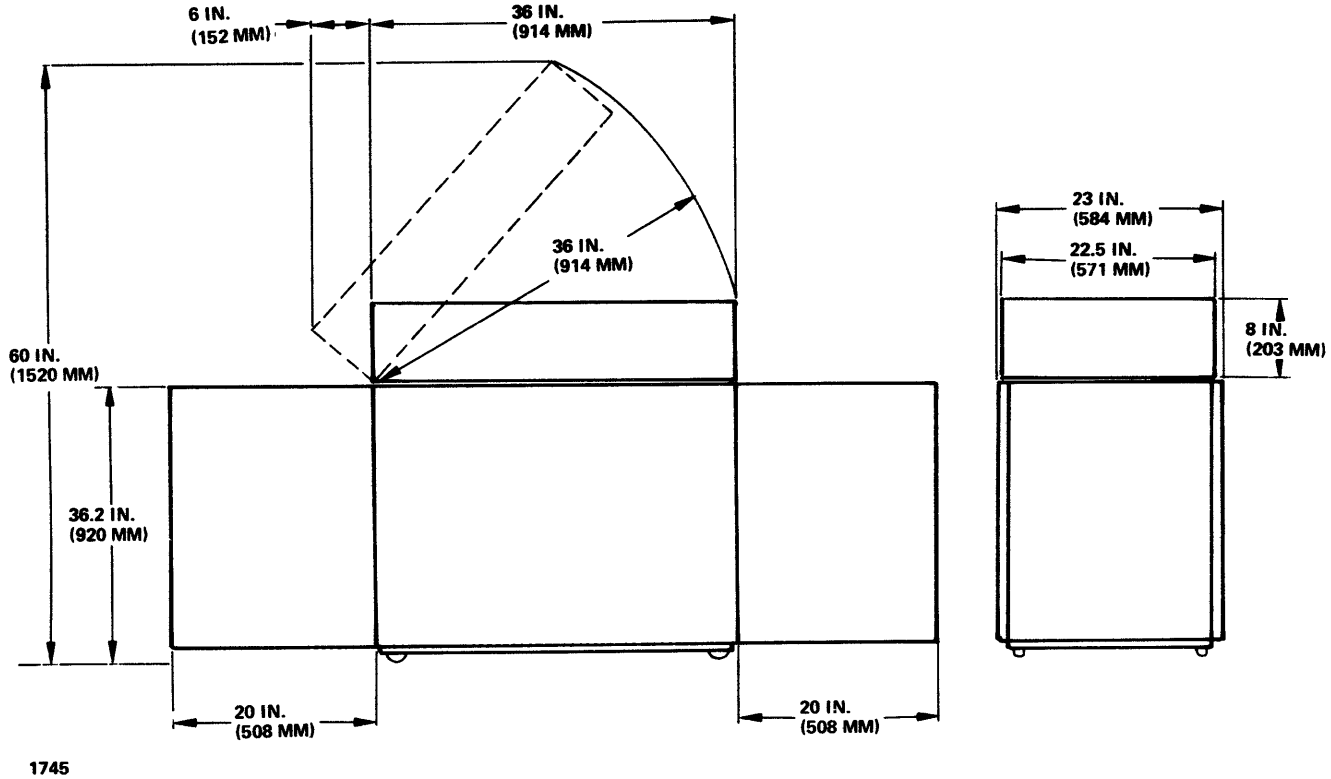
	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

†Maximum cabinet separation between cable accesses

1867-40 MODULE DRIVE



X' = 60 IN.
(1524 MM)



1745

1867-40 MODULE DRIVE

Width: 23.0 inches (584 millimeters)
Depth: 36 inches (914 millimeters)
Height: 36.2 inches (920 millimeters)

Weight: 345 pounds (156.5 kilograms)
Support: 4 adjustable casters

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 208 V, 3 phase, (8 amperes)† or 50 Hz, 220 V, 1 phase, (5 amperes)

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA L6-20P, 3-prong connector that requires mating to a NEMA L6-20R or Hubbell 2321 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 10 amperes, 1 phase
or
50 Hz, 5 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Standard Length	Maximum Length
Module drive to module drive	1	10 feet (3.05 meters)	100 feet (30.5 meters)

Environmental considerations:

Type of cooling: Forced air (internal fan)

Source of cooling: Ambient air

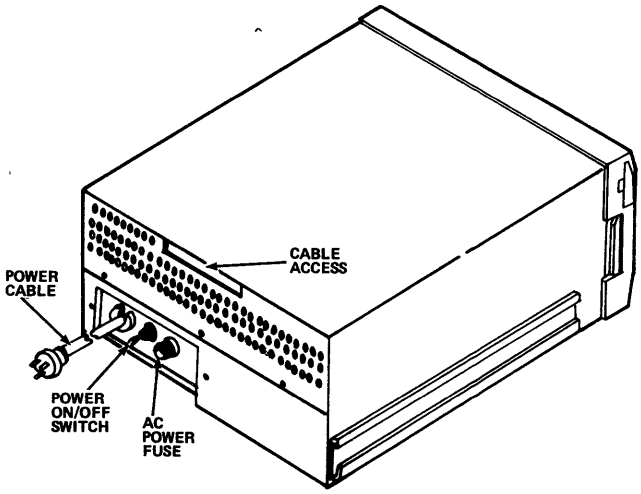
Heat rejection rate, maximum, to air: 60 Hz - 3278 Btu/hour (960 watts)
50 Hz - 3005 Btu/hour (880 watts)

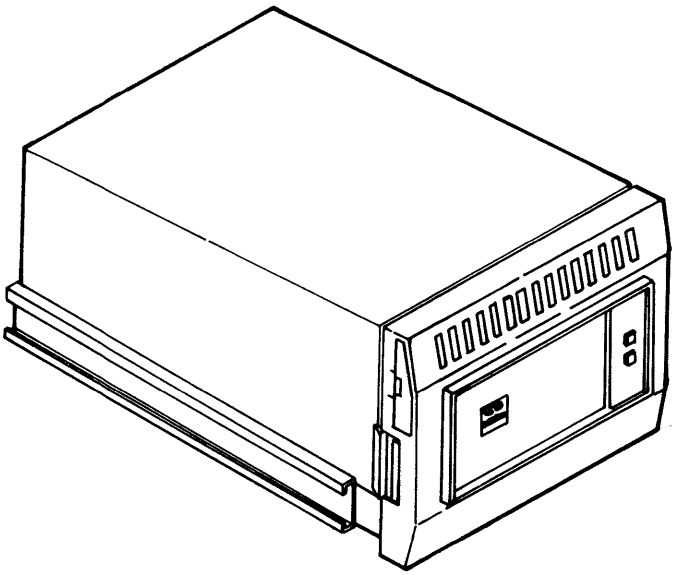
Relative humidity: 20 to 80 percent

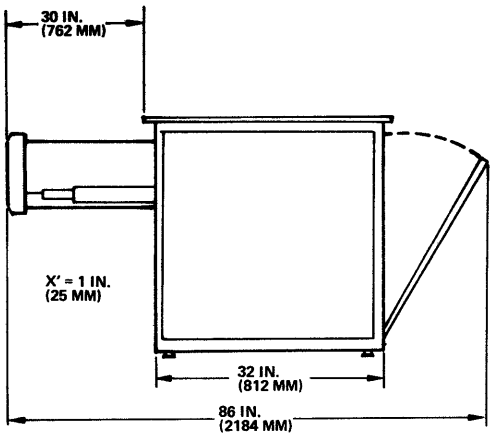
	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

†Connected as a 3 wire system where only two phases and ground are used

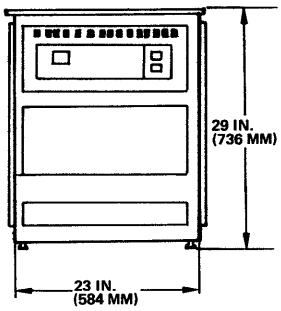
1868-1 MINI-MODULE DRIVE







RIGHT SIDE VIEW



FRONT VIEW

1753-1

1868-1 MINI-MODULE DRIVE

Width: 19 inches (483 millimeters)
Depth: 30 inches (762 millimeters)
Height: 10 inches (254 millimeters)

Weight: 100 pounds (45 kilograms)

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, (3.7 amperes)
or
50 Hz, 120 V, 1 phase, (2.0 amperes)

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

Cable	Quantity	Standard Length	Maximum Length
Drive to drive	1	10 feet (3.05 meters)	100 feet (30.5 meters)

Environmental considerations:

Type of cooling: Forced air (internal fans)

