
**CONTROL DATA®
CYBER 70/MODEL 76
COMPUTER SYSTEM**

**SECTION 2
SYSTEM DATA**

SITE PREPARATION MANUAL

PREFACE

Control Data Corporation maintains a site engineering department to provide the customer with assistance in preparing his site for a computer system installation.

A valuable reference both before and after the installation is a set of three manuals published by Control Data which have been designated as sections 1, 2, and 3. All three sections are required for complete documentation of any one system.

The site engineering department urges the customer to consult local authorities should requirements in the manuals conflict with those in either the local building, fire-ordinance, or electrical codes. Any deviations from the manual procedures and/or requirements for reasons other than complying with local regulations must be approved by the site engineering department.

SECTION 1. GENERAL SITE REQUIREMENTS

Section 1 details those aspects of site preparation that are common to more than one computer system. There are two separate section 1 manuals, one manual applies to small scale* computer systems and the other applies to large and medium scale** computer systems. A section 1 manual contains the following items of information.

- Site Engineering Procedures
- Equipment Layout
- Signal Cabling Layout and Location Requirements
- Maintenance Personnel Area
- Building and Environmental Requirements
- Magnetic Recording Media Storage
- Area Cleanliness and Fire Precautions
- Grounding Systems
- Switchgear, Converters, and System Power Requirements
- Notebook

*CONTROL DATA® SC1700, 1700, 8090, 160-A, Batch Stations, and similar systems.

**CONTROL DATA® 3000, 6000, 7000, CYBER 70, STAR, and similar systems.

SECTION 2. SYSTEM DATA

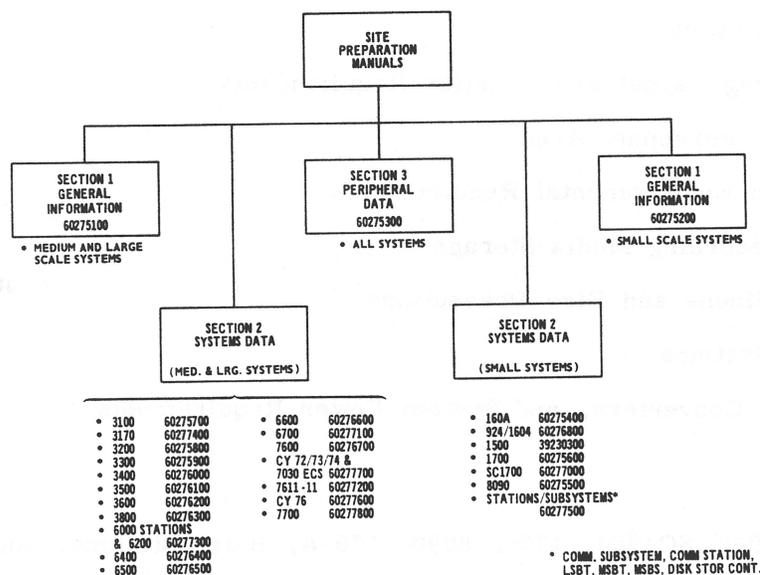
Section 2 contains information that is applicable to a specific computer system but excludes information on peripheral equipment. It provides the following information.

1. Specifications for the computer system including the number, function, and placement of cabinets.
2. Equipment data sheets which detail the power and environmental requirements of the system cabinets as well as the dimensions and physical configurations.
3. Electrical schematics which document external power connections among both the system cabinets and between the system and switchgear.

SECTION 3. PERIPHERAL EQUIPMENT DATA

Section 3 documents only peripheral equipment. It contains the following categories of information.

1. Table of peripheral controllers and equipment which gives a description of each peripheral unit and indicates whether or not the unit is self-contained.
2. Equipment data sheets which include power and environmental requirements as well as the physical configuration and dimensions of each peripheral unit.
3. Equipment data sheets which include power and environmental requirements for all Control Data provided frequency converters associated to systems and/or peripheral equipment specific needs.



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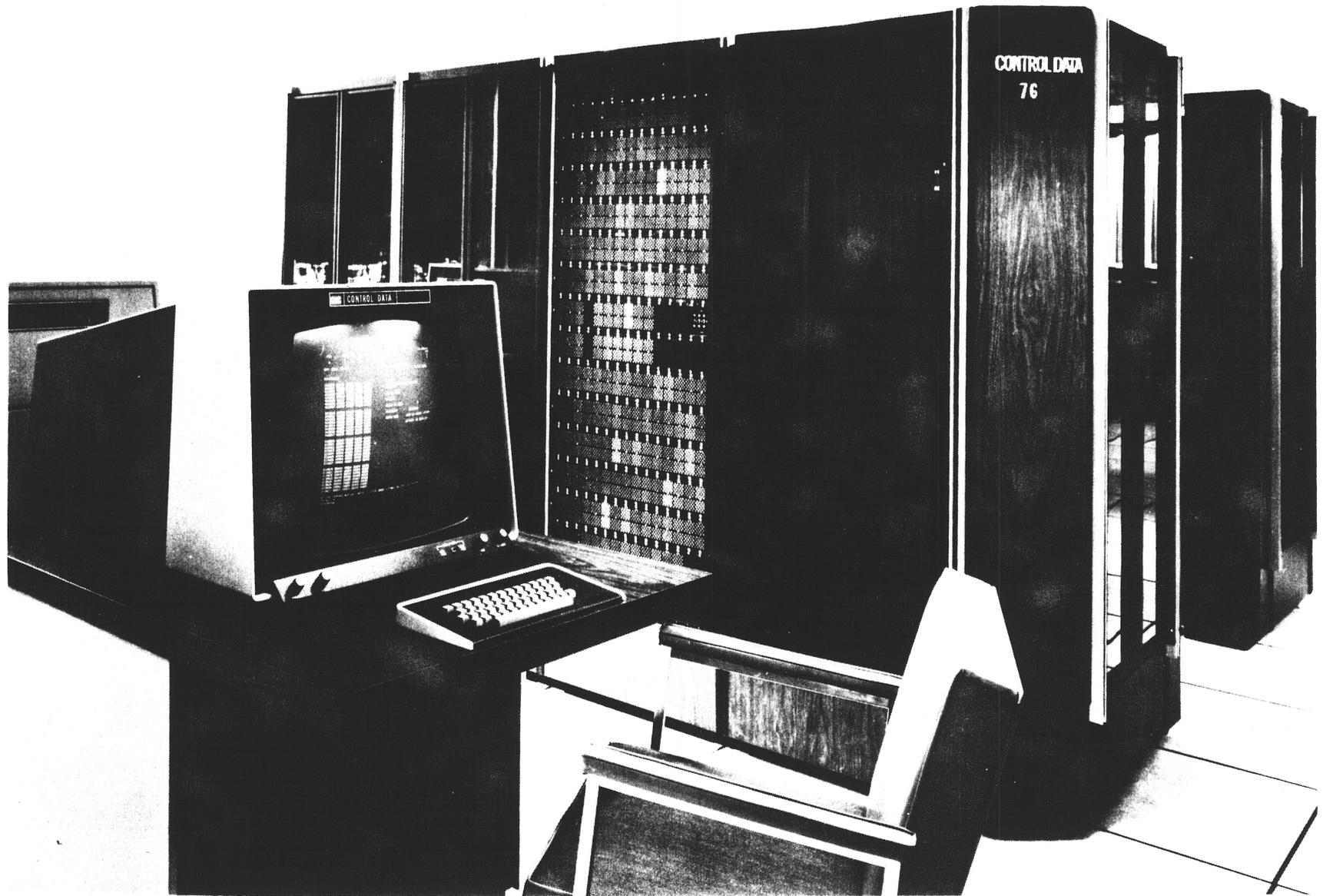
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CYBER 70 MODEL 76 COMPUTER SYSTEM

SYSTEM SPECIFICATIONS

1

INTRODUCTION

The minimum CONTROL DATA® CYBER 70 Model 76 computer system is comprised of seven cabinets. The physical design of the CYBER 70 Model 76 computer system provides rapid and convenient access to all electronic and electromechanical components. Whenever practical access panels (normally window assemblies; however, in certain instances the back panels are metal) are limited to two opposite sides of a cabinet; small panel widths are used extensively.

Each cabinet contains an entry area (referred to as a cable cutout) for signal cabling cabinet access. Power distribution within each cabinet is prewired with easily accessible terminal strips provided for rapid installation.

Typical CDC CYBER 70 Model 76 computing systems consist of the following units.

- Central Computer (refrigerant cooled)
- Maintenance Control Unit consisting of:
 - MCU Console (air cooled)
 - MCU Card Reader (air cooled)
 - MCU Disk Storage Drive (air cooled)
- Two 10-ton Condensing Units (water cooled)
- Power Distribution Unit Cabinet (air cooled)

Computer stations such as CDC 6000/CYBER 70 Model 72 Computer Station and/or CDC 7611-11 Station are also commonly associated with CDC CYBER 70 Model 76 computer systems. Refer to the System Publication Index of this manual for specific system data publication manual number.

The CDC 7611-1 Local Operator Station, another computer station associated with CDC CYBER 70 Model 76 computer system, will however be described in this manual. Such station consists of the following units.

- Equipment Controller (refrigerant cooled)
- Console (air cooled)
- Disk Storage Drive (air cooled)
- 2-ton Condensing Unit (water cooled - optional, see cabinet configuration)

CABINET CONFIGURATION

The cabinets previously described as typically part of the CDC CYBER 70 Model 76 are described in detail in the following paragraphs. Table 1-1 lists individual product configurations and physical cabinet configuration in which they are contained. While CDC CYBER 70 Model 76 computer systems are designed to provide maximum efficiency in a variety of configurations, a few restrictions and ground rules must be observed when determining floor plan layouts. These restrictions pertain to signal cable and refrigerant hoses (supply and return) length limitations and to room environmental considerations, which are delineated under computer system requirements.

- Central Computer - This stand-alone cabinet consists of 14 chassis (13 chassis in the semiconductor memory version) arranged in a quadrangle. The various chassis contain the logic and memory storage, up to 15 bidirectional I/O channels, and 13 7602-1 peripheral processors.

The most recent models (76-121, 122, and 142) have a semiconductor memory which replaces the Small Core Memory (SCM) in the original models (76-12, 14, 16, and 18). This change caused a chassis reconfiguration consisting of the removal of the SCM chassis 10, 11, and 12. These were replaced with two new (larger) semiconductor memory chassis (10 and 11). Table 1-1 provides further details and the memory sizes.

- Maintenance Control Unit (MCU) - These three stand-alone cabinets represent an integral part of the computer system and are designed to enhance the system's reliability and performance; it also enables expedient isolation of hardware malfunctions and fast processing of diagnostic maintenance.
 - Console - This unit houses the cathode-ray display tube and a typewriter keyboard along with associated logic electronics.
 - Card Reader - This unit reads 1200 cards per minute for 80-column cards and is used for initial system startup and reading of diagnostic maintenance routine instructions.
 - Disk Storage Drive - This unit houses a rotating memory single access mechanism addressable in sectors and is used to store diagnostic programs.

- Condensing Units - There are two types of units, 10-ton and 2-ton. These units provide direct refrigerant (refrigerant R-12) cooling for given cabinets of the computing system.

A normal installation requires two 10-ton condensing units. Two units in this configuration are capable of providing cooling for one central computer and up to two equipment controllers (part of a 7611-1 Local Operator Station).

The 2-ton condensing unit provides cooling for a single equipment controller (part of a 7611-1 Local Operator Station) should such controller be installed beyond the layout restrictions or should there be more than two 7611-1 stations present on site.

TABLE 1-1. PRODUCT-MODEL/CABINET SYSTEM CONFIGURATION

Product/Model	Description	Configuration
	<p>CDC CYBER 70 Model 76 Central Processors each include seven bidirectional I/O channels (each with its own assembly/disassembly logic), six 7602-1 peripheral processors (each attached to one of the I/O channels), one maintenance control unit, and power and cooling apparatus.</p>	<ul style="list-style-type: none"> ● Central computer (self-contained) ● Two 10-ton condensing units (self-contained) ● Power distribution unit cabinet (self-contained) ● MCU console (self-contained) ● MCU card reader (self-contained) ● MCU disk storage drive (self-contained)
76-12	<p>with 32K 60-bit words of small core storage expandable to 65K, 250K 60-bit words of large core storage memory expandable to 500K, 15 bidirectional I/O channels, and 13 7602-1 peripheral processors</p>	
76-14	<p>with 65K 60-bit words of small core storage, 250K 60-bit words of large core storage memory expandable to 500K, 15 bidirectional I/O channels, and 13 7602-1 peripheral processors</p>	
76-16	<p>with 32K 60-bit words of small core storage expandable to 65K and 500K 60-bit words of large core storage memory, expandable to 15 bidirectional I/O channels, and 13 7602-1 peripheral processors</p>	
76-18	<p>with 65K 60-bit words of small core storage and 500K 60-bit words of large core storage memory, expandable to 15 bidirectional I/O channels, and 13 7602-1 peripheral processors</p>	

TABLE 1-1. PRODUCT-MODEL/CABINET SYSTEM CONFIGURATION (Cont'd)

Product/Model	Description	Configuration
76-121	with 65K 60-bit words of small semiconductor storage expandable to 131K, 256K 60-bit words of large core storage expandable to 512K, expandable to 15 bidirectional I/O channels, and 13 7602-1 peripheral processors	
76-122	with 65K 60-bit words of small semiconductor storage expandable to 131K, 512K 60-bit words of large core storage expandable to 15 bidirectional I/O channels and 13 7602-1 peripheral processors	
76-142	with 131K 60-bit words of small semiconductor storage, 512K 60-bit words of large core storage	
7602-1	Peripheral Processor - 12-bit 4K word of independent magnetic core storage, 2 multiphased bands of 2K words, and controls up to 6 peripheral stations. 1 to 7 peripheral processors may be added to the central computer.	<ul style="list-style-type: none"> ● Mounts in the central computer
7606	Data Channel Unit - 4 bidirectional CPU I/O channels each with assembly/disassembly logic	<ul style="list-style-type: none"> ● Mounts in the central computer
7606-1	- adds 2 high speed and 2 normal channels	
7606-2	- adds 3 normal channels and 1 real-time channel reservation. Up to two data channel units may be added to the central computer.	
7608-1	Large Core Memory Module - 250K 60-bit words of magnetic core storage increment	<ul style="list-style-type: none"> ● Maximum of one per CPU, mounts in the central computer cabinet (CPU)
7609-1	Small Core Memory Module - 32K 60-bit words of magnetic core storage increment	

TABLE 1-1. PRODUCT-MODEL/CABINET SYSTEM CONFIGURATION (Cont'd)

Product/Model	Description	Configuration
7611-1	Local Operator Station - 8 million characters of buffer storage, one operator's display console, logic, power, and cooling apparatus included. Most combinations of up to four peripheral devices may be run simultaneously, supports (but does not include) one 407-1, one 417-1, two 517-1, and two 607 or 607-2.	<ul style="list-style-type: none"> ● Equipment controller (self contained) ● Console (self contained) ● Disk storage drive (self contained) ● 2-ton condensing unit* (self contained)
10331-2	Small Storage Increment - adds 65K 60-bit words of semiconductor storage.	<ul style="list-style-type: none"> ● Mounts in the central computer
10332-1	Large Storage Increment - adds 256K 60-bit words of core storage.	<ul style="list-style-type: none"> ● Mounts in the central computer
*Optional, may not be required.		

- Power Distribution Unit - This stand-alone cabinet provides power control and distribution to the central computer and up to two equipment controllers (part of a CDC 7611-1 Local Operator Station). Monitoring and warning devices are also housed in this cabinet.
- Equipment Controller - This stand-alone cabinet (single chassis) contains the logic and core storage modules necessary to emulate and control peripheral equipment associated with a CDC 7611-1 Local Operator Station.

The console and disk storage drive (part of a CDC 7611-1 Local Operator Station) have similar descriptions to those of the MCU (part of CDC CYBER 70 Model 76 computer system). Their physical characteristics are identical with the exception of logic cabling limitations and destinations.

COMPUTER SYSTEM REQUIREMENTS

ENVIRONMENTAL

All functional parts of the central computer and of the equipment controller are cooled by a refrigerant cooling system. However, a small portion of the total heat generated is dissipated to the ambient room air by convection.

Most other functional units in a system (console, peripherals, etc.) are cooled by ambient room air. Normally, the air is drawn into the cabinet through openings near the floor and is exhausted into the room at the top of the cabinet. The cabinets contain one or more (as necessary) internal blowers and/or fans to facilitate the air circulation. Temperature and relative humidity in the room must be controlled within the limits required by the most restrictive cabinet (or equipment) in the system. Refer to the equipment data sheets in part 2. In many instances, the most restrictive limit in a system will be determined by the limitations of the associated peripheral equipment. Refer to the equipment data sheets in the section 3 manual.

The system is designed for under the floor piping, power, and signal cabling. General information is delineated in part 5 of the section 1 manual. Specifics or restrictions are further described in this manual.

DEW POINT

In order to prevent condensation in the central computer and in the equipment controller, the dew point temperature of the air in the computer room should not exceed 60° F (15.6° C). In the event other computer systems, extended core storage systems such as CDC CYBER 70 Model 72, 73, and 74 and 7030, are to be located in the same vicinity, the dew point temperature limitation is lowered to 56° F (13.0° C).

A dew point recorder assembly which monitors the dew point of the computer room air is required with the CYBER systems. If the dew point reaches an unsatisfactory level, the assembly causes an audible alarm located in the power distribution cabinet to be activated. If the unsatisfactory dew point condition is not corrected within a specified time, an automatic predetermined shutdown cycle turns off the computer.



If the maximum dew point is exceeded, condensation may occur within the refrigerant cooled cabinets. This can cause serious damage to components in these cabinets.

When the dew point alarm sounds, immediate steps should be taken to lower the humidity in the computer area. If the humidity cannot be quickly lowered, the system will enter a predetermined automatic shutdown procedure.

In order to maintain the dew point assembly calibration and avoid damage to the sensing element, the following precautions should be observed.

- Care should be taken not to splash water or other liquids on the dew point recorder cabinet or to expose it to saturated humidity conditions which will cause water to run off.
- The dew point cabinet should not be exposed to ionic or hygroscopic materials such as hygroscopic sugars, glycerine, and glycols, or vapors of the latter.
- The dew point cabinet should not be used in atmospheres containing contaminants such as:

Sulphur dioxide	Alkaline vapors
Acid vapors	Acetylene
Chlorine	Ethylene oxide
Ammonia	Salt air
Alcohols	

- Except in very dilute concentrations in the atmosphere, acetone should also be avoided.

In any of the above materials must be used in the room for cleaning equipment, floors, windows, etc., the system must be turned off until the room has been cleared of the contaminant.

SYSTEM GROUNDING REQUIREMENTS

It is the customer's responsibility to provide grounding systems for all equipment in the computer system. The grounding systems must meet local electrical codes that usually specify detailed protective grounding requirements. (Although the intent of these codes is the same, approved methods and materials vary somewhat.) It is the customer's responsibility to install a protective grounding system that satisfies local requirements.

Refer to part 8 of the section 1 manual for specific grounding requirements. (Additional information may be obtained from the Control Data Digital Computer System grounding Standard, Engineering Standard 1.30.23.)

In addition to the power and grounding requirements set forth in the section 1 manual, the following grounding and shielding is required for a CDC CYBER 170 system installation.

All power and control cable runs must be shielded, and the shielding must be grounded. The following types of shielding are acceptable.

- Totally enclosed conductive busways
- Steel thin-walled metallic conduit
- Flexible metallic conduit
- Braided metallic-shielded jacketing
- Zip-on flexible metallic-shielded jacketing (for example, Zippertubing †)

NOTE

The shielding on all power and control cable runs must be grounded at each end of the run.

† Registered trademark of the Zipper Tubing Co., Los Angeles, California.

For stationary cabinets (mainframe and peripheral units not on casters), the shielding should be run up into the cabinet. If the shielding used is of a rigid variety, a short length of flexible shielding (if local codes permit) should be used to connect from the rigid shielding at a point below the surface of the raised floor, up into the cabinet. Where flexible shielding is used, it should be run directly up into the cabinet.

For movable peripherals (those on casters) having a drop cable, the shielding should terminate at a junction box located below the surface of the raised floor at a point immediately below the peripheral equipment floor cable cutout, or as close as possible. Local codes determine the exact placement of the junction box.

NOTE

All signal cables attached to the mainframe must be shielded and grounded to the frame. If either logic cables or the movable type peripheral equipment drop cables are a source of EMI, they will be shielded by Control Data (on an as-needed basis) with a zip-on type shielding.

In order to keep the EMI at a minimum, signal cables, alternating current †† cables, and direct current cables must be routed in separate cable troughs.

The EMC grounding straps for the CDC computer systems should consist of tinned-copper braided strap (CDC P/N 24534811 or equivalent). The strap should be 1 inch (2.54 centimeters) in width. Each chassis of the central computer must be connected (indirectly) to the grid ground plane through the use of a white terminal block (CDC P/N 53714401).

Each of the chassis should be connected directly to its bay's frame by a short length † of the 1-inch braided strap. A white terminal block is installed in each bay of the central computer. A length of 1-inch braided strap, not to exceed a total length of 3 feet (0.91 meters), should connect from each bay's white terminal block to the EMI grid ground.

The connection point of the ground strap to the grid should not exceed 2 feet (0.61 meter) from the opening in the computer bay, through which the ground strap extends, to the point of termination on the grid ground.

† In order to keep the EMI at a minimum, the strap should be kept as short as possible; however, the strap must be long enough to permit the chassis to be swung fully open without putting tension on the strap.

†† 400-Hz and 50/60-Hz cables must not be routed in the same trough.

The placement of the single terminal, white terminal block (P/N 53714401) should be such that the distance between the terminal block and cabinet opening is a maximum of 1 foot (0.31 meter).

NOTE

All terminations of the strap must conform with the Control Data Engineering Standard 1.30.023, revision B and the grounding instructions in part 8 of the section 1 manual.

PHYSICAL ROOM REQUIREMENTS

Room requirements should provide for power service (50/60 Hz and 400 Hz), water service entry for cooling the condensing units, sufficient air conditioning to handle the requirements of personnel, peripheral devices and controllers, and other additional equipment (for example, test equipment, lighting, etc.). In addition, ample space must be provided for equipment cabinets, test equipment, and freedom of movement by personnel and test equipment among the cabinets (parts 2 and 4 of the Section 1, Site Preparation Manual).

FLOOR CLEARANCE

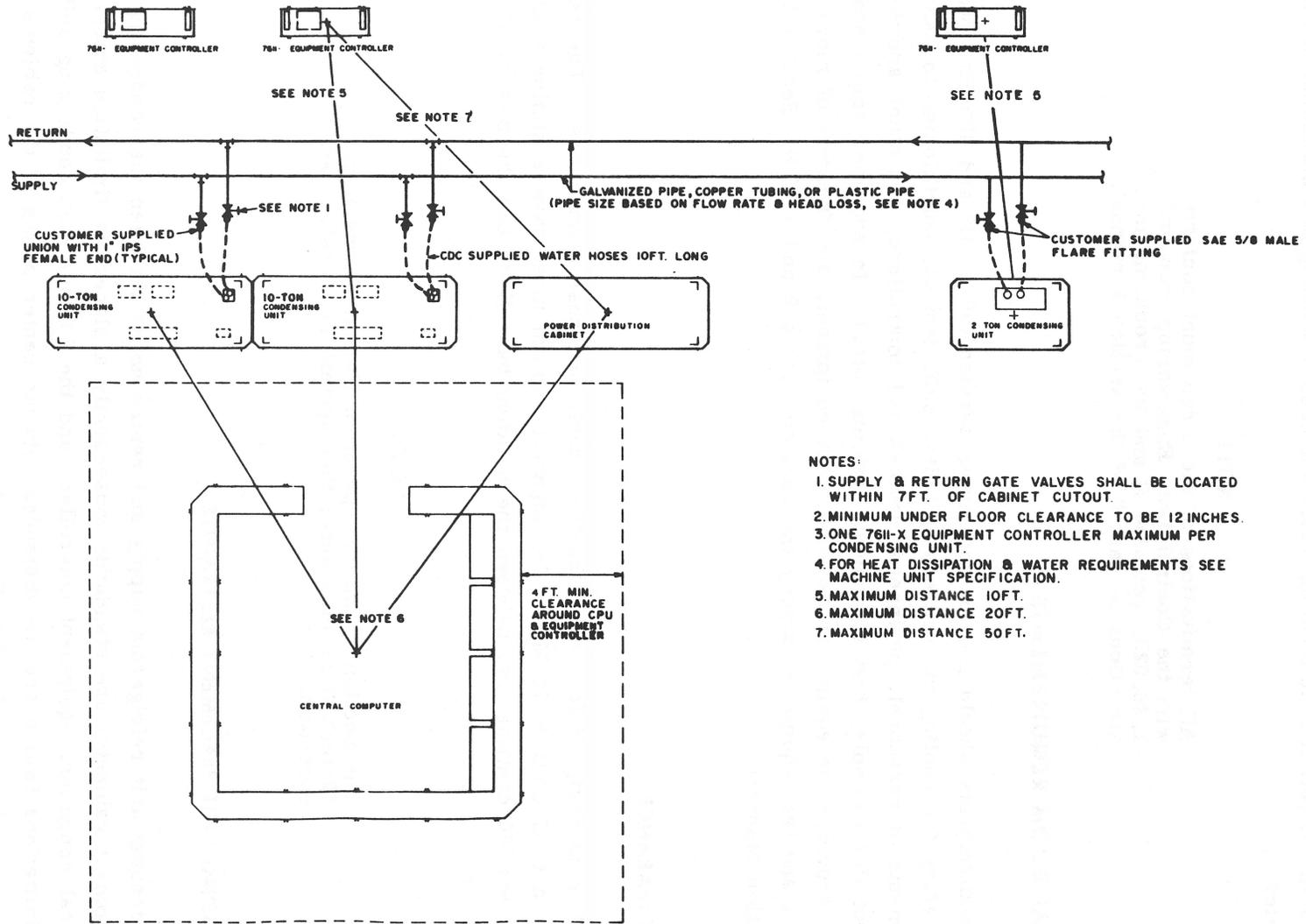
The system is designed for under-the-floor cable and hose connections. The raised floor for a CDC CYBER 70 Model 76 computer system must have a minimum clearance of 12 inches (30 centimeters) between the building base floor and the bottom of the raised floor.

NOTE

The Section 1, Site Preparation Manual allows 8 to 12 inch floor clearance; this system is therefore an exception.

CONDENSING UNIT PLACEMENT RESTRAINTS

The condensing unit refrigerant supply and return hoses (between the condensing unit and equipment cabinets) are standard; consequently a placement limitation exists between the central computer, equipment controller, and the 10-ton/2-ton condensing units. These limitations (which are the distances between center points of the cabinets and condensing units) are depicted in Figure 1-1.



NOTES:

1. SUPPLY & RETURN GATE VALVES SHALL BE LOCATED WITHIN 7FT. OF CABINET CUTOUT.
2. MINIMUM UNDER FLOOR CLEARANCE TO BE 12 INCHES.
3. ONE 76H-X EQUIPMENT CONTROLLER MAXIMUM PER CONDENSING UNIT.
4. FOR HEAT DISSIPATION & WATER REQUIREMENTS SEE MACHINE UNIT SPECIFICATION.
5. MAXIMUM DISTANCE 10FT.
6. MAXIMUM DISTANCE 20FT.
7. MAXIMUM DISTANCE 50FT.

Figure 1-1. Layout Limitations and Requirements

WATER SUPPLY REQUIREMENTS

Each condensing unit is equipped with a heat exchanger which must be supplied with cooling water. Space must be provided under the false floor for water supply and return piping, valves, and other equipment.

It is the customer's responsibility to install the water supply and return lines. Line terminations and restrictions are indicated in Figure 1-1.

Control Data provides the necessary flexible hose from the water supply and return lines to the condensing units. Each condensing unit requires water flow rate (at the head loss indicated) as shown in the appropriate data sheet. The customer installed supply and return lines must be sufficient to meet the data sheet requirements.

Water system requirements for the condensing units used in the refrigeration systems of the computer system must be adhered to. Any variation from the requirements must be approved by the electronic packaging department of the development division. Requests for variation should be forwarded via the site planning liaison engineer.

A recirculating closed loop chilled water system should be used. Chilled water may be obtained by the use of refrigerant type chillers or secondary chillers which use other water sources on the primary side.

Nominal supply temperatures should fall within the range of 60°F to 70°F (15.6°C to 21.1°C). Fluctuations from the nominal temperatures must not exceed ±4°F (±2.2°C). Operation below the limit may result in condensation forming on the external water lines, valves, etc. Operation above the limit requires modifications to the condensing unit due to the high flow rates that would be necessary to meet the cooling requirements.

Flow rate and head loss psi are indicated on the equipment data sheets. Minor variations in these may occur during operation due to differences in ambient conditions and slight scaling of the condensing units.

The makeup of the water supplied to the cooling system during operations will vary due to mineral content, bacterial growth, evaporation, etc. As a result, no specific water composition requirements or treatment methods are recommended here. However, early in the site preparation stage, the site planning liaison engineer will provide recommendations for water analysis and for any necessary water treatment or sampling programs.

WATER ALARM INDICATOR



After installation of all piping, valves, alarm indicators, etc., is completed, locations of all shut-off valves, alarm indicators, and sump pumps should be indicated on a master floor plan diagram for ease of access during any emergency.

The computer room floor (under the false floor) should be equipped with one or more devices to warn of the presence of water in the event of a broken pipe or hose. A float operated switch, controlling both an audible alarm and a sump pump, is recommended.

REFRIGERANT SAFETY PRECAUTIONS

Control Data computer cooling systems utilize an R-12 type refrigerant (for example, Freon) in the condensing units. Each condensing unit is equipped with a temperature/pressure sensitive fusible plug which acts as a safety relief valve to remove any danger of explosion due to an excessive temperature/pressure build up. Excessive temperature/pressure build up could occur due to internal (mechanical) failure of the condensing unit or external causes (such as a fire in the computer room).

HAZARDS OF REFRIGERANT GAS

Small quantities of refrigerant R-12 taken into the respiratory system are harmless; however, large quantities of concentrated refrigerant gas can cause serious illness. Refrigerant R-12 is an inert gas which is heavier than air and tends to collect in low areas (such as under the false floor). A small amount of gas if trapped, can cause a high concentration level.

The principle hazard with an inert gas is that if the supply of oxygen is replaced by the inert gas, suffocation may occur. The threshold limit value† for refrigerant R-12 is 1000 parts per million. In addition, concentrations of refrigerant R-12 gas†† in the order of 0.5 percent to 2.5 percent in the presence of any open flame represents a lethal life hazard for continuous duration of exposure of 5 to 15 minutes (no ventilation).

† Determined by the American Conference of Governmental Industrial Hygienists. The value is the concentration in air which is believed to represent a safe limit for repeated exposure day-after-day without adverse affects. From the E. I. DuPont de Nemours & Co. (Inc.), Freon Fluorocarbons, Properties and Applications product bulletin E-2 (dated 3-71).

†† 65 pounds (29.5 kilograms) of liquid refrigerant R-12 expands to approximately 200 cubic feet (5.9 cubic meters) of gas.

WARNING

Toxic gases are formed if refrigerant R-12 gas comes in contact with any open flame.

PRESSURE VENTING NETWORK

Control Data has available an optional flexible 4-foot (1.2 meters) metallic hose (P/N 52764201) which can be connected to the pressure relief safety valve on the condensing unit. The other end of the metallic hose terminates in a 3/8-inch flare union (female) and hangs down into the area of raised floor space underneath the condensing unit.

The installation of an emergency pressure venting network should consist of piping connecting the metallic hoses from the pressure relief valves to a discharge point outside the building. Thus, in case of venting by the pressure relief valve, the refrigerant is released safely into the atmosphere.

The provision and installation of such a venting network is the responsibility of the customer. Although the customer is not obligated to install such a system, Control Data strongly recommends installation of the pressure venting network. Detailed information and instructions for such a network may be obtained from the Control Data site engineering personnel.

The final decision on installation of a pressure venting network should be based upon calculation of potential lethal refrigerant levels in consideration with the following.

- Physical location of the condensing units
- State and local building codes and regulations †
- Total amount of liquid refrigerant R-12 on site
- Volume of the computer room (or area where the condensing units are located)
- Total occupancy and approximate evacuation time of the site by personnel in any emergency.

† These may require the installation of such a network.

SIGNAL CABLES

Control Data provides all signal cables required by the computer system. Because signal cables are custom cut † according to the floor plan, the equipment must be located to accommodate the signal cable length limitations.

Figure 1-2 indicates the system signal cable types and limitations as they apply to the quantity of signal cables between cabinets, the number of pins per cable connector, and the maximum cable lengths. Additional information on signal cable lengths is given in the equipment data sheets found in part 2 of this manual and in the Section 3 - Peripheral Equipment Manual.

Care should be exercised to minimize layout interferences between signal and power cables as well as water and refrigerant pipings where applicable.

7611-1 LOCAL OPERATORS STATION, REMOTE LOCATION REQUIREMENTS

Whenever one or more 7611-1 Equipment Controllers are installed in a location other than the main computer room (remote installation), the station requires the following additional operating, control, and monitoring equipment.

- 2-ton condensing unit (one per 7611-1)
- 10 KVA M-G (one per 7611-1)

†Signal cables should be kept as short as possible to minimize signal transmission delays.

- Emergency-off panel
- Power control panel (one per 7611-1)
- Monitor panel (one per 7611-1)
- Dew point recorder (as required)

Data sheets for the four auxiliary panels are included in part 2.

7611-1 EQUIPMENT CONTROLLER INSTALLATION PRECAUTIONS

The 7611-1 Equipment Controller is physically unstable and is designed to be secured to the false floor via a pair of long angle supports which are supplied with the station. Refer to Figure 1-3.

WARNING

During installation, the 7611-1 Equipment Controller must not be uncrated until after it has been properly secured to the false floor via the two angle supports; conversely, when preparing to ship the station, the station must be completely crated prior to removal of the angle supports. Failure to heed these instructions will permit the station to topple over, causing damage to the unit and possible injury to personnel.

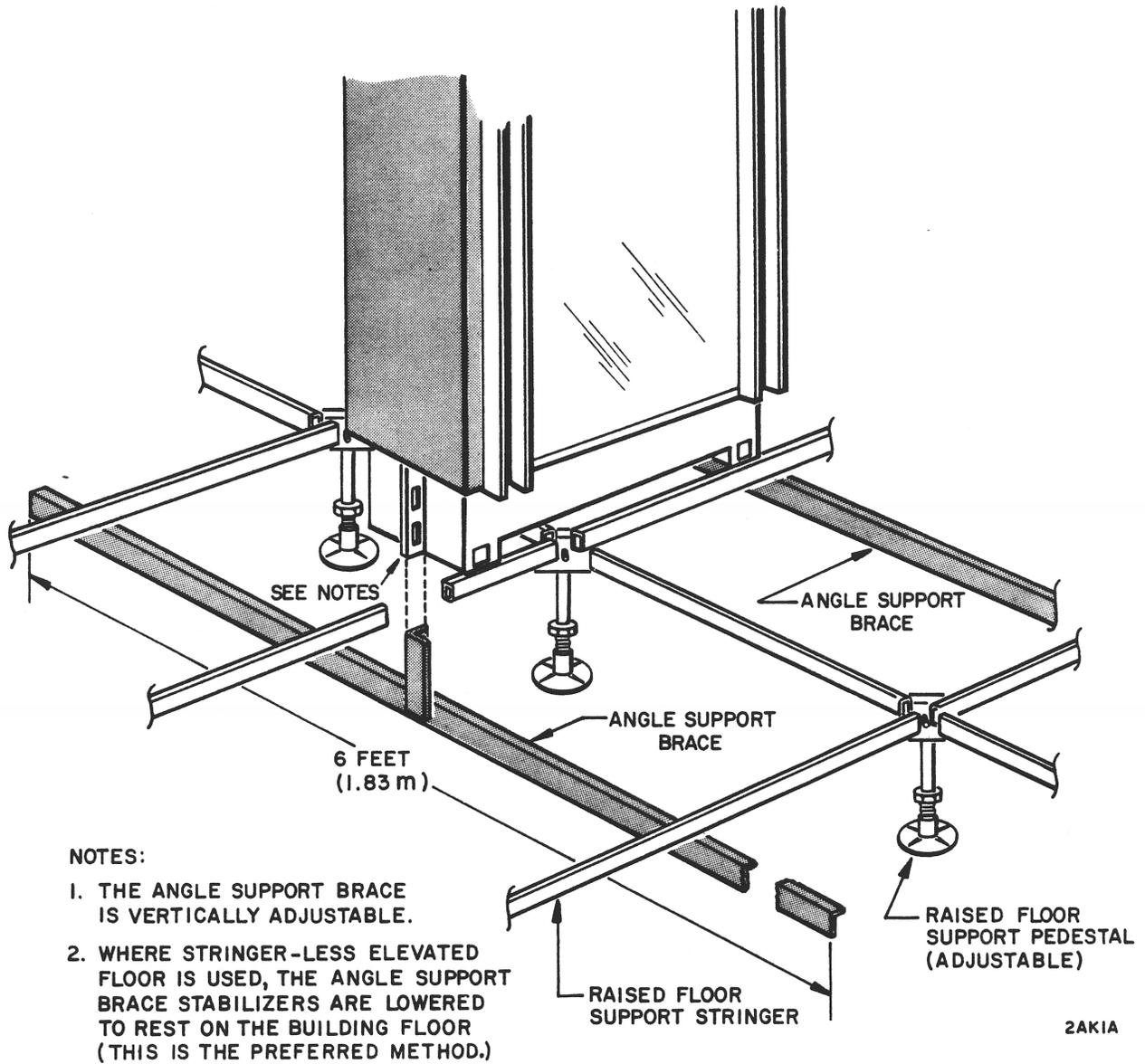


Figure 1-3. 7611-1 Equipment Controller, Angle Support Bracing

DATA SHEETS

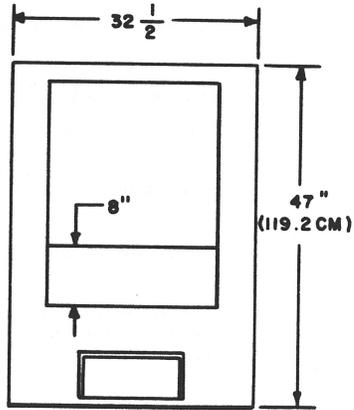
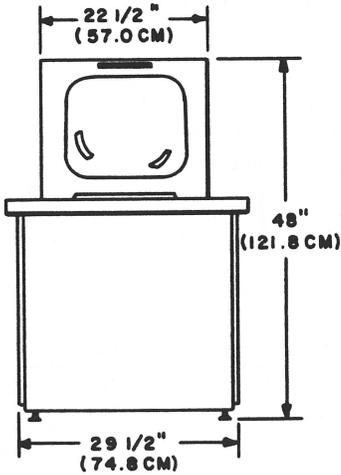
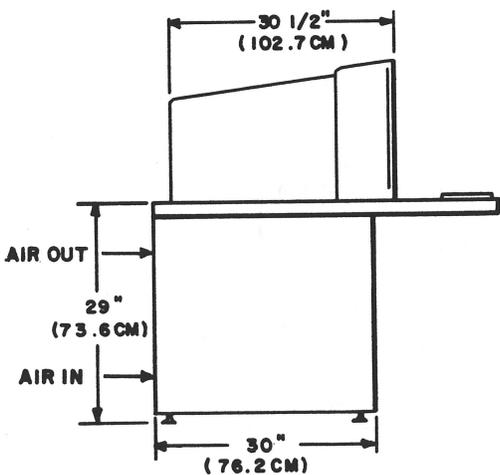
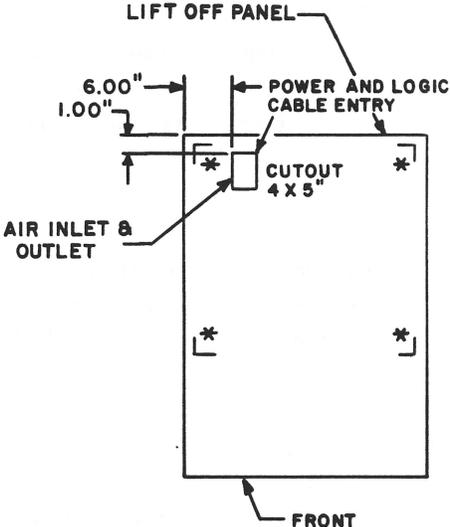
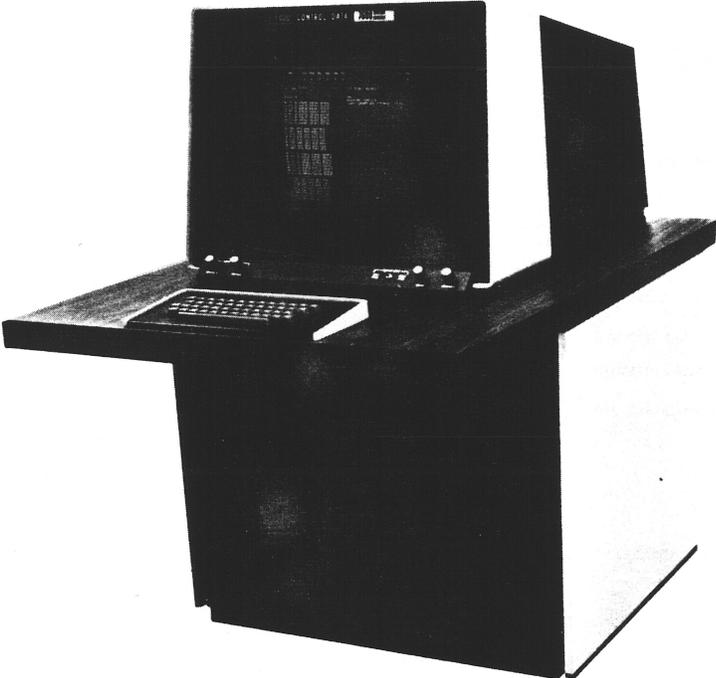
2

NOTE

In all cases N/A on the data sheet indicates Not Applicable. Information which is not available at the particular time will be specifically indicated by a note at the bottom of the page.

CONSOLE

6254



CONSOLE

(MCU Console Part of CYBER 70 Model 76 Central Computer)
(Console Part of 7611-1 Local Operators Station)

Width 32.5 in. (83 cm)
Depth 47 in. (120 cm)
Height 48.5 in. (123 cm)

For maximum width/depth, all doors extended, see floor plan layout.

Weight 390 lb (175 kg)
Supported by 4 leveling pads 0.85 in² each (5.5 cm²)

Power consumption, steady state, maximum:

400 Hz, 208 v, 3 phase, 0.81 kva max.
and { 60 Hz, 120 v, 1 phase, 0.31 kva
or 50 Hz, 220 v, 1 phase, 0.31 kva

Circuit breakers:	Power connections:	Location:
400 Hz, 15 amp, 3 phase	Terminal strips	20 in. (51 cm) } above
and { 60 Hz, 15 amp, 1 phase	Terminal strips	16 41 } base of
or 50 Hz, 15 amp, 1 phase	Terminal strips	in. (cm) } cabinet

Control Data signal cables:	Quantity:	Maximum length:
Console to Equipment Controller	4	50 ft (15 m)
Console to Central Computer	4	50 ft (15 m)

Distance from internal signal cable connectors to floor: 18 in. (46 cm)
External terminator power connection required: X no

Environmental considerations:

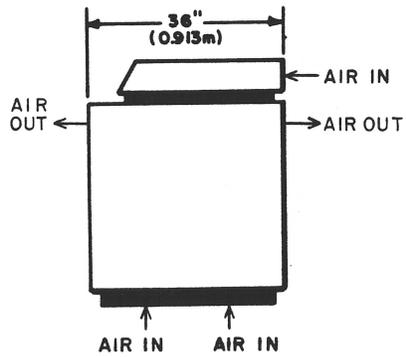
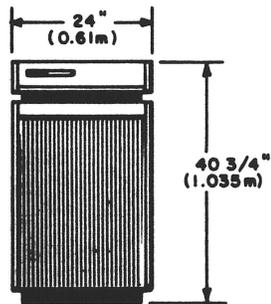
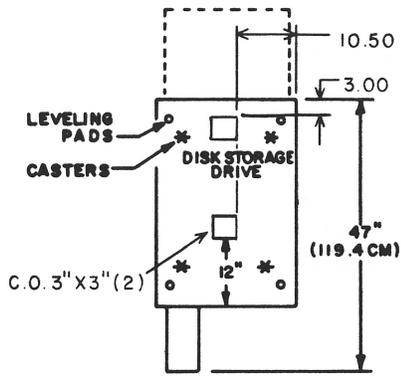
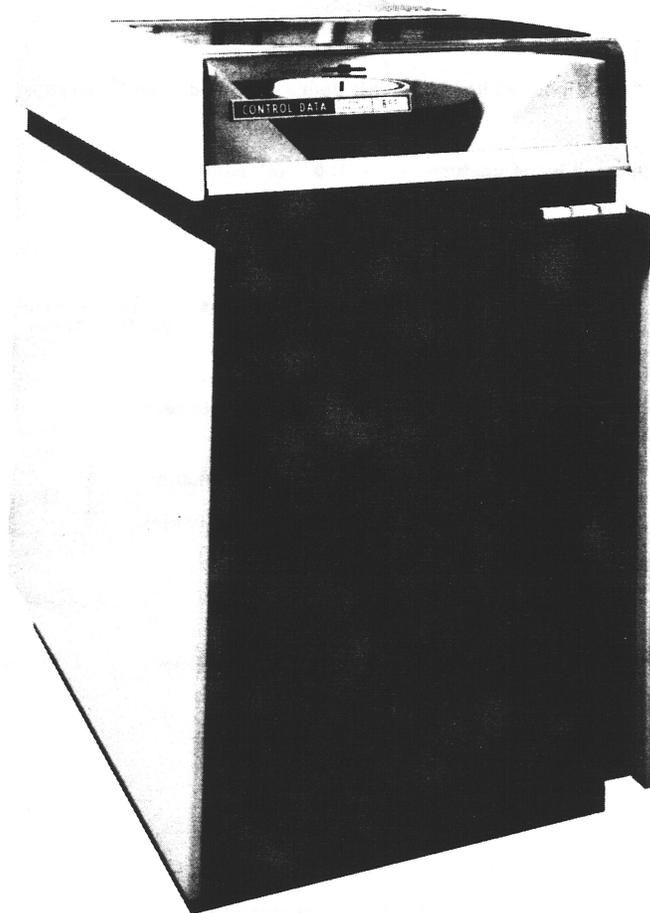
Type of cooling: Forced air (internal fan)
Source of cooling: Ambient room air
Air required at inlet if plenum-cooled: N/A cfm (- m³/hr)
Heat rejection rate, maximum { to air: 3030 Btu/hr (760 kcal/hr) }
to water: N/A Btu/hr (- kcal/hr) }
Permissible range of room relative humidity: 0 % to 70 %

Operating temperature (ambient or plenum inlet temperature):	Maximum	Recommended	Minimum	Dew point limitation
	85 °F (29.4 °C)	72 °F (22 °C)	65 °F (18.3 °C)	N/A °F (- °C)
Storage temperature	130 °F (54 °C)		40 °F (4.5 °C)	

Water flow and temperature requirements: N/A

MCU DISK STORAGE DRIVE

6151



MCU DISK STORAGE DRIVE

Width 24 in. (61 cm)
 Depth 36 in. (91 cm)
 Height 40.75 in. (104 cm)

For maximum width/depth, all doors extended, see floor plan layout.

Weight 480 lb (220 kg)
 Supported by 4 castors 1.0 in² each (6.5 cm²)

Power consumption, steady state, maximum:

NOTE

60 Hz, 208 v, 3 phase, 0.9 kva max Requires step-down transformer for
 or 50 Hz 208 v.
 50 Hz, 208 v, 3 phase, 0.9 kva

Circuit breakers:

Power connections:

Location:

{ 60 Hz, 15 amp, 3 phase Locking connector }
 or
 { 50 Hz, 15 amp, 3 phase Locking connector } 60 in. (150 cm) } above base of cabinet

Control Data signal cables:

Quantity:

Maximum length:

Disk Drive to Equipment Controller

4

50 ft (15 m)

MCU Disk Drive to Central Computer

4

50 ft (15 m)

Distance from internal signal cable connectors to floor:

12 in. (30 cm)

External terminator power connection required:

X no

Environmental considerations:

Type of cooling: Forced air (internal fans)

Source of cooling: Ambient room air

Air required at inlet if plenum-cooled:

N/A cfm (- m³/hr)

Heat rejection rate, maximum { to air:

2950 Btu/hr (740 kcal/hr) }

{ to water:

N/A Btu/hr (- kcal/hr) }

Permissible range of room relative humidity:

10 % to 80 %

Operating temperature (ambient or plenum inlet temperature):

Maximum	Recommended	Minimum	Dew point limitation
90 °F (32 °C)	72 °F (22 °C)	60 °F (15.5 °C)	N/A °F (- °C)

Storage temperature

150 °F (65 °C)	-30 °F (-34 °C)
--------------------	---------------------

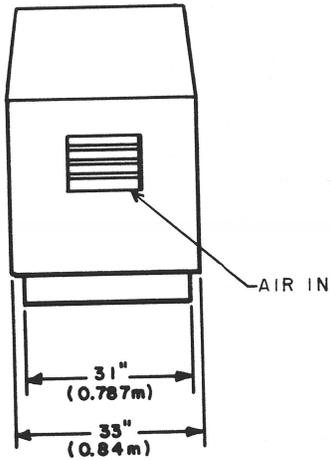
Water flow and temperature requirements: N/A

MCU CARD READER

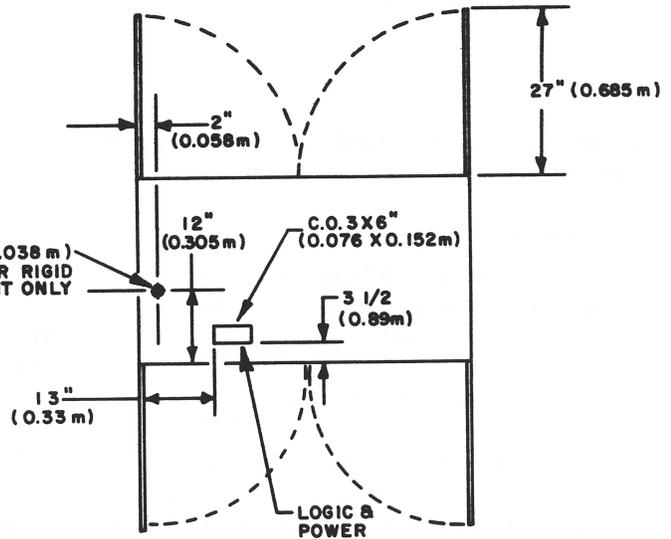
6205



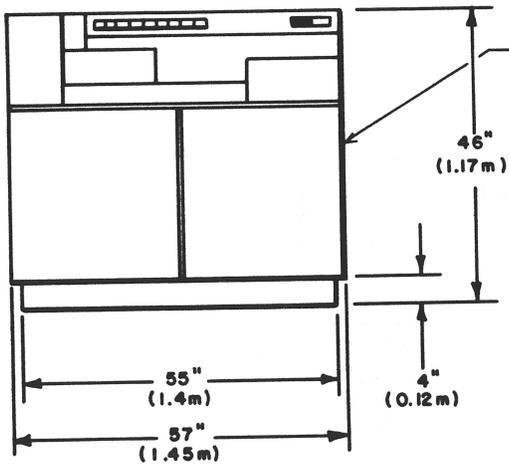
SIDE VIEW



PLAN VIEW



FRONT VIEW



MCU CARD READER

Width 57 in. (145 cm)
 Depth 33 in. (84 cm)
 Height 46 in. (117 cm)

For maximum width/depth, all doors extended, see floor plan layout.

