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Apple Service
Technical Procedures
Peripheral Interface Guide

 **Apple Technical Procedures**

Peripheral Interface Guide

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Apple Technical Procedures
Peripheral Interface Guide
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□ PREFACE

Welcome to the Apple® Peripheral Interface Guide.

This guide contains interfacing information — pin-outs, switch settings, cabling requirements, and diagrams of interface ports — for Apple computers, interface cards, and peripherals. This information will help you in connecting both Apple and non-Apple peripheral devices to Apple computers. It will also be useful in troubleshooting situations where interface problems may be involved.

The following information is provided:

Section 1, Computer Interface Ports: Pin-outs

This section lists all the built-in interface ports on each Apple computer. Pin numbers, signal mnemonics, signal descriptions, and connector types are provided. Special information related to the interface is noted.

Section 2, Interface Cards: Pin-outs and Switch Functions

Similar in format to Section 1, this section covers interface cards for each type of Apple computer. For each card, pin numbers, signal mnemonics, signal descriptions, and connector types are listed. If the interface card contains any option switches, a table lists the functions of the switches and how they should be set to produce various operating characteristics.

Section 3, Peripheral Devices: Pin-outs and Switch Functions

This section covers Apple peripheral devices. Each device's pin numbers, signal mnemonics, signal descriptions, and connector types are listed. Option switch functions and settings are listed, with the default (factory) settings shown in bold type.

Section 4, Configurations: Computers and Peripherals

This section is a guide to connecting any Apple peripheral device to any Apple computer. The cables needed, option switch settings, and any special notes or requirements are all listed.

Section 5, Cable and Connector Specifications

Included here is a list of all the standard Apple peripheral cables, with their pin connections. Also included are diagrams of the various connectors used, with pin designations indicated.

Peripheral Interface Guide

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□ INTRODUCTION

This section contains the specifications for all the built-in interface ports on each type of Apple computer. The information is arranged by computer type. A drawing at the beginning of each section shows the locations of the interface connectors.

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Composite Video Connector

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
(Sleeve)	GND	System common ground.
(Tip)	VIDEO	NTSC composite video.

Connector Type: RCA Phono Plug

Apple II and II Plus video level is adjustable from 0 to 1 volt by a 200-ohm potentiometer located on the logic board near the right rear of the computer.

Auxiliary Video Connector

This connector (not shown in the illustration) is located on the logic board near the right-rear side of the computer.

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	GND	System common ground.
2	VIDEO	NTSC positive composite video.
3	+12V	+12 volts.
4	+5V	+5 volts.

Connector Type: Molex KK100 Series

Video level is not adjustable. Pin 1 is at the edge of the logic board.

Cassette Interface Connector – Input

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
(Sleeve)	GND	System electrical ground.
(Tip)	DATA IN	Audio in. One volt peak-to-peak; impedance of 12K ohms.

Connector Type: Miniature Phono Plug

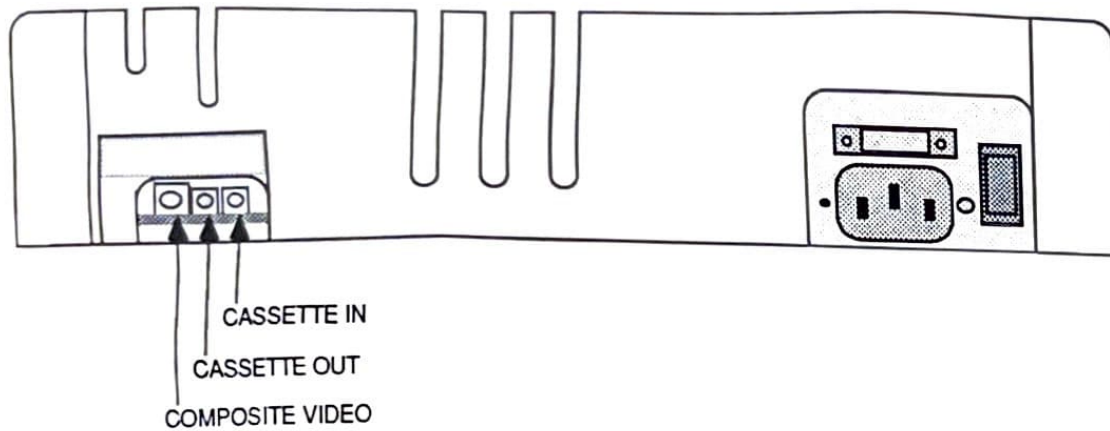
Cassette Interface Connector – Output

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
(Sleeve)	GND	System electrical ground.
(Tip)	DATA OUT	Audio out. 25 mV into a 100-ohm load.