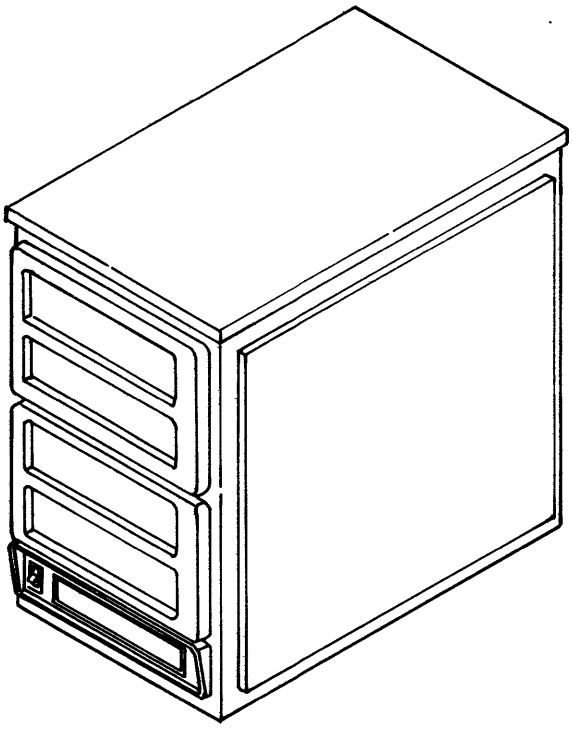
Source of cooling: Ambient air

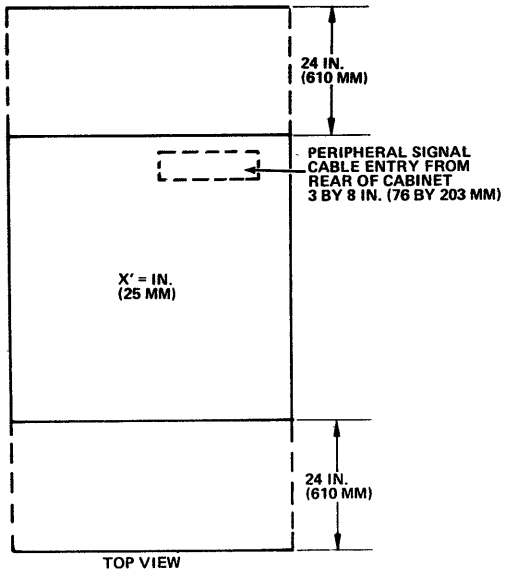
Heat rejection rate, maximum, to air: 60 Hz - 1195 Btu/hour (350 watts)
50 Hz - 1264 Btu/hour (370 watts)

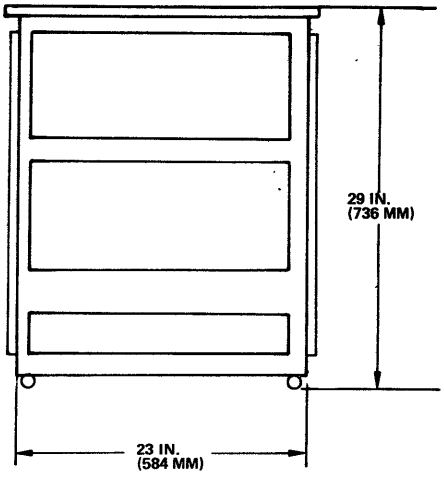
Relative humidity: 20 to 80 percent

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F (35°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	122°F (50°C)		14°F (-10°C)	

1887-5 MODULE DRIVE ENCLOSURE







1751-1

1887-5 MODULE DRIVE ENCLOSURE

Width: 24 inches (610 millimeters)
Depth: 33 inches (838 millimeters)
Height: 27 inches (686 millimeters)

Weight: 130 pounds (59 kilograms)
Support: 4 adjustable rubber feet

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

Supplied with a 12-foot (3.6-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R or Hubbell 5261 receptacle. The 50 Hz system requires a connector to be supplied by the customer.

Circuit breakers:

(Refer to the appropriate data sheet for the equipment to be installed.)

Control Data signal cables:

(Refer to the appropriate installed equipment for power, cabling, and heat dissipation requirements.)

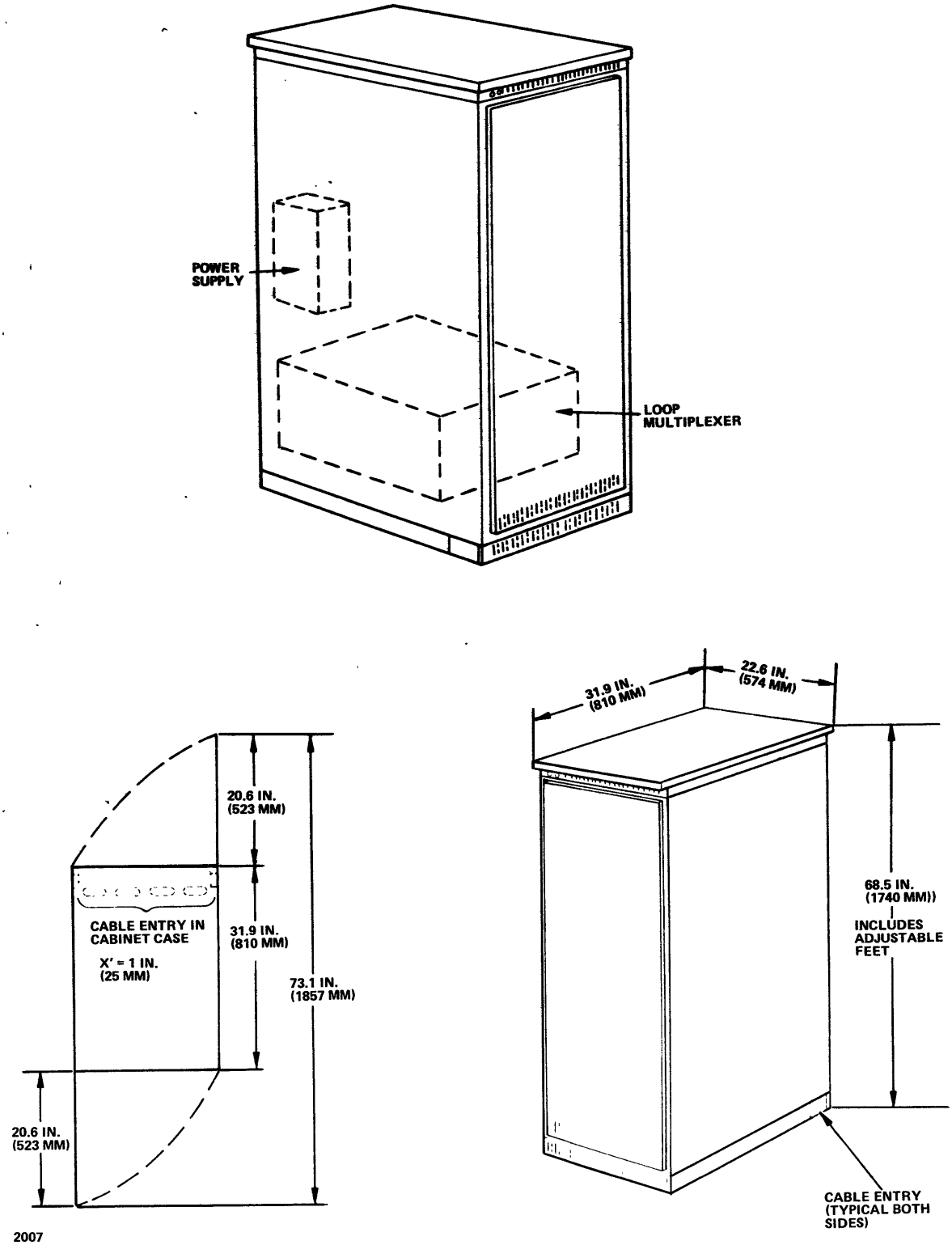
External terminator power connection required: No __X__ Yes _____ (_____ V dc)

Environmental considerations:

Type of cooling:	Forced air (internal fan)
Source of cooling:	Ambient air
Heat rejection rate, maximum:	N/A

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	N/A	N/A	N/A	N/A
Storage temperature	N/A		N/A	

10431-1 COMMUNICATION MULTIPLEXER EXPANSION



10431-1 COMMUNICATION MULTIPLEXER EXPANSION

Width: 22.6 inches (574 millimeters)
Depth: 31.9 inches (810 millimeters)
Height: 68.5 inches (1740 millimeters)

Weight: 240 pounds (108 kilograms)
Support: 4 adjustable rubber pads

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

60 Hz, 120 V, 1 phase, 0.84 kVa (7 amperes)
or
50 Hz, 120 V, 1 phase, 0.84 kVa (7 amperes)

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R receptacle. The 50 Hz system requires a connector. to be supplied by the customer

Circuit breakers:

60 Hz, 15 amperes, 1 phase
or
50 Hz, 15 amperes, 1 phase

Control Data signal cables:

	Quantity	Total Length	Usable Length†
Loop multiplexer to loop multiplexer	1	11 feet (3.4 meters)	6 feet (1.8 meter)

