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IBM 1130 Installation Manual—Physical Planning
Ninth Edition (December 1971)

This is a major revision of, and obsoletes, GA26-5914-7 and Technical Newsletter GN34-0057. Material relating to the IBM 1131 Models 1C, 1D, 5B, 5C, and 5D, and the IBM 2311 Disk Storage Drive Models 11 and 12 has been added. Technical changes to the text and illustrations are indicated by a vertical line to the left of the change.

Changes are periodically made to the information herein; before using this publication in connection with the installation or operation of IBM systems, refer to the latest 1130 system SRL Newsletter, GN20-1130, for the editions that are applicable and current.

Some illustrations in this manual have a code number in the lower corner. This is a publishing control number and is not related to the subject matter.

Copies of this and other IBM publications can be obtained through IBM Branch Offices.

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Preface

This manual contains information necessary for planning the physical installation of the IBM 1130 Computing System. Information required by architects, contractors, (building, electrical, and air conditioning), operating management of machine systems, and communications technical representatives is included.

The major subjects covered are:

- Installation requirements and scheduling
- 1130 system unit specifications

Note. The IBM 1131 Models 4A and 4B, and the IBM 1132 Model 2, are available in the United States and Canada only.
An efficiently operated computer system depends largely on careful planning and preparation prior to actual installation of equipment. The purpose of this manual is to assist IBM customers in the period preceding delivery of new equipment.

The foremost requirement is to provide suitable space and environmental conditions for the components ordered. Consideration should be given not only to the requirements of the system and associated personnel, but also to other equipment, such as storage cabinets, work tables, chairs, and desks.

IBM Installation Planning Representatives are available for assistance and consultation.

The following IBM publications are available to facilitate planning and installation:

1130 System Template (GX26-5997).
1130 System Cable Order Form (Form 120-1696).

SYSTEM ARRANGEMENT AND SPACE REQUIREMENTS

The physical location of the 1130 system components can be arranged to fit the individual needs of the user. Raised floors are not required but offer the following advantages:

1. Provide increased flexibility in system layout by allowing cables to be run direct.
2. Can be used as an air plenum.
3. Provide protection for inter-unit cabling and customer branch circuit wiring.

A compact arrangement of components allows efficient and convenient operation by the system operator.

Consideration should be given to the possible future expansion of the system or installation. Additional machines or equipment can then be added to the initial installation without disruptive revisions to the original plans.

In summary, the following items should be considered in determining space requirements and location:

- Cable routing
- Cable length
- Service clearance
- Work space
- Heat dissipation
- Desk space
- Aisle space
- Future expansion
- Weight and floor loading
- Electrical requirements
- Doorway sizes, elevator capacities, and loading facilities used to get the machines to their location

Figure 1 illustrates the system component cabling and includes a list of the cables and cable lengths.

The appendixes contain a summary of the physical specifications of the 1130 system units including the required service clearances for proper servicing of the equipment by IBM Customer Engineers.

SCHEDULING

The design and implementation of a physical planning schedule assures machine-room readiness when the system is delivered. Because each 1130 system installation differs in some respect from every other installation, it is not possible to provide a precise schedule. The following schedule may be modified to meet the specific needs of a given installation.

Six Months before Delivery

1. Review the order.
2. Determine the prospective location of the system, initiate design criteria for facilities, and make a preliminary layout of the proposed installation.
Figure 1 (Part 1 of 2). Cable diagram and cable chart
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**Notes:**

1. Available only at length shown.
2. Ac power cord (cable group 1) to 1131 not used when 1133 is installed. When 1133 is not installed, ac power cord (cable group 1) must be ordered.
3. Cables are shipped with "from unit" (or "to unit" if "from unit" is a receptacle). Do not include these cables on cable order form.
4. Only one device can be connected via the storage access channel. Thus, either an 1133 (cable group 9), the 2250 (cable group 20), or a customer device (cable group 7) can be connected to the 1131. Similarly, either the 2250 (cable group 22) or a customer device (cable group 8) can be connected to the 1133 (SAC II). Cable group 7 can be substituted for cable group 8 and cable group 20 can be substituted for cable group 22 when adding an 1133 to an installed system.
5. Maximum length of cable group 12 plus cable group 14 must not exceed 21 feet.
6. Only one 1231 or one 2501 may be installed.
7. Customer purchase only.
8. Cable length is measured from cable floor entry at 1131 or 1133 to connector at end of cable. Maximum length must be reduced by 4 feet circuit dimension from mating receptacle to circuit component in customer device. (See IBM 1130 OEMI, GA26-3645.)
9. Use with feature code 7400.
10. Use with feature code 7492.
11. Cable group 6 (1627 to 1131) available only at maximum length shown. It must be specified on cable order form when supplied by an IBM manufacturing plant in the U.S.A. All other IBM manufacturing plants will automatically ship this cable when 1627 is ordered.
12. Feature code 7690 must be ordered.
13. For 50 hertz machines, use cable group 1337 in place of 1331.
14. For 50 hertz machines, use cable group 1338 in place of 1338.

* The standard cable lengths listed allow an efficient layout of most system configurations. All IBM manufacturing plants (except those in the U.S.A.) ship these lengths unless a cable order is received no less than 120 days prior to scheduled delivery; for cables to be provided by an IBM manufacturing plant in the U.S.A., a cable order covering all cables required (standard or custom lengths) must be submitted by an IBM branch office.

Figure 1 (Part 2 of 2). Cable diagram and cable chart
Four Months before Delivery

This is a critical point in the schedule. The final layout should be determined and approved by the customer and by the IBM branch manager. If building alterations, such as painting, plastering, or expansion of electrical service, are necessary, the drawings and specifications for them should be complete and ready for the work to begin.

No further changes that affect cable lengths should be made in the layout. A cable order form (Form 120-1696) must be received by the IBM plant of order control at this time.

One Week before Delivery

All installation elements pertaining to environmental and power requirements should be reviewed and tested. Lighting, floor ramps, painting, plastering, decorating, etc., should also be completed at this time. Installation and testing of all early-delivery items should be completed.

ENVIRONMENTAL REQUIREMENTS

Ambient Air Conditions

All IBM 1130 Computing Systems use air for internal cooling. Cool air is introduced through the bottom or side of each unit, internally circulated by fans or natural convection, and exhausted to the room from the top. The following limits should be maintained for ambient air to ensure normal operation of the system:

Temperature: 60°F to 90°F
Relative humidity: 10% to 80%
Maximum wet bulb temperature: 78°F

Recommended design conditions for optimum system operation and personnel comfort are 75°F (24°C) and 40 to 50% relative humidity.

A summary of the specifications for the individual units is given in Appendix A or Appendix B, depending on whether U.S. or metric units are desired.