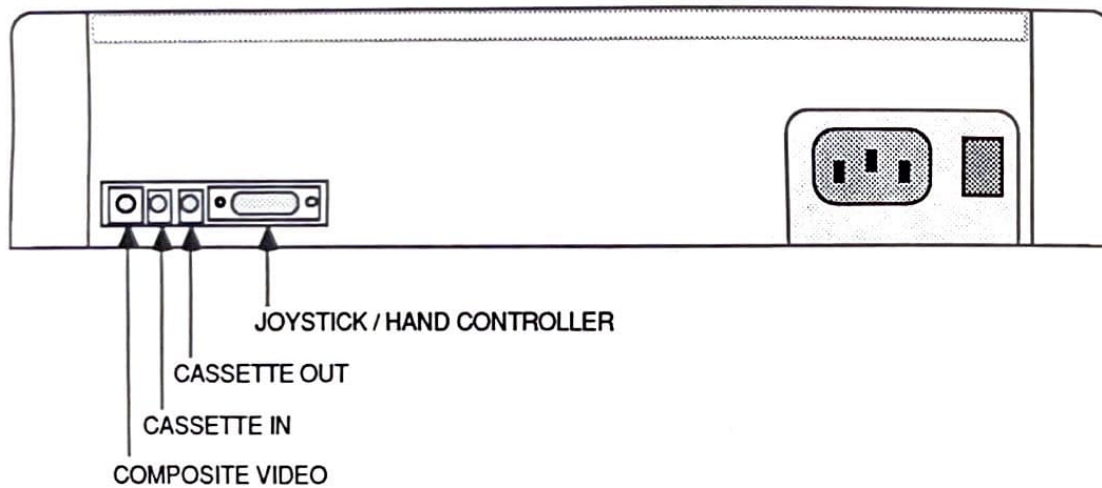
Connector Type: Miniature Phono Plug

□ APPLE II, II PLUS, AND IIe

APPLE II / II Plus



APPLE IIe



Game Controller Connector

This connector (not shown in illustration) is located near the right-rear side of the computer on the logic board.

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	+5V	+5 volts, 100 ma maximum current drain.
2	PB0	Push button input. Standard 74LS Series.
3	PB1	See Pin 2.
4	PB2	See Pin 2.
5	C040 STROBE/	General-purpose strobe output. Goes low during phase zero of a read or write cycle to any address from \$C040 to \$C04F.
6	GC0	Game controller input. Connected through a 150K-ohm variable resistor to +5V.
7	GC2	See Pin 6.
8	GND	System electrical ground.
9	NC	No connection.
10	GC1	See Pin 6.
11	GC3	See Pin 6.
12	AN3	Annunciator. Standard 74LS-Series TTL output. Must be buffered if used to drive other than TTL inputs.
13	AN2	See Pin 12.
14	AN1	See Pin 12.
15	AN0	See Pin 12.
16	NC	No connection.

