SERIES 60 (LEVELS 66 & 68)

SITE PREPARATION MANUAL ADDENDUM A

SUBJECT

Additions and Changes to the Manual Including Site Preparation Information for DPS-C Systems

SPECIAL INSTRUCTIONS

This is the first addendum to DC79, Revision 3, dated July 1978. Insert the attached pages into the manual according to the collating instructions on the back of this cover. Change bars in the margins indicate technical changes and additions; asterisks denote deletions.

Note:

Insert this cover behind the manual cover as evidence the manual is updated with Addendum \mathbf{A} .

ORDER NUMBER

DC79A, Rev. 3

April 1979

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COLLATING INSTRUCTIONS

To update this manual, remove old pages and insert new pages as follows:

| Remove | Insert |
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| 2-13, 2-14 | 2-6.1, blank 2-13, blank |
| | 2-13.1, 2-14 |
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| 4-21, 4-22 | 4-21, 4-21.1 |
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be provided. For a single system, the area of the room must be at least 200 sq ft (18.6 sq m). For a dual system, the area must be 250 sq ft (23.2 sq m).

In addition to the above area, a space approximately 5 feet (1.5 m) square must be provided, near the computer system, for a Board Tester. (See Section 4 for details of space and power for this unit.)

The following facilities must be provided in the maintenance area:

- Workbench with wooden top
- Standard office desk
- Four-drawer file cabinet
- Desk chair and steel posture stool
- Two convenience outlets: 120V, 20A
- Telephone
- Standard office-level lighting

MEDIA STORAGE REQUIREMENTS

For successful system operation, media must be stored conveniently and under proper environmental conditions. Depending on the size of your computer installation, space must be allotted for storage of cards, printer paper, disk packs, printer ribbons, and other supplies. Savings in operator time over the planned years of system use can justify dedication of sufficient storage space convenient to the point of use.

Consider fireproof storage for critical disk packs. The amount of space to be allotted for disk pack storage depends upon the total number of disk packs required by the system and the possible subdivision of these disk packs into two or more storage areas. Users normally desire a disk storage area within the processing center for the current disk packs. You may want to duplicate current disk packs as a safety factor in case of fire or loss of information through operator or machine errors. If duplicate disk packs are used, provide a second disk pack storage facility in a remote area.

The disk packs are stored in any of several size cabinets (housing 8 to 12 disk packs per cabinet). The recommended storage positions for disk packs is flat in a horizontal position.

The following areas for media storage must be temperature- and humidity-controlled:

- A vault containing the daily operation disks and tapes
- A storage area for bulk paper stock and other supplies
- An input/output preparation area for storing and handling batches of data material which could also contain the machinery (keypunch equipment, burster, decollator, and other document-handling devices) necessary to prepare the input/output data

The environment of the media storage area should be the same as that of the computer area. Dirt control should be considered as well as temperature and humidity. If bulk storage cannot be provided in this environment, media must be brought to the computer room to stabilize before use. Humidity stabilization in stacks of paper is a matter of months, not hours. Careful consideration must be given to critical applications.

ROOM CONSTRUCTION FLOOR REQUIREMENTS

The system is designed for under-floor access of logic and power cables. The customer must provide a raised floor or its equivalent. The raised floor must meet the following requirements:

- 1. Minimum recommended height from top of raised floor to ceiling of 8.5 ft (2.6 m).
- 2. Minimum space between subfloor and raised floor of 8 in. (20 cm) when used with overhead air conditioning, 12 in. (30 cm) when used as an air plenum. (Extra air handling capacity must be provided if this minimum is not met.)
- 3. Ramp rise not more than 20°
- 4. Level within ¼ in. (.6 cm) within 10 ft (3 m).
- 5. Floor loading capacity:
 - Castor 1500 lbs/sq in. (100 kg/sq cm)
 - Leveling pad 500 lbs/sq in. (35 kg/sq cm)
 - Maximum load of any single unit 200 lbs/sq ft (1000 kg/sq m) (weight of unit ÷ area actually occupied by the unit)
 - The distributed floor load for the entire system may be calculated by adding the weights of all units to be installed, including auxiliary equipment, and dividing by the total area of the computer room.