Dust and Dirt Control

The amount of contamination in the office atmosphere will not normally interfere with the operation of the 1130 system. Normal precautions should be taken, however, to keep dust, dirt, and other foreign matter away from the machine area.

Fire Protection Equipment

Portable carbon-dioxide fire extinguishers of suitable size should be provided in the computing system area, subject to local building-code and fire-insurance requirements. A nonwetting fire-extinguishing agent for electrical equipment (Class C hazard) is recommended.

CABLES

IBM provides the necessary inter-unit signal and power cables for proper connection to the 1130 system.

Cable length limitations and routing listed in Figure 1 are available to the customer at no extra charge, except for those cables listed as customer purchase only. Cable lengths longer than the maximum specified can be considered on an RPQ* basis.

Cable lengths are determined by measuring the distance along the cable route from the floor or other mounting surface point of entry of a unit to the corresponding point of entry of the connecting unit. When a raised floor or raceway floor is used, twice the height of the floor must be added to the measured length.

Exposed interconnecting cables should be protected so that they do not present a safety hazard and are not readily damaged. This protection can consist of ramps, raceways with removable covers, or a raised floor.

Synchronous Communications Adapter

The synchronous communications adapter (SCA) special feature enables the IBM 1130 Computing System to function as a point-to-point or multipoint data transmission terminal, using either private or commercial common-carrier line transmission facilities. The adapter sends data to or receives data from the line transmission facilities under control of the stored program in the 1130. It operates on an interrupt-request basis similar to that used by other input/output devices in the IBM 1130 Computing System.

The synchronous communications adapter cable (cable 19) routing is shown in Figure 1.

For more information on the SCA, refer to IBM 1130 Functional Characteristics, GA26-5881.

IBM FIELD ENGINEERING REQUIREMENTS

Proper servicing of the 1130 system requires adequate service clearances around each unit of the system. These clearances are listed under the specifications list for the individual unit.

Space should be provided near the operating area for storage of test equipment and spare parts. At least one duplex 115/120V ac grounding type convenience outlet should be located in this area.

*Request for price quotation from IBM
Storage Access Channel

The storage access channel (SAC) feature provides a means for external devices or systems to communicate directly with the 1131 CPU core storage. Additional I/O devices or systems can be added by attaching the 1133 Multiplex Control to the SAC channel. As a special feature, the 1133 has provisions for an extra channel (SAC II), which can accommodate other I/O devices or systems.

Communication with core storage from an external device is on either a cycle-steal or an interrupt basis, and is initiated by the external device when the device is ready to communicate. For more information on SAC, refer to IBM 1130 Computing System Storage Access Channel Original Equipment Manufacturers' Information, GA26-3645.

Storage Access Channel Cable

Cable assembly part number 2243004 (includes a connector on each end) may be purchased from IBM for attachment of a customer device to the storage access channel (cable group number 7 or 8).

The data, address, and control lines are brought out through a 160-pin receptacle in the 1131 or 1133.

A detailed diagram of the plug and receptacle is shown in Figure 2. For pin designations, spare lines, and point-to-point wiring, refer to the IBM 1130 SAC OEMI, GA26-3645.

Specifications of the storage access channel cable follow.

Number of conductors. 182 (91 twisted pairs).
One twist every 1.0 ±0.12"

Cable diameter. 1.20" nominal

Cover type. Polyvinyl chloride, 5/64" nominal thickness

Shielding. Tinned copper braid for 90% minimum coverage

Cable lay-up. 1-6-12-18-24-30

Individual conductor characteristics.
Quantity: 182 (91 twisted pairs)
Maximum outside diameter: 0.054"

AWG size: 22
Conductor material: stranded copper
Insulation material: semirigid polyvinyl chloride
Insulation thickness: 0.009" nominal
UL voltage rating: 300 volts
Insulation temperature rating: 80°C (176°F)

The external shielding must be connected only to CPU ground through position L3 of the 160-pin receptacle for the SAC.

Coupled Noise

The maximum level for noise coupled onto any signal line must not exceed 300 millivolts.

Cable Resistance

The maximum cable resistance, with customer device attached and including contact resistance, must not exceed 26 ohms.

Cable Length

The maximum length must not exceed 25 feet. Since 6 feet is required for connection in the 1131 or 1133, the available length to the customer is 19 feet. This length is measured from cable floor entry at the 1131 or 1133 to the connector at the end of the cable. The customer length (19 feet) must be reduced by the wire circuit dimensions from the mating receptacle to the circuit component in the customer device.

Power Sequence for Storage Access Channel Devices

Customer devices attached to the storage access channel (SAC or SAC II) should not be turned on or off except when the CPU is off or in single-step mode.

It is recommended that non-IBM devices connected to the 1130 system via the storage access channel (SAC or SAC II) be powered from an ac source having the same voltage as the ac source for the 1130 system.

POWER REQUIREMENTS

Power Supply

Electrical requirements for the IBM 1130 Computing System depend on the system configuration and auxiliary equipment used. See "Unit Specifications" for voltage requirements.

The voltage and frequency specifications for the 1130 system are:

1. 115V ac (±10%); 60 Hz (±0.5 Hz); single-phase; three-wire (one phase, one neutral, and one grounding conductor).
2. 208 or 230V ac (±10%); 60 Hz (±0.5 Hz); single-phase; three-wire (two phase and one grounding conductor).
3. 208 or 230V ac (±10%, −8%); 60 Hz (±0.5 Hz); three-phase; four-wire (three phase and one ground conductor).
4. 195, 220, or 235V ac (±10%); 50 Hz (±0.5 Hz); single-phase; three-wire (one phase, one neutral, and one grounding conductor).*
5. 195 delta, 220 delta/380 wye, or 235 delta/408 wye volts ac (±10%, −8%); 50 Hz (±0.5 Hz); three-phase; four-wire delta (three phase and one grounding conductor); five-wire wye (three phase, one neutral, and one ground).*

*Available for use in countries where 50-hertz power distribution systems are used.
Figure 2. Storage access channel connector
Grounding
A green-wire grounding conductor is supplied in each power cord. Each customer-supplied branch circuit should have an insulated wire conductor for the purpose of grounding equipment. All branch-circuit grounding wires should be tied to a common ground point at the distribution panel, and a single insulated grounding wire run from the distribution panel to the nearest suitable grounding station. Conduit must not be used as the only grounding means. Unless otherwise required by local codes, the grounded neutral conductor must be electrically isolated from the system grounding conductor except at the building grounding station. IBM Installation Planning Representatives should be consulted for further details.

Lightning Protection
It is recommended that the customer install lightning protection on his secondary power source when any of the following conditions exists:

1. The utility company installs lightning protectors on the primary.
2. Primary power is supplied by an overhead power service.
3. The area is subject to electrical storms or equivalent power surges.

