

2200 INSTALLATION GUIDE

SASTEL 2200



2200 **Installation Guide**

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INTRODUCTION

This manual has been prepared to give you information concerning the physical installation of the units in your system.

The preparation of this document does not assume responsibility for site preparation and installation by Wang Laboratories, Inc. but is designed to assist you in preparing your computer room for efficient operation. It is expected that your Wang Service Representative will perform actual installation of the components of your system.

ENVIRONMENTAL REQUIREMENTS

Temperature, humidity and dust are the three important environmental factors which must be controlled for proper functioning of your system. In general, if the room in which the computer is to be installed is comfortable for the computer operator, it will be satisfactory for the machine itself. Allowable ranges for operating temperature and relative humidity are:

Temperature: 50° to 90°F (10° to 32°C) Allowable Relative Humidity: 20 to 80%, non-condensing Recommended Relative Humidity: 35 to 65%, non-condensing

Airborne dust must be controlled so that over a given 24 hour period, no accumulation on the units is obvious.

Temperature can be controlled by the usual heating and air conditioning units. Dust can be effectively controlled by the usual heating, ventilating and cooling equipment if units are supplied with adequate filters. Filters should be cleaned or replaced regularly. If the usual filters do not control dust effectively, an electrostatic filter should be installed.

Humidity outside the recommended range should be controlled by the installation of humidifiers or dehumidifiers. Excessive temperature can cause equipment failure; low humidity can create static discharge which will cause system malfunctions and data loss; dirt can cause mechanical wear in all recording units and can create system malfunctions.

The computer room may be tiled and sound-proofed as desired; in general, it should never be carpeted since carpeting low humidity and can generate significant amounts of static electricity which will cause office carpeting manufacturers can provide machine malfunctions. Some special metal-impregnated anti-static carpeting which can be grounded; this is the only type of carpeting that can be used in the machine room. Spraying existing carpeting with an anti-static agent usually sufficient to control static electricity at all times. This is not problem is particularly severe during winter months when buildings are heated, since heating dries the air and reduces humidity significantly.

ELECTRICAL REQUIREMENTS

The units of your Wang system must be plugged into a dedicated power line (i.e., the line should not be shared with other office equipment such as air conditioners, calculators, water coolers, typewriters, etc.)

Power requirements are:

115 VAC or 230 VAC \pm 10% 50 or 60 Hz \pm 1 Hz depending on the system purchased.

If the dedicated line (or lines) is not regulated within these limits, a constant voltage transformer must be installed.

Your system, its peripheral units, and the medium on which your data are recorded. are extremely sensitive to electromagnetic interference (EMI). Such electromagnetic noise can be generated by conduction along wiring, or by direct radiation. Any device such as an office machine, an electrical motor, electrical machinery, an arc welder, etc., can generate considerable Any device which generates EMI should be relocated, electrical noise. repaired or filtered. If the noise is in the power line itself, an EMI filter with a cut-off frequency near lOkHz should be installed on the power line, and the power line should be properly installed in steel conduit connected to junction boxes. In extreme cases, it may be necessary to shield the peripheral cables of your system. Any medium, such as disks, cassettes or nine-track tapes must be stored away from sources of electrical interference (it is possible to degauss sections of magnetic tape by operating a vacuum cleaner near data tapes).

Each unit has specific current requirements as indicated in the layout section of this guide. To ensure operator safety, the power lines for all units should be attached only to an appropriately grounded line with the 3-prong plugs provided. It is essential that a system ground be a true ground. If a three-hole outlet is not available, an adapter can be used but it must be appropriately grounded. Normally, a 20 ampere 115 VAC power line is adequate for most Wang systems. However, to determine if a larger line is necessary, find the units of your configuration in the layout section of this guide and add up their amperages. Whenever the sum exceeds 20 amps, a larger line or more than one separate line must be used. For example, a System 2200S with a Model 2220 Console and a Model 2231 printer has the following requirements:

Model	Amps (115V)	(230V)
2200S CP 2220 2231	U 2.0A 0.6 <u>2.6</u> 5.2A	1.0A 0.3A <u>1.3A</u> 2.6A

Thus, any standard 20 amp line is sufficient to run such a system.

However, the following configuration requires one 40 amp or two 20 amp lines:

Model	Amps (115V)	(230V)
WCS/30 2221W 2230 2234A	7.8 2.6 7.0 <u>13.0</u> 30.4A	3.9 1.3 3.5 <u>6.5</u> 15.2A

SITE SELECTION

The site you choose for your system will depend on two primary considerations:

. the task to be done

the availability of adequate space.

If the task for which the system is to be used will be the responsibility of, say, the accounting department, then probably the best location for the system will be in or near that department. If it is to be used primarily for shipping documents, then it will best be located near the shipping area, etc.

The site chosen should normally provide room for storage of computer materials such as fan-fold printer paper, disks and diskettes as needed. It may also be a good idea to store at least one copy of every manual for the machine in the same room as the computer for easy access.

SITE LAYOUT

In this guide you will find two Site Grids. One has been ruled in 1 ft squares, the other in 1m squares. The appropriate grid can be used to lay out the walls, doors and windows of the room in which you intend to place your system. It is also a good plan to indicate the location of every wall outlet which can be used. Line drawings of each piece of equipment are also provided; these can be copied and placed on the Site Grid as an aid in planning your site. The line drawings have been drawn to scale and can be used with either Site Grid. Be sure to select the Site Grid ruled in the correct system (English or metric) for your area so that you will accurately lay out your site.

Make a copy of the Site Grid itself to prepare cutouts for additional pieces of office equipment such as bookcases or filing cabinets if you intend to have them in the machine room.

Once you have outlined your room on the Site Grid and indicated all openings, obstructions and wall outlets, you can place the line drawings of equipment on it to plan your layout. Estimate the distance of your equipment from the available wall plugs, since if equipment cables are too short, extension cables must be obtained. In general, the main console can be positioned along a wall in which wall plugs are located. Note that cable lengths are important since not all units can be used with extension cables

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and available cables can be obtained only in specific lengths (see individual model specifications).

To illustrate site layout, two typical installations are shown; one contains a large WCS/30 system with an optional Nine-Track Tape Drive (Model 2209), the other contains a small configuration with the small analog plotter (Model 2212).

Manuals provided with your system require a standard bookcase shelf about 2 to 3 ft (0.6 to lm) long. Diskettes on which programs and data are recorded can be filed in hanging file folders (e.g., Pendaflex files) or in regular upright files. Fixed/removable disk packs can be stored horizontally on shelves, stacked no more than two deep, or in specially constructed shelving, if many are to be stored and readily accessible. Disks may be stored in a remote area if storage space is a problem, but the area must have the same temperature, humidity and dust controls as are maintained in the computer room.

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Site Grid (English System)



Site Grid (metric system)



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Typical Site Layout with WCS/30, Model 2221W Printer, Model 2230 Disk and Model 2209 Nine-Track Tape Drive.

Line Drawings



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Line Drawings

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Line Drawings



Available Units



Central Processors

2200S	200	Watts
	2.0	amps (115 VAC)
	1.0	amp (230 VAC)

- 2200T
- 200 Watts 2.0 amps (115 VAC) 1.0 amp (230 VAC)



Specifications

Dimensions

Height 40 in. (101.6 cm) Depth 30 in. (76.2 cm) Width 30 in. (76.2 cm)

Approximate Weight

117 lb (52.7 kg)

Clearance

36 in. (91.4 cm) in front of keyboard for operator chair

Electrical Requirements

275 watts 2.4 amps (115 VAC) 1.2 amps (230 VAC)

Cable

8 ft (2.4m) to power source





Specifications

Dimensions

Height 40 in. (101.6 cm) Depth 30 in. (76.2 cm) Width 46 in. (176.8 cm)

Approximate Net Weight

189 lb (85.6 kg)

Clearance

36 in. (91.4 cm) in front of keyboard for operator chair

Electrical Requirements

425 watts 3.7 amps (115 VAC) 1.9 amps (230 VAC)

Cables

8 ft (2.4m) to power source



```
Specifications
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Dimensions

```
Height 40 in. (101.6 cm)
(Height to table top 32.5 in. (82.6 cm))
Depth 30 in. (76.2 cm)
Width 55 in. (139.7 cm)
```