Weight 1020 lb (465 kg)
 Supported by 4 casters 10 in² each (6.5 cm²)

Power consumption, steady state, maximum:

NOTE

60 Hz, 208 v, 3 phase, 3.4 kva max Requires step-down transformer for
 or 50 Hz 208v.
 50 Hz, 208 v, 3 phase, 3.4 kva

Circuit breakers:

Power connections:

Location:

{ 60 Hz, 15 amp, 3 phase Locking Connector } 60 in. (150 cm) } above
 or } base of
 { 50 Hz, 15 amp, 3 phase Locking Connector } } cabinet

Control Data signal cables:

Quantity:

Maximum length:

MCU to CPU (Ch. 13)

2

50 ft (15 m)

Distance from internal signal cable connectors to floor:

18 in. (46 cm)

External terminator power connection required:

X no

Environmental considerations:

Type of cooling: Forced air (internal fan)

Source of cooling: Ambient room air

Air required at inlet if plenum-cooled:

N/A cfm (- m³/hr)

Heat rejection rate, maximum { to air:

9000 Btu/hr (2250 kcal/hr) }

{ to water:

N/A Btu/hr (kcal/hr) }

Permissible range of room relative humidity:

35 % to 60%

Operating temperature (ambient or plenum inlet temperature):

Maximum	Recommended	Minimum	Dew point limitation
74 °F (23.5 °C)	72 °F (22 °C)	62 °F (16.5 °C)	N/A °F (- °C)

Storage temperature

130 °F (54 °C)	0 °F (-18 °C)
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Water flow and temperature requirements: N/A

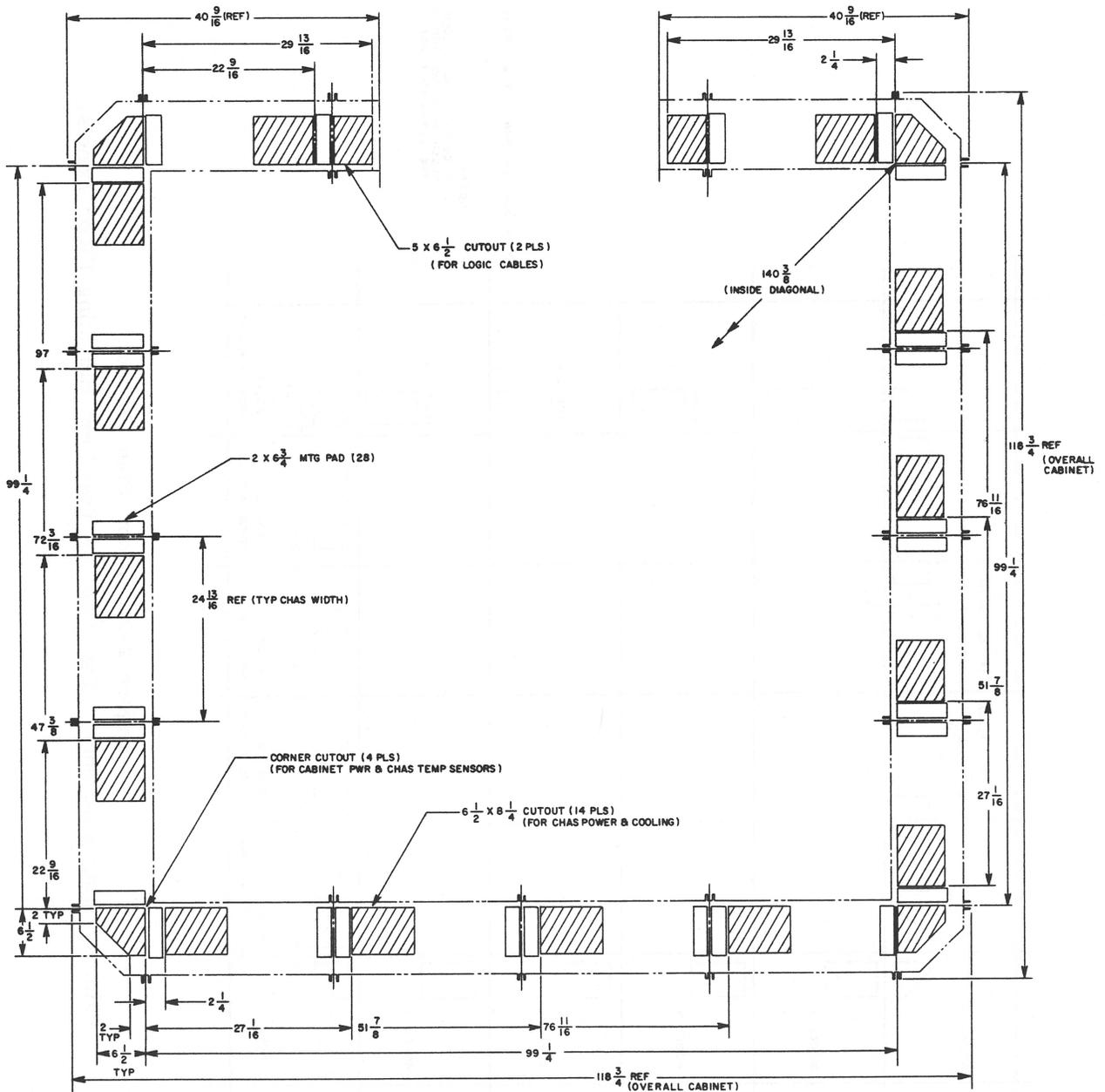


Figure 2-1. Floor Plan Cutouts
(Dimensioning Reference: Central Computer)

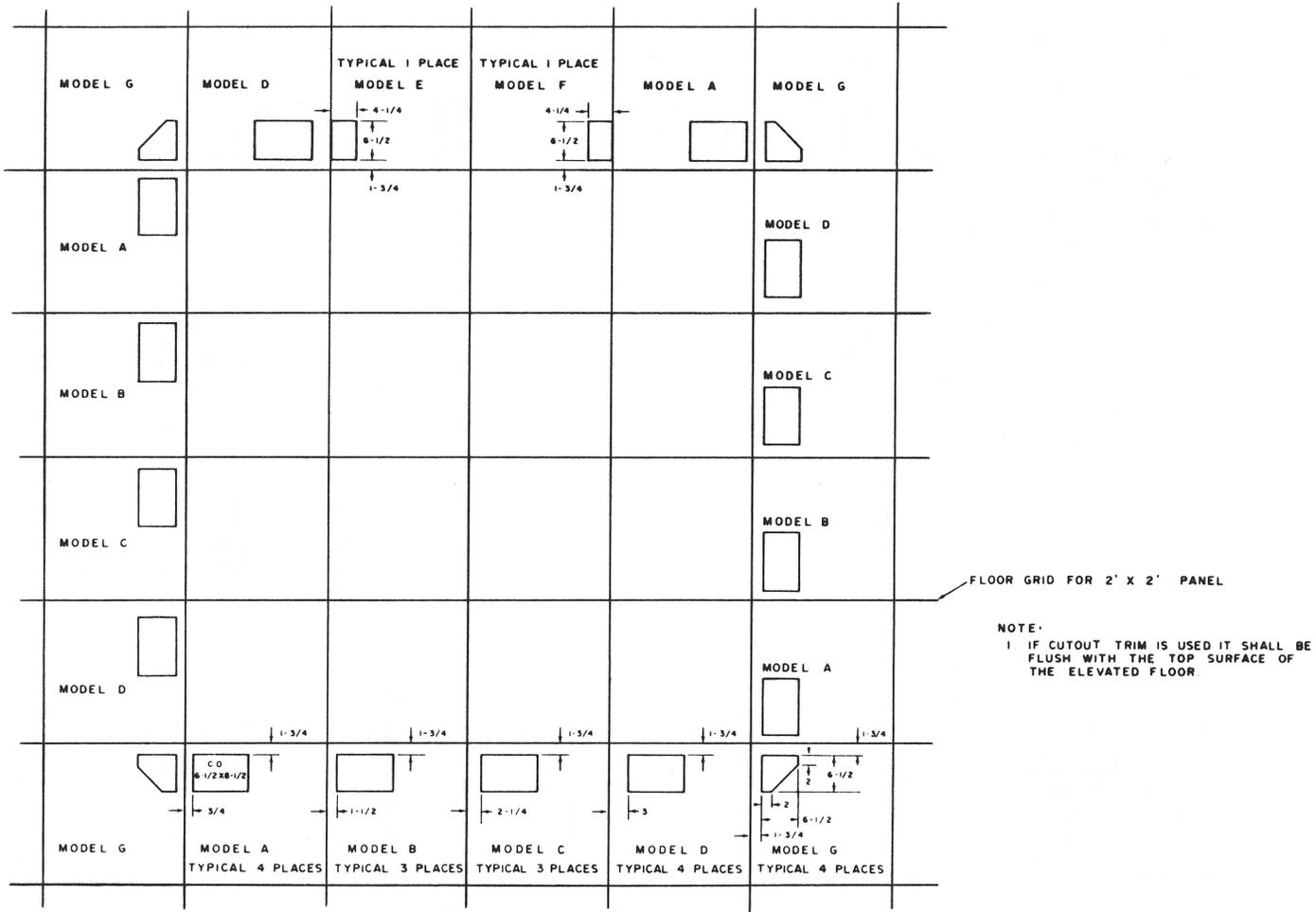


Figure 2-2. Floor Plan Cutouts
(Dimensioning Reference: Two Feet by Two Feet Elevating Floor Panels)

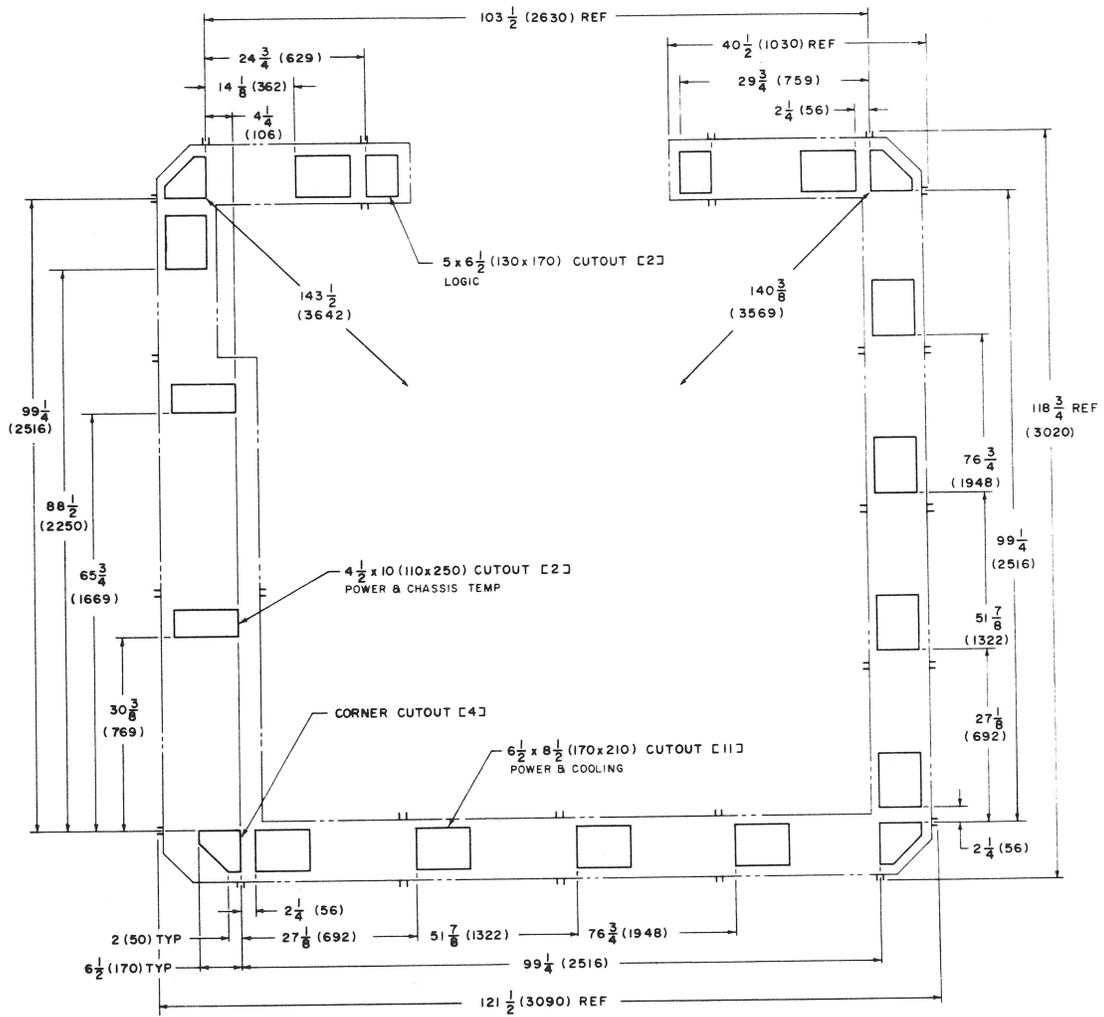
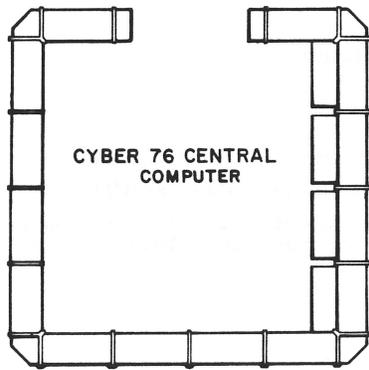
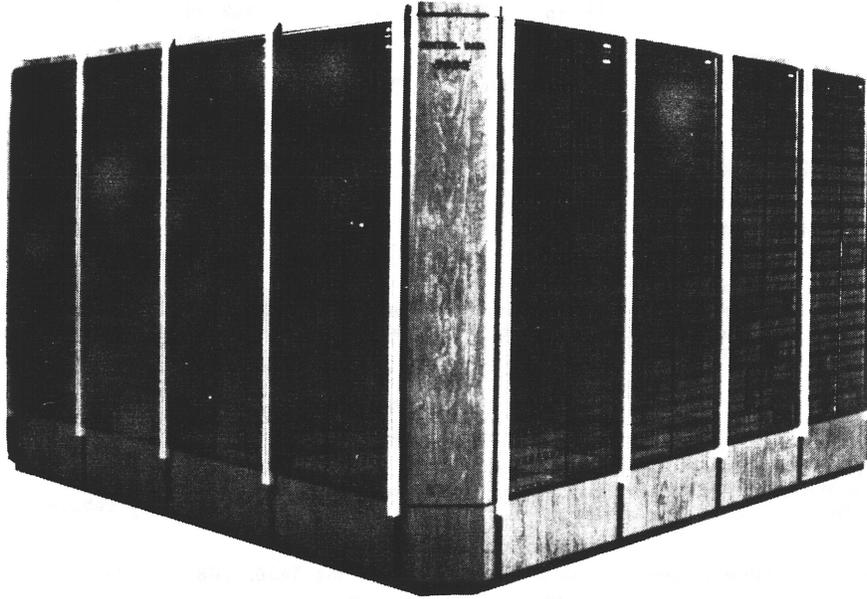


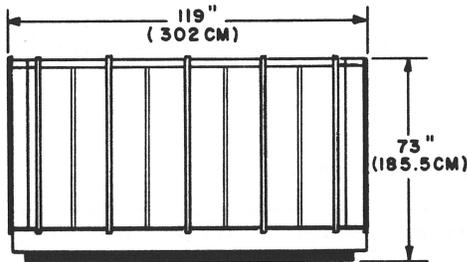
Figure 2-2.1. Floor Plan Cutouts
 (Dimensioning Reference: Semiconductor Version)

CENTRAL COMPUTER

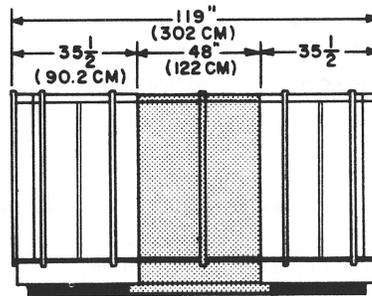


CYBER 76 CENTRAL
COMPUTER

FOR CUT-OUT DETAILS SEE;
FIG. 2-1
FIG. 2-2



FRONT AND SIDES



REAR

CENTRAL COMPUTER
76-12, 76-14, 76-16, 76-18

Width	119 in.	(302 cm)
Depth	119 in.	(302 cm)
Height	73 in.	(186 cm)

For maximum width/depth, all doors extended, see floor plan layout.

Weight	8800 lb	(4000kg)
Supported by 28 frame pads	13.5 in ² each	(87 cm ²)

Power consumption, steady state:

400 Hz,	208 v,	3 phase,	
76-12	85 kva max.		
76-14	85 kva max.		(Maximum figures derived with logic
76-16	95 kva max.		voltages + 10% above nominal)
76-18	95 kva max.		

Circuit breakers:	N/A	Power connections:	Location:
		Terminal strips	1 in. (2.5 cm) } above
NOTE:	All power and power control wiring originates at the Power Distribution Unit (PDU). Refer to the PDU data sheet for details.		} base of cabinet

Control Data Signal cables: See individual data sheets for the 7638, 7681, 7683-1, 7611-1, MCU Console, Card Reader, and Disk Storage Drive

NOTE: All signal cables connect to the central computer via a special drop cable located at floor level below the base of the equipment.

Environmental considerations:

Heat rejection rate, maximum*	76-12, 76-14	34,100 Btu/hr	(8590 kcal/hr)
	76-16, 76-18	38,200 Btu/hr	(9610 kcal/hr)

*Heat loss to ambient air at nominal voltage input; the majority of the heat generated is transferred to the cooling water via the refrigerant cooling apparatus. (Refer to 10-ton condensing unit data sheet.)

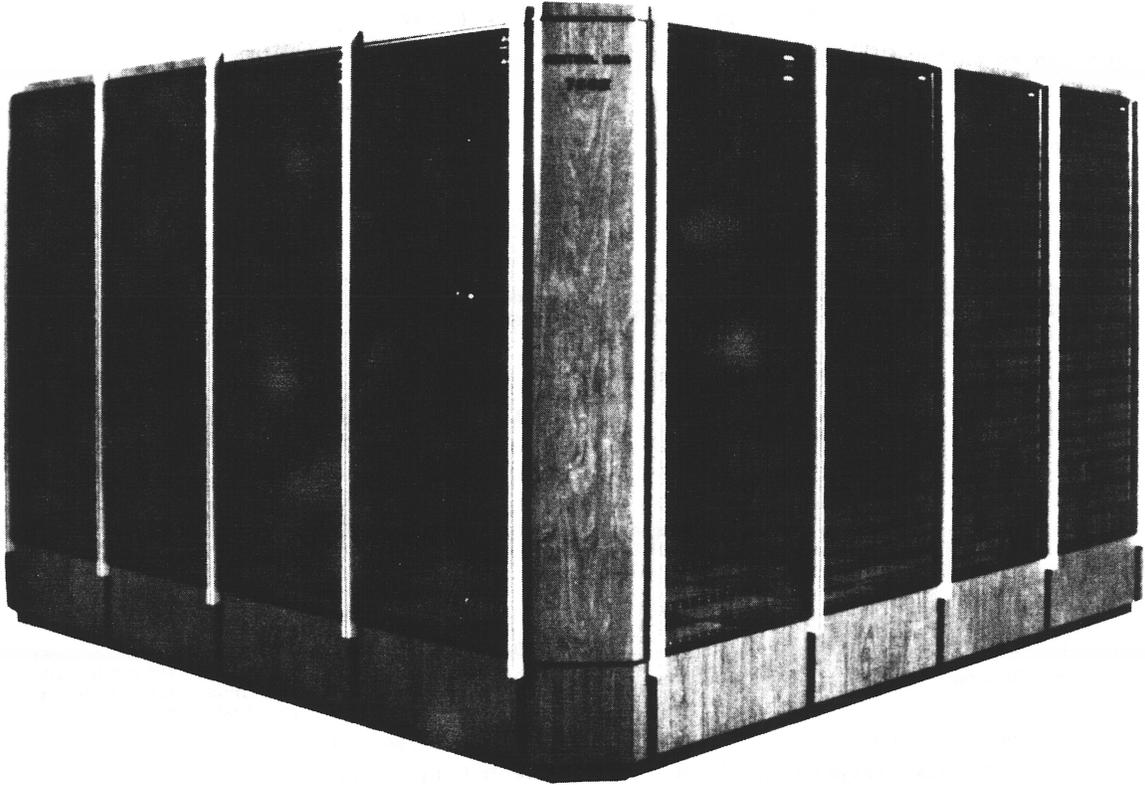
Type of cooling:	Refrigerant R12
Source of cooling:	Condensing units
Air required at inlet if plenum-cooled:	N/A cfm (- m ³ /hr)

Permissible range of room relative humidity: 20 % to 60 %

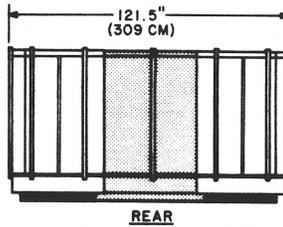
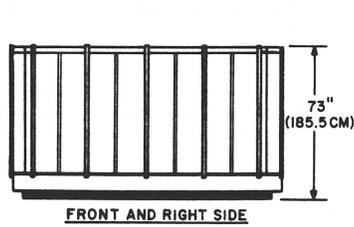
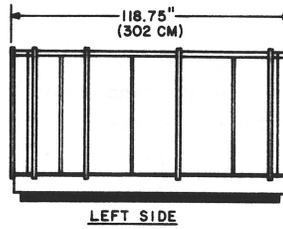
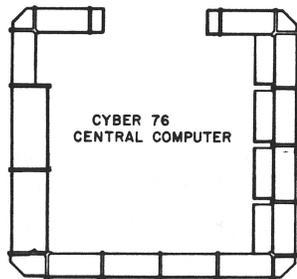
Operating temperature (ambient or plenum inlet temperature):	Maximum	Recommended	Minimum	Dew point limitation
	74 °F (23.5 °C)	72 °F (22 °C)	62 °F (16.5 °C)	60 °F (15.6 °C)
Storage temperature	120 °F (49 °C)		40 °F (4.5 °C)	

Water flow and temperature requirements: N/A

CENTRAL COMPUTER (SEMICONDUCTOR VERSION)



FOR CUT-OUT DETAILS SEE:
FIG. 2-2.1



CENTRAL COMPUTER
76-121, 76-122, 76-142

Width 121 1/2 inches (309 centimeters)
 Depth 118 3/4 in. (302 cm)
 Height 73 in. (185 cm)

For maximum width/depth, all doors extended, see floor plan layout.

Weight 9000 lb (4082 kg)
 Supported by 26 frame pads 13 1/2 in² each (87 cm²)

Power consumption, steady state, maximum:

400 Hz, 120/208v, 3 phase,

76-121 75 kva
 76-122 75 kva
 76-142 85 kva
 (Maximum figures derived with logic voltages 10% above nominal)

Circuit breakers: N/A
 Power connections: Location:
 Terminal strips 2 in. (5.08 cm) } above base of cabinet

NOTE

All power and power control wiring originates at the Power Distribution Unit (PDU). Refer to the PDU data sheet for details.

Control Data Signal cables: (37-pin coaxial)		Quantity:	Maximum length:	
Computer	to Card Reader	2	70 ft (21.34 m)	} Measured from taper pin to taper pin - includes drop cable length on both ends.
"	to Station Console	2	70 ft (21.34 m)	
"	to 7611-1	2	70 ft (21.34 m)	
"	to 857 Disk Drive	4	70 ft (21.34 m)	
"	to 7638 Mass Storage Cntrl.	40	70 ft (21.34 m)	

NOTE

All signal cables connect to the central computer via special drop cables located at floor level below the base of the computer.