Power Distribution
All power to the 1130 system should be supplied through a single feeder, protected by a mainline circuit breaker. Individual branch circuits from the distribution panel should be protected by circuit breakers suitable for motor load application and derated according to the manufacturer's specifications.

The distribution panel should be located in an unobstructed and well-lighted area within the computer room. As a safety precaution, a remote circuit breaker, which can remove all power from the computer system, should be provided in the machine room. Any customer-supplied device interconnected with the 1130 system should have its branch circuit protection device interlocked with the mainline circuit breaker.

Phase Rotation
The three-phase power receptacles for use with the system must be wired for correct phase rotation. Looking at the face of the receptacle, and running counterclockwise from the ground pin, the sequencing will be phase 1, phase 2, and phase 3.

Convenience Outlets
A suitable number of grounded convenience outlets should be installed in the computer room and Customer Engineer room for use by building maintenance personnel, porter service, Customer Engineers, etc.

Figure 3. Receptacle mounting dimensions
This section contains plan views for each of the units in the system. The plan views illustrated for each unit use these symbols:

- Caster
- Floor leveler
- IBM cable entry
- Floor level cable exit
- Usage meter
- CE panel
IBM 1131 CENTRAL PROCESSING UNIT
MODELS 1A, 1B, 2A, 2B, 4A, AND 4B

Dimensions
Width: 58.25 in. (147.5 cm)
Depth: 29 in. (73.7 cm)
Height: 45.5 in. (116.6 cm)

Service Clearances
Front: 42 in. (106.7 cm)
Rear: 36 in. (91.4 cm)
Left: —
Right: 30 in. (76.2 cm)

Maximum Weight: 760 lb (345 kg)
Heat Output/Hour: 3100 BTU (781 kcal)
Air Flow: 720 cfm (21 m³/min) maximum

Electrical Requirements (115V)*
Voltage: 115V ±10%
Frequency: 60 ±0.5 Hz
Phase: 1
kVA: 1.1
Plug: Arrow Hart 5717**
Receptacle: Arrow Hart 5716**

Electrical Requirements (208/230V)***
Voltage: 208/230V ±10%
Frequency: 60 ±0.5 Hz
Phase: 1
kVA: 1.1
Plug: Russell and Stoll FS3720
Receptacle: Russell and Stoll FS3743
Connector: Russell and Stoll FS3913

Operating Environment
Temperature: 60° to 90°F (15.6° to 23.2°C)
Relative humidity: 10% to 80%
Maximum wet bulb: 78°F (25.6°C)

Nonoperating Environment
Temperature: 50° to 110°F (10° to 43°C)
Relative humidity: 8% to 80%
Maximum wet bulb: 80°F (26.7°C)

Notes:
* Measure voltage at receptacle before connecting power cord to be sure correct voltage exists.
** All 115-volt machines shipped after January 1, 1968 are equipped with Arrow Hart (5717) plugs. Machines shipped prior to that date use Hubbell (9338) plugs.
*** Power is supplied by the 1133 if installed.
IBM 1131 CENTRAL PROCESSING UNIT MODELS
1C, 1D, 2C, 2D, 3B, 3C, 3D, 5B, 5C, AND 5D

Dimensions

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<td>Depth</td>
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<td>(73.7 cm)</td>
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<tr>
<td>Height</td>
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<td>(115.6 cm)</td>
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Service Clearances

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Maximum Weight

1050 lb (477 kg)

Heat Output/ Hour

4200 BTU (1058 kcal)

Air Flow

1000 cfm (28.3 m³/min) maximum

Electrical Requirements (208/230V)**

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<td>Frequency</td>
<td>60 ±0.5 Hz</td>
<td></td>
</tr>
<tr>
<td>Phase</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>kVA</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

Plug

Russell and Stoll FS3720

Receptacle

Russell and Stoll FS3743

Connector

Russell and Stoll FS3913

Operating Environment

Temperature

60°F to 90°F (15.6°C to 32.2°C)

Relative humidity

10% to 80%

Maximum wet bulb

78°F (25.6°C)

Nonoperating Environment

Temperature

50°F to 110°F (10°C to 43°C)

Relative humidity

8% to 80%

Maximum wet bulb

80°F (26.7°C)

Notes.

*Shipped in two sections.

Sec I: 290 lb (131.5 kg).

Sec II: 760 lb (345.7 kg).

**Power is supplied by the 1133 if installed.
IBM 1133 MULTIPLEX CONTROL ENCLOSURE

Dimensions

Width 32 in. (81,3 cm)
Depth 45.50 in. (115,6 cm)
Height 60 in. (152,4 cm)

Service Clearances

Front 30 in. (76,2 cm)
Rear 30 in. (76,2 cm)
Left 42 in. (106,7 cm)
Right 30 in. (76,2 cm)

Maximum Weight 1100 lb (499 kg)

Heat Output/Hour 3400 BTU (857 kcal)

Air Flow 500 cfm (14,2 m³/min) maximum

Electrical Requirements (208/230V)

Voltage 208/230V +10% to –8%
Frequency 60 ±0.5 Hz
Phase 3
kVA 1.1
Plug Russell and Stoll FS3760
Receptacle Russell and Stoll FS3754
Connector Russell and Stoll FS3934

Operating Environment

Temperature 60°F to 90°F (15.6°C to 32.2°C)
Relative humidity 10% to 80%
Maximum wet bulb 78°F (25.6°C)

Nonoperating Environment

Temperature 50°F to 110°F (10°F to 43°C)
Relative humidity 8% to 80%
Maximum wet bulb 80°F (26.7°C)

Inches = Centimeters

3.38 8.59
4.0 10.16
5.0 12.70
6.88 17.48
8.0 20.32
21.75 55.25
23.0 58.42
24.0 60.96
29.13 74.00
32.0 81.28
45.5 115.57
IBM 1055 PAPER TAPE PUNCH

Dimensions
Width*    15.375 in. (39 cm)
Depth     17.125 in. (44 cm)
Height    8.25 in. (21 cm)

Service Clearances
Front    12 in. (30 cm)
Rear     12 in. (30 cm)
Left     12 in. (30 cm)
Right    12 in. (30 cm)

Maximum Weight  26 lb (12 kg)
Heat Output/ Hour  150 BTU (38 kcal)
Air Flow         0 cfm (0 m³/min) maximum

Electrical Requirements**
kVA         0.06
Phase       1

Operating Environment
Temperature        50° to 110° F (10° to 43°C)
Relative humidity  10% to 80%
Maximum wet bulb   80°F (27°C)

Nonoperating Environment
Temperature        50° to 110° F (10° to 43°C)
Relative humidity  10 % to 80%
Maximum wet bulb   80°F (27°C)