```
Net Weight 189 1b (85.6 Kg)
```

Clearance

36 in. (91.4 cm) in front of keyboard for operator chair

Electrical Requirements

900 watts 7.8 amps (115 VAC) 3.9 amps (230 VAC)

Cables

8 ft (2.4m) to power source

NOTE:

See also the specifications for the Model 2221W Line Printer and the Model 2230 Fixed/Removable Disk which are components of your WCS/30.

Model 2201 Output Writer



Specifications

Dimensions

Height: 8.75 in. (22.2 cm) Depth: 15.6 in. (39.6 cm) Width: 22 in. (55.9 cm)

Approximate Net Weight

51 1b (23.2 kg)

Clearance

36 in. (91.4 cm) in front of keyboard for operator chair

Electrical Requirements

125 watts 1.1 amps (115 VAC) 0.5 amp (230 VAC)

Cables

8 ft (2.4m) to CPU controller 8 ft (2.4m) to power source

Extension Cables

Model 2202 Plotting Output Writer



Specifications

Dimensions

Height: 33 in. (83.8 cm) Depth: 18 in. (45.7 cm) Width: 28.5 in. (72.4 cm)

Approximate Net Weight

96 lb (43.6 kg)

Clearance

36 in. (91.4 cm) in front of keyboard for operator chair

Electrical Requirements

125 watts 1.1 amps (115 VAC) 0.5 amp (230 VAC)

Cables

8 ft (2.4m) to CPU controller 8 ft (2.4m) to power source

Extension Cables

Model 2203 Punched Tape Reader



Specifications

Dimensions

Height: 6.5 in. (16.5 cm) Depth: 13.5 in. (34.3 cm) with reader head Width: 7.5 in. (19.1 cm)

Approximate Net Weight

13 1b (5.9 kg)

Clearance

24 in. (61m) in front of reader to access punched tape

Electrical Requirements

45 watts 0.4 amp (115 VAC) 0.2 amp (230 VAC)

Cables

8 ft (2.4m) to controller 8 ft (2.4m) to power source Model 2209 Nine-Track Tape Drive



Specifications

Dimensions

Height: 28 in. (71 cm) Depth: 28.5 in. (72 cm) Width: 21 in. (54 cm)

Approximate Net Weight

158 lb (71.6 kg)

Clearance

Electrical Requirements

325 watts @ 115 VAC, 2.8 amps 300 watts @ 230 VAC, 1.3 amps

Cables

12 ft (3.7m) to controller 8 ft (2.4m) to power source

Operating Environment

Temperature: 60° to 90°F (16° to 32°C) Relative Humidity: 40% to 60%, non-condensing Altitude: not above 20000 ft (6000m)



Specifications

Dimensions

Height: 6.5 in. (16.5 cm) Depth: 17.25 in. (43.8 cm) Width: 19 in. (48.3 cm)

Approximate Net Weight

35 lb (15.9 kg)

Clearance:

2 ft (.6m) above and in front of plotter to access plotting surface Electrical Requirements

700 watts 0.6 amp (115 VAC) 0.3 amp (230 VAC)

Cables

I

n l 8 ft (2.4m) to controller 8 ft (2.4m) to power source

Extension Cables

Model 2216 CRT Executive Display or Model 2216/17 Combined CRT Executive Display/Single Tape Cassette Drive



Specifications

Dimensions

Height: 14 in. (35.6 cm) Depth: 16 in. (40.6 cm) Width: 21.5 in. (54.6 cm)

Approximate Net Weight

36 lb (14.4 kg)

Clearance

Approx. 11 in. (27.9 cm) in front of display unit for placement of keyboard. Rear of unit must be accessible to reach ON/OFF switch.

Electrical Requirements

	Model 2216	Model 221	6/17	
	65 watts 0.6 amp (115 VAC) 0.3 amp (230 VAC)	125 watts 1.1 amps 0.5 amp ((115 VAC)	
Cables	5	Exte	nsion Cables	
	8 ft (2.4m) to controller 8 ft (2.4m) to power source		0 ft (15.2m) 00 ft (30.5m)	

τ (2.4m) το power source

200 ft (61m) Maximum distance from CPU: 500 ft (152.4m)

Model 2217 Single Tape Cassette Drive



Specifications

Dimensions

Height: 7 in. (17.8 cm) Depth: 16 in. (40.6 cm) Width: 7.5 in. (19.1 cm)

Approximate Net Weight

21 lb (9.5 kg)

Clearance

1 ft (30.5 cm) in front of unit to access door.

Electrical Requirements

100 watts 0.9 amp (115 VAC) 0.5 amp (230 VAC)

Cables

8 ft (2.4m) to controller 8 ft (2.4m) to power source

Extension Cables

Model 2218 Dual Tape Cassette Drive



Specifications

Dimensions

```
Height: 7 in. (17.8 cm)
Depth: 16 in. (40.6 cm)
Width: 14 in. (35.6 cm)
```

Approximate Net Weight

38 lb (83.6 kg)

Clearance

1 ft (30.5 cm) in front of unit to access doors.

Electrical Requirements

150 watts 1.3 amps (115 VAC) 0.7 amp (230 VAC)

Cables

8 ft (2.4m) to controller 8 ft (2.4m) to power source

Extension Cables

Model 2220 Integrated Console



Specifications

Dimensions

```
Height: 13.5 in. (34.3 cm)
Depth: 20.5 in. (52 cm)
Width: 19.8 in. (50.2 cm)
```

Approx. Net Weight

48 lb (21.7 kg)

Clearance

3 ft (91.4 cm) in front of keyboard for operator chair.

Electrical Requirements

125 watts 1.1 amps (115 VAC) 0.5 amp (230 VAC)

Cables

Three 8 ft (2.4m) cables to controllers One 8 ft (2.4m) to power source

Extension Cables



Specifications

Dimensions

Height	12	in.	(31	cm)
Depth	25	in.	(64	cm)
Width	29	in.	(74	cm)

Net Weight

85 lb (38.6 kg)

Clearance

20 in. (50 cm) in front of unit to access paper and control panel; width of site not less than 50 in. (1.3m) to accommodate opening side covers of printer; depth of site must extend 16 in. (41 cm) behind printer to accommodate paper rack (rack extends 6 in. (16 cm) below bottom of printer).

Noise Output When Operating

65 decibels

Electrical Requirements

Cables

255 Watts	6 ft (1.8m) to power source
2.3 amps (115 VAC)	12 ft (3.7m) to controller
1.1 amps (230 VAC)	

Operating Environment

Extension Cables

40 to 80% relative humidity, non-condensing

25 ft (7.6m) 50 ft (15.2m) Maximum distance from CPU: 50 ft (15.2m)

source

Model 2223 Alphanumeric/BASIC Keyword Keyboard



Specifications

Dimensions

```
Height: 3 in. (7.6 cm)
Depth: 10 in. (25.4 cm)
Width: 17.5 in. (44.5 cm)
```

Approximate Net Weight

7 lb (3.2 kg)

Clearance

3 ft (91 cm) in front of keyboard to accommodate operator chair.

Cables

8 ft (2.4m) to controller

Extension Cables

Model 2226 CRT/Keyboard Console



Specifications

Dimensions

Height: 13.5 in. (34.3 cm) Depth: 20.5 in. (52 cm) Width: 19.8 in. (50.2 cm)

Approximate Net Weight

38.5 lb (17.4 kg)

Clearance

3 ft (91 cm) in front of keyboard to accommodate operator chair.

Electrical Requirements

65 watts 0.6 amp (115 VAC) 0.3 amp (230 VAC)

Cables

Two 8 ft (2.4m) cables to controllers One 8 ft (2.4m) cable to power source

Extension Cables

Model 2230 Fixed/Removable Disk Drive (to 5 megabytes)

or

Model 2260 Fixed/Removable Disk Drive (to 10 megabytes)



Specifications

Dimensions

Height	32.5 in. (82.6 cm)
Depth	29 in. (73 cm)
Width	17.5 in. (44.5 cm)

Net Weight

126 lb (57 kg)

Clearance

20 in. (50 cm) in front of unit 20 in. (50 cm) above unit for insertion and removal of disks and access to switches Electrical Requirements

800 Watts 7.0 amps (115 VAC) 3.5 amps (230 VAC)

Cables

10 ft (3.7m) to controller 12 ft (30.5 cm) to power source Model 2231W Line Printer (112 column)



Specifications

Dimensions

Height: 10 in. (25 cm) Depth: 18 in. (46 cm) Width: 24 in. (61 cm)

Approximate Net Weight

60 1b (27 kg)

Clearance

8 in. (20.3 cm) to the left and right of printer to access ON/OFF switch in back of printer. 8 in. (20.3 cm) in back of printer to accommodate open cover.

Electrical Requirements

230 watts 2 amps (115 VAC) 1 amp (230 VAC)

Cables

12 ft (3.7m) to CPU plug jack 8 ft (2.4m) to power source

Model 2232A Digital Flatbed Plotter



Specifications

Dimensions

<u>Plotter</u>		<u>Control Unit</u>	-
Depth:	9.5 in. (24.1 cm) 46 in. (116.8 cm) 60.25 in. (153.0 cm)	19 in. (48.3 10 in. (25.4 18 in. (45.7	cm)

Approximate Net Weight

<u>Plotter</u>

Control Unit

112 1bs	(50.1 kg)	30 lb	(13.6 kg)
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Clearance

12 in. (30 cm) in back of table to accommodate x-axis motor and cable 3 ft (91 cm) above table to access plotting surface and pen assembly Control unit must be nearby with power switch accessible.

Electrical Requirements

175 watts 1.5 amps (115 VAC) 0.8 amp (230 VAC)

Cables

12 ft (3.7m) cable, x-axis motor to control unit 8 ft (2.4m) cable, control unit to controller 8 ft (2.4m) cord, control unit to power source Model 2234A/44A Hopper Feed Card Readers



Specifications

Dimensions

Height: 11 in. (27.9 cm) Depth: 14 in. (35.5 cm) Width: 19.25 in. (48.9 cm)

Approximate Net Weight

60 lbs (27.3 kg)

Clearance

2 ft (61 cm) above, behind and in front of unit to access card hoppers and switches.

Electrical Requirements

1650 watts (start-up), 750 (running) 14.3 amps (115 VAC) 7.2 amps (230 VAC)

Cables

8 ft (2.4m) to controller 8 ft (2.4m) to power source
Model 2261 High Speed Printer



Specifications

Dimensions