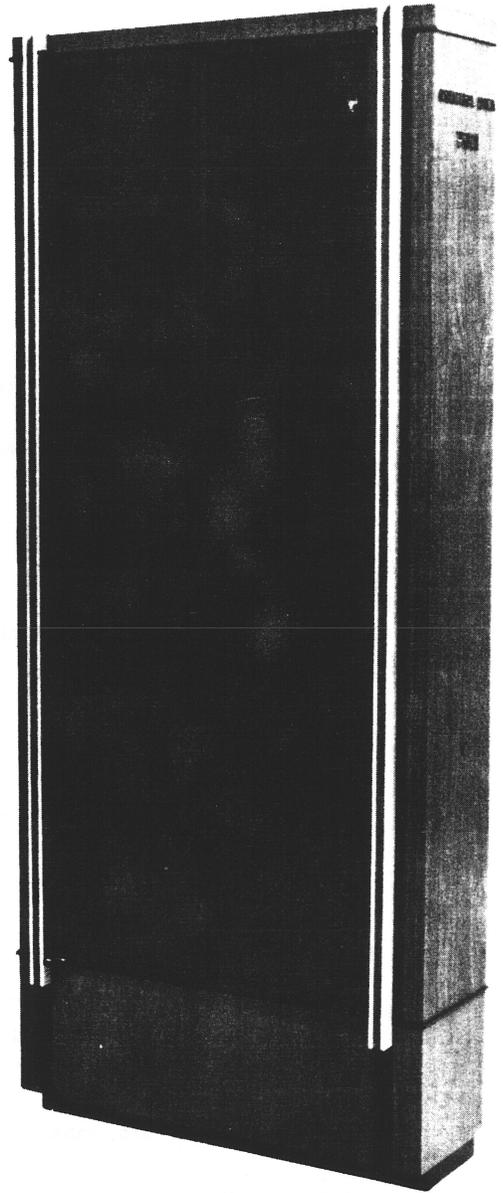
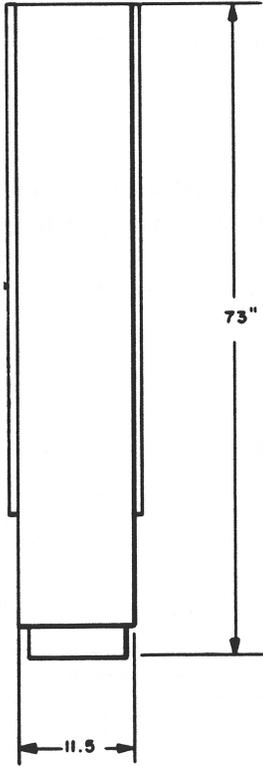
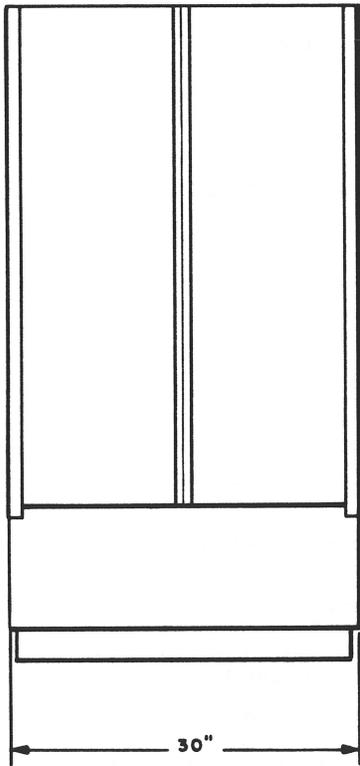
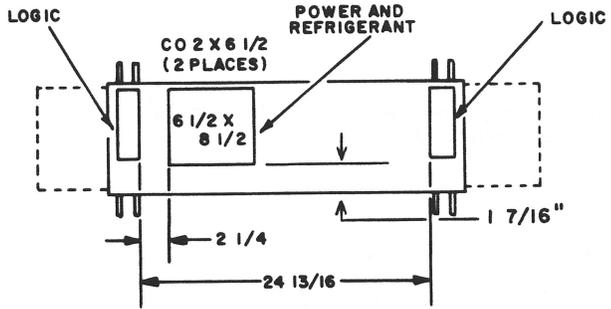
Environmental considerations:

Type of cooling: Refrigerant R12
 Source of cooling: (2) 10-ton stand alone condensing units
 Air required at inlet if plenum-cooled: N/A cfm (- m³/h)
 Heat rejection rate, maximum { to air: 33,000 Btu /hr (8,316 kcal/h)
 to water: 189,000 Btu /hr (47,628 kcal/h)
 Permissible range of room relative humidity: 20 % to 60 %

	Maximum	Recommended	Minimum	Dew point limitation
OPERATING ambient or plenum inlet temperature	74 °F 23.5 °C	72 °F 22.2 °C	62 °F 16.5 °C	60 °F 15.6 °C
STORAGE room temperature	120 °F 49 °C		40 °F 4.5 °C	

Water flow and temperature requirements: N/A

EQUIPMENT CONTROLLER



6243

EQUIPMENT CONTROLLER
(Part of 7611-1 Local Operators Station)

Width 30.12 in. (77 cm)
 Depth 11.5 in. (30 cm)
 Height 73 in. (186 cm)

For maximum width/depth, all doors extended, see floor plan layout.

Weight 600 lb (275 kg)
 Supported by 2 frame pads 13.5 in² each (87 cm²)

Power consumption, steady state, maximum:

400 Hz, 208v 3 phase, 5.1 kva (Maximum figure derived with logic voltage + 10% above nominal)

Circuit breakers:	Power connections:	Location:
400 Hz, 20 amp, 3 phase	Terminal strips	1 in. (2.5 cm)
NOTE	}	}
Required only if remotely located and/or if supported by separate 10 kva 400 Hz frequency converter.		

Control Data signal cables: *	Quantity:	Maximum length: **
Equipment Controller to Central Computer	2	50 ft (15 m)

*Each signal cable connects to the Equipment Controller via a special drop cable.
 **Long line drive cables are available which permit lengths to 200 ft (61 m).

External Terminator power connection required: X no

Environmental considerations:

Type of cooling: Refrigerant (R-12)
 Source of cooling: Condensing unit
 Air required at inlet if plenum-cooled: N/A cfm (- m³/hr)
 Heat rejection rate, maximum *** 2880 Btu/hr (725 kcal/h)
 Permissible range of room relative humidity: 20 % to 60 %

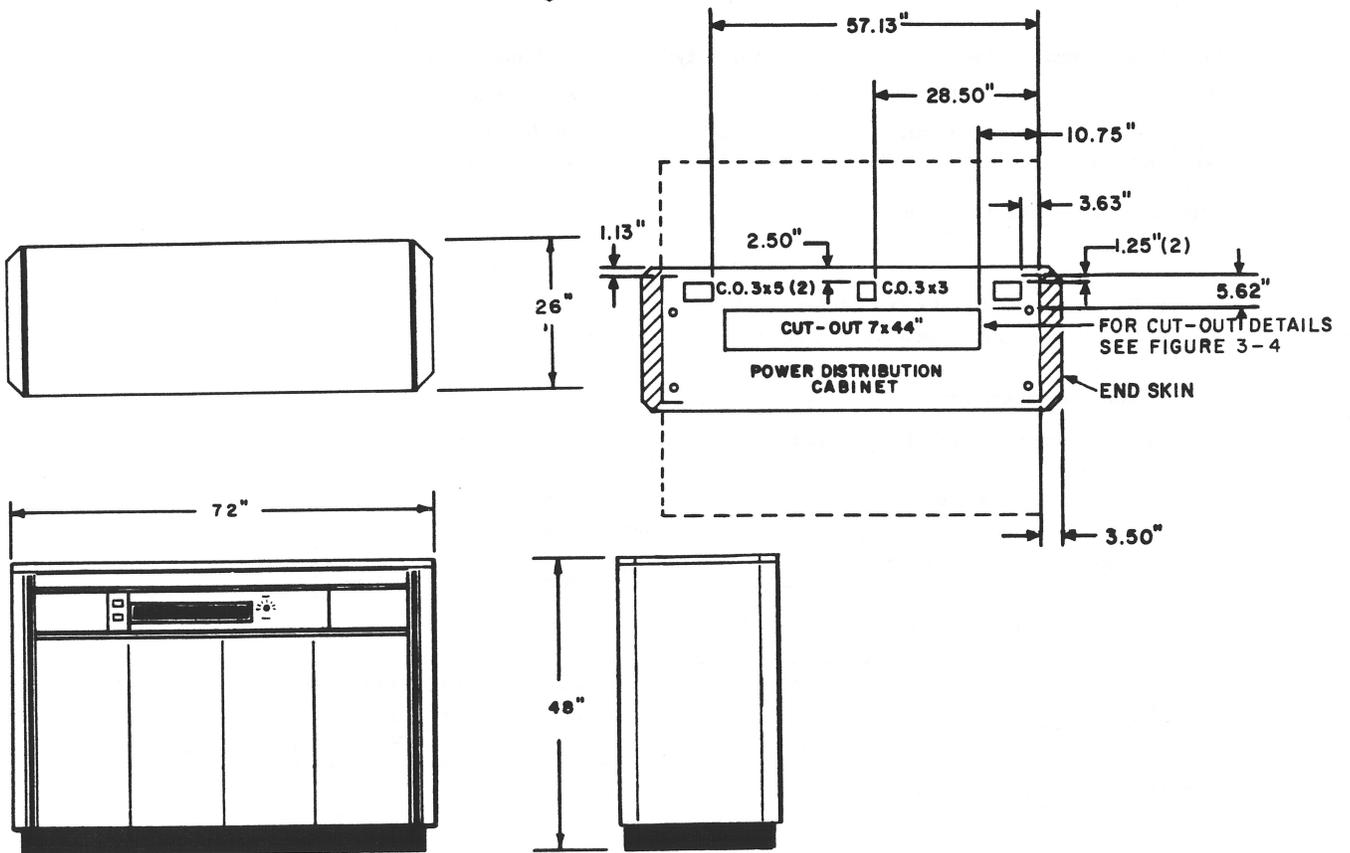
Operating temperature (ambient or plenum inlet temperature):	Maximum	Recommended	Minimum	Dew point limitation
	74 °F (23.5 °C)	72 °F (22 °C)	65 °F (16.5 °C)	60 °F (15.5 °C)
Storage temperature	120 °F (49 °C)		40 °F (4.5 °C)	

Water flow and temperature requirements: N/A
 ***Heat loss to ambient air at nominal voltage input

POWER DISTRIBUTION UNIT



6255



POWER DISTRIBUTION UNIT

Width 72 in. (183 cm)
 Depth 26 in. (66 cm)
 Height 48 in. (122 cm)

For maximum width/depth, all doors extended, see floor plan layout.

Weight 700 lb (320 kg)
 Supported by the frame N/A in² each (- cm²)

Power consumption, steady state, maximum:

400 Hz, 208 v, 3 phase, 1.0kva max. (See Central Computer)
 and { 60 Hz, 120 v, 1 phase, 0.4kva } (and Equipment Controller)
 or
 50 Hz, 120 v, 1 phase, 0.4kva }

NOTE
 Requires step-down transformer for 120v, 50 Hz.

Circuit breakers:	Power connections:	Location:
Two 400 Hz, 150 amp, 3 phase	Terminal strips	12 in. (30 cm) } above
and one { 60 Hz, 15 amp, 1 phase	Terminal strips } 8 in. (20 cm) }	base of cabinet
or		
50 Hz, 15 amp, 1 phase	Terminal strips	

Control Data signal cables:	Quantity:	Maximum length:
Power distr to Central Computer cabinet	2	20 ft (6.5 m)
Power distr to Equipment Cont. #1 cabinet	1 *	50 ft (15.2 m)
Power distr to Equipment Cont. #2 cabinet	1 *	50 ft (15.2 m)

*Optional, may not be required.

Distance from internal signal cable connectors to floor: 8 in. (20 cm)
 External terminator power connection required: X no

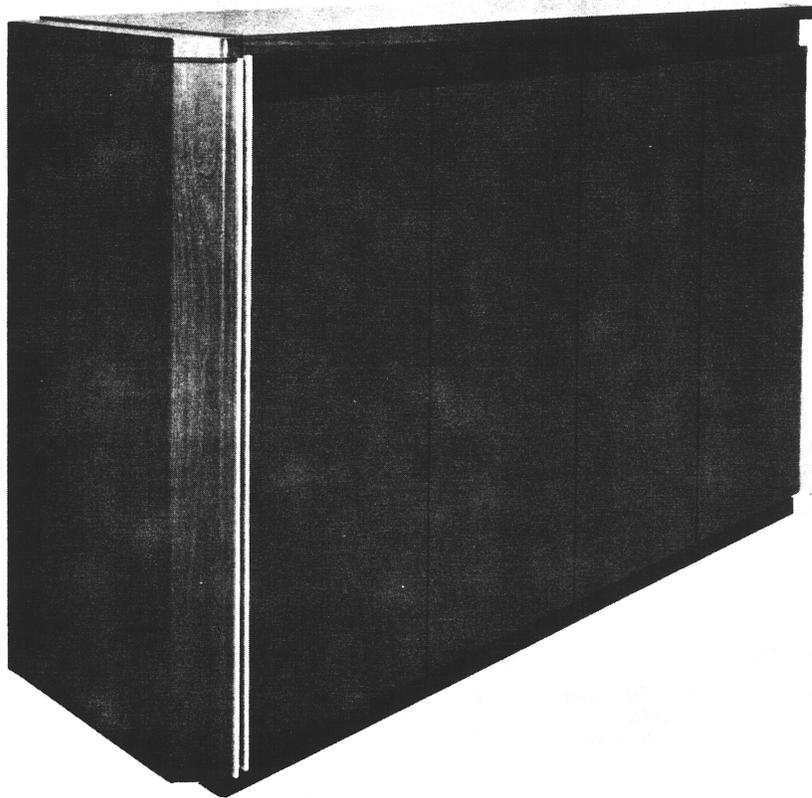
Environmental considerations:

Type of cooling: Natural convection
 Source of cooling: Ambient room air
 Air required at inlet if plenum-cooled: N/A cfm (- m³/hr)
 Heat rejection rate, maximum { to air: 4800 Btu/hr (1210 kcal/hr) }
 { to water: N/A Btu/hr (kcal/hr) }
 Permissible range of room relative humidity: 10 % to 60 %

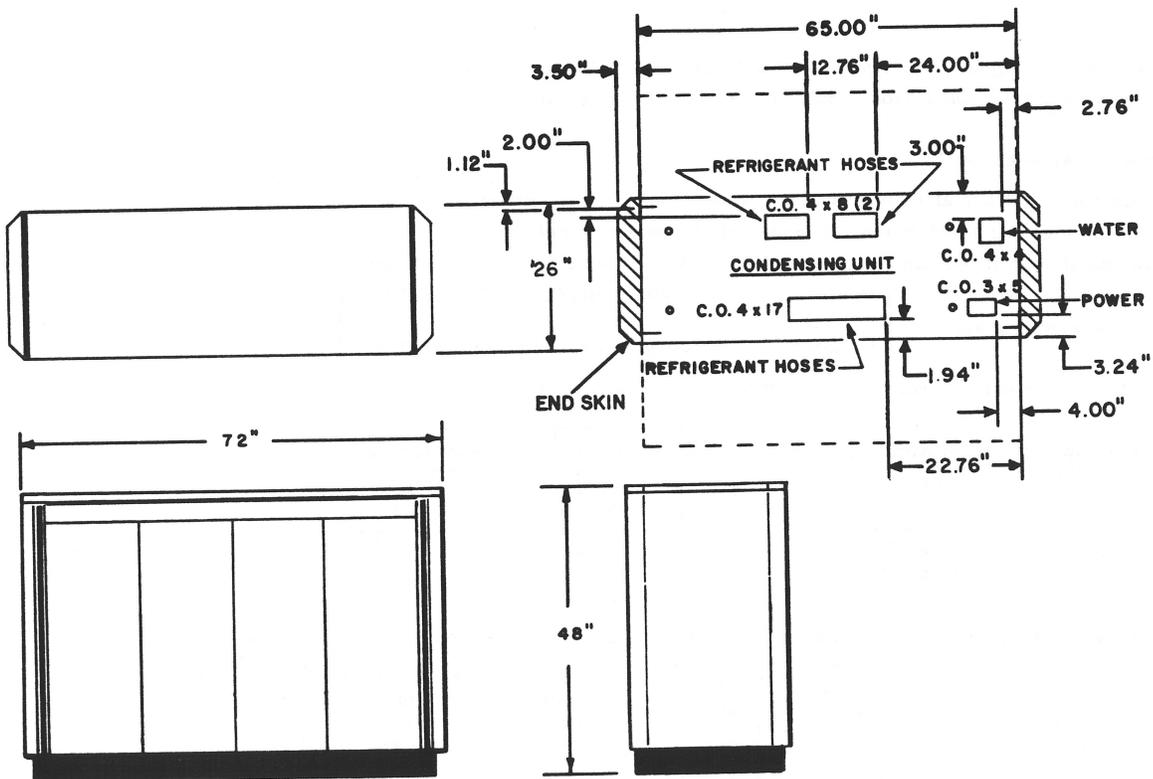
	Maximum	Recommended	Minimum	Dew point limitation
Operating temperature (ambient or plenum inlet temperature):	74 °F (23.5 °C)	72 °F (22 °C)	62 °F (16.5 °C)	60 °F (15.6 °C)
Storage temperature	120 °F (49 °C)		40 °F (4.5 °C)	

Water flow and temperature requirements: N/A

10-TON CONDENSING UNIT



6132



10-TON CONDENSING UNIT

Width 72 in. (183 cm)
 Depth 26 in. (66 cm)
 Height 48 in. (122 cm)

For maximum width/depth, all doors extended, see floor plan layout.

Weight 1400 lb (635 kg)

Supported by the frame

Power consumption, steady state, maximum:

NOTE

60 Hz, 208 v, 3 phase, 14.0kva Requires step-down transformer for
 or 50 Hz 208v.
 50 Hz, 208 v, 3 phase, 14.0kva

Circuit breakers: Power connections: Location:
 { 60 Hz, 50 amp, 3 phase Terminal strips } 10 in. (25 cm) } above
 or base of
 { 50 Hz, 50 amp, 3 phase } cabinet

Control Data Water Hoses: Quantity: Maximum length:
 Condensing Unit #1 To customer provided 2 10 ft (3 m)
 Condensing Unit #2 union/gate valve 2 10 ft (3 m)

Distance from internal signal cable connectors to floor: 10 in. (25 cm)
 External terminator power connection required: X no

Environmental considerations:

Type of cooling: Natural convection and water cooled heat exchanger.

Source of cooling: Ambient room air and building water supply.

Air required at inlet if plenum-cooled: N/A cfm (- m³/hr)

Heat rejection rate, maximum { to air: 13,000 Btu/hr (3270 kcal/hr) }
 { to water: 161,000 Btu/hr (40,500 kcal/hr) }

Permissible range of room relative humidity: 10 % to 90 %

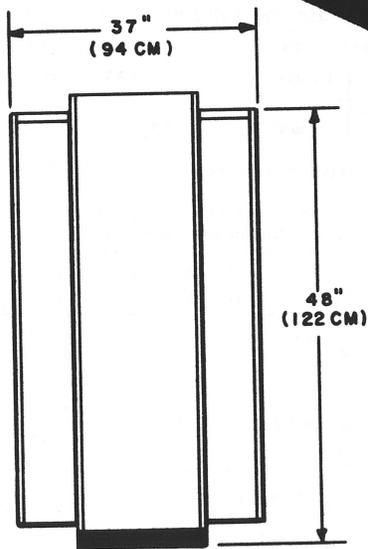
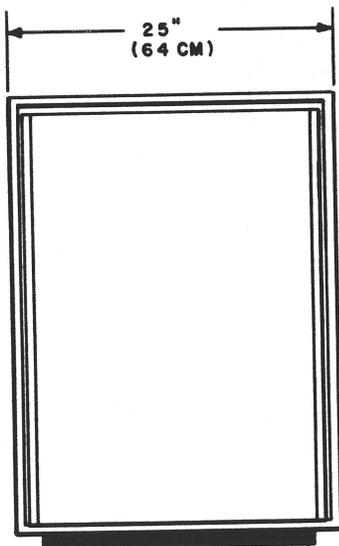
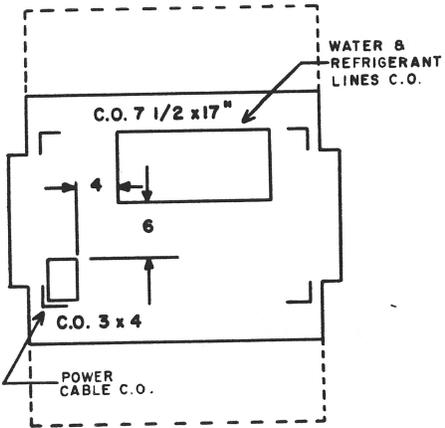
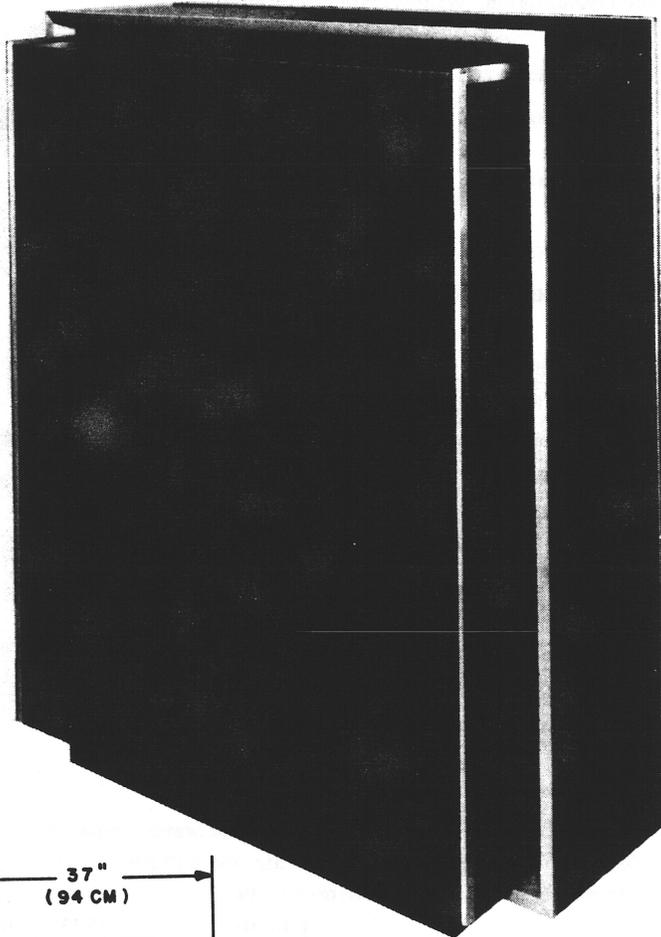
Operating temperature (ambient or plenum inlet temperature):	Maximum	Recommended	Minimum	Dew point limitation
	100 °F (37.8 °C)	72 °F (22 °C)	55 °F (13 °C)	N/A °F (- °C)
Storage temperature	140 °F (60 °C)		0 °F (-18 °C)	

Water flow and temperature requirements (per unit): NOTE: Recommended inlet temperature is 60°F (15.6°C). Inlet water pressure must not exceed 100 psig. Maximum water velocity shall not exceed 7 feet per second. Minimum operating pressure differential is 10 psig.

inlet temperature		flow rate		head loss	
°F	°C	US gpm	liter/min	psi	kg/cm ²
70	21.1	9.3	35.3	6.3	0.45
60	15.6	7.6	28.8	4.3	0.30
50	10.0	6.2	23.5	3.4	0.24

2-TON CONDENSING UNIT

6114



2-TON CONDENSING UNIT (WATER COOLED)

Width 37 in. (94 cm)
 Depth 25 in. (64 cm)
 Height 48 in. (122 cm)

For maximum width/depth, all doors extended, see floor plan layout.

Weight 650 lb (295 kg)
 Supported by the frame N/A in² each (- cm²)

Power consumption, steady state, maximum:

and { 60 Hz, 208 v, 3 phase, 2.9 kva }
 or { 50 Hz, 208 v, 3 phase, 2.9 kva }
 NOTE Requires step-down transformer for 50 Hz 208v.

Circuit breakers: Power connections: Location:
 and { 60 Hz, 15 amp, 3 phase Terminal strip } 6 in. (15.3 cm) } above base of cabinet
 or { 50 Hz, 15 amp, 3 phase } }

Control Data Water Hoses: Quantity: Maximum length:
 Condensing Unit to customer 2 15 ft (5 m)
 provided union/gate valve

Distance from internal signal cable connectors to floor: 10 in. (25 cm)
 External terminator power connection required: X no yes (vdc)

Environmental considerations:

Type of cooling: Natural convection and water cooled heat exchanger.

Source of cooling: Ambient room air and building water supply.

Air required at inlet if plenum-cooled: N/A cfm (- m³/hr)

Heat rejection rate, maximum { to air: 1700 Btu/hr (425 kcal/hr) }
 { to water: 23,500 Btu/hr (5900 kcal/hr) }

Permissible range of room relative humidity: 10 % to 90 %

	Maximum	Recommended	Minimum	Dew point limitation
Operating temperature (ambient or plenum inlet temperature):	100 °F (37.8 °C)	75 °F (23.9 °C)	55 °F (12.8 °C)	N/A °F (- °C)
Storage temperature	140 °F (60 °C)		0 °F (-17.8 °C)	

Water flow and temperature requirements: NOTE: Recommended inlet temperature is 60°F (15.6°C)

inlet temperature		flow rate		head loss	
°F	°C	US gpm	liter/min	psi	kg/cm ²
70	21.1	1.6	6.1	3.5	0.27
60	15.5	1.2	4.5	2.3	0.17

AUXILIARY PANELS DATA SHEETS

The following data sheets are for auxiliary panels^{*} necessitated by system requirements. These panels are related to equipments, controllers, peripheral devices, and other computer systems or stations most commonly associated with CDC CYBER 70 Model 76 computer systems.

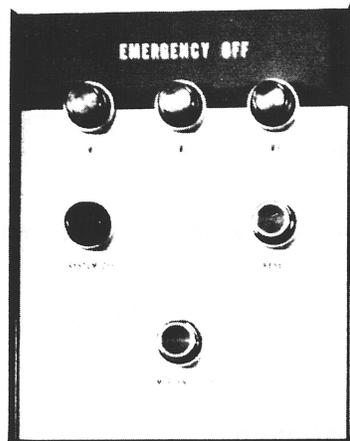
The quantity and type of panels required for a particular configuration is determined by Control Data Site Engineering Department.

The purpose of these auxiliary panels is to provide modular controls and monitoring capabilities in order to accomplish predetermined sequencing for energization, operation, and deenergization of Control Data equipment data processing components.

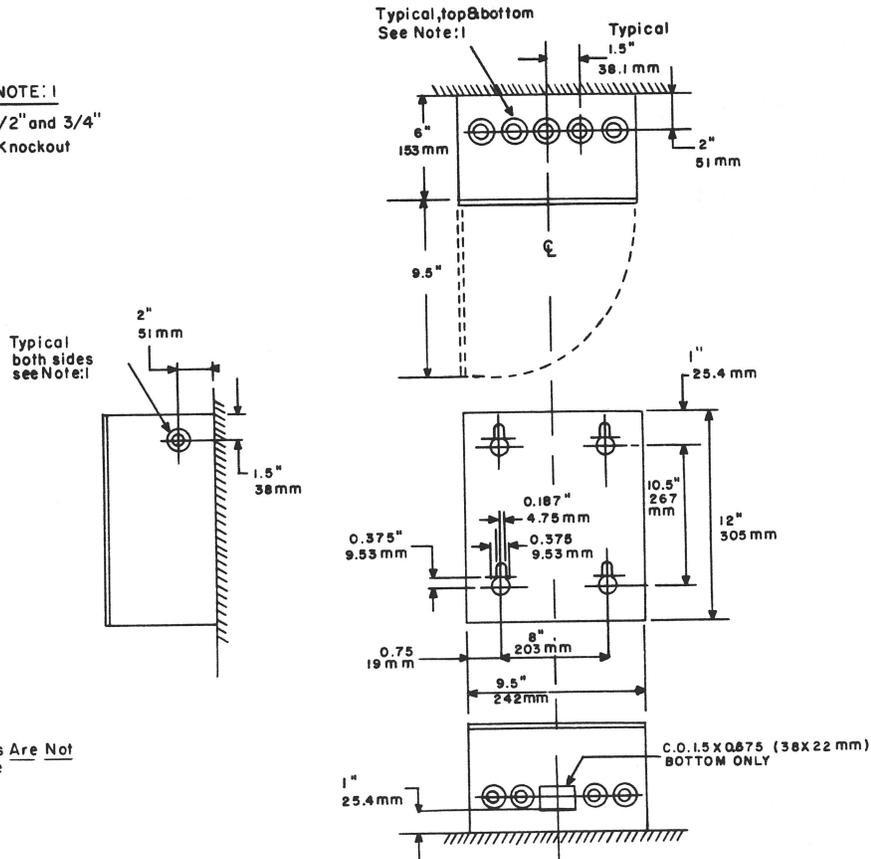
*These panel are supplied by Control Data Corporation.

EMERGENCY OFF PANEL

6108-1



NOTE: 1
1/2" and 3/4"
Knockout



NOTE: Drawings Are Not
To Scale

EMERGENCY OFF PANEL

<u>Width</u>	9.5 in.	(24.5 cm)
<u>Depth</u>	6 in.	(15.3 cm)
<u>Height</u>	12 in.	(30.5 cm)

For maximum depth, door extended, see layout sketch.

<u>Weight</u>	25 lb	(11 kg)
---------------	-------	---------

Input

Power consumption: Negligible

Line protection: 50/60 Hz, 208/120v, 3-phase, 15 ampere-circuit breaker
or disconnect

Power connections: Terminal strips

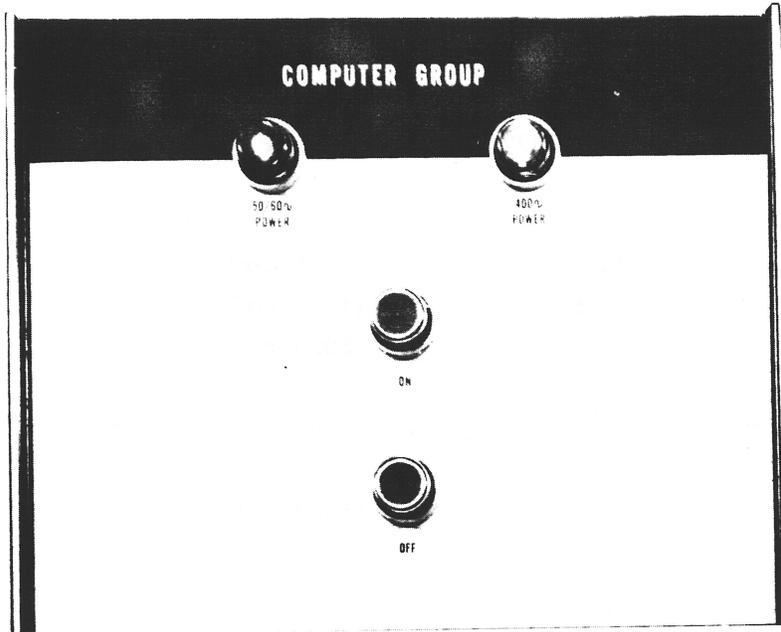
Environmental considerations

Wall mounted

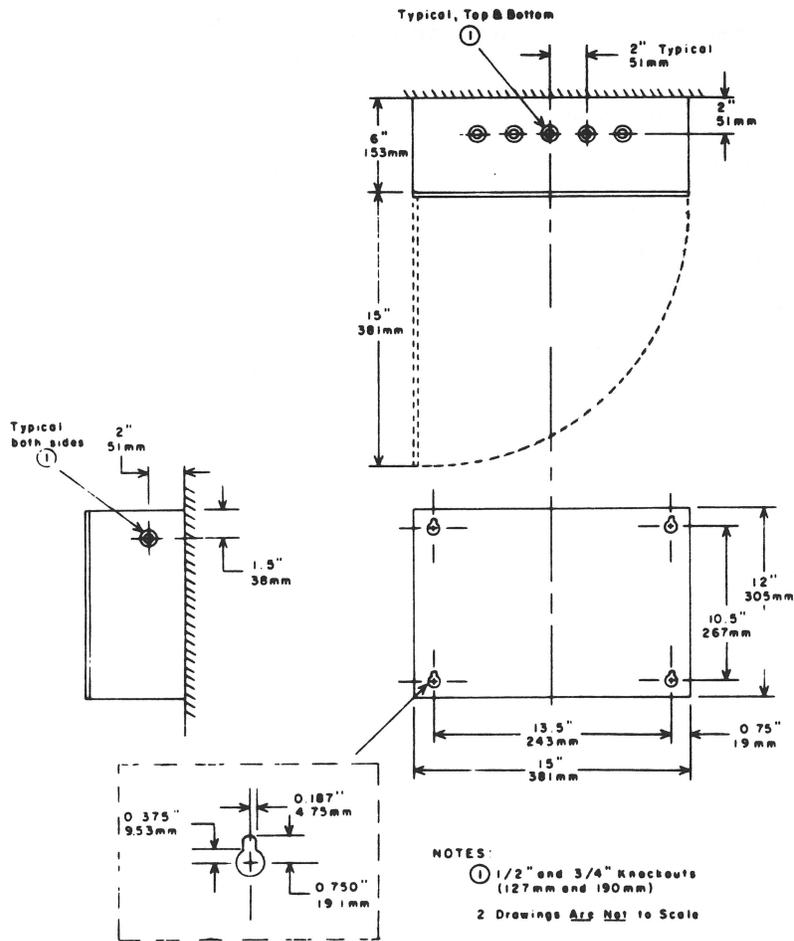
Easy accessible location

No cooling required

POWER CONTROL PANEL



6107-1



POWER CONTROL PANEL

<u>Width</u>	15 in.	(38.8 cm)
<u>Depth</u>	6 in.	(15.3 cm)
<u>Height</u>	12 in.	(30.5 cm)

For maximum depth, door extended, see layout sketch.

<u>Weight</u>	30 lb	(13.6 kg)
---------------	-------	-----------

Input

Power consumption: Negligible

Line protection: Power connection from emergency-off panel

Power connections: Terminal strips

Environmental considerations

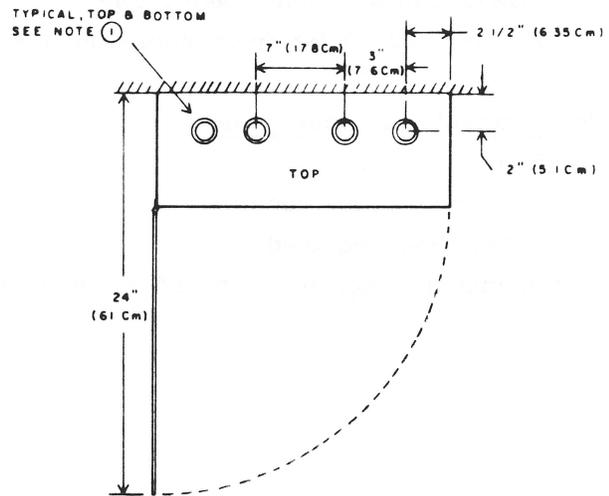
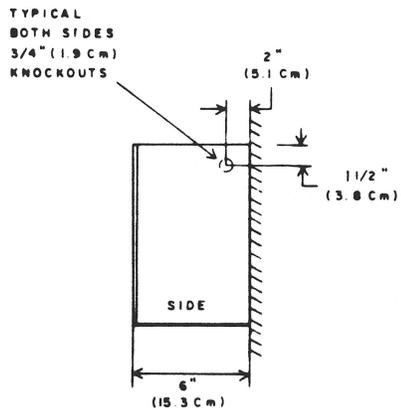
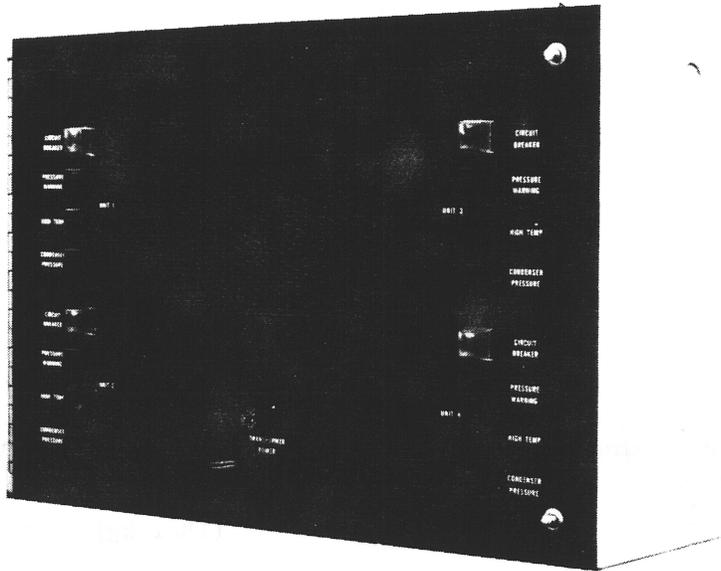
Wall mounted

Easy accessible location

No cooling required

COMPUTER MONITOR PANEL

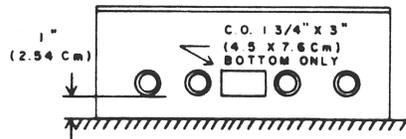
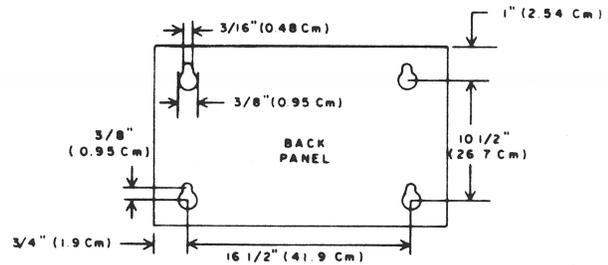
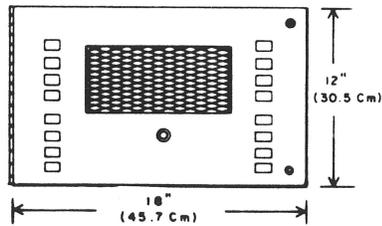
6133



NOTES:

- ① 1/2" Ø 3/4"
KNOCKOUTS
(1.3 Ø 1.9 Cm)

2. DRAWINGS ARE NOT TO SCALE.



COMPUTER MONITOR PANEL

<u>Width</u>	21 in.	(53.5 cm)
<u>Depth</u>	6 in.	(15.3 cm)
<u>Height</u>	12 in.	(30.5 cm)

For maximum depth, door extended, see layout sketch.

<u>Weight</u>	40 lb	(18.1 kg)
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Input

Power consumption: Negligible

Power: 50/60 Hz from computer power control panel

Environmental considerations

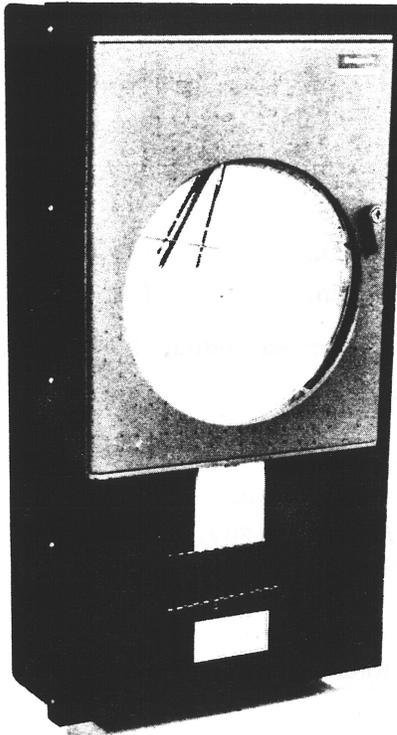
Wall mounted

Easy accessible location

No cooling required

In visual range of user and maintenance personnel

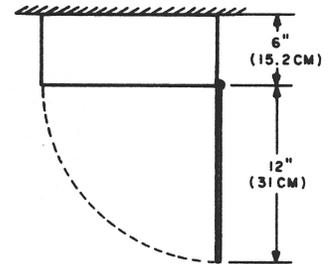
DEW POINT RECORDER/DISTRIBUTION BOX



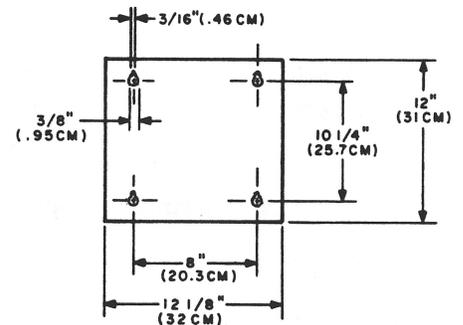
6250

DEW POINT RECORDER

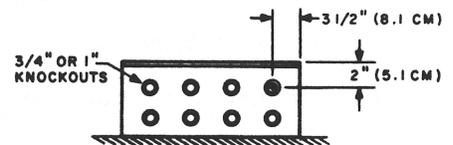
DEW POINT RECORDER
DISTRIBUTION BOX



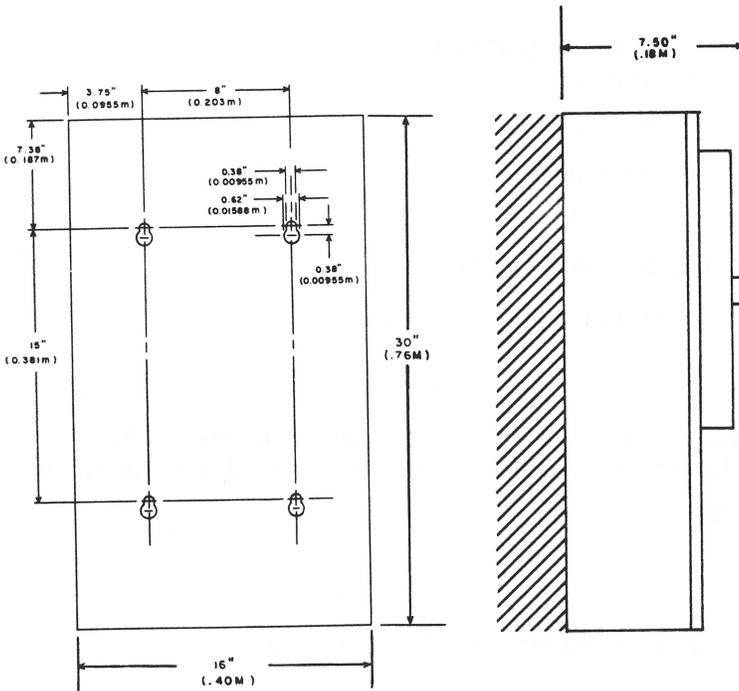
TOP



REAR



BOTTOM



DEW POINT RECORDER

<u>Width</u>	15.5 in.	(39.4 cm)
<u>Depth</u>	7.5 in.	(19 cm)
<u>Height</u>	29.8 in.	(75.5 cm)

For maximum depth, door extended, 20.8 inches (52.9 cm).

<u>Weight</u>	66.5 lb	(30.2 kg)
---------------	---------	-----------

Input

Power consumption: Less than 1 ampere

Line protection: 50/60 Hz, 120v, 1-phase, 15 ampere circuit breaker (see caution)

Power connections: Terminal strips

Environmental considerations

Wall mounted

Minimum 6-inch clearance should be maintained around sides, bottom, and front of unit

No cooling required



The dew point circuit breaker at the main breaker panel should be guarded with a protective cover in order to avoid accidental removal of power from the recorder, which in turn would cause the entire system to automatically shut-down.

DEW POINT RECORDER DISTRIBUTION BOX (Optional)*

<u>Width</u>	9-1/2 in.	(24 cm)
<u>Depth</u>	6-1/4 in.	(16 cm)
<u>Height</u>	12 in.	(30.5 cm)

For maximum depth, door extended, see layout sketch.

<u>Weight</u>	15 lb	(7 kg)
---------------	-------	--------

Input

Power consumption: Negligible

Line protection: Normally not required, since the required 50/60 Hz, 120v, 1-phase power is derived from the dew point recorder (data sheet)

Power connections: Terminal strips

Environmental considerations

Wall mounted

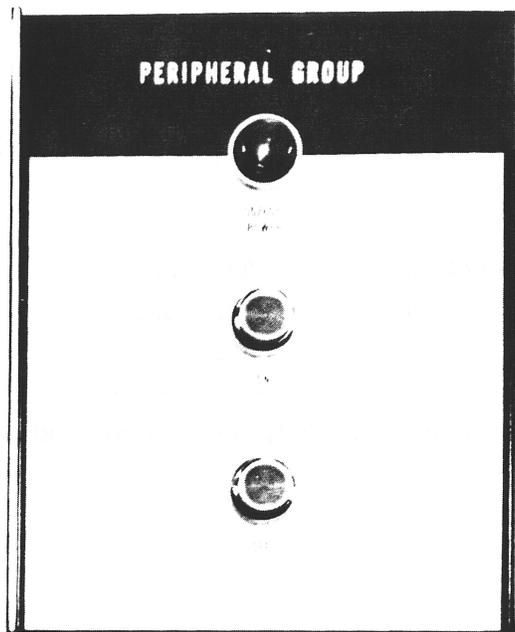
Easy accessible location, normally nearby the dew point recorder panel

No cooling required

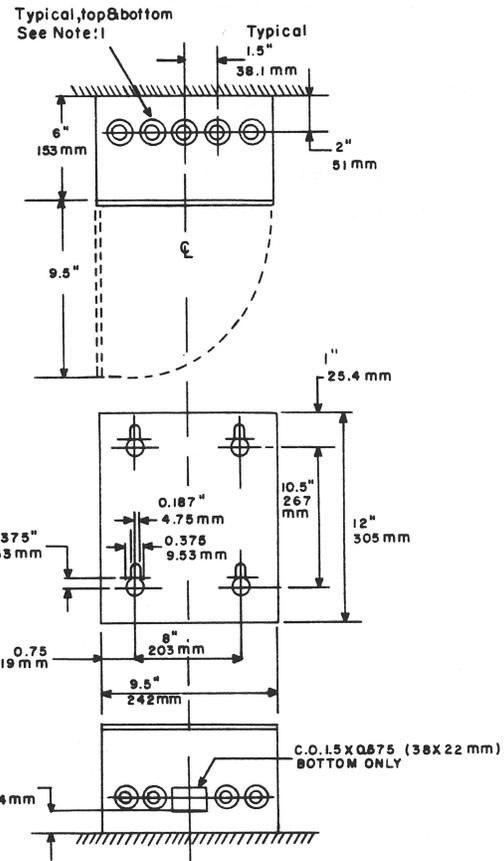
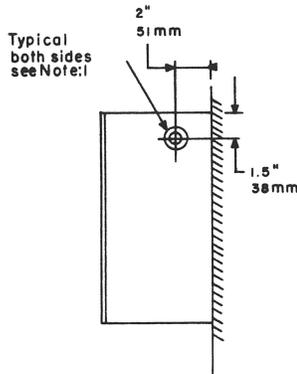
*This panel is required in the event more than one, but no more than four computer systems are present on site and located in an identical environment.

PERIPHERAL POWER CONTROL PANEL

6108-2



NOTE: 1
1/2" and 3/4"
Knockout



NOTE: Drawings Are Not To Scale

PERIPHERAL POWER CONTROL PANEL

<u>Width</u>	9-1/2 in	24.5 cm
<u>Depth</u>	7 in	17.8 cm
<u>Height</u>	12 in	30.5 cm

For maximum depth, door extended, see layout sketch.

Weight 25 lb

Input

Power consumption: Negligible

Power: 50/60 Hz from emergency-off panel

Power connections: Terminal strip

Environmental considerations:

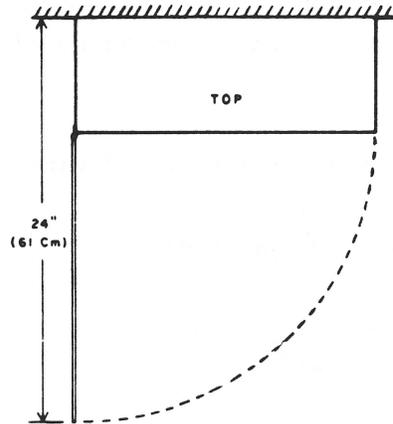
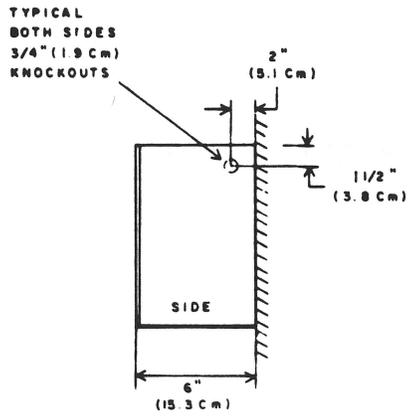
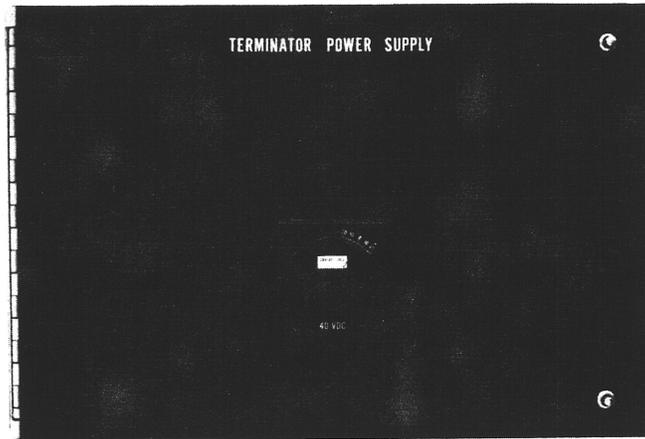
Wall mounted

Easy accessible location

No cooling required

TERMINATOR POWER SUPPLY (5 AMP)

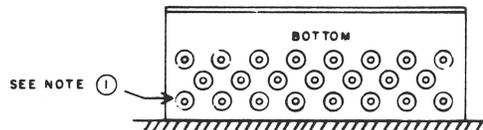
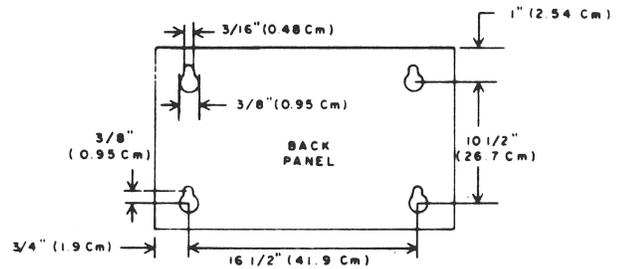
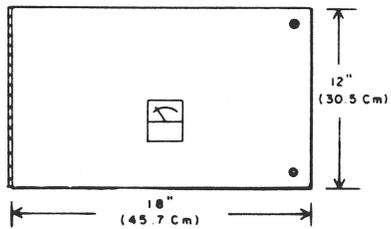
6178



NOTES

- ① 1/2" Ø 3/4"
KNOCKOUTS
(1.3 Ø 1.9 Cm)

2. DRAWINGS ARE NOT TO SCALE



TERMINATOR POWER SUPPLY

(40 vdc, 5 amp, 400 Hz)

<u>Width</u>	8 in	(45.7 cm)
<u>Depth</u>	6 in	(15.3 cm)
<u>Height</u>	12 in	(30.5 cm)

For maximum depth, door extended, see layout sketch.