CAUTION

On false floor section where flooring material contains metal beading, the beading must be insulated from the equipment frame.

If carpeting is used, it must be of a type specifically manufactured for computer room application, and be rated at 2.0 kV or less as measured by AATCC Spec. #134.

CABLE ACCESS HOLES

Drawings or templates of each cabinet base are available and should be used at the site to locate holes for system cable access and ac power cables. Using the layout drawing as a guide, these templates should be used to lay out the computer room floor so that the various access holes can be cut prior to

delivery of the system. Hole edges must be prepared in a way that will prevent cable damage. Floor panel manufacturers can provide vinyl angle strips for lining cutouts.

The drawings or templates will be provided by your Honeywell Field Engineering representative at the time required for your site construction.

CAUTION

Care must be taken during the period between cutting floor holes and installation of the equipment to ensure that the holes are temporarily covered to prevent accidental injury to personnel.

After system installation on sites with underfloor air conditioning, the ac power and logic cable access holes must be blocked off in appropriate manner with nonflammable material to prevent uncontrolled air loss. This is essential to balance air flow effectively and to prevent air at too low a temperature from entering the units.

LIGHTING

An intensity of approximately 861-1076 lux (80-100 foot-candles) at desk level is adequate for the computer area. Fluorescent lighting is preferred because it generates little heat and illuminates the work area evenly. The design and position of the lighting fixtures should take into account the requirement that personnel operate switches and read indicators that must be free of glare. Flush or recessed fixtures are suggested since they are attractive and are less likely to collect dust than hanging fixtures.

Direct sunlight should be avoided because a lower level of illumination is needed to observe indicator lights on equipment. Windows that do not face north should be fitted with Venetian blinds, glazed with tinted glass or treated with other material to protect against sunlight.

Even when not required by code for certain areas, some type of emergency lighting should be provided. Emergency lighting can be of the ordinary battery-operated type that turns on automatically when power to the main lighting system is interrupted. These units are wired to and controlled by the lighting circuit and are activated by a relay or a light sensor.

SOUNDPROOFING

Compared with a clerical office containing nothing more than light office machinery, a computer room has a higher sound level. It is normal, therefore, to line the ceiling with sound-absorbing tiles, which may also form a false ceiling to conceal other services. Local circumstances may indicate treatment of the walls also. Acoustic treatment of the data processing area ensures a comfortable working environment.

Structure-borne vibration and consequent noise in rooms below or near the computer room is negligible unless the floor is in very poor condition. Raised floors may require extra support jacks at strategic places to prevent transmission of vibration along their surface.

Airborne computer noise reaching other rooms can be reduced to almost any required level by acoustic insulation within the computer room; however, acoustic tiles alone do not perform this function. The heavier the wall and the freer it is from cracks and openings, the better. Open doors destroy acoustic insulation.

Fan noise from the air conditioning is usually less than the computer-generated noise but in some installations, where the fan is close to the room, some special treatment may be required.

SYSTEM COLORS

Customer selected "Standard or Optional" accent color is applied within the system to specific units preselected by Honeywell to enhance the appearance of the operating environment. Optional colors are available on an RPQ (Request Price Quote) additional cost basis.

Color chips are available for use by the customer or subcontractors for color matching computer room accessory equipment and decor. They may be ordered from the Finish Control Center, 200 Smith Street, Waltham, MA 02154. Order by color name and chip number as given in Table 2-1.