Notes.
*With tape reels.
**Power is supplied by the 1131.
IBM 1132 PRINTER MODELS 1 AND 2

Dimensions
Width 47 in. (119.4 cm)
Depth 29.50 in. (74.9 cm)
Height 42 in. (106.7 cm)

Service Clearances
Front 36 in. (91.4 cm)
Rear 30 in. (76.2 cm)
Left 30 in. (76.2 cm)
Right 30 in. (76.2 cm)

Maximum Weight 700 lb (318 kg)
Heat Output/Hour 1300 BTU (328 kcal)
Air Flow 80 cfm (2 m³/min) maximum

Electrical Requirements*
kVA 0.5
Phase 1

Operating Environment
Temperature 60° to 90° F (15.6° to 32.2°C)
Relative humidity 10% to 80%
Maximum wet bulb 78° F (25.6°C)

Nonoperating Environment
Temperature 50° to 110° F (10° to 43°C)
Relative humidity 8% to 80%
Maximum wet bulb 80° F (26.7°C)

*Notes.
1. Power is supplied by the 1131.
2. Voltage specified must be compatible with 1131. For field conversion, order required change via no-charge MES.

Inches = Centimeters
4.0 10.16
7.0 17.78
8.0 20.32
14.0 35.56
22.5 57.16
29.0 73.66
47.0 119.38
IBM 1134 PAPER TAPE READER

Dimensions
Width 23.5 in. (59.7 cm)
Depth 11.50 in. (29.20 cm)
Height 10 in. (25.4 cm)

Service Clearances
Front 30 in. (76.2 cm)
Rear 12 in. (30.5 cm)
Left 6 in. (15.2 cm)
Right 6 in. (15.2 cm)

Maximum Weight 15 lb (7 kg)
Heat Output/Hour 150 BTU (38 kcal)
Air Flow 0 cfm (0 m³/min) maximum

Electrical Requirements*
kVA 0.06
Phase 1

Operating Environment
Temperature 60° to 90°F (15.6° to 32.2°C)
Relative humidity 10% to 80%
Maximum wet bulb 80°F (26.7°C)

Nonoperating Environment
Temperature 60° to 90°F (15.6° to 32.2°C)
Relative humidity 10% to 80%
Maximum wet bulb 80°F (26.7°C)

Note.
*Power supplied by the 1131.
IBM 1231 OPTICAL MARK PAGE READER MODEL 1

Dimensions
Width 43.5 in. (113 cm)
Depth 24 in. (61 cm)
Height 44.75 in. (114 cm)

Service Clearances
Front 42 in. (107 cm)
Rear 42 in. (107 cm)
Left 36 in. (91 cm)
Right 30 in. (76 cm)

Maximum Weight 620 lb (281 kg)
Heat Output/Hour 3700 BTU (932 kcal)
Air Flow 300 cfm (8 m³/min) maximum

Electrical Requirements (208/230V)*
Voltage 208/230V ±10%
Frequency 60 ±0.5 Hz
Phase 1
kVA 1.2
Plug Russell and Stoll FS3720
Receptacle Russell and Stoll FS3743
Connector Russell and Stoll FS3913

Operating Environment
Temperature 50°F to 110°F (10°C to 43°C)
Relative humidity 8% to 80%
Maximum wet bulb 85°F (29.4°C)

Nonoperating Environment
Temperature 50°F to 110°F (10°C to 43°C)
Relative humidity 8% to 80%
Maximum wet bulb 85°F (29.4°C)

Note.
*1131 must be 208/230V.

Inches  =  Centimeters
4.0        10.16
5.0        12.70
7.0        17.78
9.0        22.86
13.0       33.02
16.5       41.91
22.5       57.16
24.0       60.96
27.0       68.58
43.5       110.49
IBM 1403 PRINTER MODELS 6 AND 7

Dimensions
- Width: 47.75 in. (121 cm)
- Depth: 28.50 in. (72 cm)
- Height: 63.25 in. (160 cm)

Service Clearances
- Front: 36 in. (91 cm)
- Rear: 36 in. (91 cm)
- Left: 30 in. (76 cm)
- Right: 30 in. (76 cm)

Maximum Weight: 750 lb (340 kg)

Heat Output/Hour: 2500 BTU (630 kcal)

Air Flow: 310 cfm (9 m³/min) maximum

Electrical Requirements*
- kVA: 1.0
- Phase: 3

Operating Environment
- Temperature: 60°F to 90°F (16°C to 32.2°C)
- Relative humidity: 20% to 80%
- Maximum wet bulb: 78°F (25.6°C)

Nonoperating Environment
- Temperature: 50°F to 110°F (10°C to 43°C)
- Relative humidity: 0% to 80%
- Maximum wet bulb: 80°F (26.7°C)

Note,
*Power is supplied by the 1133.
IBM 1442 CARD PUNCH MODEL 5
IBM 1442 CARD READ PUNCH MODELS 6 AND 7

Dimensions
Width 43 in. (109 cm)
Depth 24 in. (61 cm)
Height 49 in. (124 cm)

Service Clearances
Front 36 in. (91 cm)
Rear 30 in. (76 cm)
Left* 18 in. (46 cm)
Right 6 in. (15 cm)

Maximum Weight 525 lb (238 kg)
Heat Output/ Hour 1800 BTU (454 kcal)

Air Flow 50 cfm (1 m³/min) maximum

Electrical Requirements**
kVA 0.7
Phase 1

Operating Environment
Temperature 60° to 90°F (15.6° to 32.2°C)
Relative humidity 10% to 80%
Maximum wet bulb 80°F (26.7°C)

Nonoperating Environment
Temperature 50° to 110°F (10° to 43°C)
Relative humidity 0% to 80%
Maximum wet bulb 80°F (26.7°C)

Notes.
*No service clearance is required from floor level to 30” (76 cm) above floor level. Service clearance is required for the upper portion of the machine only. The 1442 can be abutted to units that do not extend more than 30” (76 cm) above the floor.
**Power is supplied by the 1131. For 1442 Model 5, 1131 must be 208/230V.

Inches = Centimeters
0.5 1.27
0.75 1.91
2.5 6.35
5.0 12.70
6.0 15.24
8.0 20.32
9.0 22.86
10.0 25.40
12.0 30.48
15.0 38.10
24.0 60.96
43.0 109.22
IBM 1627 PLOTTER MODELS 1 AND 2

Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Width</th>
<th>Depth</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>18 in.</td>
<td>15 in.</td>
<td>10 in.</td>
</tr>
<tr>
<td>Model 2</td>
<td>40 in.</td>
<td>15 in.</td>
<td>10 in.</td>
</tr>
</tbody>
</table>

Service Clearances

<table>
<thead>
<tr>
<th>Side</th>
<th>Clearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front</td>
<td>12 in. (30 cm)</td>
</tr>
<tr>
<td>Rear</td>
<td>12 in. (30 cm)</td>
</tr>
<tr>
<td>Left</td>
<td>12 in. (30 cm)</td>
</tr>
<tr>
<td>Right</td>
<td>12 in. (30 cm)</td>
</tr>
</tbody>
</table>

Maximum Weight

<table>
<thead>
<tr>
<th>Model</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>33 lb (15 kg)</td>
</tr>
<tr>
<td>Model 2</td>
<td>55 lb (25 kg)</td>
</tr>
</tbody>
</table>

Heat Output/ Hour

|       | 250 BTU (63 kcal) |

Air Flow

|       | 0 cfm (0 m³/min) maximum |

Electrical Requirements

|       | 0.1 kVA | 1 Phase |

Operating Environment

<table>
<thead>
<tr>
<th></th>
<th>60° to 90° F (15.6° to 32.2° C)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20% to 80%</td>
</tr>
<tr>
<td></td>
<td>78° F (25.6° C)</td>
</tr>
</tbody>
</table>

Nonoperating Environment

<table>
<thead>
<tr>
<th></th>
<th>50° to 110° F (10° to 43° C)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0% to 80%</td>
</tr>
<tr>
<td></td>
<td>85° F (29.4° C)</td>
</tr>
</tbody>
</table>

Note.

*Power is supplied by the 1131.
IBM 2250 DISPLAY UNIT MODEL 4

Dimensions
Width* 58.5 in. (149 cm)
Depth 64.5 in. (164 cm)
Height 50 in. (127 cm)

Service Clearances
Front 30 in. (76 cm)
Rear 10 in. (25 cm)
Left 40 in. (102 cm)
Right 30 in. (76 cm)

Maximum Weight 600 lb (172 kg)

Heat Output/Hour 3,000 BTU (756 kcal)

Air Flow 420 cfm (11.9 m³/min) maximum

Electrical Requirements
Voltage 208/230V ±10%
Frequency 60 ±0.5 Hz
Phase 1
kVA 1.0
Plug Russell and Stoll FS3720
Receptacle Russell and Stoll FS3743
Connector Russell and Stoll FS3913

Operating Environment
Temperature 60° to 90° F (15.6° to 32.2° C)
Relative humidity 8% to 80%
Maximum wet bulb 78° F (25.6°C)
Maximum ambient light Recommended level at desk height—
60 foot candles
Normal range at desk height—
15 to 80 foot candles

Nonoperating Environment
Temperature 50° to 110° F (10° to 43° C)
Relative humidity 8% to 80%
Maximum wet bulb 80° F (26.7°C)

Note.
*Maximum width with reading board removed 28.5 in. (72 cm).

Inches = Centimeters
1.0 2.54
2.0 5.08
6.0 15.24
6.3 16.01
8.0 20.32
11.0 27.94
14.0 35.56
17.6 44.71
18.75 47.63
22.0 55.88
22.62 57.46
33.5 85.09
35.5 90.17
58.52 148.65
IBM 2285 DISPLAY COPIER

Dimensions
Width  22 in. (56 cm)
Depth  30 in. (76 cm)
Height  40 in. (102 cm)

Service Clearances
Front  30 in. (76 cm)
Rear  30 in. (76 cm)
Left  30 in. (76 cm)
Right  26 in. (66 cm)

Maximum Weight  350 lb (159 kg)
Heat Output/Hour  750 BTU (187 kcal)
Air Flow  75 cfm (2 m³/min) maximum

Electrical Requirements*
kVA  1.5
Cable limitations  length fixed at 5 feet.

Operating Environment
Temperature  60° to 90°F (15.6° to 32.2°C)
Relative humidity**  20% to 80%
Maximum wet bulb  78°F (26.8°C)

Nonoperating Environment
Temperature  50° to 110°F (10° to 43°C)
Relative humidity  8% to 80%
Maximum wet bulb  80°F (26.7°C)

Notes.
*Powered from 2250.
**Maximum operating RH is limited to 70% because of the characteristics of the photographic medium.

22.00" Cover Swing
12.00" Gate Swing
26.00" Cover Swing

3.38" Front  2.00"
3.38"  3.00"  4.25"  26.00" Cover Swing

Inches  =  Centimeters
2.0  5.08
3.0  7.62
3.38  8.69
4.25  10.80
12.0  30.48
22.0  55.88
26.0  66.04
30.0  76.20
IBM 2310 DISK STORAGE MODELS B1 AND B2

Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>22 in. (56 cm)</td>
</tr>
<tr>
<td>Depth</td>
<td>30 in. (76 cm)</td>
</tr>
<tr>
<td>Height</td>
<td>44 in. (112 cm)</td>
</tr>
</tbody>
</table>

Service Clearances

<table>
<thead>
<tr>
<th>Clearances</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front</td>
<td>30 in. (76 cm)</td>
</tr>
<tr>
<td>Rear</td>
<td>30 in. (76 cm)</td>
</tr>
<tr>
<td>Left*</td>
<td>24 in. (61 cm)</td>
</tr>
<tr>
<td>Right*</td>
<td>24 in. (61 cm)</td>
</tr>
</tbody>
</table>

Maximum Weight 365 lb (165 kg)

Heat Output/Hour 1800 BTU (454 kcal)

Air Flow 75 cfm (2 m³/min) maximum

Electrical Requirements**

kVA 0.7
Phase 3

Operating Environment

<table>
<thead>
<tr>
<th>Environment</th>
<th>Temperature</th>
<th>Relative humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60°F to 90°F (15.6°C to 32.2°C)</td>
<td>10% to 80%</td>
</tr>
<tr>
<td></td>
<td>78°F (25.6°C)</td>
<td></td>
</tr>
</tbody>
</table>

Nonoperating Environment

<table>
<thead>
<tr>
<th>Environment</th>
<th>Temperature</th>
<th>Relative humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50°F to 110°F (10°C to 43°C)</td>
<td>8% to 80%</td>
</tr>
<tr>
<td></td>
<td>85°F (29.4°C)</td>
<td></td>
</tr>
</tbody>
</table>

Notes.

*Side clearance not required when abutted to units of like construction.