(Refer to the associated peripheral products for others)

External terminator power connection required: No __X__ Yes _____ (_____Vdc)

Environmental considerations:

Type of cooling: Forced air (internal fans)

Source of cooling: Ambient air

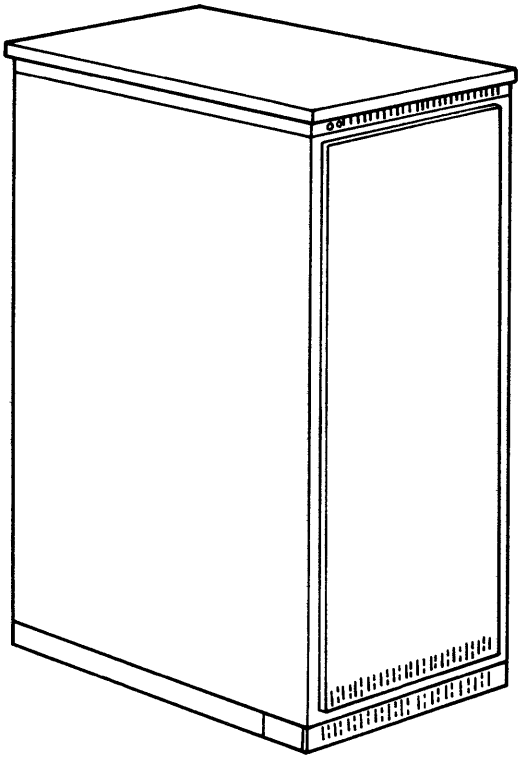
Heat rejection rate, maximum, to air: 2295 Btu/hour (670 watts)

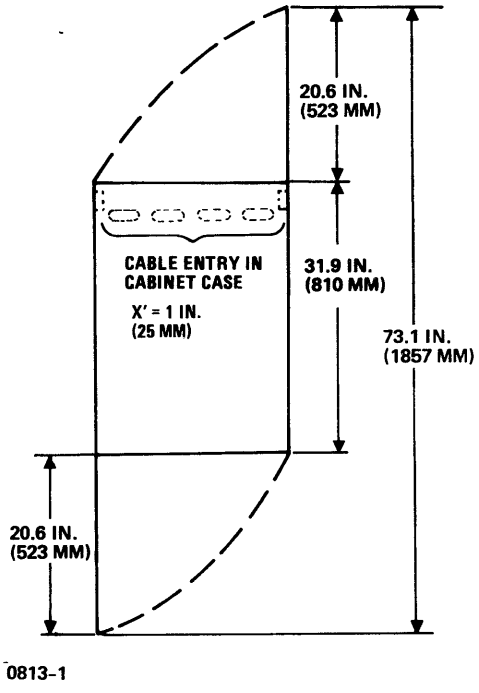
Relative humidity: 20 to 80 percent

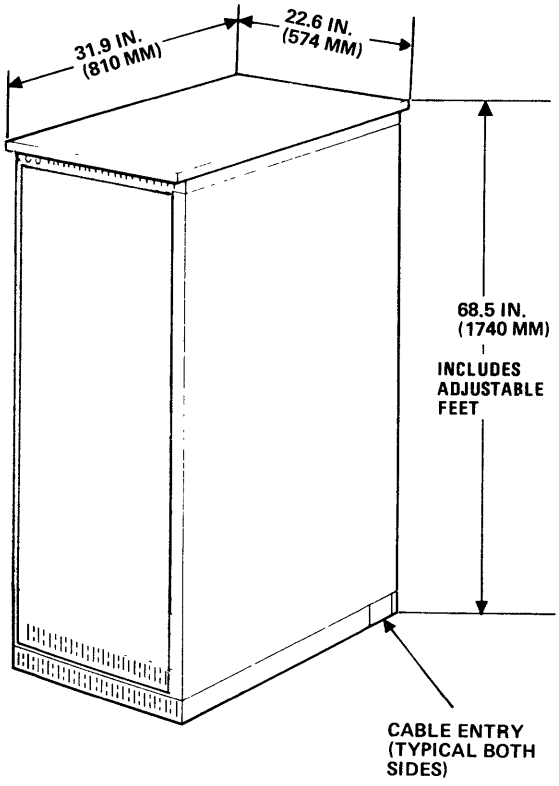
	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	95°F	72°F	60°F	Minimum 25°F Maximum 79°F
	35°C	22°C	15.6°C	Minimum -4°C Maximum 26°C
Storage temperature	122°F (50°C)		140°F (-10°C)	

†Maximum cabinet separation between cable accesses

1887-4 EQUIPMENT CABINET







1887-4 EQUIPMENT CABINET

Width: 22.6 inches (574 millimeters)
Depth: 31.9 inches (810 millimeters)
Height: 67.8 inches (1722 millimeters)

Weight: 145 pounds (66 kilograms)
Support: 4 adjustable rubber pads

Vertical mounting space: 59.5 inches (1511 millimeters)

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

Supplied with a 10-foot (3.05-meter) power cord. The 60 Hz system is supplied with a NEMA 5-15P, 3-prong connector that requires mating to a NEMA 5-15R receptacle. The 50 Hz system requires a connector. to be supplied by the customer

Circuit breakers:

(Refer to the appropriate data sheet for the equipment to be installed.)

Control Data signal cables:

(Refer to the appropriate installed equipment for power, cabling, and heat dissipation requirements.)

External terminator power connection required: No __X__ Yes _____ (_____V dc)

Environmental considerations:

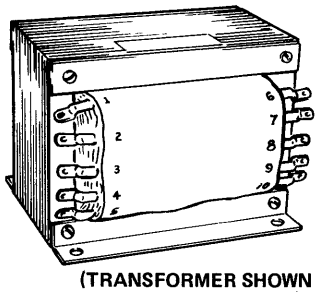
Type of cooling: Forced air (internal fan)

Source of cooling: Ambient air

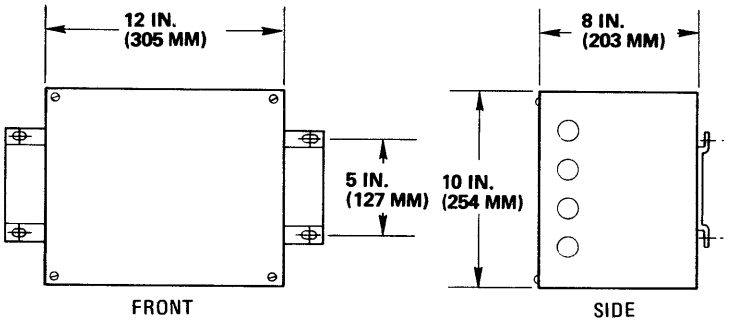
Heat rejection rate, maximum:

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	N/A	N/A	N/A	N/A
Storage temperature	N/A		N/A	

1888-1 POWER CONVERSION TRANSFORMER



(TRANSFORMER SHOWN WITHOUT ENCLOSURE)



0798-1

1888-1 POWER CONVERSION TRANSFORMER

Width: 19 inches (483 millimeters)
Depth: 8 inches (203 millimeters)
Height: 10 inches (254 millimeters)

Weight: 110 pounds (50 kilograms)
Wall mounted

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

50 Hz, 220 V, 1 phase, 5.1 kVa (23 amperes)

Circuit breakers:

50 Hz, 30 amperes, 1 phase

Control Data signal cables:

N/A

Environmental considerations:

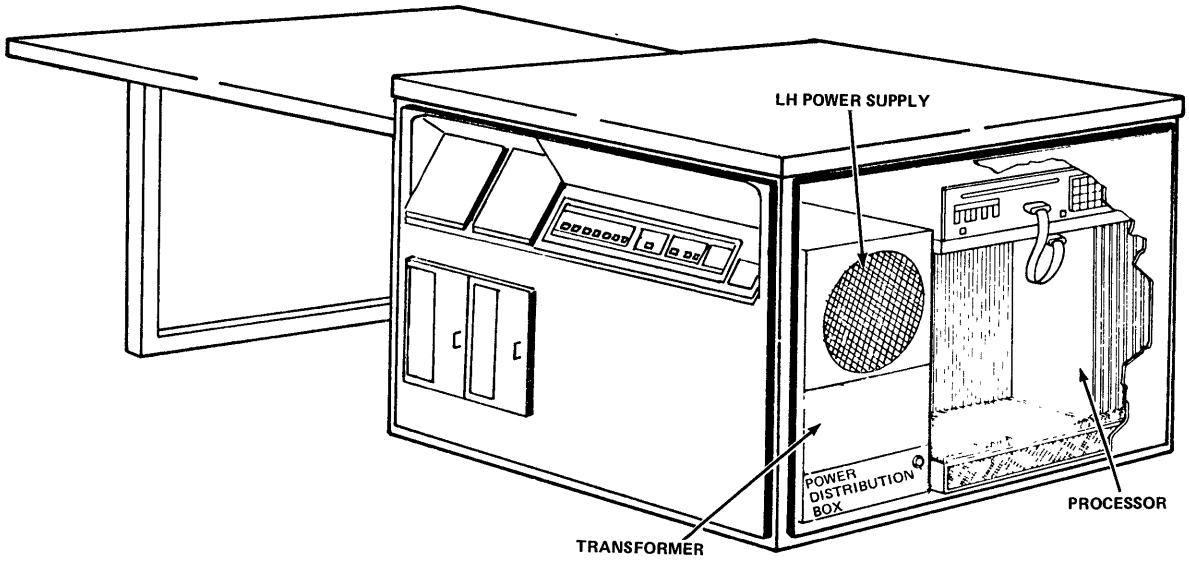
Type of cooling: Convection

Source of cooling: Ambient air

Heat rejection rate, maximum, to air: 1740 Btu/hour (510 watts)

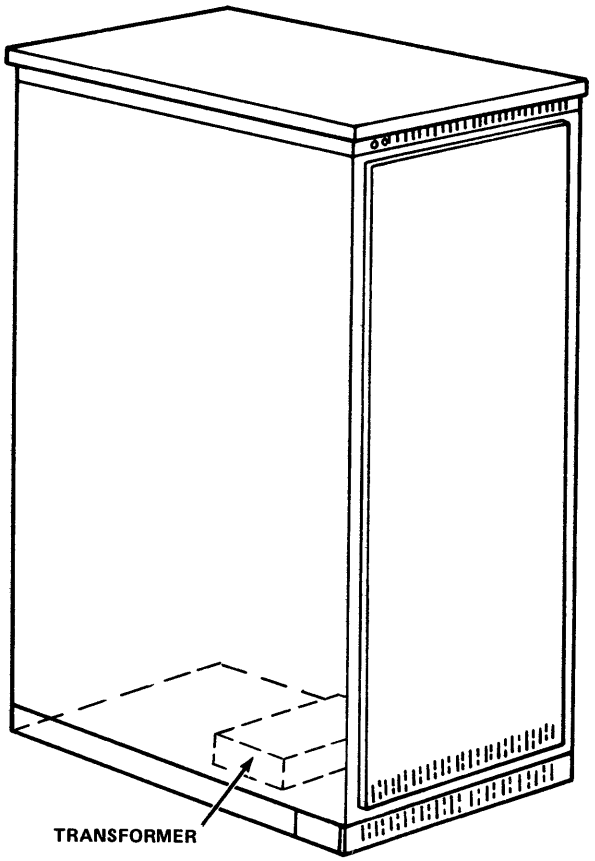
	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	120°F (48.9°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	N/A		N/A	

1888-3 POWER CONVERSION TRANSFORMER



1747

1888-4 POWER CONVERSION TRANSFORMER



1748

1888-3/4 POWER CONVERSION TRANSFORMER

Width: N/A†
Depth: N/A†
Height: N/A†

Weight: 46 pounds (20.9 kilograms)

For the maximum width/depth, all doors extended, refer to the floor plan layout.

Power consumption, steady state, maximum:

50 Hz, 2.4 kVa (20 amperes), single phase. Accommodates any of the following input levels: 95, 105, 220, 230, and 250 V ac.

Circuit breakers:

50 Hz, 30 amperes, 1 phase

Control Data signal cables:

N/A

External terminator power connection required: No __X__ Yes _____ (_____ V dc)

Environmental considerations:

Type of cooling: Forced air (internal fans in mounting cabinet)

Source of cooling: Ambient room air

Heat rejection rate, maximum, to air: 819 Btu/hour (240 watts)

	Maximum	Recommended	Minimum	Dew Point Limitation
Operating temperature	90°F (32.2°C)	72°F (22.2°C)	60°F (15.6°C)	N/A
Storage temperature	N/A		N/A	

†Transformer mounts in a CYBER 18 processor or an 1887-4 Equipment Cabinet.

EQUIPMENT/INTERRUPT NUMBER ASSIGNMENT FORM

PROJECT: _____ PROCESSOR TYPE: _____ SITE NUMBER: _____

1. This form provides specific equipment and interrupt number assignment information for the above system.
2. The backplane interrupt wiring for the above equipment is shown in the Backplane Interrupt Pin Assignment column.
3. Equipment numbers as shown have been selected on respective peripheral controllers/interfaces.
4. Keep this form updated. Log all equipment and/or interrupt number changes that occur to the above system processor.

Product Number	Equipment Number	Description	Slot Assignment		Slot Type	Equipment Number	Interrupt Number	Interrupt Type	Backplane Interrupt Pin Assignment	
			Single-Card Processor	Other Processors					Card Slot Origin	Destination
		CR	C	J	A/Q			MACRO		
								MICRO		
		LP						MACRO		
								MICRO		
		CLA						MACRO		
								MICRO		
			D	H	A/Q-DMA			MACRO		
								MICRO		
			E	G	A/Q-DMA			MACRO		
								MICRO		
			F	F	A/Q			MACRO		
								MICRO		
			—	E†	A/Q			MACRO		
								MICRO		
			B†	D	A/Q-DMA			MACRO		
								MICRO		
			—	C	A/Q			MACRO		
								MICRO		
			—	B††	OPEN			MACRO		
								MICRO		
			—	A	A/Q-DMA			MACRO		
								MICRO		
			—	AA	A/Q			MACRO		
								MICRO		
								MACRO		
								MICRO		
			A	AB	SET/SAM†††			MACRO		
								MICRO		

†Recommended flexible disk drive controller slot

††Slot B is normally unwired and not used; it is reserved for future system expansion.

†††Conversion to A/Q slot optional with single-card processors

The templates in figure B-1 are scaled so that 1/4 inch equals 1 foot. On the template sheet, the front of the cabinet is toward the bottom. The template view is the bottom of the unit as viewed from above.

Templates are provided for stand-alone and tabletop-mounted products only; all other products mount either within stand-alone units or on the wall.

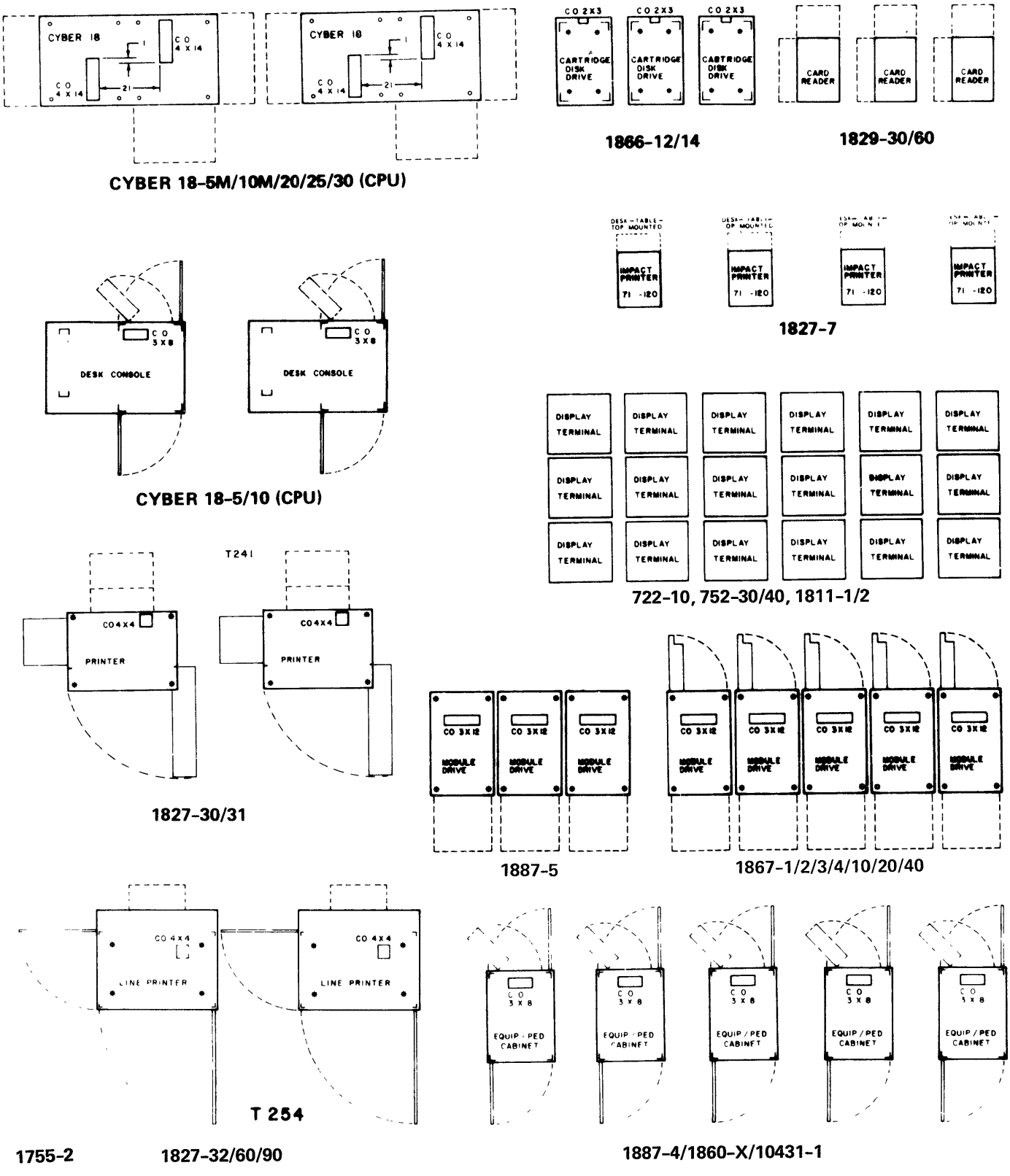


Figure B-1. Equipment Templates

The following information is intended to assist a customer when he wishes to have his CYBER 18 equipment removed from the site or relocated to a new site.

LEASED EQUIPMENT (DOMESTIC OR INTERNATIONAL)

The customer should notify, in writing, the regional or country marketing administration (the sales representative) of his desire to remove or relocate the equipment.

CUSTOMER-OWNED EQUIPMENT

The customer should send his specific request in writing to the Control Data CE branch manager, who should then forward the request to the attention of the Manager, Contracts Administration, Engineering Services, ES Contracts Department, HQW04L.

SAMPLE WORK SHEET AND FLOOR PLAN

This appendix consists of three figures illustrating a typical CYBER 18-20 system: the system configuration (figure D-1), the work sheet (figure D-2), and the floor plan grid (figure D-3).

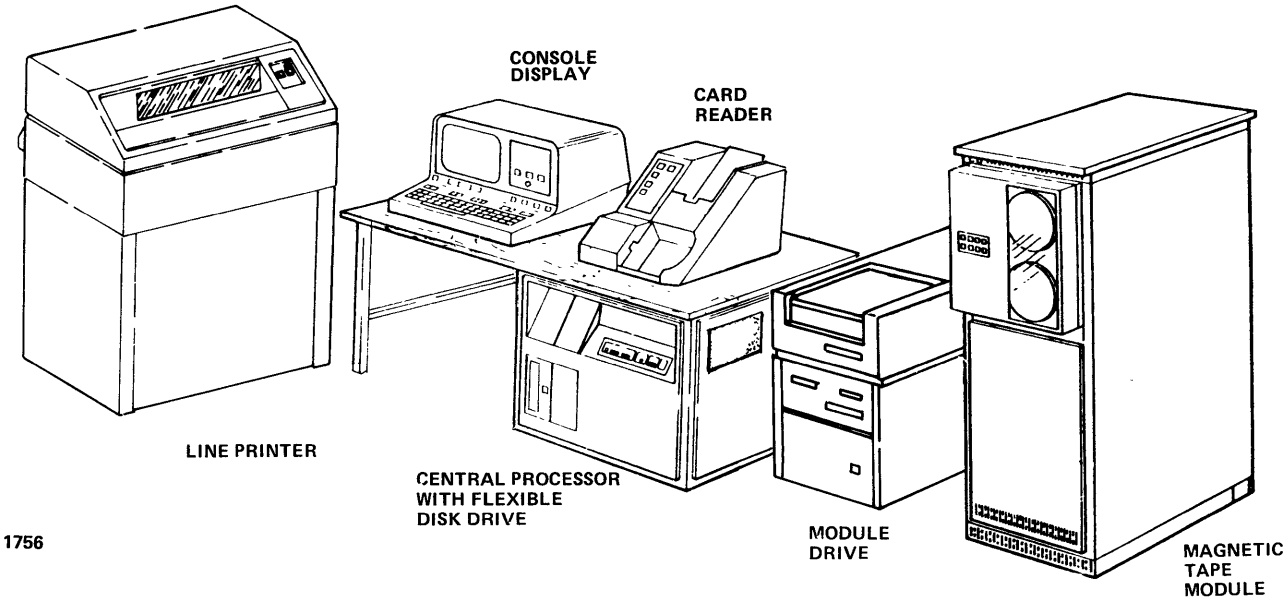


Figure D-1. Typical CYBER 18-20 System Configuration

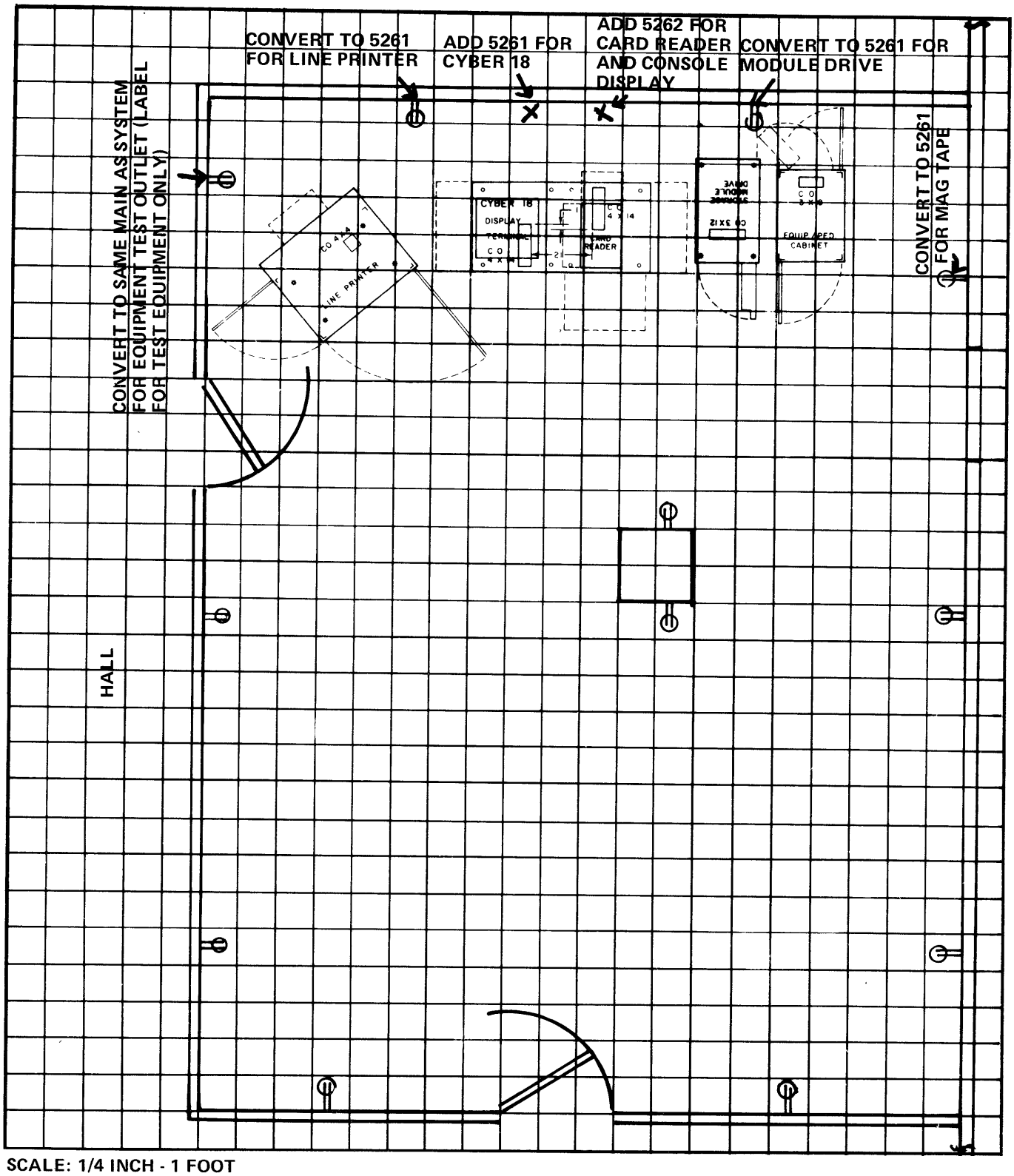
SYSTEM WORK SHEET

Product	Qty	Maximum Power Required 50/60 Hz kVa				Required Connector Receptacle		Maximum Heat Dissipated Btu/Hr (Watts)	
		Per Unit		Total					
		A	kVa	A	kVa	NEMA or Hubbell		Per Unit	Total
CYBER 18-20	1	12.0	1.4	12.0	1.4	5-15R	5261	3824	3824
1811-2	1	1.0	0.12	1.0	0.12	5-15R	5262	331	331
1827-60	1	10.0	1.2	10.0	1.2	5-20R	5361	3278	3278
1828-1	1	–	–	–	–	–	–	–	–
1833-1	1	–	–	–	–	–	–	–	–
1833-3	1	–	–	–	–	–	–	–	–
1860-5	1	4.7	1.17	4.7	1.17	5-15R	5261	3244	3244
1867-10	1	10.0	1.2	10.0	1.2	5-15R	5261	3278	3278
Totals				46.7	5.57				15266
	System Power			A	kVa			System Heat Dissipation	Btu/Hr (Watts)

NOTES:

1735

Figure D-2. Sample CYBER 18-20 System Work Sheet



SCALE: 1/4 INCH - 1 FOOT

1758

Figure D-3. Sample CYBER 18-20 Floor Plan Grid

CUSTOMER FABRICATED CABLE ASSEMBLIES E

Adapter-to-CRT cable assemblies may be constructed to a maximum length of 500 feet (152.4 m) at 9600 baud, or to a maximum length of 1000 feet (304.8 m) at 4800 baud. These cables are not supplied with the adapters. The lists of materials and procedure for the assembly of these cables follows in this appendix.

