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Tech Reference: Pinouts for Keyboard and Mouse Interfaces

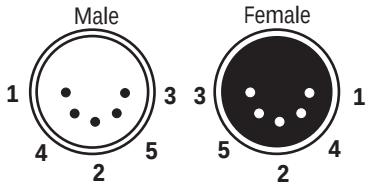
This Technical Reference describes the pinouts defined for many different keyboard and mouse interfaces. Given the uncertainties about these mostly proprietary interfaces, and the speed with which new I/O devices render older ones obsolete, this document is not intended to be authoritative, comprehensive, or exhaustive. We hope you will find it useful as you study, shop for, build, or troubleshoot devices and cables; however, we make no claim that it is absolutely correct, and will not be responsible for any damages or losses resulting from its use—please exercise caution.

Notes: All connectors are shown in front view (wires exit from the rear). The "pins" on male connectors are typically metal prongs or teeth, while those on female connectors are typically metal-lined sockets or grooves.

I. Keyboard Only and Integrated Keyboard/Mouse Interfaces

1. IBM® PC/XT™, PC/AT® compatible and Commodore® Amiga® 2000/3000 keyboard

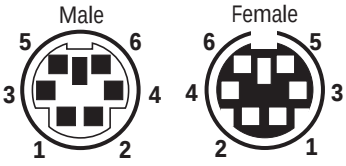
Pinout on **5-pin DIN ("DIN-5")** connectors:



Pin	Signal/Circuit Name	Signal Function	Signal Source
1	Keyboard Clock	Timing	Computer
2	Keyboard Data	Data	Keyboard
3	Keyboard Reset[1]	Control	Computer
4	Ground	Ground	n/a
5	+5 VDC	Voltage	Computer

2. IBM PS/2® compatible keyboard[2]

A. **Standard** pinout on **6-pin mini-DIN ("mini-DIN-6")** connectors:



Pin	Signal/Circuit Name	Signal Function	Signal Source
1	Keyboard Data	Data	Keyboard
2	Reserved[3]	n/a	n/a
3	Ground	Ground	n/a
4	+5 VDC	Voltage	Computer
5	Keyboard Clock	Timing	Computer
6	Reserved[3]	n/a	n/a

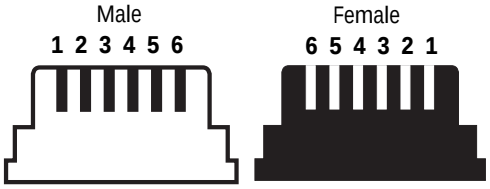
[1]This line/signal was used by XT and very early AT computers to reset the keyboard. Contemporary AT compatible computers either do not use it or do not connect it, and it is not connected on the Amiga 2000 and 3000.

[2]This interface is also used by many other computers, including the IBM RS/6000, some Silicon Graphics and HP® workstations, the DEC™ Alpha®, and the Commodore Amiga 4000.

[3]These pins are normally not used or not connected.

2. IBM® PS/2® keyboard (continued)

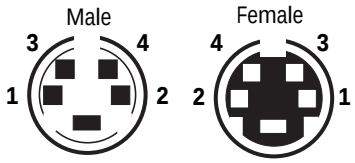
B. **ACCESS.bus-compliant** pinout on **6-pin Shielded Data Link (SDL)** connectors:



Pin	Signal/Circuit Name	Signal Function	Signal Source	Pin	Signal/Circuit Name	Signal Function	Signal Source
1	Reserved[1]	n/a	n/a	4	Keyboard Clock	Timing	Computer
2	Keyboard Data	Data	Keybd/Computer[1]	5	+5 VDC	Voltage	Computer
3	Ground	Ground	n/a	6	Reserved[1]	n/a	n/a

3. Apple Desktop Bus® (ADB®—Apple® Macintosh® keyboard and mouse)

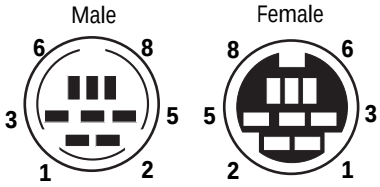
Pinout on **4-pin mini-DIN ("mini-DIN-4")** connectors:



Pin	Signal/Circuit Name	Signal Function	Signal Source	Pin	Signal/Circuit Name	Signal Function	Signal Source
1	Bus Data	Data	Keyboard/Mouse	3	+5 VDC	Voltage	Computer
2	Reserved	n/a	n/a	4	Ground	Ground	Ground

4. Sun Microsystems® keyboard and mouse

Pinout on **8-pin mini-DIN ("mini-DIN-8")** connectors:



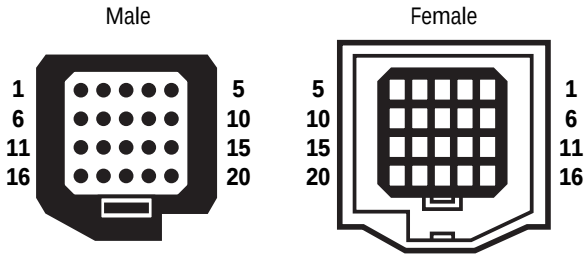
Pin	Signal/Circuit Name	Signal Function	Signal Source	Pin	Signal/Circuit Name	Signal Function	Signal Source
1	Ground	Ground	n /a	5	Keyboard Transmit[2]	Data	Keyboard
2	Ground	Ground	n /a	6	Keyboard Receive	Data	Computer
3	+5 VDC	Voltage	Computer	7	No Connection		
4	Mouse Receive	Data	Computer	8	+5 VDC	Voltage	Computer

[2]These pins are normally not used or not connected.

[3]The mouse transmits its data to the keyboard on this pin; the keyboard then adds its data and transmits it to the computer.

5. Compaq® Vocalyst® keyboard[1]

Pinout on **HDI-20** connectors:

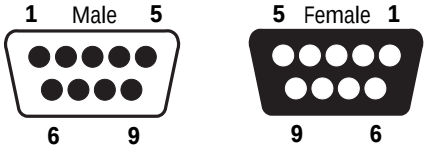


Pin	Signal/Circuit Name	Signal Function	Signal Source
1	+5 VDC	Voltage	Computer
2	Keyboard Clock	Timing	Computer
3	Keyboard Data	Data	Keyboard
4	Ground	Ground	n/a
5	Mouse Clock[2]	Timing	Computer
6	Mouse Data[2]	Data	Mouse

Pin	Signal/Circuit Name	Signal Function	Signal Source
7	Left Headphone[3]	Data	Computer
8	Right Headphone[3]	Data	Computer
9	Microphone In	Data	Keyboard
10	Audio Ground	Ground	n/a
11	+5VDC for Audio	Voltage	Computer
12	Headphones Present[4]	Control	Keyboard
13–20	No Connection		

6. AT&T® 6300 keyboard

Pinout on **DB9 (DE9)** connectors:

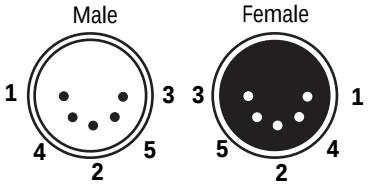


Pin	Signal/Circuit Name	Signal Function	Signal Source
1	Keyboard Data	Data	Keyboard
2	Keyboard Clock	Timing	Computer
3, 4	Ground	Ground	n/a

Pin	Signal/Circuit Name	Signal Function	Signal Source
5	+12 VDC	Voltage	Computer
6–9	Not Connected		

7. Commodore Amiga 1000 keyboard

Pinout on **5-pin DIN ("DIN-5")** connectors:



Pin	Signal/Circuit Name	Signal Function	Signal Source
1	+5 VDC	Voltage	Computer
2	Keyboard Clock	Timing	Computer
3	Keyboard Data	Data	Keyboard

Pin	Signal/Circuit Name	Signal Function	Signal Source
4	Ground	Ground	n/a
5	No Connection		

[1]The Vocalyst keyboards are basically PS/2 compatible with added audio-I/O support. They have a built-in mike, speaker, and headphone jack.

[2]PS/2 compatible mice are attached to this keyboard using a standard PS/2 mouse interface (see page 4).

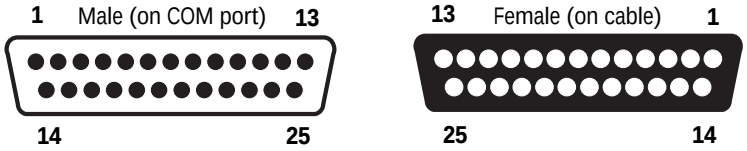
[3]When headphones are not plugged in, the Left and Right Headphone signals are summed and output from the keyboard's speaker.

[4]Current Vocalyst keyboards do not implement this signal, which causes compatible attached CPUs to automatically mute their audio output.

II. Mouse-Only or Integrated Mouse/Peripheral Interfaces

1. IBM compatible TIA-232 ("RS-232") serial mouse

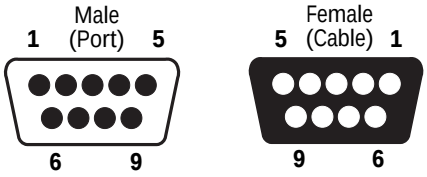
A. **IBM PC/XT compatible** pinout on **DB25** connectors:



Pin	Signal/Circuit Name	Signal Function	Signal Source
2	Transmitted Data	Data	Computer
3	Received Data	Data	Mouse
4	Request to Send	Control	Computer
7	Signal Ground	Ground	n/a
20	Data Terminal Ready	Control	Computer

(All other pins are not connected or not used)

B. **IBM PC/AT compatible** pinout on **DB9 (DE9)** connectors:

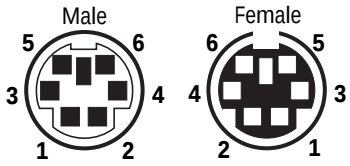


Pin	Signal/Circuit Name	Signal Function	Signal Source
2	Received Data	Data	Mouse
3	Transmitted Data	Data	Computer
4	Data Terminal Ready	Control	Computer
5	Signal Ground	Ground	n/a
7	Request to Send	Control	Computer

(All other pins are not connected or not used)

2. IBM PS/2 compatible mouse[1]

Pinout on **6-pin mini-DIN ("mini-DIN-6")** connectors:

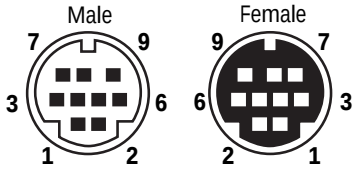


Pin	Signal/Circuit Name	Signal Function	Signal Source
1	Mouse Data	Data	Keyboard
2	Reserved	n/a	n/a
3	Ground	Ground	n/a
4	+5 VDC	Voltage	Computer
5	Mouse Clock	Timing	Computer
6	Reserved	n/a	n/a

[1]This interface is also used by many other computers, including the IBM RS/6000, some Silicon Graphics and HP workstations, and the DEC Alpha.

3. IBM® compatible bus mouse

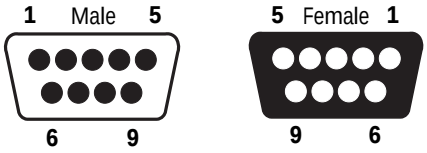
Pinout on **9-pin mini-DIN ("mini-DIN-9")** connectors:



Pin	Signal/Circuit Name	Signal Function	Signal Source
1	+5 VDC	Voltage	Computer
2	X2 Direction	Data	Mouse
3	X1 Direction	Data	Mouse
4	Y1 Direction	Data	Mouse
5	Y2 Direction	Data	Mouse
6	Left Button	Data	Mouse
7	Middle Button	Data	Mouse
8	Right Button	Data	Mouse
9	Signal Ground	Ground	n/a

4. Silicon Graphics® (SGI®) mouse[1]

Pinout on **DB9 (DE9)** connectors:

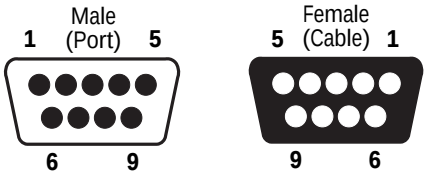


Pin	Signal/Circuit Name	Signal Function	Signal Source
1	+5 VDC	Voltage	Computer
2	–5 VDC	Voltage	Computer
5	Mouse Data	Data	Mouse
9	Ground	Ground	n/a

(All other pins are not connected.)

5. Amiga Mouse/Joy® port[2]

Pinout on **DB9 (DE9)** connectors:



Pin	Mouse/Trackball Signal	Lightpen Signal	Digital Joystick Signal	Paddle Signal	Signal Function	Signal Source
1	V-pulse	No Connection	Forward	Button 3	Data	Peripheral
2	H-pulse	No Connection	Backward	No Connection	Data	Peripheral
3	VQ-pulse	No Connection	Left	Button 1	Data	Peripheral
4	HQ-pulse	No Connection	Right	Button 2	Data	Peripheral
5	Button 3 (Middle)	Penpress	No Connection	PotX[3]	Data	Peripheral
6	Button 1 (Left)	Beamtrigger	Button 1	No Connection	Data	Peripheral
7	+5 VDC	+5 VDC	+5 VDC	+5 VDC	Voltage	Computer
8	Ground	Ground	Ground	Ground	Ground	n/a
9	Button 2 (Right)	Button 2	Button 2	PotY[3]	Data	Peripheral

[1]This is the Model 021-0004-002 mouse used with some SGI computers. Most contemporary SGI computers use the regular IBM PS/2 mouse interface (see page 4) instead.

[2]This interface is designed to support several types of pointing-device peripherals, as shown in the table.

[3]These are linear 470-kΩ (±10%) potentials.