**Power is supplied by the 1133.

Inches = Centimeters

<table>
<thead>
<tr>
<th>Inches</th>
<th>Centimeters</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.25</td>
<td>5.72</td>
</tr>
<tr>
<td>3.63</td>
<td>9.23</td>
</tr>
<tr>
<td>3.75</td>
<td>9.53</td>
</tr>
<tr>
<td>4.0</td>
<td>10.16</td>
</tr>
<tr>
<td>8.0</td>
<td>20.32</td>
</tr>
<tr>
<td>21.0</td>
<td>53.34</td>
</tr>
<tr>
<td>22.0</td>
<td>55.88</td>
</tr>
<tr>
<td>22.5</td>
<td>57.15</td>
</tr>
<tr>
<td>23.0</td>
<td>58.42</td>
</tr>
<tr>
<td>30.0</td>
<td>76.20</td>
</tr>
</tbody>
</table>
IBM 2311 DISK STORAGE DRIVE
MODELS 11 AND 12

Dimensions
Width 30 in. (76,2 cm)
Depth 24 in. (61,0 cm)
Height 38 in. (96,5 cm)

Service Clearances
Front 36 in. (91,4 cm)
Rear 36 in. (91,4 cm)
Right* 30 in. (76,2 cm)
Left* 30 in. (76,2 cm)

Maximum Weight 390 lb (177 kg)
Heat Output/ Hour 2,000 BTU (504 kcal)
Air Flow 100 cfm (3 m³/min) maximum

Electrical Requirements**
kVA 0,75
Phase 3

Operating Environment
Temperature 60° to 90°F (16° to 32°C)
Relative humidity 8% to 80%

Nonoperating Environment
Temperature 50° to 110°F (10° to 43°C)
Relative humidity 0% to 80%

Notes.
*Clearances as shown except when not abutted to units of like construction.
**Power is supplied by the 1133.

Inches = Centimeters
1.0 2,54
2.0 5,08
2.5 6,35
4.5 11,43
6.0 15,24
8.0 20,32
9,5 24,33
24.0 60,96
30.0 76,20
IBM 2501 CARD READER MODELS A1 AND A2

Dimensions

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>30 in. (76 cm)</td>
</tr>
<tr>
<td>Depth</td>
<td>24 in. (61 cm)</td>
</tr>
<tr>
<td>Height</td>
<td>45 in. (114 cm)</td>
</tr>
</tbody>
</table>

Service Clearances

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front</td>
<td>36 in. (91 cm)</td>
</tr>
<tr>
<td>Rear</td>
<td>36 in. (91 cm)</td>
</tr>
<tr>
<td>Left</td>
<td>6 in. (15 cm)</td>
</tr>
<tr>
<td>Right</td>
<td>24 in. (61 cm)</td>
</tr>
</tbody>
</table>

Maximum Weight 340 lb (154 kg)

Heat Output/Hour 700 BTU (176 kcal)

Air Flow 0 cfm (0 m³/min) maximum

Electrical Requirements*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kVA</td>
<td>0.3</td>
</tr>
<tr>
<td>Phase</td>
<td>1</td>
</tr>
</tbody>
</table>

Operating Environment

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>50°F to 90°F (10°C to 32.2°C)</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>20% to 80%</td>
</tr>
<tr>
<td>Maximum wet bulb</td>
<td>78°F (25.6°C)</td>
</tr>
</tbody>
</table>

Nonoperating Environment

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>50°F to 110°F (10°C to 43°C)</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>8% to 80%</td>
</tr>
<tr>
<td>Maximum wet bulb</td>
<td>80°F (26.7°C)</td>
</tr>
</tbody>
</table>

Note.

*Power is supplied by the 1131 and must be 208/230V.

Inches = Centimeters

<table>
<thead>
<tr>
<th>Inches</th>
<th>Centimeters</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.75</td>
<td>1.91</td>
</tr>
<tr>
<td>2.0</td>
<td>5.08</td>
</tr>
<tr>
<td>2.5</td>
<td>6.35</td>
</tr>
<tr>
<td>5.0</td>
<td>12.70</td>
</tr>
<tr>
<td>6.0</td>
<td>15.24</td>
</tr>
<tr>
<td>8.0</td>
<td>20.32</td>
</tr>
<tr>
<td>9.0</td>
<td>22.86</td>
</tr>
<tr>
<td>10.0</td>
<td>25.40</td>
</tr>
<tr>
<td>24.0</td>
<td>60.96</td>
</tr>
<tr>
<td>30.0</td>
<td>76.20</td>
</tr>
</tbody>
</table>

24
**AUXILIARY TABLE**

**Dimensions**

- **Width**: 32 in. (81 cm)
- **Depth**: 23 in. (58 cm)
- **Height**: 27 in. (69 cm)

**Service Clearances**

- **Front**: 12 in. (30 cm)
- **Rear**: 12 in. (30 cm)
- **Left**: 12 in. (30 cm)
- **Right**: 12 in. (30 cm)

**Maximum Weight**: 30 lb (13.6 kg)

The auxiliary table is available from IBM, but is not standard with the IBM 1130 system. It is for use with the 1134, 1055, and 1627 Model 1 units.

**Note.**

*This dimension is decreased 3" (7.6 cm) when the lower shelf is repositioned to the rear.*

---

**Diagram**

- **Tape Basket Back Cover**
- **Forms Stand**
- **Upper Shelf**
- **Lower Shelf**
- **Front**

**Inches = Centimeters**

- 12.0 = 30.48
- 15.0 = 38.10
- 17.5 = 44.45
- 18.0 = 45.72
- 23.0 = 58.42
- 29.0 = 73.66
- 32.0 = 81.28
## Appendix A. Summary of Specifications (U.S. Units)

### Unit Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Name</th>
<th>Electrical</th>
<th>Environmental</th>
<th>Dimensions (inches)</th>
<th>Service clearances (inches)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>kVA</td>
<td>Conn Type</td>
<td>BTU/hr</td>
<td>cfm</td>
<td>Weight (lbs.)</td>
</tr>
<tr>
<td>1131</td>
<td>1A, 1B, 2A, 2B, 4A, 4B</td>
<td>Central Processing Unit</td>
<td>1.1</td>
<td>A, D or E</td>
<td>3100</td>
<td>720</td>
<td>760</td>
</tr>
<tr>
<td>1131</td>
<td>1C, 1D, 2C, 2D, 3B, 3C, 3D, 5B, 5C, 5D</td>
<td>Central Processing Unit</td>
<td>1.5</td>
<td>A</td>
<td>4200</td>
<td>1000</td>
<td>1050</td>
</tr>
<tr>
<td>1055</td>
<td>–</td>
<td>Paper Tape Punch</td>
<td>0.06</td>
<td>–</td>
<td>150</td>
<td>–</td>
<td>26</td>
</tr>
<tr>
<td>1132</td>
<td>1, 2</td>
<td>Printer</td>
<td>0.5</td>
<td>–</td>
<td>1300</td>
<td>80</td>
<td>700</td>
</tr>
<tr>
<td>1133</td>
<td>–</td>
<td>Multiplex Control Enclosure</td>
<td>1.1</td>
<td>C</td>
<td>3400</td>
<td>500</td>
<td>1100</td>
</tr>
<tr>
<td>1134</td>
<td>1, 2</td>
<td>Paper Tape Reader</td>
<td>0.06</td>
<td>–</td>
<td>150</td>
<td>–</td>
<td>15</td>
</tr>
<tr>
<td>1231</td>
<td>1</td>
<td>Optical Mark Page Reader</td>
<td>1.2</td>
<td>A</td>
<td>3700</td>
<td>300</td>
<td>620</td>
</tr>
<tr>
<td>1403</td>
<td>6, 7</td>
<td>Printer</td>
<td>1.0</td>
<td>–</td>
<td>2500</td>
<td>310</td>
<td>750</td>
</tr>
<tr>
<td>1442</td>
<td>5</td>
<td>Card Punch</td>
<td>0.7</td>
<td>–</td>
<td>1800</td>
<td>50</td>
<td>525</td>
</tr>
<tr>
<td>1442</td>
<td>6, 7</td>
<td>Card Read Punch</td>
<td>0.7</td>
<td>–</td>
<td>1800</td>
<td>50</td>
<td>525</td>
</tr>
<tr>
<td>1627</td>
<td>1</td>
<td>Plotter</td>
<td>0.1</td>
<td>–</td>
<td>250</td>
<td>–</td>
<td>33</td>
</tr>
<tr>
<td>1627</td>
<td>2</td>
<td>Plotter</td>
<td>0.1</td>
<td>–</td>
<td>250</td>
<td>–</td>
<td>55</td>
</tr>
<tr>
<td>2310</td>
<td>B1, B2</td>
<td>Disk Storage</td>
<td>0.7</td>
<td>–</td>
<td>1800</td>
<td>75</td>
<td>365</td>
</tr>
<tr>
<td>2311</td>
<td>11, 12</td>
<td>Disk Storage Drive</td>
<td>0.75</td>
<td>–</td>
<td>2000</td>
<td>100</td>
<td>390</td>
</tr>
<tr>
<td>2501</td>
<td>A1, A2</td>
<td>Card Reader</td>
<td>0.3</td>
<td>–</td>
<td>700</td>
<td>–</td>
<td>340</td>
</tr>
<tr>
<td>2250</td>
<td>4</td>
<td>Display Unit</td>
<td>1.0</td>
<td>A</td>
<td>3000</td>
<td>420</td>
<td>600</td>
</tr>
<tr>
<td>2285</td>
<td>–</td>
<td>Display Copier</td>
<td>1.5</td>
<td>–</td>
<td>750</td>
<td>75</td>
<td>350</td>
</tr>
</tbody>
</table>

### Notes
1. The base of the processor is 31.50 inches high; the console adds another 14.0 inches for a total height of 45.5 inches.
2. This unit is equipped with radio interference control circuitry and requires a good wired earth or building ground. Total resistance of the ground conductor, measured between the receptacle and the building grounding point, must not exceed 3 ohms. For proper operation, all components of the system or systems to which this unit is attached must have the same ground reference. Conduit is not a satisfactory means of grounding.
3. Powered from 1131.
4. Powered from 1133.
5. Power is supplied by 1133 if installed.
6. If a 1231, 1442-5 or a 2501 is installed, the 1131 must be 208/230V ac.
7. Powered from 2250.
## Connector Types

<table>
<thead>
<tr>
<th>Type</th>
<th>Plug</th>
<th>Connector</th>
<th>Receptacle</th>
<th>Branch Circuit</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Russell &amp; Stoll, FS3720</td>
<td>FS3913</td>
<td>FS3743</td>
<td>20 amp, 1 phase, 3-wire</td>
<td>208/230</td>
</tr>
<tr>
<td>C</td>
<td>Russell &amp; Stoll, FS3760</td>
<td>FS3934</td>
<td>FS3754</td>
<td>30 amp, 3 phase, 4-wire</td>
<td>208/230</td>
</tr>
<tr>
<td>D*</td>
<td>Hubbell 9338</td>
<td></td>
<td>9344</td>
<td>30 amp, 1 phase, 3-wire</td>
<td>115**</td>
</tr>
<tr>
<td>E*</td>
<td>Arrow Hart 5717</td>
<td></td>
<td>5716</td>
<td>30 amp, 1 phase, 3-wire</td>
<td>115**</td>
</tr>
</tbody>
</table>

*All 115-volt machines shipped after January 1, 1968, are equipped with Arrow Hart (5717) plugs. Machines shipped prior to that date use Hubbell (9338) plugs.

**Measure voltage at receptacle before connecting power cord to be sure correct voltage exists.
### Appendix B. Summary of Specifications (Metric)

#### Unit Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Name</th>
<th>Electrical</th>
<th>Environmental</th>
<th>Dimensions (centimeters)</th>
<th>Service clearances (centimeters)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>kVA</td>
<td>Power cord style</td>
<td>kcal</td>
<td>m³/min</td>
<td>Width</td>
</tr>
<tr>
<td>1131</td>
<td>1A, 1B</td>
<td>Central Processing Unit</td>
<td>1.1</td>
<td>A or D</td>
<td>781</td>
<td>20,7</td>
<td>345,7</td>
</tr>
<tr>
<td>1131</td>
<td>2A, 2B</td>
<td>Central Processing Unit</td>
<td>1.5</td>
<td>A or D</td>
<td>1058</td>
<td>28,3</td>
<td>477</td>
</tr>
<tr>
<td>1055</td>
<td></td>
<td>Paper Tape Punch</td>
<td>0.06</td>
<td>–</td>
<td>37,8</td>
<td>–</td>
<td>16,3</td>
</tr>
<tr>
<td>1132</td>
<td></td>
<td>Printer</td>
<td>0.5</td>
<td>–</td>
<td>328</td>
<td>2,26</td>
<td>317,5</td>
</tr>
<tr>
<td>1133</td>
<td></td>
<td>Multiplex Control Enclosure</td>
<td>1.1</td>
<td>C</td>
<td>857</td>
<td>14,2</td>
<td>499</td>
</tr>
<tr>
<td>1134</td>
<td>1, 2</td>
<td>Paper Tape Reader</td>
<td>0.08</td>
<td>–</td>
<td>37,8</td>
<td>–</td>
<td>6,8</td>
</tr>
<tr>
<td>1231</td>
<td>1</td>
<td>Optical Mark Page Reader</td>
<td>1.2</td>
<td>A</td>
<td>932</td>
<td>8,49</td>
<td>281</td>
</tr>
<tr>
<td>1403</td>
<td>6, 7</td>
<td>Printer</td>
<td>1.0</td>
<td>–</td>
<td>630</td>
<td>8,77</td>
<td>340</td>
</tr>
<tr>
<td>1442</td>
<td>5</td>
<td>Card Punch</td>
<td>0.7</td>
<td>–</td>
<td>454</td>
<td>1,42</td>
<td>238</td>
</tr>
<tr>
<td>1442</td>
<td>6, 7</td>
<td>Card Read Punch</td>
<td>0.7</td>
<td>–</td>
<td>454</td>
<td>1,42</td>
<td>238</td>
</tr>
<tr>
<td>1627</td>
<td>1</td>
<td>Plotter</td>
<td>0.1</td>
<td>–</td>
<td>63</td>
<td>–</td>
<td>15</td>
</tr>
<tr>
<td>1627</td>
<td>2</td>
<td>Plotter</td>
<td>0.1</td>
<td>–</td>
<td>63</td>
<td>–</td>
<td>24,9</td>
</tr>
<tr>
<td>2311</td>
<td>B1, B2</td>
<td>Disk Storage Drive</td>
<td>0.7</td>
<td>–</td>
<td>454</td>
<td>2,12</td>
<td>165</td>
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<tr>
<td>2311</td>
<td>11, 12</td>
<td>Disk Storage Drive</td>
<td>0.75</td>
<td>–</td>
<td>504</td>
<td>3</td>
<td>177</td>
</tr>
<tr>
<td>2501</td>
<td>A1, A2</td>
<td>Card Reader</td>
<td>0.3</td>
<td>–</td>
<td>17,6</td>
<td>–</td>
<td>154</td>
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<tr>
<td>2250</td>
<td>4</td>
<td>Display Unit</td>
<td>1.0</td>
<td>E or F</td>
<td>756</td>
<td>11,9</td>
<td>272</td>
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<tr>
<td>2285</td>
<td></td>
<td>Display Copier</td>
<td>1.5</td>
<td>–</td>
<td>187</td>
<td>2,12</td>
<td>159</td>
</tr>
</tbody>
</table>