```
Height: 11.5 in. (29.2 cm)
Depth: 20 in. (50.8 cm)
Width: 27.75 in. (70.5 cm)
```

Approximate Net Weight

118 lb (53.5 kg)

Clearance

At least 24 in. (61 cm) on either side of printer to accommodate opening side covers.

Electrical Requirements

375 watts 3.3 amps (115 VAC) 1.6 amps (230 VAC)

Cables

8 ft (2.4 in.) to controller 8 ft (2.4 in.) to power source

Extension Cables

25 ft (7.6m) 50 ft (15.2m) Maximum distance from CPU: 50 ft (15.2m) Model 2262 Digitizer



Specifications

Dimensions

of Digitizer Chassis of Tablets

Height:	7.25 in. (18.1 cm)	2262-1 22 by 22 in. (56 by 56 cm)
Depth:	11.75 in. (29.4 cm)	2262-2 32 by 42 in. (81 by 107 cm)
Width:	9.75 in. (24.4 cm)	2262-338 by 50 in. (97 by 127 cm)

Approximate Net Weight

14 lb (6.3 kg)	2262-1 20 lb (9 kg)
•	2262-2 60 lb (27 kg)
	2262-3 81 1b (37 kg)

Clearance

To access switches on chassis and tablet surface.

Electrical Requirements

50 watts 0.4 amp (115 VAC) 0.2 amp (230 VAC)

Cables

8 ft (2.4m) from chassis to controller 8 ft (2.4m) from chassis to power source 6 ft (1.8m) from tablet to chassis 4 ft (1.2m) from chassis to stylus or cursor

Model 2270 Diskette Drives



Specifications

Dimensions

Height: 19 in. (47.5 cm) Depth: 16.3 in. (40.8 cm) Width: 17.5 in. (43.8 cm)

Approximate Net Weight

68 1b (30.6 kg)

Clearance

2 ft (61 cm) in front of unit to access doors.

Electrical Requirements

225 watts 2.0 amps (115 VAC) 1.0 amp (230 VAC)

Cables

12 ft (3.7m) to controller 8 ft (2.4m) to power source

A multiplexer can be used to increase distance from the CPU to a maximum of 500 ft (152.4m).

Model 2290 CPU/Peripheral Stand



Specifications

Dimensions

Height: 28.25 in. (71.8 cm) Depth: 30 in. (76.2 cm) Width: 30 in. (76.2 cm)

Approximate Net Weight

69 lb (31 kg)

Clearance

3 ft (91 cm) in front of unit for operator chair 2 ft (61 cm) in back of unit for cables and air circulation

Electrical Requirements

Contains four electrical outlets, rated collectively at 1400 watts 12.2 amps (115 VAC) 6.1 amps (230 VAC)

Cables

8 ft (2.4m) cable to power source

Model 2291 Plotter Stand



Specifications

Dimensions

Height: 26.3 in. (66.8 cm) Depth: 36 in. (91.4 cm) Width: 37.5 in. (95.3 cm)

Approximate Net Weight

65 lbs (29.5 kg)

Clearance

2 ft (61 cm) above unit to accommodate plotter.

Model 2292 Auxiliary Display



Specifications

Dimensions

```
Height: 8 in. (20.3 cm)
Depth: 10.5 in. (26.7 cm)
Width: 10.5 in. (26.7 cm)
```

Approximate Net Weight

36 lb (16.3 kg)

Clearance

3 ft (91 cm) in front of unit to view screen and access switch and controls.

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Electrical Requirements

60 watts 0.5 amp (115 VAC) 0.3 amp (230 VAC)

Cables

8 ft (2.4m) to power source 25 ft (7.6m) to controller Extension Cables 50 ft (15.2m) 100 ft (30.4m) 200 ft (60.9m) Maximum distance from CPU: 500 ft (152.4m) To help us to provide you with the best manuals possible, please make your comments and suggestions I concerning this publication on the form below. Then detach, fold, tape closed and mail to us. All comments and suggestions become the property of Wang Laboratories, Inc. For a reply, be sure to include your name and address. Your cooperation is appreciated. I.

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