Section 1. System Description

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Description

The IBM Personal System/2 Model 50 is a self-contained, desktop computer system with a keyboard. The system can support two 3.5-inch diskette drives and one 3.5-inch fixed disk drive. Built into the system board is a keyboard port controller, an auxiliary device port controller, a serial port controller, a parallel port controller, and a video subsystem. The system features the Personal System/2 Micro Channel 16-bit architecture. This new channel architecture supports adapters that are physically and electrically different from IBM Personal Computer adapters. A fixed disk adapter occupies one channel connector. Three unoccupied channel connectors are provided for optional feature expansion. The keyboard is attached to the system unit by a coiled cable. The following shows the Model 50 system unit and keyboard.

Figure 1-1. Model 50 System Unit and Keyboard
The IBM Personal System/2 Model 60 is a self-contained, floor-standing computer system with a keyboard. The system can support two 3.5-inch diskette drives and two 5.25-inch fixed disk drives. Built into the system board is a keyboard port controller, an auxiliary device port controller, a serial port controller, a parallel port controller, and a video subsystem. The system features the Personal System/2 Micro Channel 16-bit architecture. This new channel architecture supports adapters that are physically and electrically different from IBM Personal Computer adapters. A fixed disk adapter occupies one channel connector. Seven unoccupied channel connectors are provided for optional feature expansion. The keyboard is attached to the system unit by a coiled cable. The following shows the Model 60 system unit and keyboard.

Figure 1-2. Model 60 System Unit and Keyboard
System Board Features

The system boards for the Model 50 and Model 60 incorporate very large scale integration modules and surface-mount technology.

The following is a list of the Model 50 and Model 60 system board features:

- Intel 80286 system microprocessor
- Microprocessor support
  - Eight-channel direct memory access (DMA) controller
  - 16-level interrupt system
  - System clock
  - Three programmable timers
- ROM subsystem, 128K (K = 1024)
- RAM subsystem, 1M (M = 1,048,576)
- 16-bit channel
- Real-time clock CMOS RAM with battery backup
  - Clock
  - Calendar
  - CMOS RAM
- Integrated video graphics subsystem with an auxiliary connector
- EIA RS-232-C serial communications controller and port
- Parallel port
- Audio subsystem with speaker
- Keyboard/Auxiliary device controller
- Keyboard connector
- Auxiliary device connector
- Password security
- Diskette drive controller
- Distributed arbitration mechanism with support for up to 15 devices
- Socket for the 80287 Math Coprocessor
- Four Micro Channel connectors
  - One with an auxiliary video connector
  - One connector used by the fixed disk adapter.

The Model 60 system board has the following additional features:

- 2K CMOS RAM extension with battery backup
- Four additional Micro Channel connectors for a total of eight.
The following shows the layout of the Model 50 system board.

1. 16-bit channel connectors
2. 16-bit channel connector with video extension
3. Fixed disk drive adapter connector
4. Display connector
5. Serial port connector
6. Parallel port connector
7. Auxiliary device connector
8. Keyboard connector
9. Fuse (keyboard/auxiliary device)
10. Fan assembly connector
11. Power supply connector
12. Memory module package connectors
13. Diskette drive connector
14. Battery and speaker assembly connector
15. 80286 Microprocessor
16. 80287 Math Coprocessor socket

Figure 1-3. Model 50 System Board Layout
The following shows the layout of the Model 60 system board.

1. Fuse (keyboard/auxiliary device)
2. Power supply connector
3. Diskette drive connector
4. Memory module package connectors
5. 80286 Microprocessor
6. Battery and speaker assembly cable connector
7. 80287 Math Coprocessor Socket
8. 16-bit channel connectors
9. 16-bit channel connector with video extension
10. Fixed disk drive adapter connector
11. Display connector
12. Serial port connector
13. Parallel port connector
14. Auxiliary device connector
15. Keyboard connector

Figure 1-4. Model 60 System Board Layout
The following is a block diagram of the system boards.

Figure 1-5. System Board Block Diagram
## System I/O Address Map

The following is the address map for the various system board I/O functions.