<u>Weight</u>	42 lb	(19.1 kg)
---------------	-------	-----------

Input

Power consumption: Negligible

Line protection: 400 Hz, 208v, 3-phase, 15 ampere circuit breaker

Power connections: Terminal strips

Output

40 vdc; provision for nine 2-wire terminal strip connections

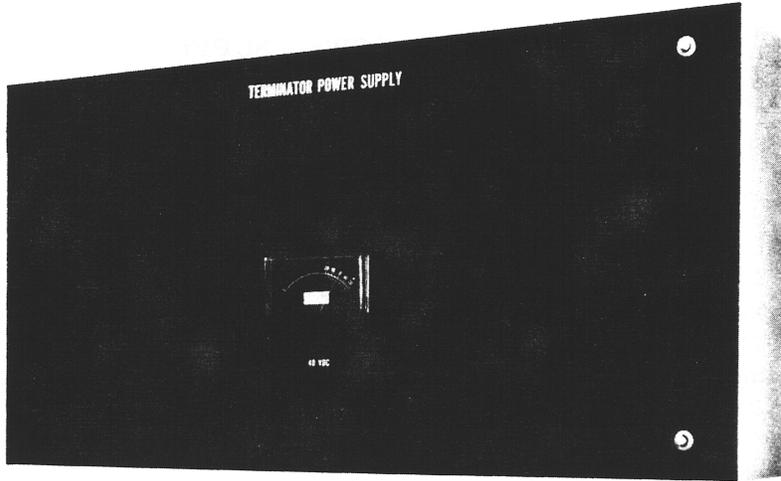
Environmental considerations

Wall mounted

Easy accessible location

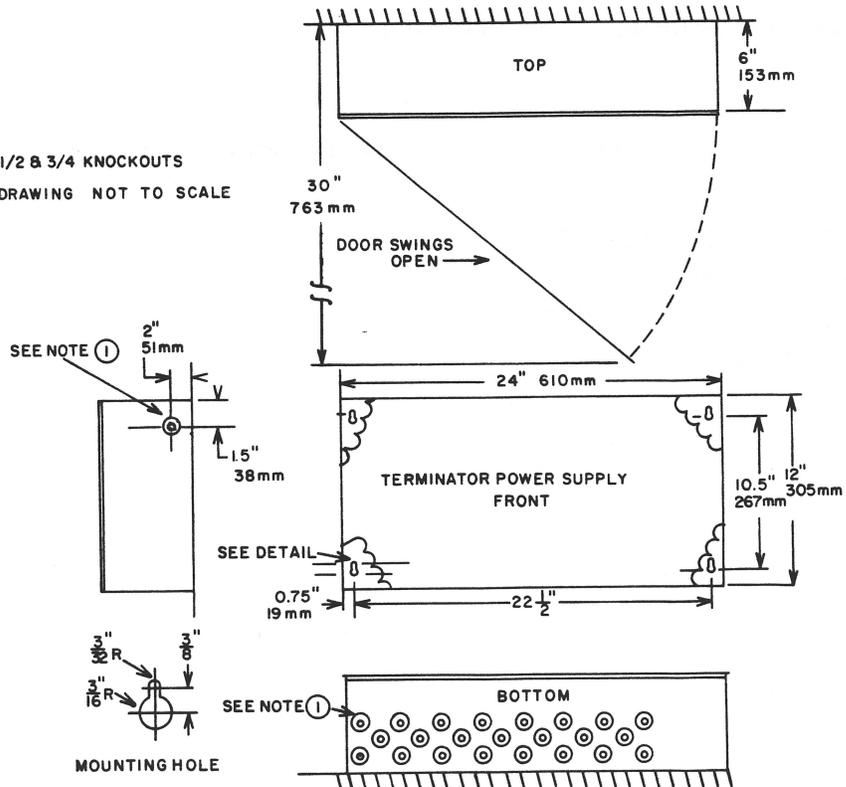
No cooling required

TERMINATOR POWER SUPPLY (20 AMP)



NOTES:

- ① 1/2 & 3/4 KNOCKOUTS
- ② DRAWING NOT TO SCALE



TERMINATOR POWER SUPPLY
(40 vdc, 20 amp, 400 Hz)

<u>Width</u>	24 in	(61.0 cm)
<u>Depth</u>	6 in	(15.3 cm)
<u>Height</u>	12 in	(30.5 cm)

For maximum depth, door extended, see layout sketch.

<u>Weight</u>	50 lb	(23 kg)
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Input

Power consumption: Negligible

Line protection: 400 Hz, 208v, 3-phase, 15-ampere circuit breaker

Power connections: Terminal strips

Output

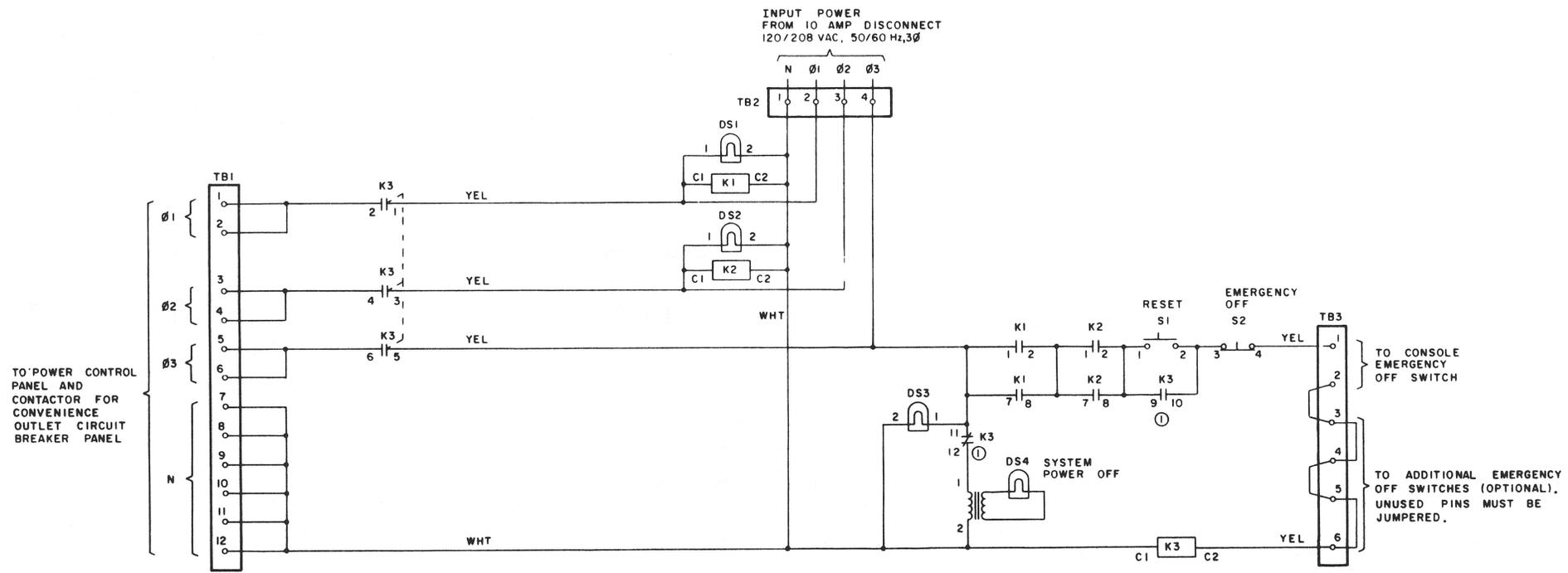
40 vdc; provision for 20 2-wire terminal strip connections

Environmental considerations

Wall mounted

Easy accessible location

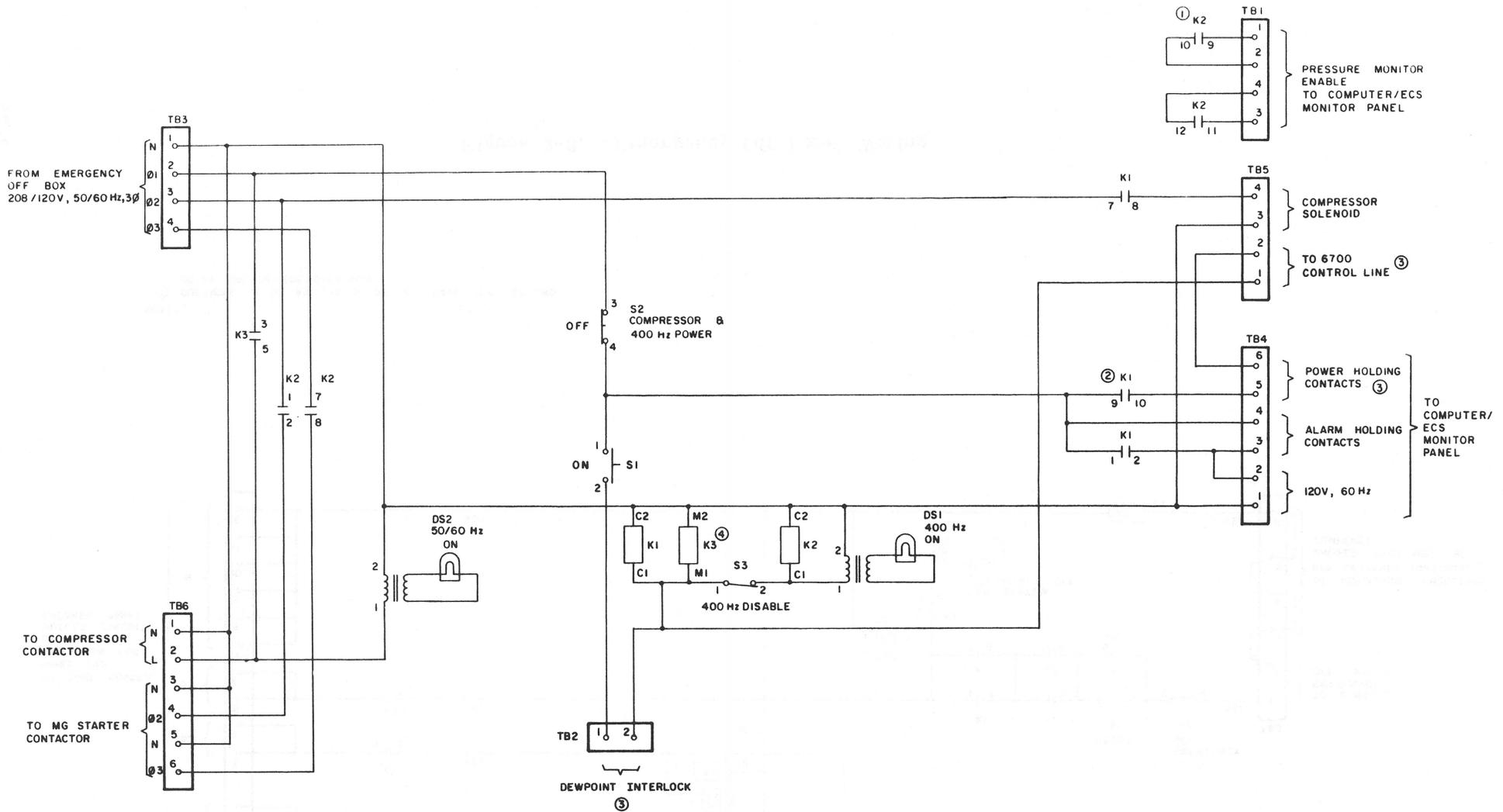
No cooling required



NOTES:

- ① CONTACTS 9,10 AND 11,12 OF K3 HAVE 0,5 SECOND DELAY ON DE-ENERGIZATION.

Figure 2-3. Emergency Off Panel Wiring



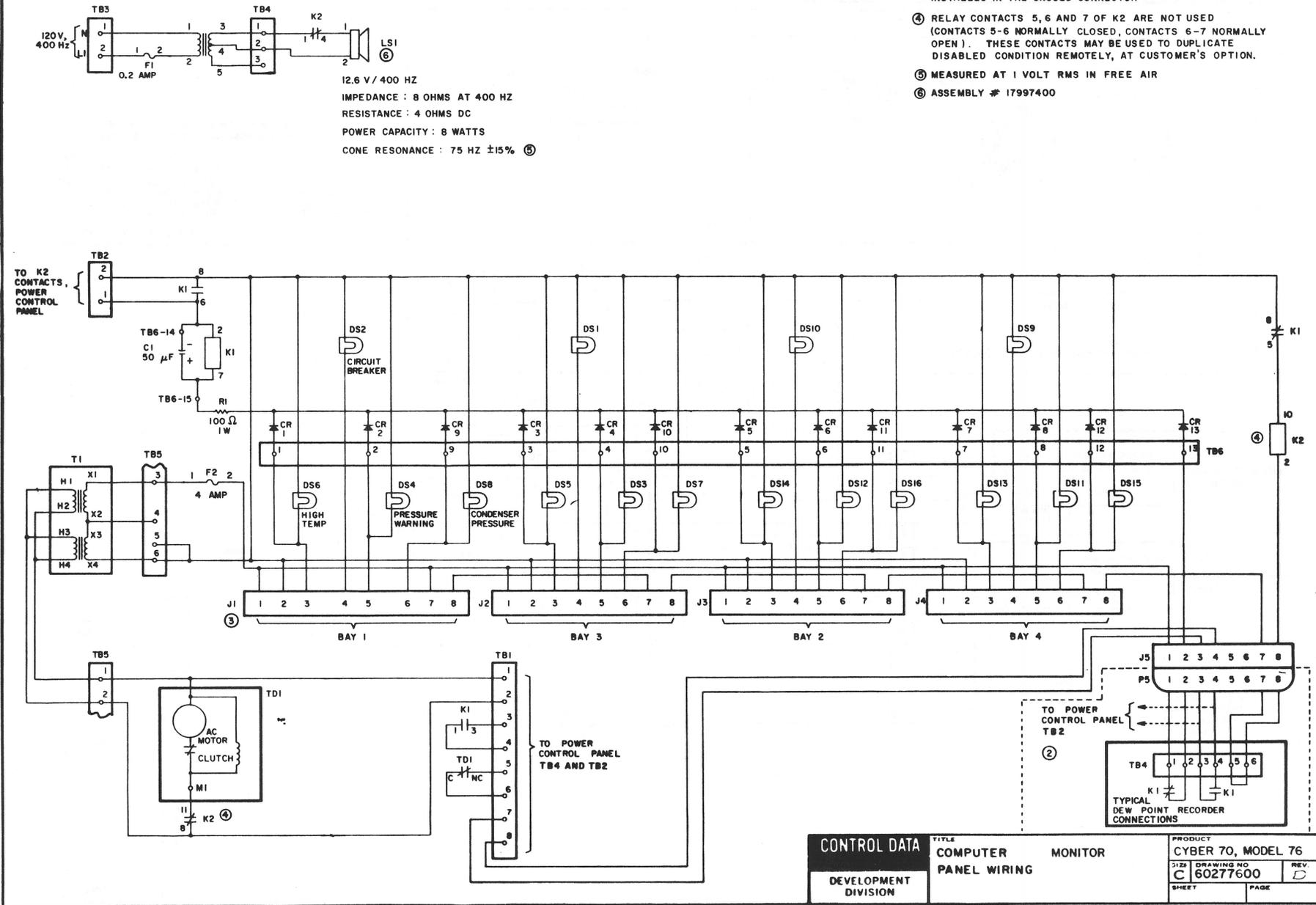
NOTES:

- ① 2 MIN CLOSING DELAY ON ENERGIZATION OF K2 CONTACTS 9, 10 & 11, 12
- ② 0,5 SEC OPENING DELAY ON DE-ENERGIZATION OF K1 CONTACTS 9 & 10
- ③ JUMPER IF NOT USED.
- ④ 2 MIN DELAY ON DE-ENERGIZATION

Figure 2-4. Power Control Panel Wiring

NOTE: 1. THIS SCHEMATIC IS APPLICABLE TO MONITOR PANEL ASSEMBLY NO. 18761800

- ② THE DEW POINT RECORDER IS NOT CONNECTED TO J5 WHEN THIS PANEL IS USED AS AN ECS MONITOR OR OPTIONALLY MAY BE CONNECTED DIRECTLY TO THE POWER CONTROL PANEL.
- ③ WHEN ANY OF THE CONNECTORS J1 THRU J5 ARE NOT UTILIZED, THE JUMPER PLUG 18412300 MUST BE INSTALLED IN THE UNUSED CONNECTOR
- ④ RELAY CONTACTS 5, 6 AND 7 OF K2 ARE NOT USED (CONTACTS 5-6 NORMALLY CLOSED, CONTACTS 6-7 NORMALLY OPEN). THESE CONTACTS MAY BE USED TO DUPLICATE DISABLED CONDITION REMOTELY, AT CUSTOMER'S OPTION.
- ⑤ MEASURED AT 1 VOLT RMS IN FREE AIR
- ⑥ ASSEMBLY # 17997400



CONTROL DATA DEVELOPMENT DIVISION	TITLE COMPUTER MONITOR PANEL WIRING	PRODUCT CYBER 70, MODEL 76
	SIZE C	DRAWING NO. 60277600
SHEET		PAGE

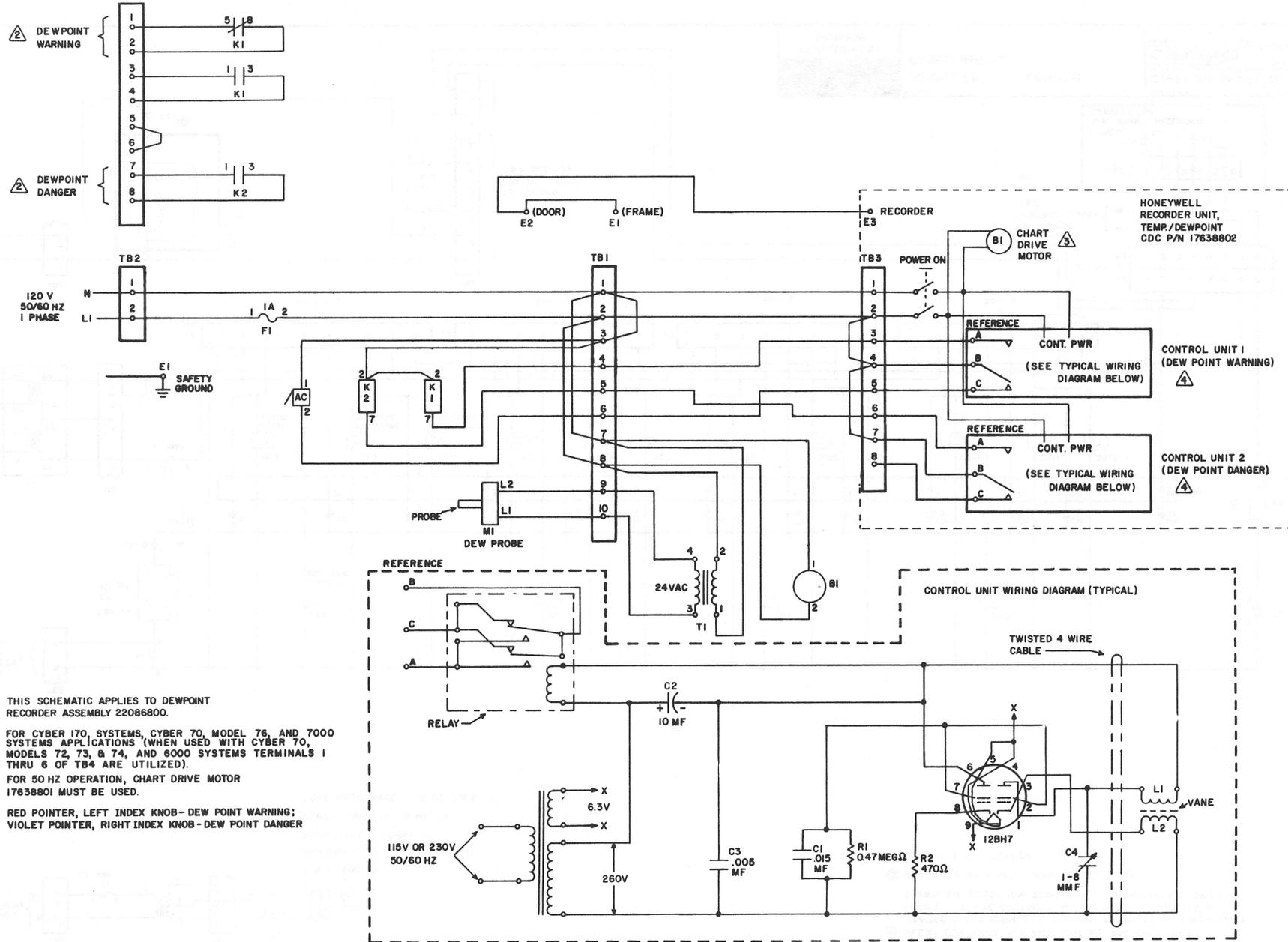
Figure 2-5. Computer Monitor Panel Wiring

D

C

B

A



- 1 THIS SCHEMATIC APPLIES TO DEWPOINT RECORDER ASSEMBLY 22086800.
- ⚠ FOR CYBER 170, SYSTEMS, CYBER 70, MODEL 76, AND 7000 SYSTEMS APPLICATIONS (WHEN USED WITH CYBER 70, MODELS 72, 73, & 74, AND 6000 SYSTEMS TERMINALS 1 THRU 6 OF TB4 ARE UTILIZED).
- ⚠ FOR 50 HZ OPERATION, CHART DRIVE MOTOR 17638801 MUST BE USED.
- ⚠ RED POINTER, LEFT INDEX KNOB - DEW POINT WARNING; VIOLET POINTER, RIGHT INDEX KNOB - DEW POINT DANGER

CONTROL DATA	DEWPOINT CHART RECORDER ASSEMBLY	CODE IDENT	DWG NO	REV
DEVELOPMENT DIVISION		C	60277600	D
		SHEET	PAGE	

Figure 2-6. Dew Point Recorder

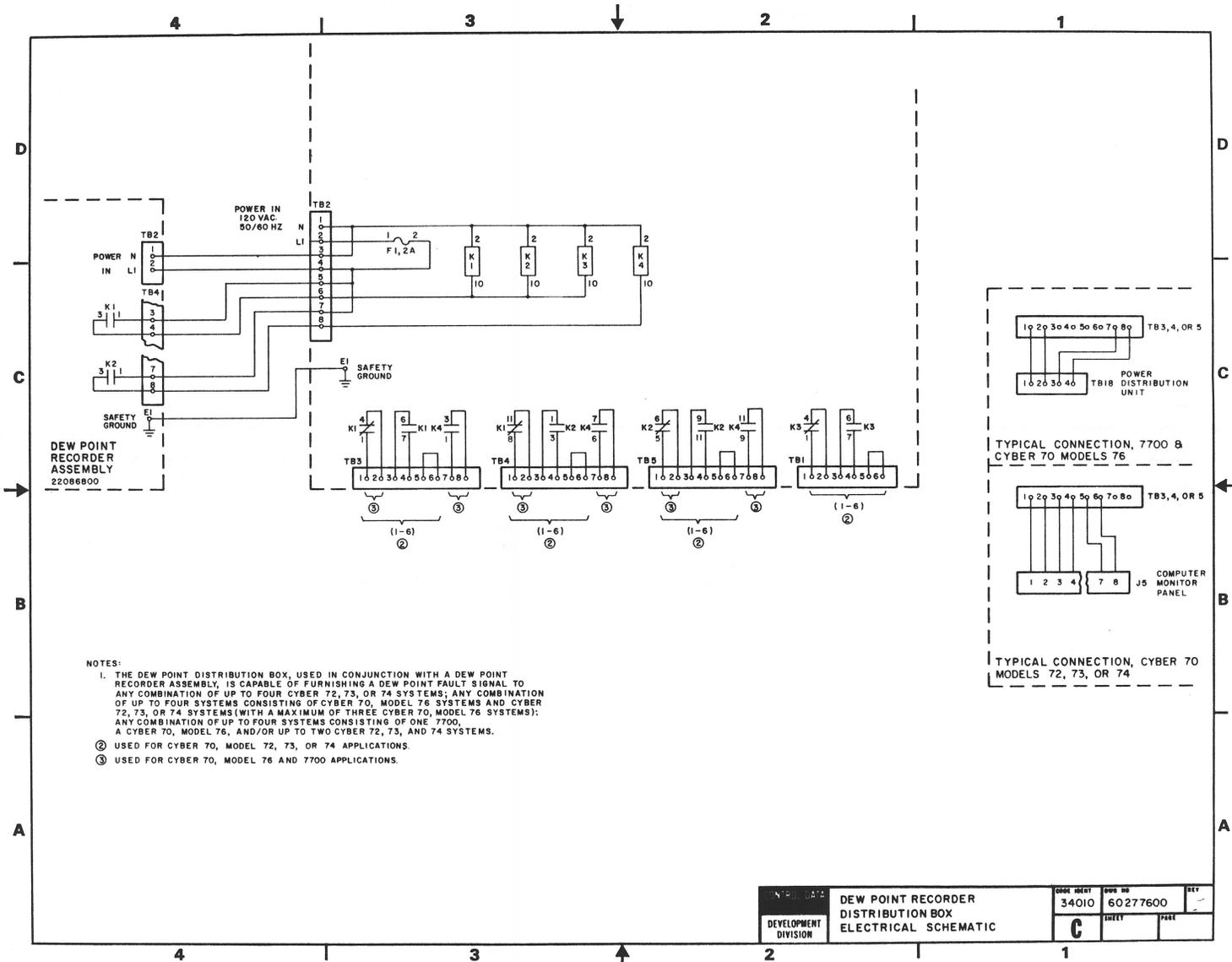


Figure 2-7. Dew Point Recorder Distribution Box (Typical Wiring Diagram)

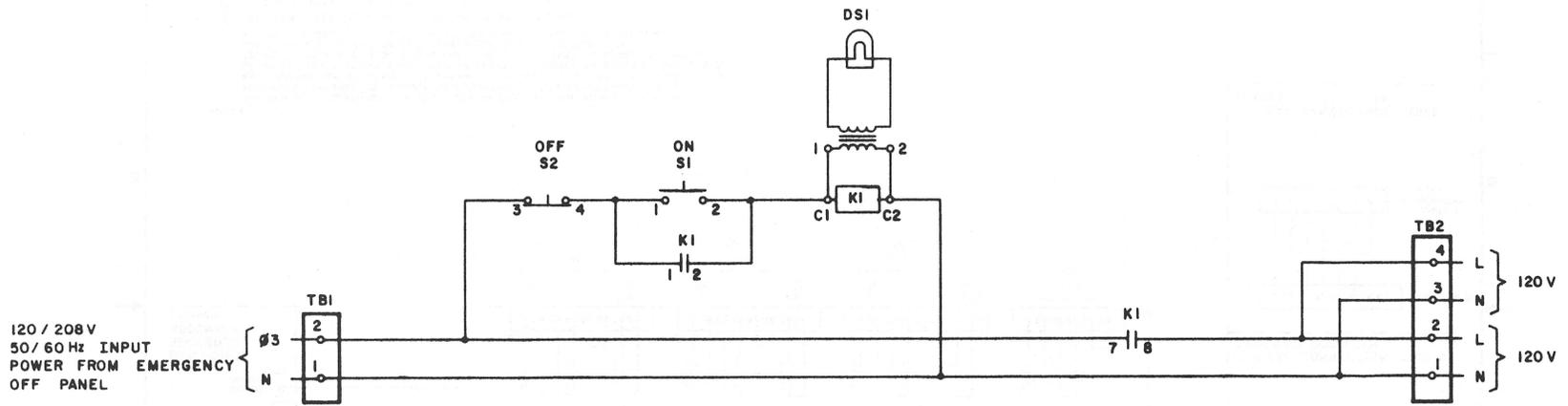


Figure 2-8. Peripheral Power Control Panel

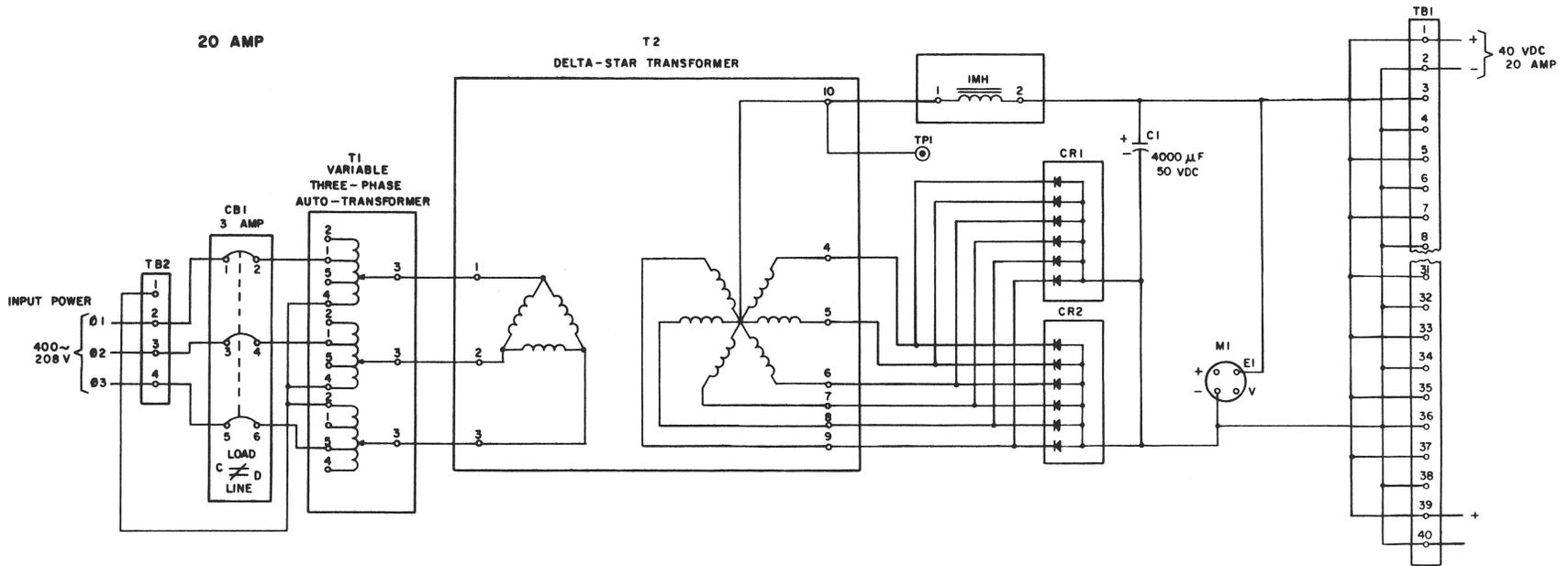
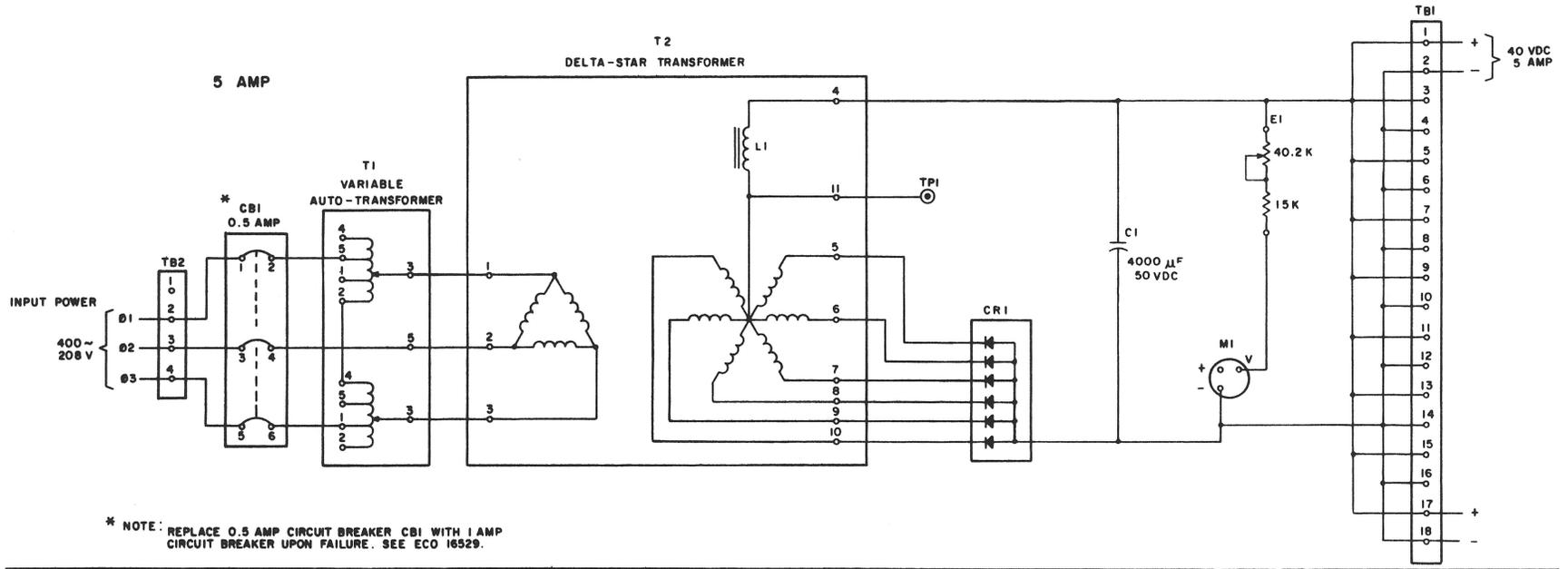


Figure 2-9. 5 amp and 20 amp Terminator Power Supplies

POWER REQUIREMENTS, DISTRIBUTION, DIAGRAMS, AND SYSTEM GROUNDING

3

ELECTRICAL POWER

All power and warning system wiring must conform to local codes and should be installed prior to the delivery of the computer system. All computer power is routed through the power distribution unit cabinet with the exception of 60-Hz or 50-Hz power to the condensing units, consoles, card readers and disk storage drive, and 400 Hz power to the consoles.

The electrical and power wiring requirements for a CDC CYBER 70 Model 76 computer system are as follows:

- Two 460-volt \pm 10 percent, 60-Hz or 398-volt, \pm 15 percent, 50-Hz, 3-phase circuitry from separate disconnects or circuit breakers, each sized to energize a 200 horsepower inductive type motor, part of Control Data provided 125 kva frequency converters which deliver 400-Hz power to the computer system.
- One 208/120-volt, 3-phase, 60-Hz or 50-Hz circuit from a separate enclosed 15-ampere, 3-pole circuit breaker to the emergency-off panel.

It is recommended that the following circuits originate at a circuit breaker panel directly controlled by the emergency-off panel.

- Two 208/120-volt, 3-phase, 60-Hz or 50-Hz circuits from separate 50-ampere, 3-pole circuit breaker to the two 10-ton condensing units.
- One 120 volt, single-phase, 60-Hz or 50-Hz circuit from a separate 15-ampere, single-pole circuit breaker to the power distribution unit.
- One 120-volt, single-phase, 60-Hz or 50-Hz circuit from a separate 15-ampere, single-pole circuit breaker to the dew point recorder assembly.

Control Data computer and peripheral equipment cabinets are not equipped with convenience outlets; therefore, it is necessary for the customer to furnish an adequate number of convenience outlets. They should be located within 15 feet (5 meters) of each cabinet in the computer system. They may be located in the perimeter walls and/or in raised floor panels or beams, columns or posts, in the center area. The receptacles should be of the single-phase grounded type and connected to the same circuit breaker panel as above. Each receptacle should be protected by a separate 15-ampere circuit breaker.

It is recommended that in addition to the above, at least two 60-Hz, 3-phase, 208/120-volt circuit breaker panels should be controlled by a magnetic contactor (120-volt coil) to enable power sequencing via the power distribution unit and the emergency-off panel for the purpose of circuit protection for peripheral equipment supported by the CDC CYBER 70 Model 76 computer system. These circuits should include:

- One 208/120-volt, 3-phase, 60-Hz circuit from a separate 15-ampere, 3-pole circuit breaker to the MCU disk drive.
- One 208/120-volt, 3-phase, 60-Hz circuit from a separate 15-ampere, 3-pole circuit breaker to the MCU card reader.
- One 120-volt, single-phase, 60-Hz circuit from a separate 15-ampere, single-pole circuit breaker to the MCU console.

The following 400 Hz circuits are required for a CDC CYBER 70 Model 76 computer system.

- One 208/120-volt, 3-phase, 400-Hz circuit from the 500-ampere circuit breaker output of the Control Data provided 125 kva frequency converter control cabinet. This circuit shall be routed to 400 Hz circuit breaker or panel located in the same area as the power distribution unit. The maximum voltage drop between the output terminals of the Control Data provided 125 kva frequency control cabinet and the CDC CYBER 70 Model 76 computer system input terminals must not exceed 2 percent. The number and size of the conductors for the generator output to the 400 Hz circuit breaker panel should be based on the kva rating of the generator and the 2 percent maximum voltage drop limitation.
- Two 208/120-volt, 3-phase, 400-Hz circuits from separate 150-ampere, 3-pole circuit breaker located in the 400-Hz circuit breaker panel to the power distribution unit.

- One 208/120-volt, 3-phase, 400-Hz circuit from a separate 15-ampere, 3-pole circuit breaker located in the 400 Hz circuit breaker panel to the MCU console.

All cabinet frames which are part of the computer system are to be grounded for safety and connected to the EMI grid system. Refer to part 8, section 1, of the Site Preparation Manual and to the grounding requirements in this manual.

The above wiring should be installed prior to delivery of the system. Power cables connecting to the computer cabinets should be in place under the raised floor and have sufficient additional length* to permit connection to the cabinets when delivered.

In addition, the following should be available at the time of delivery.

- Enough 12 gage wire to make two 7-wire runs between the power distribution unit cabinet and chassis 1 and 14 of the central computer**.
- Enough 12 gage wire to make four 5-wire runs between the power distribution unit cabinet and chassis 2 through 5 of the central computer**.
- Enough 12 gage wire to make 12 4-wire runs between the power distribution unit cabinet and chassis 6 through 13, and each corner of the central computer**.
- Enough 14 gage wire to make one 4-wire run between the power distribution unit cabinet and the 125 kva frequency converter control cabinet.
- Enough 12 gage wire to achieve all other equipment connections from 50/60 Hz and 400 Hz circuit breaker panels. These wire runs may be 3, 4, and 5 wires per run.
- Enough 14 gage wire to achieve control wiring of 60 Hz magnetic contactors to the Control Data emergency-off panel and power distribution unit cabinet, as well as control interconnection of Control Data provided frequency converter control cabinets, and condensing units interconnections to the power distribution unit cabinet.

*Wire runs must be sufficiently long enough to reach from the bottom of the real floor (under the false floor) into the cabinet up to the power connection point.

**Unless otherwise specified, Control Data will furnish the conduit for these runs.

In order to ensure that system components are equipped with the proper blowers, motors, and power supplies, the customer must inform Control Data of the type and frequency of the power that will be used.

In addition to the previously listed requirements, the following circuits are also required if a 7611-1 Station is installed in a remote location.*

- Two 440/220-volt \pm 10 percent, 60 Hz or 398/230-volt \pm 15 percent, 50 Hz, 3-phase circuits from separate circuit breakers or disconnects each sized to energize a 15 horsepower induction type motor, part of a Control Data provided 10 kva frequency converter and control cabinet delivering 400 Hz power to the equipment controller and console (part of 7611-1 Station).
- One 208/120-volt, 3-phase, 60-Hz or 50-Hz circuit from a separate enclosed 15-ampere, 3-pole circuit breaker to the emergency-off panel.**

It is recommended that the following circuits originate at a circuit breaker panel directly controlled by the emergency-off panel.

- One 120-volt, single-phase, 60-Hz or 50-Hz circuit from a separate 15-ampere, single-pole circuit breaker to the dew point recorder assembly.**
- One 208/120-volt, 3-phase, 60-Hz or 50-Hz circuit from a separate 15-ampere, 3-pole circuit breaker to the condensing unit cabinet.
- 208/120-volt, 60-Hz or 50-Hz breaker panel for peripherals.
- Convenience Outlets.** The 7611-1 Station cabinets are not equipped with convenience outlets; therefore, it is necessary for the customer to furnish an adequate number of convenience outlets. They should be located within 15 feet (5 meters) of each cabinet. They may be located in the perimeter walls and/or in raised floor panels or beams, columns or posts, in the center area. The receptacles should be of the single-phase grounded type and connected to the same circuit breaker panel as above. Each receptacle should be protected by a separate 15-ampere circuit breaker.

The following 400-Hz circuits are required for a remote 7611-1 Station.

- *Remote = outside the environment of the computer room or inside the environment of the computer room but beyond the 10-ton condensing unit refrigeration line length limitations.
- **If the remote 7611-1 Station is located in the same area as the CDC CYBER 70 Model 76 computer system, these circuits will not be required.

- One 208/120-volt, 3-phase, 400-Hz circuit from the 30-ampere circuit breaker output of the Control Data provided 10 kva frequency converter and control cabinet. This circuit shall be routed to a 400-Hz circuit breaker panel located in the same area as the 7611-1 Station. The maximum voltage drop between the output terminals must not exceed 2 percent. The number and size of the conductors for the generator output to the circuit breaker panel should be based on the kva rating of the generator and the 2 percent maximum voltage drop limitation.
- One 208/120-volt, 3-phase, 400-Hz circuit from a separate 15-ampere, 3-pole circuit breaker to the 7611-1 Station Equipment Controller.
- One 120-volt, single-phase, 400-Hz circuit from a separate 15-ampere, single-pole circuit breaker to the computer monitor panel.
- Enough 14 gage 2-wire per run to achieve additional wiring of 60 Hz magnetic contactors to CDC wall mounted panels part of the 7611-1 station, as well as control interconnection of CDC provided 10 kva frequency converters and 2-ton condensing units.

POWER DISTRIBUTION

Figures 3-1 and 3-2 show the typical power distribution schemes used for the computer system. All power, except for the 60 Hz to the condensing units, is distributed in the system via the power distribution unit cabinet. The Control Data site engineer will provide the customer with a power distribution diagram tailored to the specific site configuration.

NOTE

It is the customer's responsibility for provision and installation of items related to the computer system power distribution and grounding as described here, under the System Grounding Requirements which follows, and as defined in the Section 1 - Large Scale Systems, Site Preparation Manual.

Figures 3-4 and 3-4.1 show in detail all wiring to and from the power distribution unit cabinet. Figure 3-5 shows the auxiliary panel wiring for the 7611-1 2-ton condensing unit.

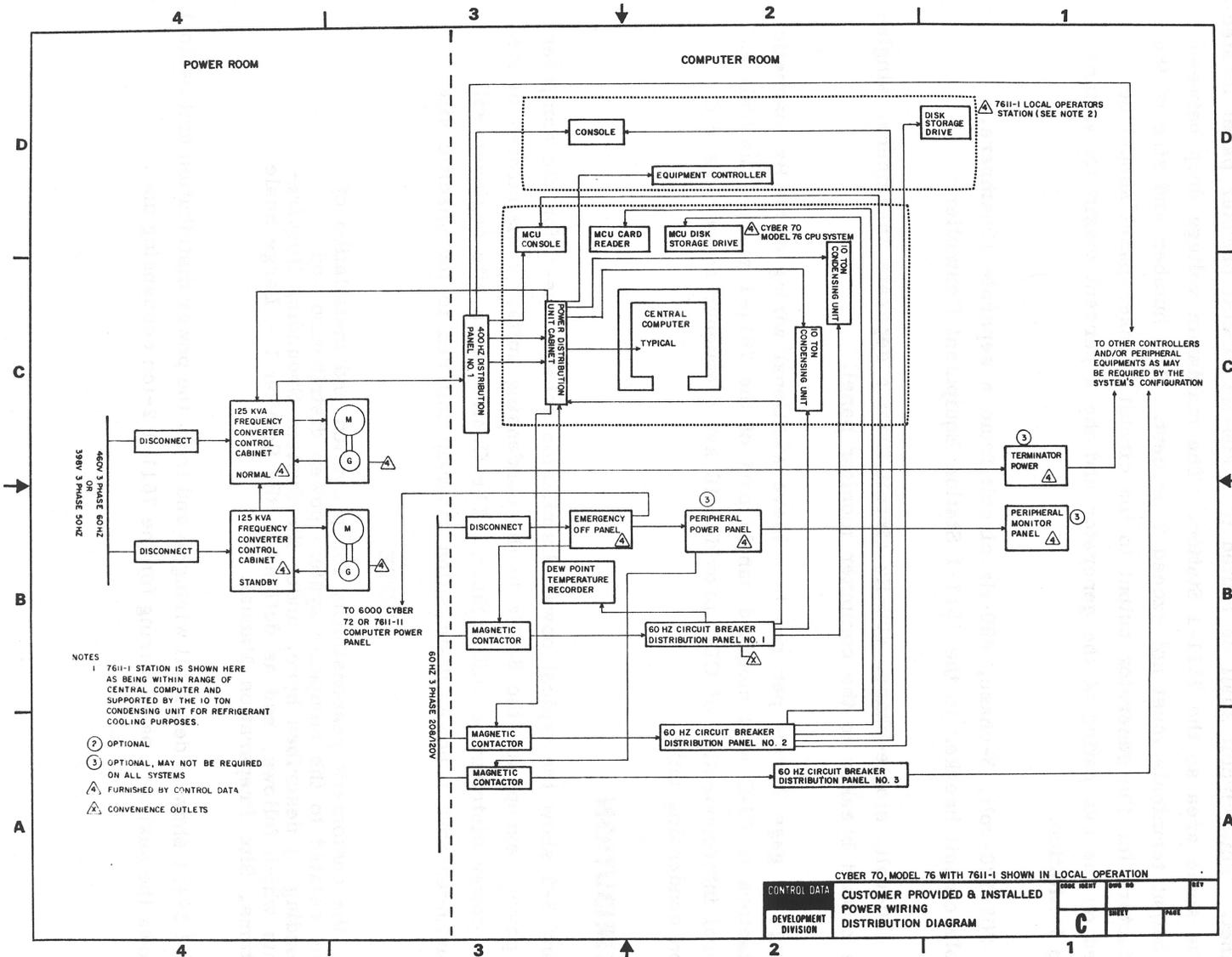
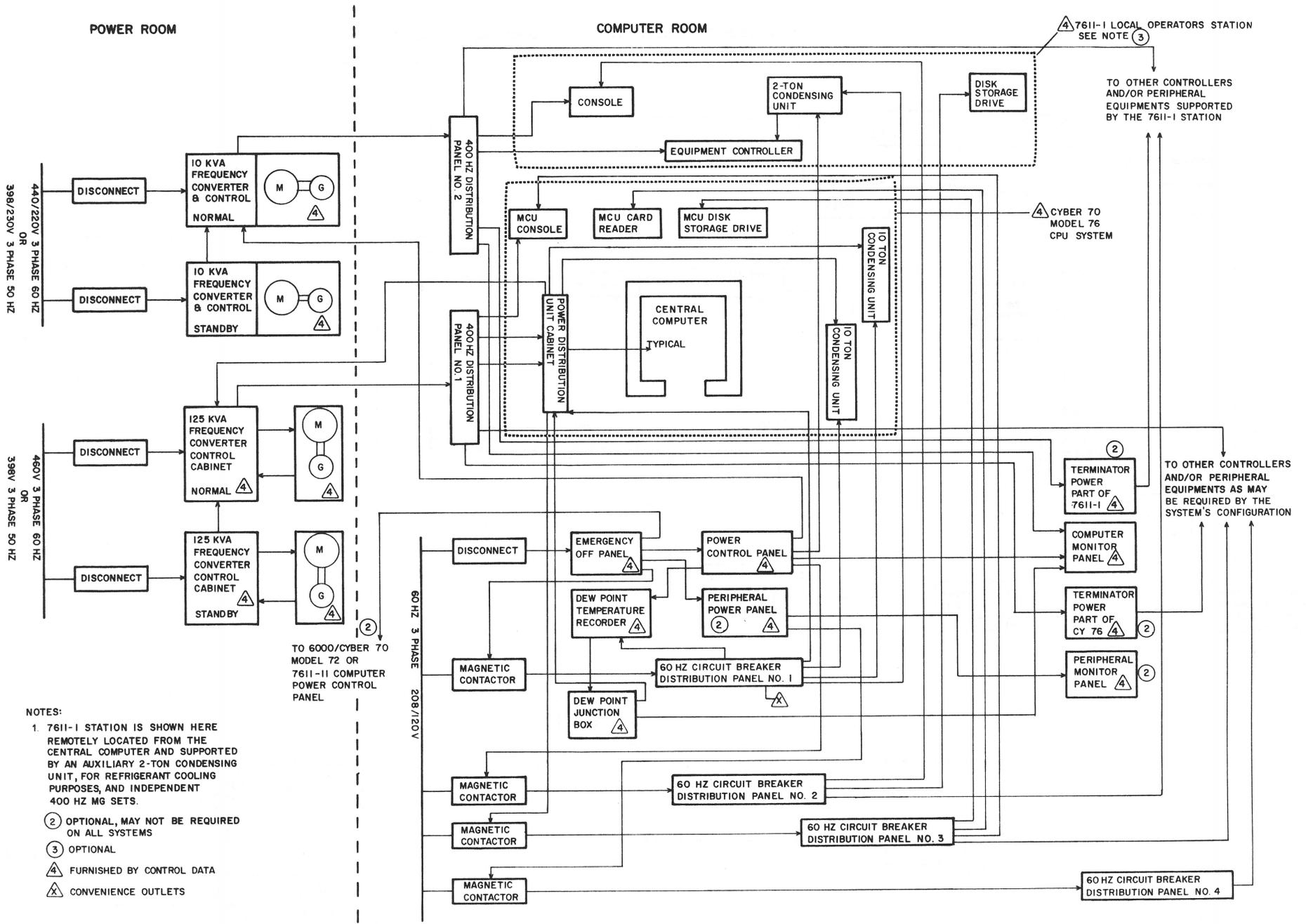


Figure 3-1. Customer Provided Power Wiring, Distribution Diagram (Simplified Schematic) (CYBER 70, Model 76 Central Computer and 7611-1 Station shown in local operation.)



NOTES:

- 1. 7611-1 STATION IS SHOWN HERE REMOTELY LOCATED FROM THE CENTRAL COMPUTER AND SUPPORTED BY AN AUXILIARY 2-TON CONDENSING UNIT, FOR REFRIGERANT COOLING PURPOSES, AND INDEPENDENT 400 HZ MG SETS.
- (2) OPTIONAL, MAY NOT BE REQUIRED ON ALL SYSTEMS
- (3) OPTIONAL
- (Δ) FURNISHED BY CONTROL DATA
- (X) CONVENIENCE OUTLETS

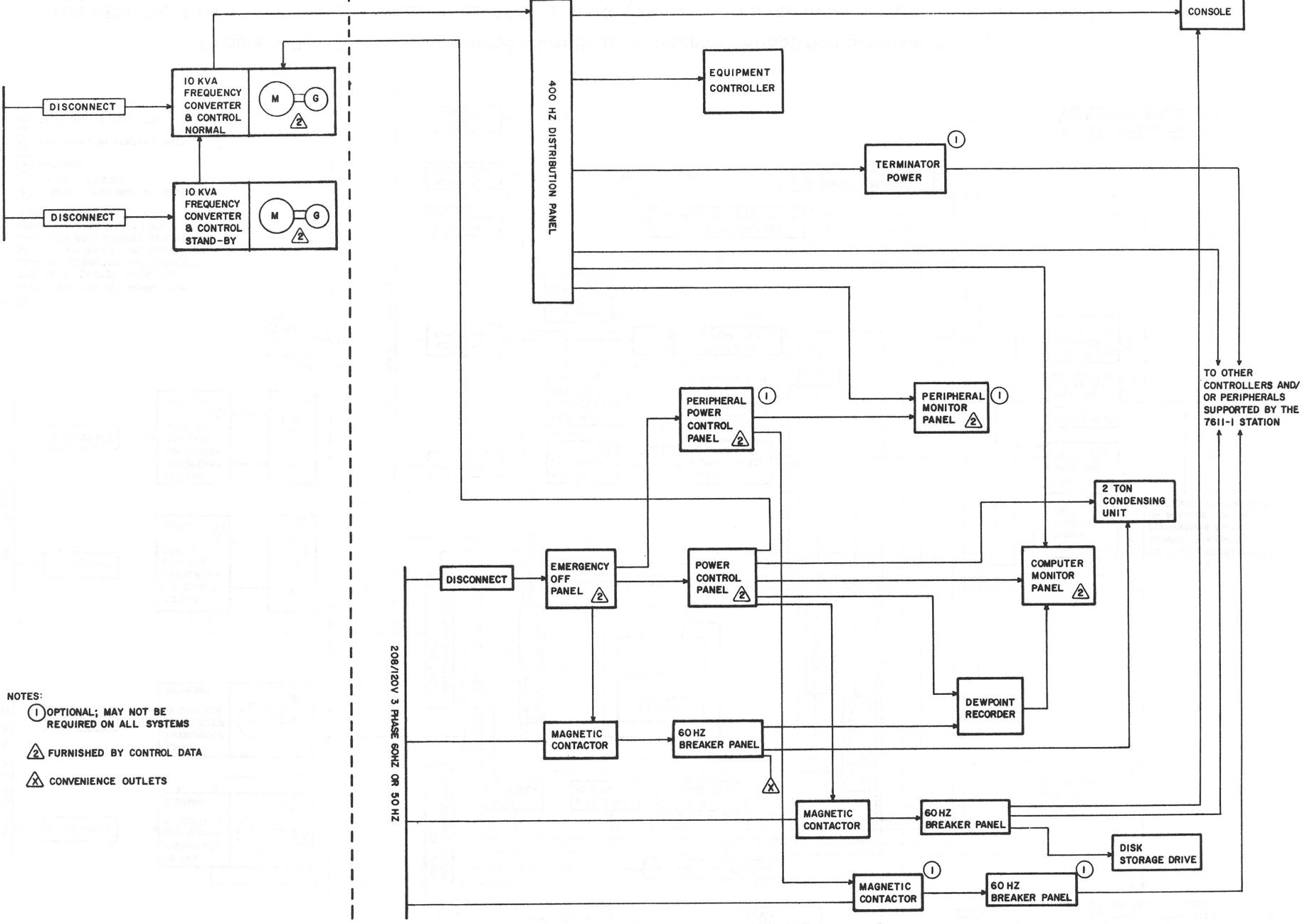
Figure 3-2. Customer Provided Distribution Diagram (Simplified Schematic)

(CYBER 70, Model 76 Central Computer and 7611-1 Station shown in remote same environment operation.)

440/220V 3 PHASE 60HZ
OR
398/230V 3 PHASE 90HZ

POWER ROOM

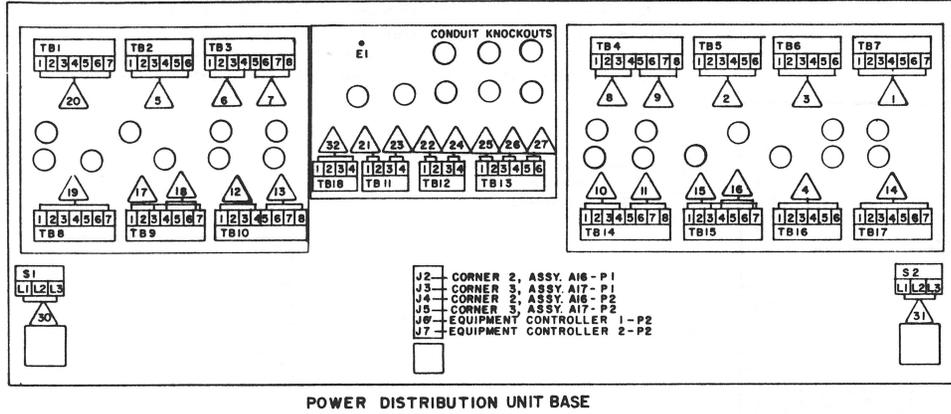
COMPUTER ROOM



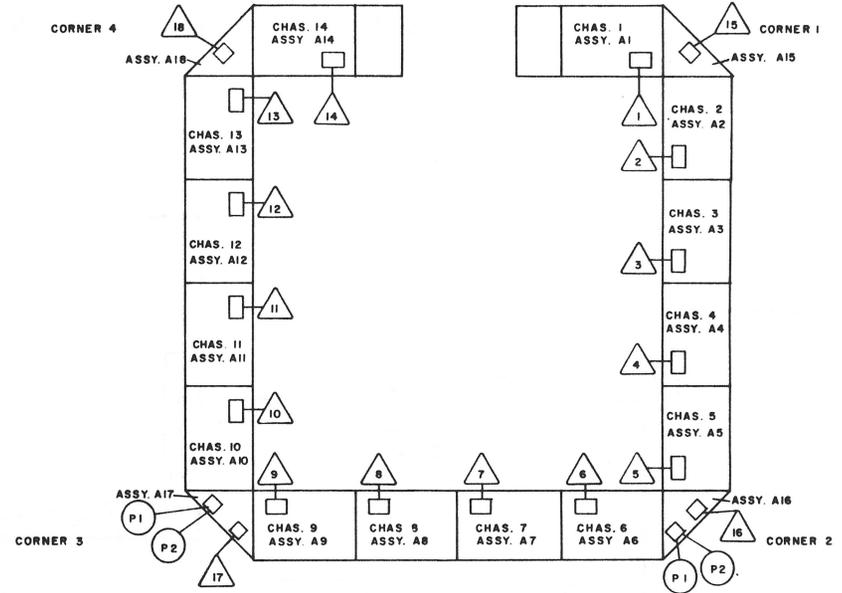
- NOTES:
- ① OPTIONAL; MAY NOT BE REQUIRED ON ALL SYSTEMS
 - △ FURNISHED BY CONTROL DATA
 - △ CONVENIENCE OUTLETS

Figure 3-3. Customer Power Distribution Diagram
(7611-1 Station shown in remote location.)

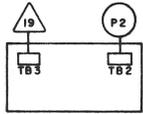
76-IX POWER DISTRIBUTION UNIT



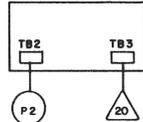
CYBER 70 MODEL 76
CENTRAL COMPUTER



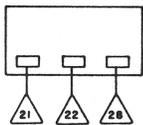
7611-X EQUIPMENT CONTROLLER 1
SEE NOTE 7



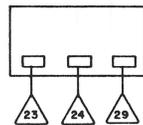
7611-X EQUIPMENT CONTROLLER 2
SEE NOTE 7



761X-1 CONDENSING UNIT 1



761X-1 CONDENSING UNIT 2



NOTES:

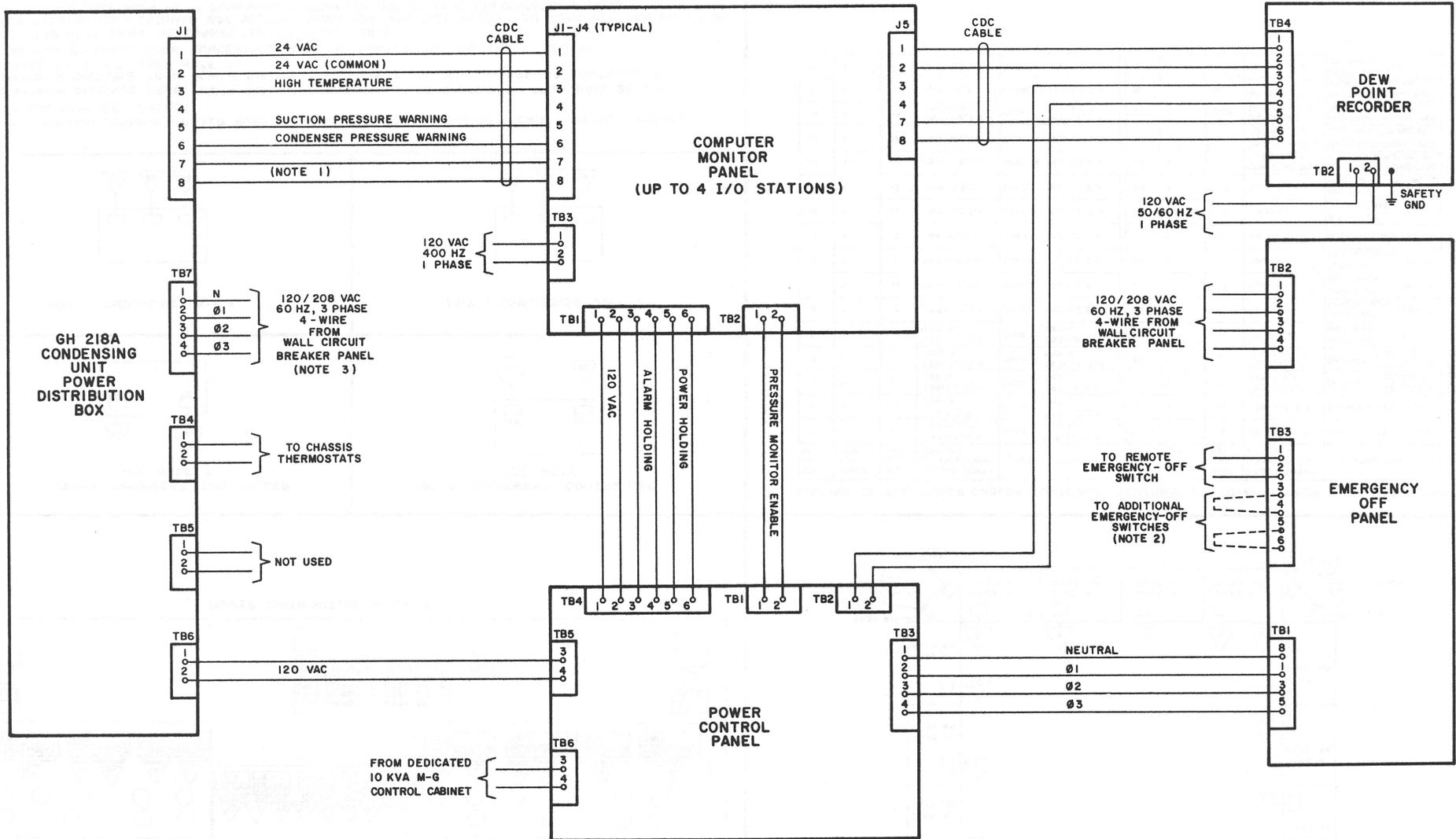
- △: CUSTOMER FURNISHED POWER RUNS (MUST BE METALLIC TUBING OR FLEXIBLE METAL CONDUIT)
- : CDC SUPPLIED CABLES
- MAXIMUM DISTANCE FROM POWER DISTRIBUTION CABINET TO CENTER OF CPU SHALL BE 30FT.
- MAXIMUM DISTANCE FROM POWER DISTRIBUTION CABINET TO 7611-X EQUIPMENT CONTROLLER SHALL BE 50 FT. (SEE NOTE 7)
- MAXIMUM DISTANCE FROM CONDENSING UNITS TO CENTER OF CPU SHALL BE 20FT.
- ALL CABINETS SHALL BE CONNECTED TO FLOOR GRID.
- FOR CONVENIENCE, CUSTOMER MAY SELECT LARGER AWG. WIRE SIZE WHERE TWO SIZES PER RUN ARE SHOWN.
- APPLICABLE ONLY WHEN 7611-X EQUIPMENT CONTROLLER COOLED BY 10 TON CONDENSING UNITS.
- FOR SIMPLICITY #12 AWG WIRE SHOULD BE USED ON WIRE RUNS 1 THRU 27 AND 32 EVEN THOUGH A FEW RUNS DO NOT REQUIRE WIRES THAT LARGE. (WIRE RUNS 28 THRU 31 MUST USE THE SIZES INDICATED)
- MAY BE TB 2-1,2,3 & TB 3-1,2,3 INSTEAD OF TB 3-1 THRU 7.

LISTING OF ALL POWER CABLES CUSTOMER PROVIDED TO 761X-1 POWER DIST. CABINET (SEE NOTE 8)

WIRE RUN NO.	WIRES PER RUN	WIRE SIZE AWG.	ORIGIN POWER DISTRIBUTION CABINET	DESTINATION	WIRE RUN NO.	WIRES PER RUN	WIRE SIZE AWG.	ORIGIN POWER DISTRIBUTION CABINET	DESTINATION
1	7	12	TB7-1,2,3,4 TB7-5,6,7	CHAS. 1 TB3-1,2,3,4 TB3-5,6,7	17	4	12	TB-9-1,2,3,7	CORNER 3 TB2-1,2,3,4
2	5	12	TB5-1,2,3,4 TB5-6	CHAS. 2 TB3-1,2,3,4 TB3-5	18	4	12	TB9-4,5,6,7	CORNER 4 TB2-1,2,3,4
3	5	12	TB6-1,2,3,4 TB6-6	CHAS. 3 TB3-1,2,3,4 TB3-5	19	7	12	TB8-1,2,3,4 TB8-5,6,7	EQ. CONT. 1 TB3-1,2,3,4 TB3-5,6,7
4	5	12	TB16-1,2,3,4 TB16-6	CHAS. 4 TB3-1,2,3,4 TB3-5	20	7	12	TB1-1,2,3,4 TB1-5,6,7	EQ. CONT. 2 TB3-1,2,3,4 TB3-5,6,7
5	5	12	TB2-1,2,3,4 TB2-6	CHAS. 5 TB3-1,2,3,4 TB3-5	21	2	12	TB-11-1,2	COND. UNIT NO. 1 WARN.
6	4	12	TB3-1,2,3,4	CHAS. 6 TB3-1,2,3,4	22	2	12	TB12-1,2	COND. UNIT NO. 1 SOL. VALVE
7	4	12	TB3-5,6,7,8	CHAS. 7 TB3-1,2,3,4	23	2	12	TB11-3,4	COND. UNIT NO. 2 WARN.
8	4	12	TB4-1,2,3,4	CHAS. 8 TB3-1,2,3,4	24	2	12	TB12-3,4	COND. UNIT NO. 2 SOL. VALVE
9	4	12	TB4-5,6,7,8	CHAS. 9 TB3-1,2,3,4	25	2	12	TB13-1,2	M/G CONT. M.G. TB2-11,12
10	4	12	TB4-1,2,3,4	CHAS. 10 TB3-1,2,3,4	26	2	12	TB13-3,4	M/G INPUT VOLT. SENSE.
11	4	12	TB14-1,2,3,4	CHAS. 11 TB3-1,2,3,4	27	2	12	TB13-5,6	120/208V, 50/60HZ. PWR. 50/60HZ. PNL. NO. ___
12	4	12	TB10-1,2,3,4	CHAS. 12 TB3-1,2,3,4	28	4	6	ORIG. COND. NO. 1 TB5-1,2,3,4	120/208V, 50/60HZ. COND. NO. 1-50HZ. PWR. PNL. NO. ___
13	4	12	TB10-5,6,7,8	CHAS. 13 TB3-1,2,3,4	29	4	6	ORIG. COND. NO. 2 TB5-1,2,3,4	120/208V, 50/60HZ. COND. NO. 2-60HZ. PWR. PNL. NO. ___
14	7	12	TB17-1,2,3,4 TB17-5,6,7	CHAS. 14 TB3-1,2,3,4 TB3-5,6,7	30	4	000	DISCONNECT S1-L1,L2,L3,N	120/208V 400HZ. PWR. 400HZ. PNL. NO. ___
15	4	12	TB5-1,2,3,7	CORNER 1 TB2-1,2,3,4	31	4	000	DISCONNECT S2-L1,L2,L3,N	120/208V 400HZ. PWR. 400HZ. PNL. NO. ___
16	4	12	TB15-4,5,6,7	CORNER 2 TB2-1,2,3,4	32	4	12	TB18-1,2,3,4	DEW POINT RECORDER TB4-1,2,7,8

SEE NOTE 9

Figure 3-4. Power Distribution Unit Cabinet Wiring



NOTES:

1. PINS 7 AND 8 MUST BE JUMPERED ON ALL UNUSED J CONNECTORS.
2. UNUSED PINS MUST BE JUMPERED.
3. POWER ENTERS VIA SAME PIN NUMBERS ON TB5 FOR GH 216A (TWO-TON, AIR COOLED CONDENSING UNIT).
4. ALL CABLES FURNISHED BY CUSTOMER UNLESS OTHERWISE INDICATED.

Figure 3-5. 7611-1 2-Ton Condensing Unit Auxiliary Panels Wiring Diagram

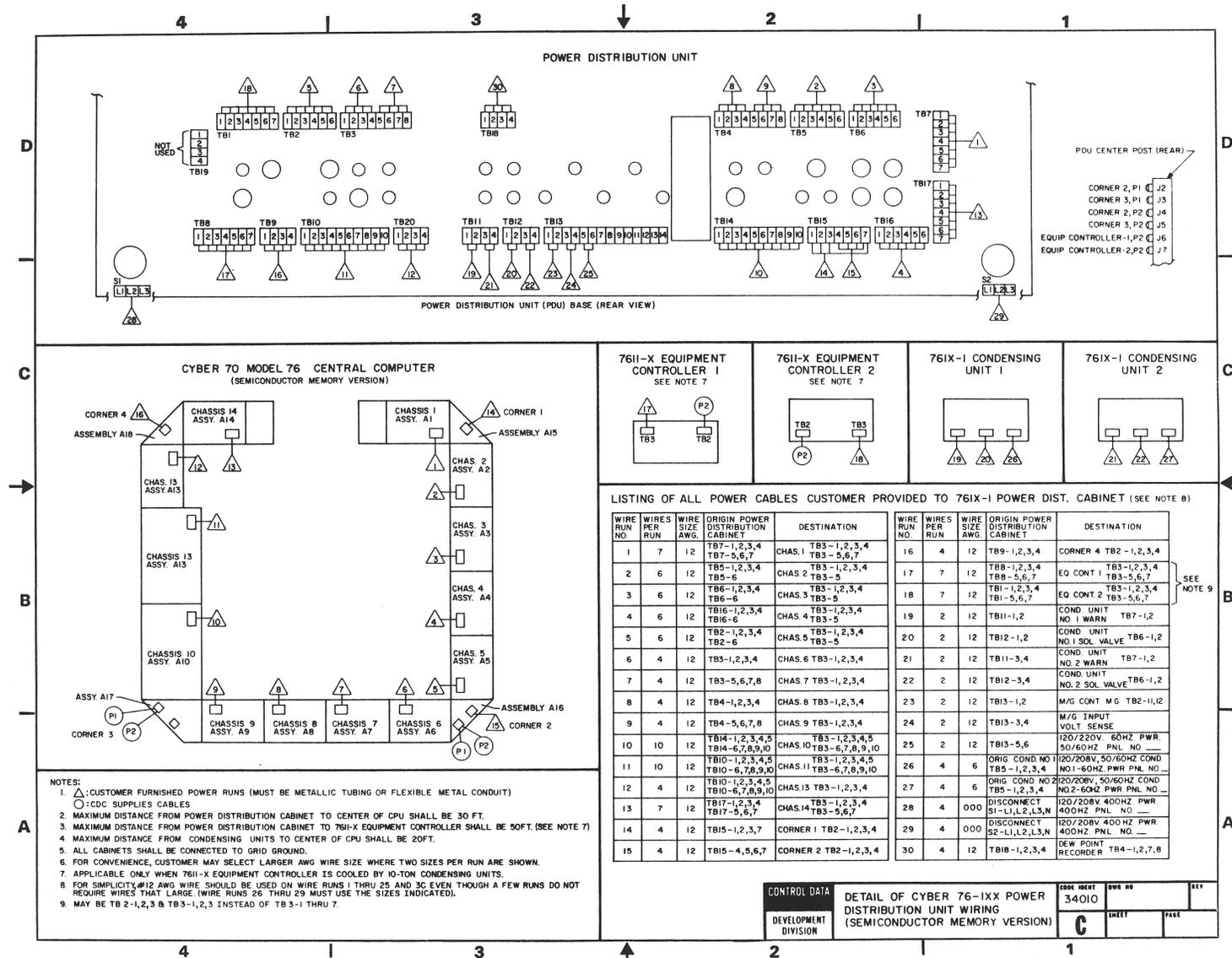


Figure 3-5.1. PDU Cabinet Wiring (Semiconductor Version)

FREQUENCY CONVERTER (MG SET)

The CDC CYBER 70 Model 76 computer system requires 400-Hz power. Control Data furnishes adequate size MG sets (or group of MGs, if the system warrants) based upon the system configuration. The size and quantity of the units furnished are determined by Control Data. Most installations require a minimum of two 125 kva (generator output rating) MG sets. Of the two MG sets one MG set is used for back-up purposes only. The customer must provide primary power capable of handling the starting current load of a 200 horsepower induction motor. Refer to the section 1 manual, part 9, and the section 3 manual, MG data sheets.

Each MG set is accompanied by an MG set control cabinet containing start/stop switches, meters, and overload protection for the motor and generator. It also provides switching, capability to transfer the load to the stand-by MG set. The control cabinet is furnished by Control Data; however, the user must provide mainline disconnects to isolate each MG set from main power in accordance with local codes.

SYSTEM GROUNDING REQUIREMENTS

In addition to the electrical power safety grounding requirements and the electromagnetic compatibility grounding system set forth in the Section 1 - Large Scale Computer Systems Site Preparation Manual, the following grounding and shielding is required for CDC CYBER 70 series computer installation.

All power cable runs must be shielded and the shielding must be grounded. The following types of shielding are acceptable.

- Totally enclosed conductive busways.
- Steel thin-walled metallic conduit
- Flexible metallic conduit
- Braided copper-shield jacketing
- Zip-on flexible metallic-shielded jacketing (for example, Zippertubing*)

NOTE

The shielding on all power cable runs must be grounded at each end of the run.

*Registered trademark of the Zipper Tubing Co., Los Angeles, California.

For stationary cabinets (central computer, system cabinets, and peripheral units not on casters), the shielding should be run up into the cabinet. If the shielding used is of a rigid variety, a short length of flexible shielding (if local codes permit) should be used to connect from the rigid shielding, at a point below the surface of the raised floor, up into the cabinet. Where flexible shielding is used, it should be run directly up into the cabinet.

For movable peripherals (those on casters) having a drop cable, the shielding should terminate at a junction box located below the surface of the raised floor at a point immediately below the peripheral equipment floor cable cutout, or as close as possible. Local codes will determine the exact placement of the junction box.

NOTE

If it is found that either logic cables or the movable type peripheral equipment drop cables are a source of EMI, (electromagnetic interference) they will be shielded by Control Data (on an as needed basis) with a zip-on type shielding.

Each of the 14 chassis of the central computer (as well as stand-alone 7611-1 Equipment Controllers must be connected to the grid ground. Each chassis has two possible locations where the grounding strap may be connected; these locations are threaded to accept no. 20-1/4 inch screws. Figure 3-6 shows the ground strap connection from a computer chassis to the grid ground formed by the metal raised floor supporting structure network. It also shows use of PVC covered flexible metallic conduit for the electrical power run.

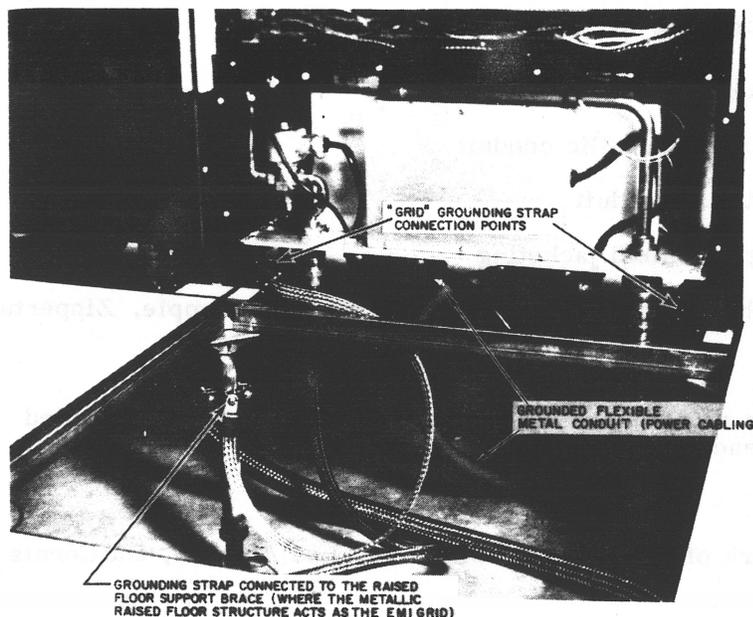


Figure 3-6. Grid Ground Strap Connection

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