TABLE 2-1. SYSTEM COLORS AND CHIP NUMBERS

| Color Scheme | System Color | Chip Number |
|--------------|---------------------------------|------------------------------|
| STANDARD | Gothic Black | 58000100-003 |
| Accent P-1 | Glacier White Caribbean Blue | 58000100-002 58000100-001 |
| STANDARD | Gothic Black | 58000100-003 |
| Accent P-2 | Glacier White Hunter Red | 58000100-002 58000100-004 |
| OPTIONAL | Gothic Black | 58000100-003 |
| Accent P-3 | Glacier White Aztec Yellow | 58000100-002 58000100-005 |
| OPTIONAL | Gothic Black | 58000100-003 |
| Accent P-4 | Glacier White Maritime Green | 58000100-002 58000100-006 |
| OPTIONAL | Gothic Black | 58000100-003 |
| Accent P-9 | Glacier White Dark Gold | 58000100-002 58000100-019 |
| | Chamois Rebel Red | 58000100-018 58000100-017 |

AC POWER SYSTEM REQUIREMENTS

The primary power source for the computer system should be completely isolated from other power systems in the facility. This will minimize the electrical interference caused by motors, fluorescent lights, and on/off electrical loads found on most utility systems.

The central system is isolated by the motor generator sets or by a customer-provided Uninterruptable Power System.

Similar isolation is needed for peripheral equipment. To obtain this degree of isolation, a separate transformer is required to provide power to the peripheral equipment. The transformer must be adequate to handle the load plus future computer expansion. No other building loads should be supplied by this transformer.

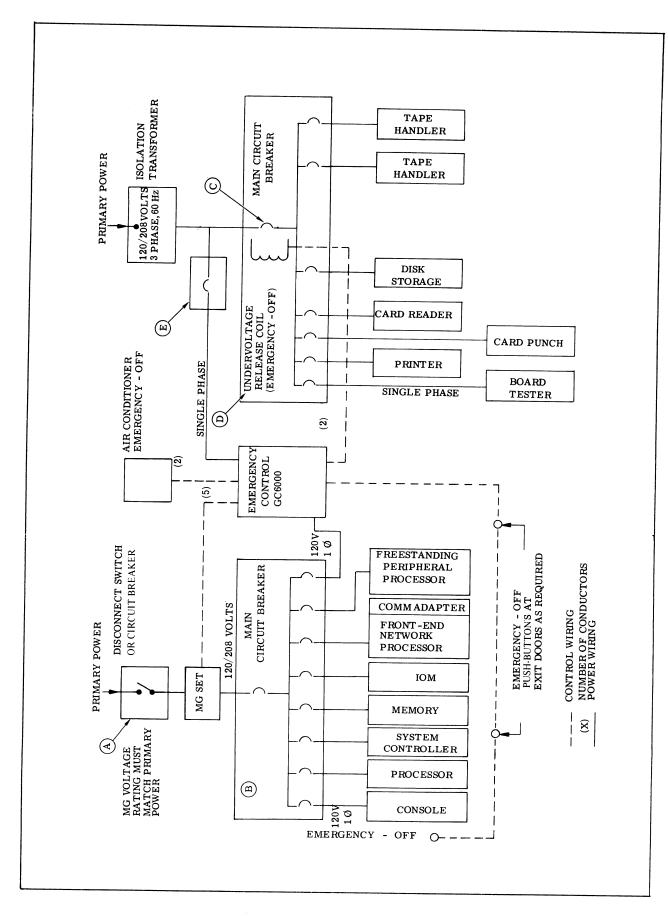
PRIMARY AC POWER SPECIFICATION

The electrical power supplied to the information processing system must meet the following requirements:

- 1. 60 Hz nominal with 60.5 Hz maximum and 59.4 Hz minimum frequency.
- 2. 208, 240, 440, or 480 V \pm 10% for the motor generator (MG) set. The voltages available determine the MG set used. (See Section 4.)
- 3. 120/208 V, five-wire, four-wire wye plus ground, for the peripheral equipment with limits of 208 V \pm 10%.
- 4. A total harmonic content of less than 10% of the fundamental frequency.
- 5. Three-phase with a maximum phase variation of 5% from the nominal 120° relation.

Installation of facilities that have 50-Hz ac power requires frequency conversion. Two or more MG sets are required, at least one for the central computer system and one or more for the peripheral equipment. Regardless of the system size, central system equipment and peripheral equipment must not be connected to the same MG set. (Refer to Figure 2-1.)

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If your system availability criteria necessitate an Uninterruptable Power System, your Honeywell sales representative will assist in obtaining interface requirements. Refer to "Motor Generator Set" later in this section for possible elimination of redundant protection features.

LIGHTNING PROTECTION

To ensure the safety of equipment and personnel, primary power transformers must be protected by lightning arrestors. It is highly desirable that similar protection be provided at the service entrance to the building. These arrestors will reduce the possibilities that excessive voltage and currents due to lightning strikes will seek some indeterminate, low-impedance path to ground, such as building metallic structures or equipment cabinets.

AC CONVENIENCE OUTLETS

All convenience outlets in the computer room must be on a feeder separate from the computer system to prevent electrical noise interference. Sufficient outlets must be provided so that no unit of the computer system is more than 15 ft (4.6 m) from an outlet. Convenience outlet power is 120 V, single phase, 60 Hz, 15 A capacity. A three-wire system must be used with the ground at the same potential as the computer equipment frame ground.

PHASE BALANCING

In a three-phase, wye-connected system with grounded neutral, phase imbalance currents flow in the neutral wire. High neutral return currents can generate noises which may be reflected back into the computer system. To avoid problems, attention must be given to balancing loads on the motor generator set and on the power distribution transformer.

Values given in Section 4 for amperes per phase are not exact enough for phase balancing. Manufacturing variables exceed the required tolerance for good phase balance. Therefore, it is necessary to measure exact current per phase on each unit and calculate an optimum balance by exchanging values. The units should then be reconnected and the total current per phase measured. This, of course, must be done separately for MG power and for peripheral power.

Keep in mind that some peripheral equipment have phase-sensitive motors. This must be taken into account when trying to switch loads to balance the utility power.

AC POWER REQUIREMENTS BY UNIT

Section 4 of this manual includes an installation outline drawing for each unit in your system. These include typical values for:

- Amps per phase
- kW
- kVA

These values are for general information only to estimate power load. They may differ slightly in each unit due to manufacturing tolerances. *They have not been derated for duty cycle*. Size and duration of starting current is shown where significant. To meet NFPA 70 Electrical Code, the primary distribution must be sized by nameplate rating.

The value shown for circuit breakers and wire size meets NFPA 70 code. Follow your local code if larger sizes are required. The quantity of wires shown includes the required "green wire" or safety ground conductor.

MOTOR GENERATOR SET

The motor generator set will normally be shipped to your site one month prior to arrival of the system. It should be installed, wired, and tested by your electrician or contractor before system installation.

The motor generator must be selected in accordance with the primary power provided at the site and with the system load taking into account line losses and future expansion. Line losses must be considered if the load approaches the rating of the generator and the generator is remotely located.

Motor generator sets are available with ratings listed in Section 4. The MG is normally shipped with the motor connected for 440-volt input. For other input voltages, the motor must be reconnected by your contractor in accordance with the MG installation instructions.

A properly designed Uninterruptable Power System (UPS) may eliminate the need for the Motor Generator and the Isolation Tranformer. Honeywell Engineering will evaluate UPS design for this aspect upon submission of complete specifications of the UPS and its loads. The MG Control Unit (or equivalent) will still be needed for emergency control purposes.

POWER SEQUENCING OPTION

The Power Sequencing Option will turn on dc power in all central system units designed for power sequence. This sequence may be manually initiated and also will automatically sequence on the dc power after a utility power interruption.

The sequencer is designed to be mounted in the MG Control Unit, and therefore requires no site preparation. Logic cabling for the dc control of each central system cabinet will be provided and installed by Honeywell.

AC POWER DISTRIBUTION

Figure 2-1 shows a typical power system diagram. It is the customer's responsibility to supply and install the following materials. (See Section 4 for required breaker capacities.)

- Disconnect switch or circuit breaker for the input to the motor generator set (Reference A).
- · Distribution panel and circuit breakers for

- central system (Reference B). Rating of main breaker is determined by total load.
- Distribution panel and circuit breakers for peripheral equipment (Reference C).
- Main circuit breaker with a 24-volt dc undervoltage release coil for the peripheral distribution panel. Rating of circuit breaker is determined by total load (Reference D).
- 10-A single pole circuit breaker for MG Control Unit (Reference E). The MG Control Unit is connected to both the motor generator output and primary power as indicated.
- Primary power wiring and conduit from distribution panels to each central system unit

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problem as long as at any one measurement point the temperature does not change more than previously described as allowable.

MAINTENANCE

A reasonable level of dirt and dust control is important to satisfactory system operation. To avoid raising dust that will clog the air conditioning system and computer filters, a tightly sealed vacuum cleaner with a good filter is recommended for cleaning the computer room. Floors can be swept with an oiled mop.

Also, a regular schedule of maintenance of filters in the air conditioning system must be established. Periodic cleaning of the subfloor area is recommended to prevent accumulation of dirt and debris. Impregnated mats at each entrance reduce dust brought in from other areas on the soles of shoes.

SAFETY

EMERGENCY POWER-OFF WIRING

The National Electrical Code NFPA 70 and the electrical code in many cities require each exit from the room to be equipped with a switch that will cycle off all power to the system and to the air conditioning in an emergency situation.

The customer should supply appropriate emergency-off switches for the exit doors.³ An emergency-off switch is supplied on the system console or system control center. The control wiring for these switches is supplied and installed by the customer. The power to operate the emergency-off circuit is obtained from the MG Control Unit (see Figure 2-3).

Operation of an emergency-off switch at the console or other location causes the emergency control to:

- Trip the main circuit breaker in the peripheral equipment load center through the 24-V dc undervoltage release coil
- Turn off motor generator set
- Turn off air conditioning

DPS-C EMERGENCY POWER-OFF WIRING

Emergency power-off switches are required at the console and at all exit doors of a computer site. A separate set of contacts is needed on these switches for battery power turn-off when the WMCP601A memory is installed.

For a single memory unit, the emergency-off should be wired as shown in Figure 2-4.

For installations with more than one memory unit, the battery emergency-off wiring must be con-

nected through a Shutdown Module, WESM001A. This module is in a metal enclosure which may be wall-mounted near the MGCU. Knockouts are provided for Class 1 wiring. Approximate dimensions are shown in Figure 2-5.

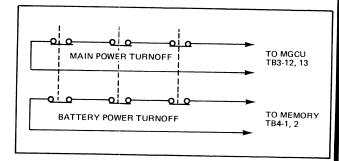


Figure 2-4. Single Memory Unit Emergency-Off

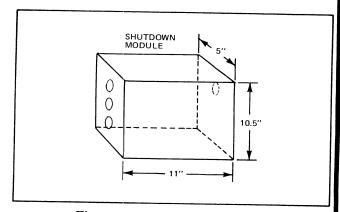


Figure 2-5. Shutdown Module

Connections from the Shutdown Module to the memories and the emergency-off switches should be made per Figure 2-6.

For installations with more than three units containing battery power, additional Shutdown Modules are required. Connection to units being controlled is shown in Figure 2-6. Connection to the emergency-off switches is shown in Figure 2-7.

MG CONTROL UNIT WIRING CONTROL CONNECTIONS

The control connections for all functions of emergency control and motor generator control are shown in Figure 2-3. No. 14 wire can be used for connections. Both ends of the control wiring must be permanently tagged to identify the connections to be made.

The emergency-off switches are to be wired in series and the site layout may dictate the best arrangement to do this. One method would be to run two wires from each emergency-off switch to the MG Control Unit and make the necessary series connec-

³The switch should be activated by a push-to-open/pull-to-close mechanism, be UL listed, and have normally-closed contacts rated at 5 A, 125 V.