<table>
<thead>
<tr>
<th>Hex Addresses</th>
<th>Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000 - 001F</td>
<td>DMA Controller</td>
</tr>
<tr>
<td>0020, 0021</td>
<td>Interrupt Controller 1, 8259A</td>
</tr>
<tr>
<td>0040, 0042, 0043, 0044, 0047</td>
<td>System Timers</td>
</tr>
<tr>
<td>0060</td>
<td>Keyboard, Auxiliary Device</td>
</tr>
<tr>
<td>0061</td>
<td>System Control Port B</td>
</tr>
<tr>
<td>0064</td>
<td>Keyboard, Auxiliary Device</td>
</tr>
<tr>
<td>0070, 0071</td>
<td>RT/CMOS and NMI Mask</td>
</tr>
<tr>
<td>0074, 0075, 0076</td>
<td>Reserved</td>
</tr>
<tr>
<td>0081, 0082, 0083, 0087</td>
<td>DMA Page Registers (0 - 3)</td>
</tr>
<tr>
<td>0089, 008A, 008B, 008F</td>
<td>DMA Page Registers (4 - 7)</td>
</tr>
<tr>
<td>0090</td>
<td>Central Arbitration Control Port</td>
</tr>
<tr>
<td>0091</td>
<td>Card Selected Feedback</td>
</tr>
<tr>
<td>0092</td>
<td>System Control Port A</td>
</tr>
<tr>
<td>0093</td>
<td>Reserved</td>
</tr>
<tr>
<td>0094</td>
<td>System Board Setup</td>
</tr>
<tr>
<td>0096, 0097</td>
<td>POS, Channel Connector Select</td>
</tr>
<tr>
<td>00A0 - 00A1</td>
<td>Interrupt Controller 2, 8259A</td>
</tr>
<tr>
<td>00C0 - 00DF</td>
<td>DMA Controller</td>
</tr>
<tr>
<td>00F0 - 00FF</td>
<td>Math Coprocessor</td>
</tr>
<tr>
<td>0100 - 0107</td>
<td>Programmable Option Select</td>
</tr>
<tr>
<td>0278 - 027B</td>
<td>Parallel Port 3</td>
</tr>
<tr>
<td>02FF - 02FF</td>
<td>Serial Port 2 (RS-232-C)</td>
</tr>
<tr>
<td>0378 - 037B</td>
<td>Parallel Port 2</td>
</tr>
<tr>
<td>03BC - 03BF</td>
<td>Parallel Port 1</td>
</tr>
<tr>
<td>03B4, 03B5, 03BA, 03C0 - 03C5</td>
<td>Video Subsystem</td>
</tr>
<tr>
<td>03CE, 03CF, 03D4, 03D5, 03DA</td>
<td>Video Subsystem</td>
</tr>
<tr>
<td>03C6 - 03C9</td>
<td>Video DAC</td>
</tr>
<tr>
<td>03F0 - 03F7</td>
<td>Diskette Drive Controller</td>
</tr>
<tr>
<td>03F8 - 03FF</td>
<td>Serial Port 1 (RS-232-C)</td>
</tr>
</tbody>
</table>

*Figure 1-6. System I/O Address Map*
Specifications

The following are specifications for the Model 50 system unit.

Size

- Width: 360 millimeters (14.1 inches)
- Depth: 420 millimeters (16.5 inches)
- Height: 140 millimeters (5.5 inches)

Weight

- 9.55 kilograms (21 pounds)

Cables

- Power Cable: 1.8 meters (6 feet)
- Keyboard Cable: 0.91 meters (3 feet)

Air Temperature

- System On: 15.6 to 32.2 degrees C (60 to 90 degrees F)
- System Off: 10.0 to 43.0 degrees C (50 to 110 degrees F)

Humidity

- System On: 8% to 80%
- System Off: 20% to 80%

Altitude

- Maximum Altitude: 2133.6 meters (7000 feet)

Heat Output

- 494 BTU/hour
Acoustical

Readings from 1 meter (3.28 feet)

- 46 dB average, operating
- 40 dB average, idle

Electrical

Automatic Ranging

- Low Range
  - Minimum - 90 Vac
  - Maximum - 137 Vac
- High Range
  - Minimum - 180 Vac
  - Maximum - 265 Vac

Electro-Magnetic Compatibility

- FCC Class B
The following are specifications for the Model 60 system unit.

**Size**

- Width: 165 millimeters (6.5 inches)
- Width (Feet extended): 318 millimeters (12.5 inches)
- Depth: 483 millimeters (19.0 inches)
- Height: 597 millimeters (23.5 inches)

**Weight**

- 20 kilograms (44 pounds) with one fixed disk drive

**Cables**

- Power Cable: 1.8 meters (6 feet)
- Keyboard Cable: 3.05 meters (10 feet)

**Air Temperature**

- System On: 15.6 to 32.2 degrees C (60 to 90 degrees F)
- System Off: 10.0 to 43.0 degrees C (50 to 110 degrees F)

**Humidity**

- System On: 8% to 80%
- System Off: 20% to 80%

**Altitude**

- Maximum Altitude: 2133.6 meters (7000 feet)

**Heat Output**

- 1240 BTU/hour
Acoustical

Readings from 1 meter (3.28 feet)

- 46 dB average, operating
- 40 dB average, idle

Electrical

Automatic Ranging

- Low Range
  - Minimum - 90 Vac
  - Maximum - 137 Vac
- High Range
  - Minimum - 180 Vac
  - Maximum - 265 Vac

Electro-Magnetic Compatibility

- FCC Class B
Notes: