PCI Express connector pinout (×1, ×4, ×8 and ×16 variants)

Pin	Side B	Side A	Description	Pin	Side B	Side A	Description
1	+12 V	PRSNT1#	Must connect to farthest PRSNT2# pin	50	HSOp(8)	Reserved	Lane 8 transmit data, + and −
2	+12 V	+12 V	Main power pins	51	HSOn(8)	Ground	
3	+12 V	+12 V		52	Ground	HSIp(8)	Lane 8 receive data, + and −
4	Ground	Ground		53	Ground	HSIn(8)	
5	SMCLK	TCK	SMBus and JTAG port pins	54	HSOp(9)	Ground	Lane 9 transmit data, + and −
6	SMDAT	TDI		55	HSOn(9)	Ground	
7	Ground	TDO		56	Ground	HSIp(9)	Lane 9 receive data, + and −
8	+3.3 V	TMS		57	Ground	HSIn(9)	
9	TRST#	+3.3 V		58	HSOp(10)	Ground	Lane 10 transmit data, + and −
10	+3.3 V aux	+3.3 V	Standby power	59	HSOn(10)	Ground	
11	WAKE#	PERST#	Link reactivation; fundamental reset [22]	60	Ground	HSIp(10)	Lane 10 receive data, + and −
Key notch				61	Ground	HSIn(10)	
12	CLKREQ#[23]	Ground	Clock Request Signal	62	HSOp(11)	Ground	Lane 11 transmit data, + and −
13	Ground	REFCLK+	Reference clock differential pair	63	HSOn(11)	Ground	
14	HSOp(0)	REFCLK−	Lane 0 transmit data, + and −	64	Ground	HSIp(11)	Lane 11 receive data, + and −
15	HSOn(0)	Ground		65	Ground	HSIn(11)	
16	Ground	HSIp(0)	Lane 0 receive data, + and −	66	HSOp(12)	Ground	Lane 12 transmit data, + and −
17	PRSNT2#	HSIn(0)		67	HSOn(12)	Ground	
18	Ground	Ground		68	Ground	HSIp(12)	Lane 12 receive data, + and −
PCI Express ×1 cards end at pin 18				69	Ground	HSIn(12)	
19	HSOp(1)	Reserved	Lane 1 transmit data, + and −	70	HSOp(13)	Ground	Lane 13 transmit data, + and −
20	HSOn(1)	Ground		71	HSOn(13)	Ground	
21	Ground	HSIp(1)	Lane 1 receive data, + and −	72	Ground	HSIp(13)	Lane 13 receive data, + and −
22	Ground	HSIn(1)		73	Ground	HSIn(13)	
23	HSOp(2)	Ground	Lane 2 transmit data, + and −	74	HSOp(14)	Ground	Lane 14 transmit data, + and −
24	HSOn(2)	Ground		75	HSOn(14)	Ground	
25	Ground	HSIp(2)	Lane 2 receive data, + and −	76	Ground	HSIp(14)	Lane 14 receive data, + and −
26	Ground	HSIn(2)		77	Ground	HSIn(14)	
27	HSOp(3)	Ground	Lane 3 transmit data, + and −	78	HSOp(15)	Ground	Lane 15 transmit data, + and −
28	HSOn(3)	Ground		79	HSOn(15)	Ground	
29	Ground	HSIp(3)	Lane 3 receive data, + and −	80	Ground	HSIp(15)	Lane 15 receive data, + and −
30	PWRBRK#[24]	HSIn(3)		81	PRSNT2#	HSIn(15)	
31	PRSNT2#	Ground		82	Reserved	Ground	
32	Ground	Reserved					

PCI Express ×4 cards end at pin 32			
33	HSOp(4)	Reserved	Lane 4 transmit data, + and −
34	HSOn(4)	Ground	
35	Ground	HSIp(4)	Lane 4 receive data, + and −
36	Ground	HSIn(4)	
37	HSOp(5)	Ground	Lane 5 transmit data, + and −
38	HSOn(5)	Ground	
39	Ground	HSIp(5)	Lane 5 receive data, + and −
40	Ground	HSIn(5)	
41	HSOp(6)	Ground	Lane 6 transmit data, + and −
42	HSOn(6)	Ground	
43	Ground	HSIp(6)	Lane 6 receive data, + and −
44	Ground	HSIn(6)	
45	HSOp(7)	Ground	Lane 7 transmit data, + and −
46	HSOn(7)	Ground	
47	Ground	HSIp(7)	Lane 7 receive data, + and −
48	PRSNT2#	HSIn(7)	
49	Ground	Ground	
PCI Express ×8 cards end at pin 49			

Legend	
Ground pin	Zero volt reference
Power pin	Supplies power to the PCIe card
Card-to-host pin	Signal from the card to the motherboard
Host-to-card pin	Signal from the motherboard to the card
Open drain	May be pulled low or sensed by multiple cards
Sense pin	Tied together on card
Reserved	Not presently used, do not connect

Power

All PCI express cards may consume up to 3 A at +3.3 V (9.9 W). The amount of +12 V and total power they may consume depends on the type of card:[25]:35–36[26]

8-pin (left) and 6-pin (right) power connectors used on PCI Express cards

- ×1 cards are limited to 0.5 A at +12 V (6 W) and 10 W combined.
- ×4 and wider cards are limited to 2.1 A at +12 V (25 W) and 25 W combined.
- A full-sized ×1 card may draw up to the 25 W limits after initialization and software configuration as a "high power device".
- A full-sized ×16 graphics card[21] may draw up to 5.5 A at +12 V (66 W) and 75 W combined after initialization and software configuration as a "high power device".

Optional connectors add 75 W (6-pin) or 150 W (8-pin) of +12 V power for up to 300 W total (2 × 75 W + 1 × 150 W).

- Sense0 pin is connected to ground by the cable or power supply, or float on board if cable is not connected.