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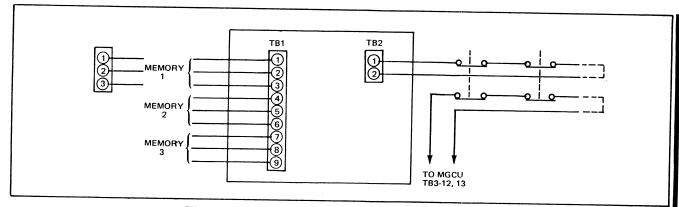


Figure 2-6. Multiple Memory Unit Emergency-Off

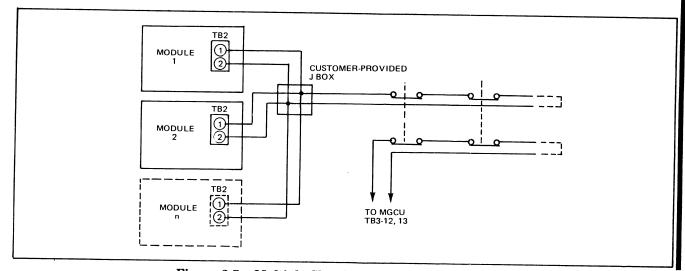


Figure 2-7. Multiple Shutdown Module Emergency-Off

tions inside the MG Control Unit case. An emergency-off switch *must* be located at each exit/entrance door.

The National Electrical Code (NEC) NFPA 70 classifies the emergency-off circuit wiring connecting the MG Control Unit to the emergency-off switches and to the devices disconnecting main service power to the computer room (and to the air conditioning system) serving the computer room as Class 1 remote-control circuits to safety-control devices. The wiring method for Class 1 systems must comply with Article 725 of the (NEC) NFPA70, or with local code requirements for remote control safety circuits where such local code differs.

EMERGENCY LIGHTING

Some local codes require a special batteryoperated lighting unit that will automatically illuminate an area in case of power or lighting circuit failure. These units are wired to and controlled by the lighting circuit. Even when not required by code, it is recommended that such lights be installed.

GENERAL PRECAUTIONS AND PERSONNEL TRAINING

The computer room and tape library should be monitored during nonoperating periods for fire and "over-temperature" conditions. Special precautions should be taken if equipment is left with power on.

Protection should be taken against equipment damage due to condensation or leakage from any overhead pipes.

Site personnel must be thoroughly trained in the function of all fire detector equipment, desired responses to alarm conditions, and the use of all available extinguishing equipment. This training must include both the capabilities and the limitations of each available type of extinguisher.

Training should include, but not be limited to:

- Emergency telephone numbers
- Emergency power shutdown procedures
- Location and use of available fire extinguishing equipment

- Special instruction on extinguishing a fire in data processing equipment
- Personnel evacuation procedures

FIRE PROTECTION EQUIPMENT

Portable carbon dioxide, Halon 1301, or Halon 1211 fire extinguisher types of suitable size and number should be provided in the computer room. These extinguishing agents are nonconductors of electricity and are for Class C fires (may be applied to energized electrical equipment). The extinguishers should be provided and maintained in accordance with NFPA No. 10-1975, or in accordance with prevailing local code.

While your selection of one or more of the extinguisher types will be used as the primary extinguishing agent, it is advisable to have a standpipe or hose unit within effective range of the system area as a secondary extinguishing agent for Class A hazards (paper or other solid combustible materials).

Local fire protection codes or fire insurance regulations may require the installation of automatic extinguishing systems. If this is a requirement, one of the following systems is recommended:

1. Automatic HALON 1301 Total Flooding System

An automatic total flooding HALON 1301 system may be used to provide complete

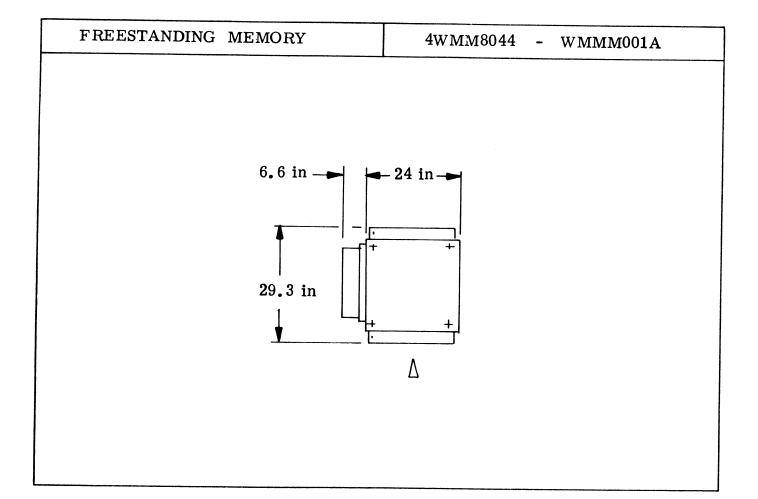
machine-room protection. The system requires automatic early detection of fire and timed release of the 1301 extinguishing agent. The system must be engineered for the specific area to be protected in accordance with NFPA No. 12A-1973, Halogenated Extinguishing Agent Systems — Halon 1301.

An Automatic Sprinkler System
 Installed in accordance with NFPA No. 13-1976, Installation of Sprinkler Systems.

DETECTION AND ALARM SYSTEM

The Commercial Division of Honeywell Inc. can provide complete custom-designed Fire Detection and Alarm Systems to meet all requirements for computer room protection. The system may include ionization-smoke detection, heat detection, alarm annunciation, alarm signaling, and interface to new or existing fire alarm equipment as well as tie-in to fire extinguishing systems. Honeywell system specification bulletin SES-3, 77-6815, is published as a reference data source for computer room fire detection design and can be obtained from:

Honeywell Inc. Honeywell Plaza 2701 Fourth Avenue South Minneapolis, Minnesota 55408



GENERAL INFORMATION

| Installed Weight | 850 Lb |
|---------------------|----------------|
| Shipping Weight | 900 Lb |
| Installed Height | 88.6 In |
| Shipping Height | 76.3 In |
| Full Scale Template | 43R177800 SH 8 |

Required Clearances Front 36 In Back 30 In

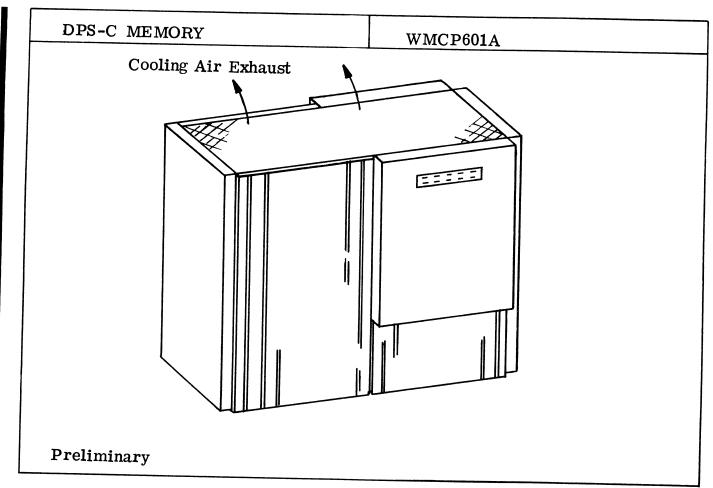
Right -

Spacing Restriction

Per system layout

NOTES

- 1. WMMM001A may include an integrated SCU.
- 2. Electrical data for: 512K, 16 pin, 4K MOS with SCU.



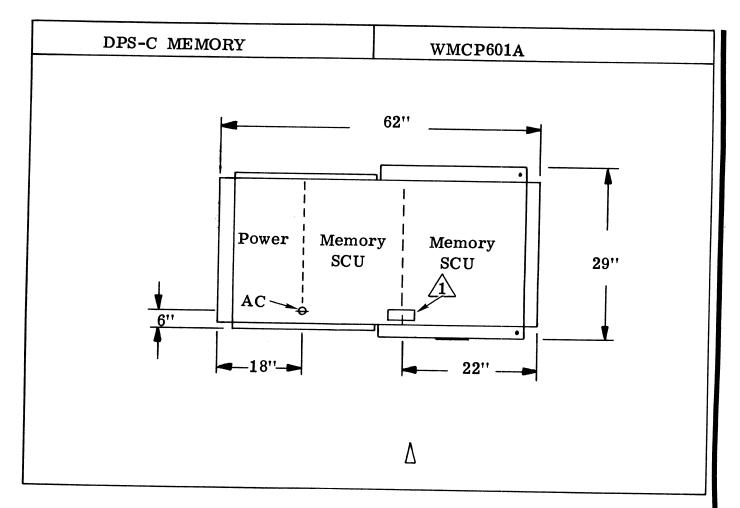
AC Power Requirements

| NAMEPLATE RATING | TYPICAL VA | ALUES | STARTING CURRENT |
|---|-----------------------------|---------|------------------|
| VOLTS 120/208 AMPS 14 PHASE 3 CYCLE 60 | AMPS PER PHASE A 9 B 9 C 9 | 3.2 2.9 | NA |

AC POWER CORD AC Power Connection

| ACTOWER | CORD . | re i ewer connection |
|-----------------|--------------|-----------------------------|
| INCLUDED OPTION | AL NOT AVAIL | RECOMMENDED FACILITY WIRING |
| AC PLUGNA | | CIRCUIT BREAKER 3 |
| CONNECTOR NA | | 5 |
| RECEPTACLE NA | | AV (IIICI Ground) NoAW |
| | | PHASE SENSITIVE YES X NO |

HEAT GAIN 9.9 KBTU



GENERAL INFORMATION

NOTES

1. Cable entry approximately 3" by 6".

Installed Weight 1665 lbs.
Shipping Weight 1700 lbs.
Installed Height 68 inches
Shipping Height 68 inches

Full Scale Template NA

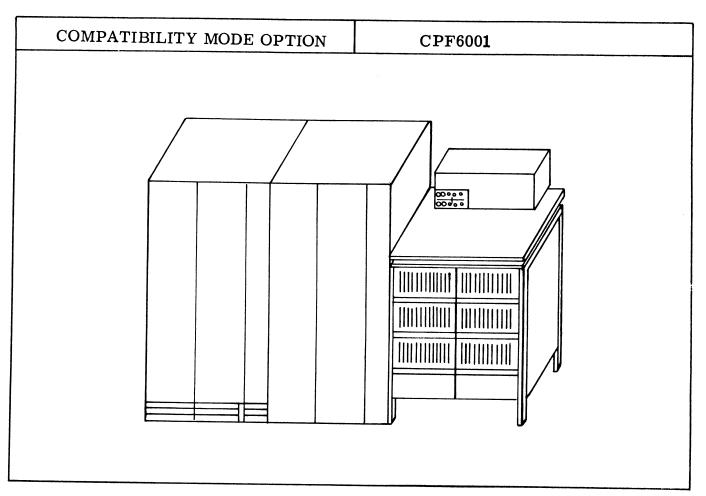
Required Clearances

Front 36 inches
Back 30 inches
Right 18 inches
Left 18 inches

Spacing Restriction

Cable length to CPU. Keep minimum distance consistent with required maintenance access.

Cable Length 50 foot maximum.



AC Power Requirements

TYPICAL VALUES

| 190/900 | | | | | | |
|-----------------------------|-------------------|-----------|-------------------|---------|--------|-------|
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| AC POWER CORD | AC Power Con | necti | ion | • | | |
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| AC PLUG Hubbell 25415 | CIRCUIT BREAKER _ | 2 | 0 | AMP | 3_ | POLES |
| CONNECTOR Hubbell 25414 | wire5 | _ QTY (II | nci Ground | d) (| NO10 | AWG |
| RECEPTACLE Hubbell 25403 | PHASE SENSITIVE | | | YES [| NO | |
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