**Notes:**

1. The base of the processor is 80 centimeters high; the console adds another 35.6 centimeters for a total height of 115.6 centimeters.
2. This unit is equipped with radio interference control circuitry and requires a good wired earth or building ground. Total resistance of the ground conductor, measured between the receptacle and the building grounding point, must not exceed 3 ohms. For proper operation, all components of the system or systems to which this unit is attached must have the same ground reference. Conduit is not a satisfactory means of grounding.
3. Powered from 1131.
4. Powered from 1133.
5. Power is supplied by the 1133 if installed.
6. If a 1231, 1442-5 or a 2501 is installed, the 1131 must be 195, 220 or 235V ac.
7. All 115-volt machines shipped after January 1, 1968, are equipped with Arrow Hart (5717) plugs. Machines shipped prior to that date use Hubbell (9338) plugs.
8. Powered from 2250.
## Power Cord Styles

<table>
<thead>
<tr>
<th>Power cord style</th>
<th>Cable Nominal O.D.</th>
<th>Conductor Qty</th>
<th>AWG</th>
<th>Shield</th>
<th>Material</th>
<th>Insulation Nominal O.D.</th>
<th>Material</th>
<th>Body color</th>
<th>Voltage rating</th>
<th>Branch circuit</th>
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<td></td>
<td>Inch</td>
<td>cm</td>
<td></td>
<td></td>
<td></td>
<td>Inch</td>
<td>cm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A, 50 Hz</td>
<td>0.405</td>
<td>1,0</td>
<td>Grey</td>
<td>3</td>
<td>12</td>
<td>None</td>
<td>Stranded tinned copper</td>
<td>0.03</td>
<td>0.076</td>
<td>PVC Note 1</td>
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<tr>
<td>C, 50 Hz*</td>
<td>0.750</td>
<td>1.9</td>
<td>Grey</td>
<td>5</td>
<td>10</td>
<td>Yes</td>
<td>Stranded tinned copper</td>
<td>0.094</td>
<td>0.24</td>
<td>PVC Note 3</td>
</tr>
<tr>
<td>D, 50 Hz**</td>
<td>0.405</td>
<td>1,0</td>
<td>Grey</td>
<td>3</td>
<td>12</td>
<td>None</td>
<td>Stranded tinned copper</td>
<td>0.03</td>
<td>0.076</td>
<td>PVC Note 4</td>
</tr>
<tr>
<td>E, 50 Hz Note 5</td>
<td>0.58</td>
<td>1.47</td>
<td>Grey</td>
<td>3</td>
<td>12</td>
<td>Yes</td>
<td>Stranded tinned copper</td>
<td>0.094</td>
<td>0.24</td>
<td>PVC Note 1</td>
</tr>
<tr>
<td>F, 50 Hz** Note 5</td>
<td>0.58</td>
<td>1.47</td>
<td>Grey</td>
<td>3</td>
<td>12</td>
<td>Yes</td>
<td>Stranded tinned copper</td>
<td>0.094</td>
<td>0.24</td>
<td>PVC Note 4</td>
</tr>
</tbody>
</table>

*For countries using 50 hertz power.

**United Kingdom.

### Notes

1. Green/Yellow for lead 1, Blue for lead 2, Black for lead 3.
2. Ground to any conductor, 250 volts. Between any two conductors, 500 volts.
5. An external flexible steel conduit 0.75" I.D. (1.9 cm) covers the attachment cord. This is grounded at the 2250 end and must also be grounded at the receptacle end.
### Unit Phase Distribution

<table>
<thead>
<tr>
<th>Unit</th>
<th>Phase*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1056</td>
<td>1 and 2</td>
</tr>
<tr>
<td>1131</td>
<td>1 and 2</td>
</tr>
<tr>
<td>1132</td>
<td>1 and 2</td>
</tr>
<tr>
<td>1133</td>
<td>1, 2, and 3</td>
</tr>
<tr>
<td>1134</td>
<td>1 and 2</td>
</tr>
<tr>
<td>1231</td>
<td>**</td>
</tr>
<tr>
<td>1403</td>
<td>1, 2, and 3</td>
</tr>
<tr>
<td>1442</td>
<td>1 and 2</td>
</tr>
<tr>
<td>1627</td>
<td>1 and 2</td>
</tr>
<tr>
<td>2250</td>
<td>**</td>
</tr>
<tr>
<td>2285</td>
<td>***</td>
</tr>
<tr>
<td>2310B</td>
<td>1, 2, and 3</td>
</tr>
<tr>
<td>2311</td>
<td>1, 2, and 3</td>
</tr>
<tr>
<td>2501</td>
<td>1 and 2</td>
</tr>
</tbody>
</table>

*Single-phase loads are connected.

**Receptacle is customer assignable.

***Same as 2250.
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