

New Technical Notes

Macintosh

®

Developer Support

HW 19 - Pinouts

Hardware

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This note gives pinouts for Macintosh ports, cables, and other products.

Below are pinout descriptions for the Macintosh ports, cables, and various other products. Please refer to the Hardware chapter of *Inside Macintosh* and the *Macintosh Hardware Reference Manual* for more information, especially about power limits. Note that unconnected pins are omitted.

Macintosh Port Pinouts

Macintosh Serial Connectors (DB-9)

<u>Pin</u>	<u>Name</u>	<u>Description/Notes</u>
1	Ground	
2	+5V	See <i>Inside Macintosh</i> for power limits
3	Ground	
4	TxD+	Transmit Data line
5	TxD-	Transmit Data line
6	+12V	See Macintosh Hardware chapter for power limits
7	HSK	HandShaKe: CTS or TRxC, depends on Zilog 8530 mode
8	RxD+	Receive Data line; ground this line to emulate RS232
9	RxD-	Receive Data line

Macintosh Mouse Connector (DB-9)

<u>Pin</u>	<u>Name</u>	<u>Description/Notes</u>
1	Ground	
2	+5V	See <i>Inside Macintosh</i> for power limits
3	GND	Ground
4	X2	Horizontal movement line (connected to VIA PB4 line)
5	X1	Horizontal movement line (connected to SCC DCDA- line)
7	SW-	Mouse button line (connected to VIA PB3)
8	Y2	Vertical movement line (connected to VIA PB5 line)
9	Y1	Vertical movement line (connected to SCC DCDB- line)

Macintosh Keyboard Connector (RJ-11 Telephone-style jack)

<u>Pin</u>	<u>Name</u>	<u>Description/Notes</u>
1	Ground	
2	KBD1	Keyboard clock
3	KBD2	Keyboard data
4	+5V	See <i>Inside Macintosh</i> for power limits

Macintosh External Drive Connector (DB-19)

<u>Pin</u>	<u>Name</u>	<u>Description/Notes</u>
1	Ground	
2	Ground	
3	Ground	
4	Ground	
5	-12V	See <i>Inside Macintosh</i> for power limits
6	+5V	See <i>Inside Macintosh</i> for power limits
7	+12V	See <i>Inside Macintosh</i> for power limits
8	+12V	See <i>Inside Macintosh</i> for power limits
10		PWM Regulates speed of the drive
11	PH0	Control line to send commands to the drive
12	PH1	Control line to send commands to the drive
13	PH2	Control line to send commands to the drive
14	PH3	Control line to send commands to the drive
15	WrReq-	Turns on the ability to write data to the drive
16	HdSel	Control line to send commands to the drive
17	Enbl2-	Enables the Rd line (else Rd is tri-stated)
18	Rd	Data actually read from the drive
19	Wr	Data actually written to the drive

Other Pinouts**Macintosh XL Serial Connector A (DB-25)**

<u>Pin</u>	<u>Name</u>	<u>Description/Notes</u>
1	Ground	
2	TxD	Transmit Data line
3	RxD	Receive Data line
4	RTS	Request to Send
5	CTS	Clear To Send
6	DSR	Data Set Ready
7	Ground	
8	DCD	Data Carrier Detect
15	TxC	Connected to TRxCA
17	RxC	Connected to RTxCA
24	TEXT	Connected to TRxCA

Macintosh XL Serial Connector B (DB-25)

<u>Pin</u>	<u>Name</u>	<u>Description/Notes</u>
1	Ground	
2	TxD-	Transmit Data line
3	RxD-	Receive Data line
6	HSK/DSR	TRxCB or CTSB
7	Ground	
19	RxD+	Receive Data line
20	TXD+/DTR	connected to DTRB

Apple 300/1200 Modem Serial Connector (DB-9)

<u>Modem</u>	<u>Name</u>	<u>Description/Notes</u>
2	DSR	Output from modem
3	Ground	
5	RxD	Output from modem
6	DTR	Input to modem
7	DCD	Output from modem
8	Ground	
9	TxD	Input to modem

Apple ImageWriter Serial Connector (DB-25)

<u>ImageWriter</u>	<u>Name</u>	<u>Description/Notes</u>
1	Ground	
2	SD	Send Data; Output from ImageWriter
3	RD	Receive Data; Input to ImageWriter
4	RTS	Output from ImageWriter
7	Ground	
14	FAULT-	False when deselected; Output from ImageWriter
20	DTR	Output from ImageWriter

Apple LaserWriter AppleTalk Connector (DB-9)

<u>LaserWriter</u>	<u>Name</u>	<u>Description/Notes</u>
1	Ground	
3	Ground	
4	TxD+	Transmit Data line
5	TxD-	Transmit Data line
7	RXCLK	TRxC of Zilog 8530
8	RxD+	Receive Data line
9	RxD-	Receive Data line