COMMUNICATION MULTIPLEXER CABLE ASSEMBLY

This procedure details the steps necessary for the field fabrication of a signal cable from customer-provided parts.

The parts (or equivalent) required for this procedure are listed in table E-1.

The parts required for assembly, with the exception of the cable, are available in kit form from Control Data Corporation®. Order the Communication Multiplexer Cable Kit, part number 96850355. The five-twisted-pair shielded cable is available from the cable vendor in minimum quantities of 500 feet (152.4 m) on a reel.

To assemble the customer fabricated cable assembly, proceed as follows:

1. Cut cable to desired length and strip approximately 3 inches (8 cm) of outer insulation from both ends of signal cable exposing the shield braid.

2. Cut approximately 2 inches (5 cm) of shield braid from both ends of the signal cable.

TABLE E-1. COMMUNICATION MULTIPLEXER CABLE PARTS

Item Number	Quantity	Description	Suggested Vendor	Vendor Part Number
1	4 pieces	Screw lock, connector	ITT CANNON	D20419-16
2	1 piece	Connector, 25-pin contact	ITT CANNON	DB-25P
3	1 piece	Connector, 25-socket contact	ITT CANNON	DB-25S
4	12 inches	Wire, 24 AWG, PVC, UL, black stranded (7 strands, 32 AWG)	-	-
5	9 inches	Insulation, sleeve shrink, 1/16-inch diameter, black	REMTEK	CFR125-.0625 inch - black
6	4 inches	Insulation, sleeve shrink, 3/8-inch diameter, black	REMTEK	CFR 125 - .3750 inch - black
7	2 pieces	Hood, connector, 25-pin	AMP	205718-1
8	†	Cable, 5 conductor, 24 AWG twisted pair, shielded	NATIONAL WIRE AND CABLE	NXP524SJ

†The signal cable is a five-twisted-pair shielded cable cut to the desired length. The maximum permissible cable length is:

a. 500 feet (152.4 m) for 9600 baud operation.

b. 1000 feet (304.8 m) for 4800 baud operation.

3. Cut the unused common (white) wires flush with the end of the shield at both ends of the cable; i.e. white wires to the brown/white, orange/white and yellow/white wire pairs.

4. Strip approximately 1/4 inch (0.6 cm) of insulation from the remaining conductors at both ends; i.e. black/white pair, brown, red, orange and yellow.

5. Prepare two 4-inch (10 cm) jumpers using black 24 gauge wire by stripping approximately 1/4 inch (0.6 cm) of insulation from the ends of each wire. Tin the ends of each wire and solder one end of each wire to the respective J1 and J2 connector cases in the approximate position shown in figure E-1.

6. Prepare four 1-inch (2.5 cm) jumpers using black 24 gauge wire by stripping approximately 1/4 inch (0.6 cm) of insulation from the ends of each jumper. Cut the 1/16 black shrink sleeving into four pieces approximately 1/2 inch (1.2 cm) in length and slip over each jumper to provide insulation. Tin the ends of the jumper wires. Use a small flat-bladed soldering iron and apply heat to the inside portion of the connector pins (between the two rows of pins). Maintain heat until the solder flows. Solder a jumper wire between J1-pin 4 and J1-pin 5. Solder a jumper wire between J2-pin 4 and J2-pin 5 (refer to figures E-1 and E-2). Solder one end of a jumper wire to J1-pin 6. Solder one end of a jumper wire to J2-pin 6. Leave the jumper end going to pin 8 of each connector unsoldered at this step. (Combine the pin 8 ends with cable conductors going to pin 8 during step 10.)

NOTE

When soldering, use extreme care not to overheat the connector as damage may occur.

7. Slip approximately 2 inches (5 cm) of 3/8-inch diameter black shrink sleeving (item 6) over each end of the signal cable. Insure that sleeving is slipped back onto the cable far enough to avoid being affected by the heat produced from soldering in the steps that follow. Refer to figure E-1.

8. Slip approximately 1/2 inch (1.2 cm) of 1/16 inch diameter black shrink sleeving (item 5) over each of the signal conductors at both ends of the cable.

9. At each end of the cable, solder the cable shield to the 4-inch (10 cm) jumper that is soldered to the case.

10. Tin the ends of each signal conductor, then solder the signal conductors to the pins of J1 and J2 per connections shown in figures E-1 and E-2. Combine the conductor going to pin 8 with the jumper that was installed in step 6. For soldering instructions refer to step 6.

11. Slip the small shrink sleeving installed in steps 6 and 8 over the solder connections made in steps 6 and 10, and shrink in place.

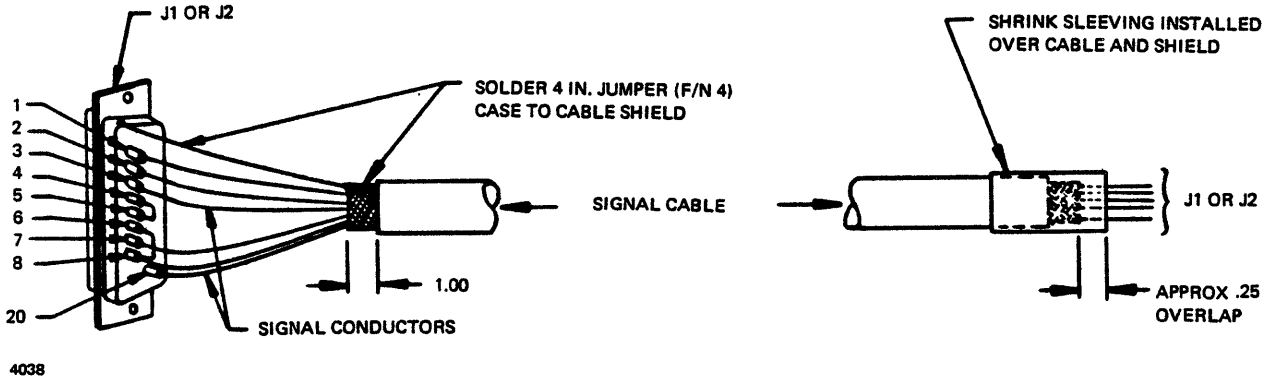


Figure E-1. Communication Multiplexer Jumper and Shrink Sleeving Installation

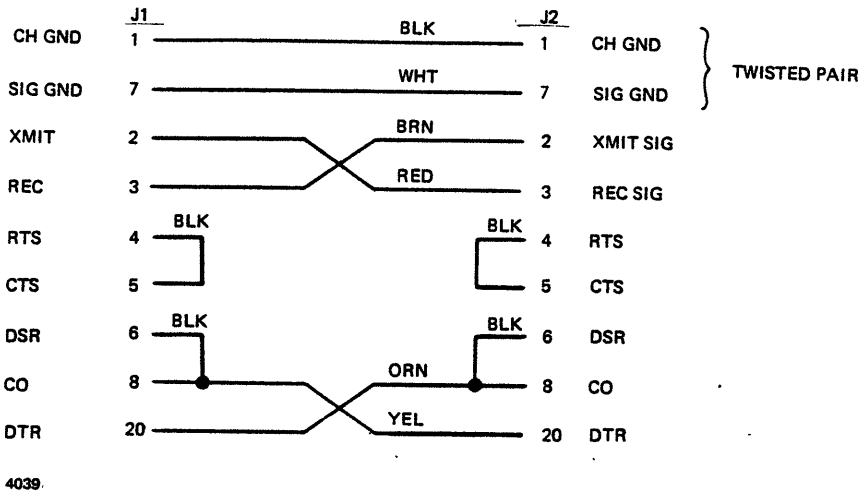


Figure E-2. Communication Multiplexer Customer-Fabricated Cable Connections

12. Slip the shrink sleeving installed in step 7 down over the cable shield, overlapping the connectors approximately 1/4 inch (0.6 cm) and shrink in place (refer to figure E-1).

13. Use an ohmmeter and verify that the cable is wired per figure E-2.

14. Use figure E-3 to verify the location of the various item numbers. Install the connector hoods (item 7) over the housings and secure the cable by tightening the screw at the side of the housing. Install the lock screws (item 1) on both ends of connectors.

NOTE

Insure that the cable is deep enough into the hood so that the cable is pinched at an insulated area. Refer to figure E-1.

15. Cable installation. Refer to the installation manual listed in the preface for further instructions.

EIGHT-CHANNEL COMMUNICATION LINE ADAPTER CABLE ASSEMBLY

This procedure details the steps necessary for the field fabrication of the customer-built cables to be used on the eight channel CLA. The cable interface board provides for a customer signal cable connection.

The parts (or equivalent) required for this procedure are listed in table E-2.

The parts required for assembly (with the exception of the cable) are available in kit form from Control Data Corporation®. Order the eight channel CLA cable kit, part number 88951507. The five-twisted-pair shielded cable is available from the cable vendor in minimum quantities of 500 feet (152.4 m) on a reel.

To assemble the customer-fabricated cable assembly, proceed as follows:

1. Strip the outer insulation from one end of the cable approximately 25 inches (63.5 cm). Refer to figure E-4.

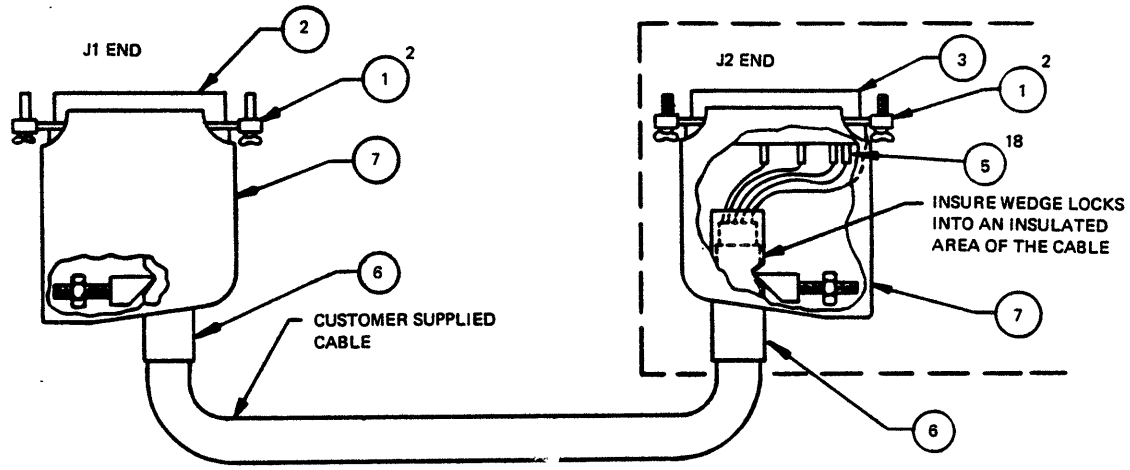
2. Cut approximately 24 inches (61 cm) of the shield braid from the end of the cable and fold the remaining 1 inch (2.5 cm) back over the cable insulation.

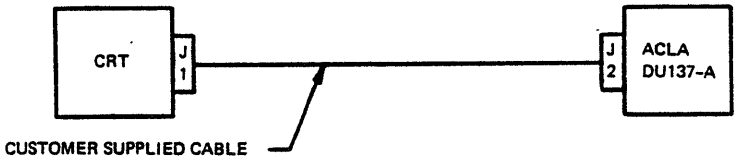
3. Add approximately 1.5 inches (3.8 cm) of bulk-braided shield (item 9) over the cable shield and secure with tie string at both ends.

4. Add approximately 3 inches (7.6 cm) of 1/2 inch (1.3 cm) diameter shrink sleeving (item 14) over the insulated cable, overlapping the bulk shield and string by 1/4 inch (0.6 cm). Add approximately 23 inches (58.5 cm) of 1/4 inch (.06 cm) diameter shrink sleeving (item 13) over the conductors overlapping the bulk shield and string by 1/4 inch (.06 cm). Approximately 1 inch (2.5 cm) of the bulk shield should be left exposed.

5. Strip approximately 1/4 inch (0.6 cm) of insulation from the five-twisted-pair conductors.

6. Solder the common (white) conductors of the five-twisted-pairs together and solder jumper, using approximately 3 inches (7.6 cm) black 24 AWG wire (item 10) to this junction. Insulate the junction with approximately 1/2 inch (1.2 cm) of 1/8 inch (1.4 cm) diameter shrink sleeving (item 15).





NOTE: Refer to table E-1 for desription of circled item numbers.

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Figure E-3. Communication Multiplexer Customer-Fabricated Cable Parts Identification

TABLE E-2. EIGHT-CHANNEL CLA CABLE PARTS

Item Number	Quantity	Description	Suggested Vendor	Vendor Part Number
1	1 piece	Connector, 25-pin contact	ITT CANNON	DB-25P
2	2 pieces	Screw lock, connector	ITT CANNON	D20419-16
3	1 piece	Hood, connector, 25-pin	AMP	205718-1
4	6 pieces	Lug, ring 0.188 diameter, #2 screw	3M	A-01-502
5	6 pieces	Screw, 2-56 x 3/8 inch	-	-
6	6 pieces	Washer, flat no. 2	-	-
7	6 pieces	Washer, lock no. 2	-	-
8	6 pieces	Nut, 2-56	-	-
9	2 inches	Shield, bulk-braid 9/16	BELDEN	8672
10	12 inches	Wire, 24 AWG PVC UL black standard (7 strands, 32 AWG)	-	-
11	9 inches	Insulation, sleeve shrink, 1/16-inch diameter, black	REMTEK	CFR125 - .0625 inch - black

TABLE E-2. EIGHT-CHANNEL CLA CABLE PARTS (Contd)

Item Number	Quantity	Description	Suggested Vendor	Vendor Part Number
12	4 inches	Insulation, sleeve shrink, 3/8-inch diameter, black	REMTEK	CFR125 - .3750 inch - black
13	24 inches	Insulation, sleeve shrink, 1/4-inch diameter, black	REMTEK	CFR125 - .2500 inch - black
14	4 inches	Insulation, sleeve shrink, 1/2-inch diameter, black	REMTEK	CFR125 - .5000 inch - black
15	2 inches	Insulation, sleeve shrink, 1/8-inch diameter, black	REMTEK	CFR125 - .1250 inch - black
16	†	Cable, 5 conductor, twisted pair, 24 AWG, shielded	NATIONAL WIRE AND CABLE	NXP524SJ

†The signal cable is a five-twisted-pair shielded cable cut to the desired length. The maximum permissible lengths are:

a. 500 feet (152.4 m) for 9600 baud operation.

b. 1000 feet (304.8 m) for 4800 baud operation.

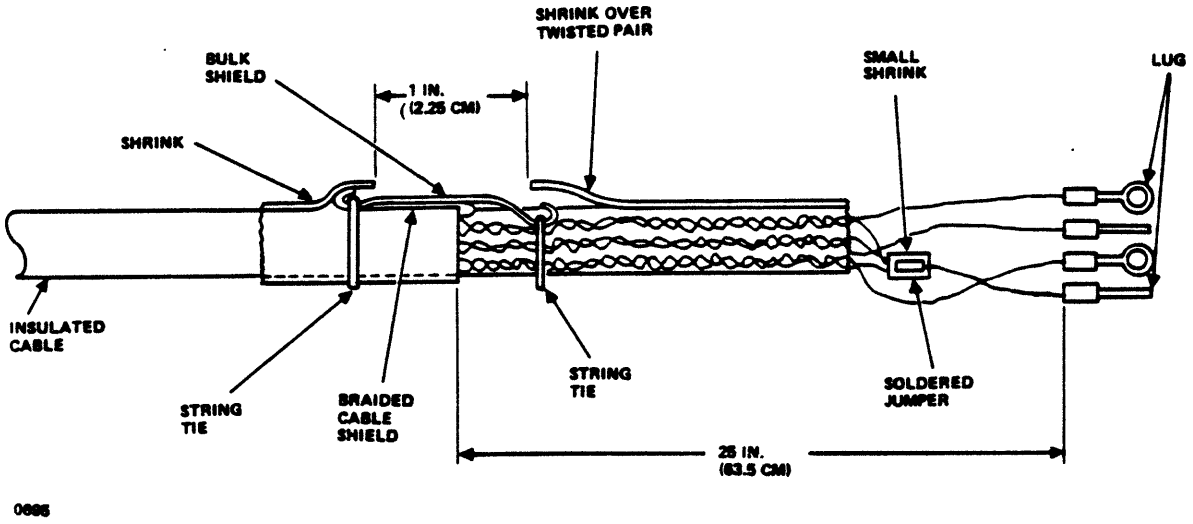


Figure E-4. Eight-Channel CLA Customer-Fabricated Signal Cable Assembly, Backplane Connector Installation

7. Solder a lug (item 4) onto each of the remaining five (colored) conductors and a lug (item 4) onto the black jumper.

8. Cut the cable to the desired length. Maximum lengths are 500 feet (152.4 m) for 9600 baud operation or 1000 feet (304.8 m) for 4800 baud operation.