Apple LaserWriter Serial Connector (DB-25)

<u>LaserWriter</u>	<u>Name</u>	<u>Description/Notes</u>
1	Ground	
2	TXD-	Transmit Data; Output from LaserWriter
3	RXD-	Receive Data; Input to LaserWriter
4	RTS-	Output from LaserWriter
5	CTS	Input to LaserWriter
6	DSR	Input to LaserWriter (connected to DCBB- of 8530)
7	Ground	
8	DCD	Output from LaserWriter
20	DTR-	Output from LaserWriter
22	RING	Input to LaserWriter

Macintosh Cable Pinouts

Note for the cable descriptions below:

The arrows (“Æ”) show which side is an input and which is an output. For example, the notation “a Æ b” means that signal “a” is an output and “b” is an input.

When pins are said to be connected on a side in the Notes column, it means the pins are connected on that side of the connector.

Macintosh ImageWriter Cable (part number 590-0169)

<u>Macintosh (DB9)</u>	<u>Name</u>	<u>(DB25)</u>	<u>ImageWriter</u>	<u>Notes</u>
1	Ground	1		
3	Ground	7		pins 3, 8 connected on Macintosh side
5	TxD RD	3		RD = Receive Data
7	HSK DTR	20		
8	RxD+ =	GND		Not connected on ImageWriter side
9	RxD- ..	SD	2	SD = Send Data

Macintosh Modem Cable (Warning! Don't use this cable to connect 2 Macintoshes!) (part number 590-0197-A)

<u>Macintosh (DB9)</u>	<u>Name</u>		<u>Modem (DB9)</u>	<u>Notes</u>
3	Ground		3	pins 3, 8 connected on EACH side
5	TxD-	Æ	TxD	9
6	+12V	Æ	DTR	6
7	HSK ..		DCD	7
8	No wire			8
9	RxD- ..		RxD	5

Macintosh to Macintosh Cable

(Macintosh Modem Cable with pin 6 clipped on both ends.)

<u>Macintosh</u> <u>(DB9)</u>	<u>Name</u>		<u>Modem</u> <u>(DB9)</u>	<u>Notes</u>
3	Ground		3	pins 3, 8 connected on EACH side
5	TxD-	Æ	9	
7	HSK	DCD	7	
8	No wire		8	
9	RxD-	TxD-	5	

Macintosh External Drive Cable

(part number 590-0183-B)

<u>Macintosh</u> <u>(DB9)</u>	<u>Name</u>	<u>Sony Drive</u> <u>(20 Pin Ribbon)</u>
1	Ground	1
2	Ground	3
3	Ground	5
4	Ground	7
6	+5V	11
7	+12V	13
8	+12V	15
10	PWM	20
11	PH0	2
12	PH1	4
13	PH2	6
14	PH3	8
15	WrReq-	10
16	HdSel	12
17	Enbl2-	14
18	Rd	16
19	Wr	18

Macintosh XL Null Modem Cable

(part number 590-0166-A)

<u>Macintosh XL</u> <u>(DB25)</u>	<u>Name</u>		<u>DTE</u> <u>(DB25)</u>	<u>NOTES</u>	
1	Ground		1		
2	TxD-	Æ	RxD	3	
3	RxD-	..	TxD	2	
4, 5	RTS,CTS	Æ	DCD	8	pins 4, 5 connected together
6	DSR	..	DTR	20	
7	Ground		7		
8	DCD	..	RTS, CTS	4, 5	pins 4, 5 connected together
20	DTR	Æ	DSR	6	

Macintosh to Non-Apple Product Cable Pinouts

Macintosh to IBM PC Serial Cable #1 (not tested)

<u>Macintosh (DB9)</u>	<u>Name</u>		<u>IBM-PC (DB25)</u>	<u>NOTES</u>
3	Ground		7	pins 3, 8 connected on Mac side
5	TxD-	Æ	3	
7	HSK	..	20	Not connected on IBM side
8	RxD+	=	Ground	
9	RxD-	..	2	
	CTS	..	4-5	pins 4, 5 connected on IBM side pins 6, 8, 20 connected on IBM side
	DSR	..	6-8-20	

Macintosh to IBM PC Serial Cable #2 (not tested)

<u>Macintosh (DB9)</u>	<u>Name</u>		<u>IBM-PC (DB25)</u>	<u>NOTES</u>
1	Ground		1	pins 3, 8 connected on Mac side
3	Ground		7	
5	TxD-	Æ	3	pins 4, 5 connected on IBM side pins 6, 8 connected on IBM side
9	RxD-	..	2	
	CTS	..	4-5	
	DSR	..	6-8	

Further Reference:

- *Macintosh Hardware Reference Manual*
- Technical Note HW 10 — Macintosh Plus Pinouts