9. Strip the outer insulation from the cut end of the cable approximately 3 inches (7.6 cm). Refer to figure E-5.

10. Cut approximately 2 inches (5.1 cm) of the shield braid from the end of the cable.

11. Solder approximately 4 inches (10.2 cm) of black 24 AWG wire (item 10) to the shield braid to form a jumper.

12. Install approximately 4 inches (10.2 cm) of 3/8 inch diameter shrink sleeving (item 12) over the insulation and shield, overlapping the conductors by approximately 1/4 inch (0.6 cm).

13. Prepare the 25-pin connector using one of the three following procedures, depending on objective use:

    a. Display/terminal cable. Refer to figure E-6. Prepare three 1-inch (2.5 cm) jumpers using black 24 AWG wire by stripping approximately 1/4 inch (0.6 cm) of insulation from the ends of each jumper. Cut the 1/16 inch diameter shrink sleeving (item 11) into three 1/2-inch (1.2 cm) pieces and slip over each jumper to provide insulation. Tin the ends of the jumpers and then solder to the pins of the 25-pin connector per table E-3.

    b. Printer cable. Refer to table E-4. Prepare one jumper as in step 13. a. and install on the connector between pins 6 and 8.

    c. Modem/punch cable. Refer to table E-5.

14. Solder the black jumper (formed in step 11) to the case of the 25-pin connector. Refer to figure E-6.

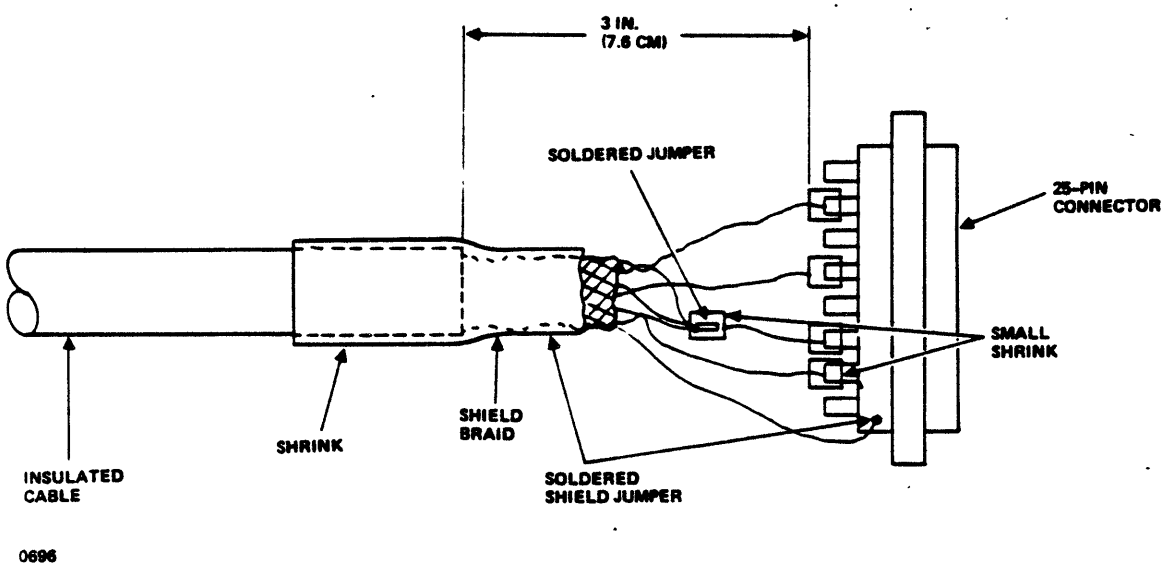


Figure E-5. Eight-Channel CLA Customer-Fabricated Signal Cable Assembly, Peripheral Connector Installation

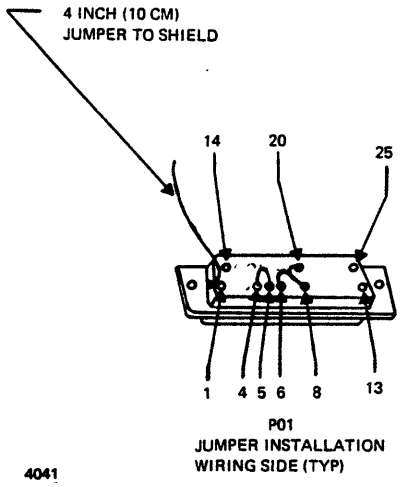


Figure E-6. Eight-Channel CLA Jumper Installation

TABLE E-3. DISPLAY/TERMINAL PIN ASSIGNMENTS

Eight-Channel Communication Line Adapter Cable Adapter Pin Assignment	Peripheral 25-Pin Connector Assignment	Signal Description	Color Code Using the Suggested Vendor Cable
3	P01-2	RS232 transmit	Red
1	P01-3	RS232 receive	Brown
N/C	P01-4 to P01-5 (Jumper)	Clear to send/ request to send	Black jumper
N/C	P01-6 to P01-20 (Jumper)	Data set ready/ data terminal ready	Black jumper
N/C	P01-6 to P01-8 (Jumper)	Data set ready/ released	Black jumper
6	P01-7	Ground	White/black jumper

TABLE E-4. PRINTER PIN ASSIGNMENTS

Eight-Channel Communication Line Adapter Cable Adapter Pin Assignment	Peripheral 25-Pin Connector Assignment	Signal Description	Color Code Using the Suggested Vendor Cable
1	P01-3	RS232 transmit	Red
4	P01-6 and P01-8	Data set ready, carrier on	Black jumper
5	P01-11	Reverse channel	Yellow
6	P01-7	Ground	White/black jumper

TABLE E-5. MODEM/PUNCH PIN ASSIGNMENTS

Eight-Channel Communication Line Adapter Cable Adapter Pin Assignment	Peripheral 25-Pin Connector Assignment	Signal Description	Color Code Using the Suggested Vendor Cable
1	P01-2	RS232 transmit	Red
3	P01-3	RS232 receive	Brown
2	P01-4	Request to send	Orange
5	P01-5	Clear to send	Black
4	P01-20	Data terminal ready	Yellow
6	P01-7	Ground	White/black jumper

15. Solder the common (white) conductors of the five-twisted-pairs together and solder a jumper (using black 24 AWG wire) to this junction. Insulate the junction with approximately 1/2 inch (1.2 cm) of 1/8 inch diameter shrink sleeving (item 15).

16. Using tables E-3, E-4, or E-5 (depending on objective cable assembly), determine the unused colored wires and cut them flush with the shield of the cable.

17. Slip approximately 1/2 inch (1.2 cm) of 1/16 inch diameter shrink sleeving over the black jumper and the remaining conductors.

18. Solder the black common jumper to pin 7 of the 25-pin connector.

19. Solder the signal conductors in accordance with tables E-3, E-4, or E-5. Slip the insulating sleeves over the pins.

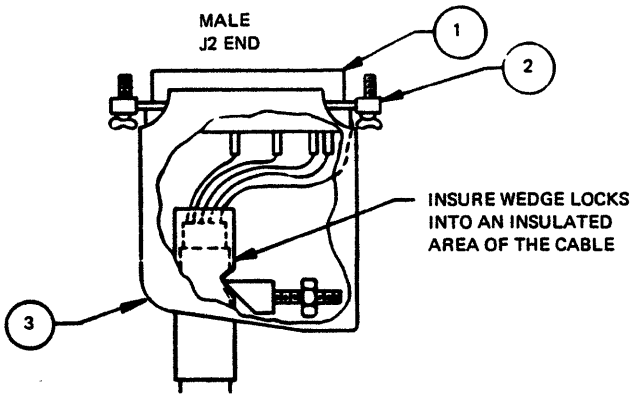
20. Using an ohmmeter, verify that the cable is wired in accordance with tables E-3, E-4, or E-5.

NOTE

Insure that the cable is deep enough into the hood so that the cable is pinched at an insulated area. Refer to figure E-3.

21. Refer to figure E-7 to verify the location of the various item numbers. Install the connector hood (item 3) over the housing (item 1) and secure the cable by tightening the screen at the side of the hood. Install the lock screws (item 2) on both ends of the connector.

22. Cable installation. Refer to the installation manual listed in the preface for further instructions.



NOTE: Refer to table E-2 for description of circled item numbers.

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Figure E-7. Eight-Channel CLA Parts Identification

COMMENT SHEET

MANUAL TITLE CDC® CYBER 18 Computer Systems Site Planning Kit

PUBLICATION NO. 96768510 REVISION W

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.

☐ Please Reply ☐ No reply necessary

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