Connector Type: 16-pin DIP header

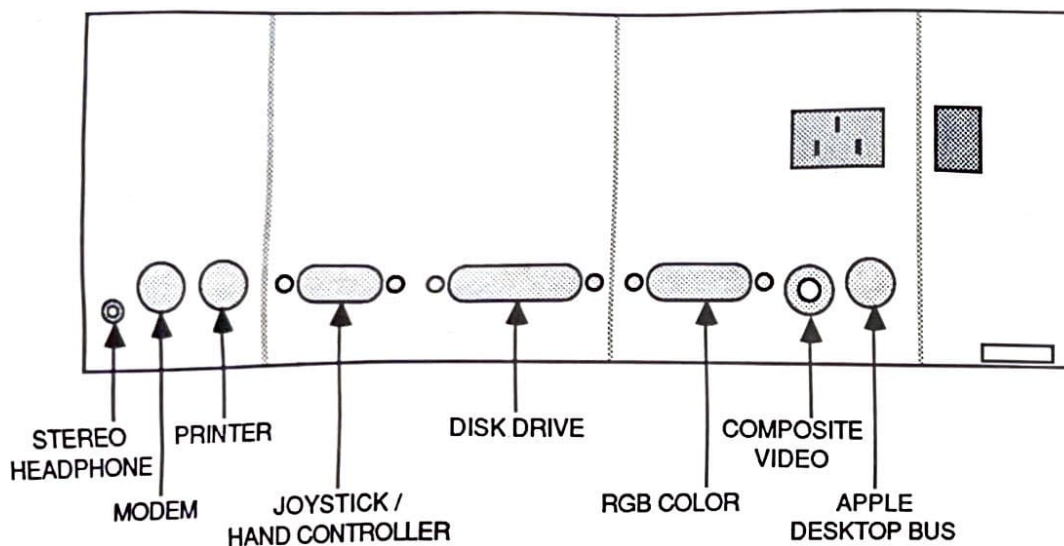
**Joystick/
Hand Controller
Port**

This connector is present only on the Apple IIe.

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	PB1	Push button input. Standard 74LS Series.
2	+5V	+5 volts. 100 ma maximum current drain.
3	GND	System ground.
4	PDL2	Hand control input. Connected through a 150K-ohm variable resistor to +5V.
5	PDL0	See Pin 4.
6	PB2	See Pin 1.
7	PB0	See Pin 1.
8	PDL1	See Pin 4.
9	PDL3	See Pin 4.

Connector Type: DE-9 Male

APPLE IIgs



Stereo Headphone Connector

Pin No.	Signal Description
1	Signal ground
2	Earphone 1
3	Earphone 2

Connector Type: Miniature Phono Plug

Modem and Printer Ports

Pin No.	Signal Description	Pin No.	Signal Description
1	Handshake Out	5	Receive Data -
2	Handshake In	6	Transmit Data +
3	Transmit Data -	7	DCD input on SCC
4	Signal Ground	8	Receive Data +

Connector Type: Mini DIN-8 Male

**Joystick/
Hand Controller
Port**

<u>Pin No.</u>	<u>Signal Description</u>	<u>Pin No.</u>	<u>Signal Description</u>
1	Switch 1/Option key	6	Switch 2
2	+5 volts	7	Switch 0/Open Apple key
3	Signal ground	8	Paddle 1
4	Paddle 2	9	Paddle 3
5	Paddle 0		

Connector Type: DE-9 Male

These signals are also available on a 16-pin DIP socket labeled GAME I/O (J22) inside the case.

Disk Drive Port

<u>Pin No.</u>	<u>Signal Description</u>	<u>Pin No.</u>	<u>Signal Description</u>
1	Signal ground	11	Seek phase 0
2	Signal ground	12	Seek phase 1
3	Signal ground	13	Seek phase 2
4	3.5-inch drive	14	Seek phase 3
5	-12 volts DC	15	Write request
6	+5 volts DC	16	Head select
7	+12 volts DC	17	Drive 2 enable
8	+12 volts DC	18	Read data
9	Enable 2	19	Write data
10	Write-protect		

Connector Type: DB-19 Male

RGB Video Port

<u>Pin No.</u>	<u>Signal Description</u>	<u>Pin No.</u>	<u>Signal Description</u>
1	Signal ground (RED)	9	Analog BLUE
2	Analog RED	10	No connection
3	Composite SYNC	11	Sound (1 Volt peak- to-peak)
4	No connection	12	Monochrome video output
5	Analog GREEN	13	Signal ground (BLUE)
6	Signal ground (GREEN)	14	No connection
7	-5 volts DC	15	No connection
8	+12 volts DC	(Shield)	System ground

Connector Type: DA-15 Male

Composite Video Connector

<u>Pin No.</u>	<u>Signal Description</u>	<u>Pin No.</u>	<u>Signal Description</u>
(Sleeve)	System common ground	(Tip)	NTSC composite video

Connector Type: RCA Phono Plug

Apple DeskTop Bus

<u>Pin No.</u>	<u>Signal Description</u>	<u>Pin No.</u>	<u>Signal Description</u>
1	Bidirectional data bus	3	Power (+5v)
2	Reserved	4	Ground

Connector Type: Mini DIN-4 Male

Total length of all cables not to exceed 16 feet (5 meters)

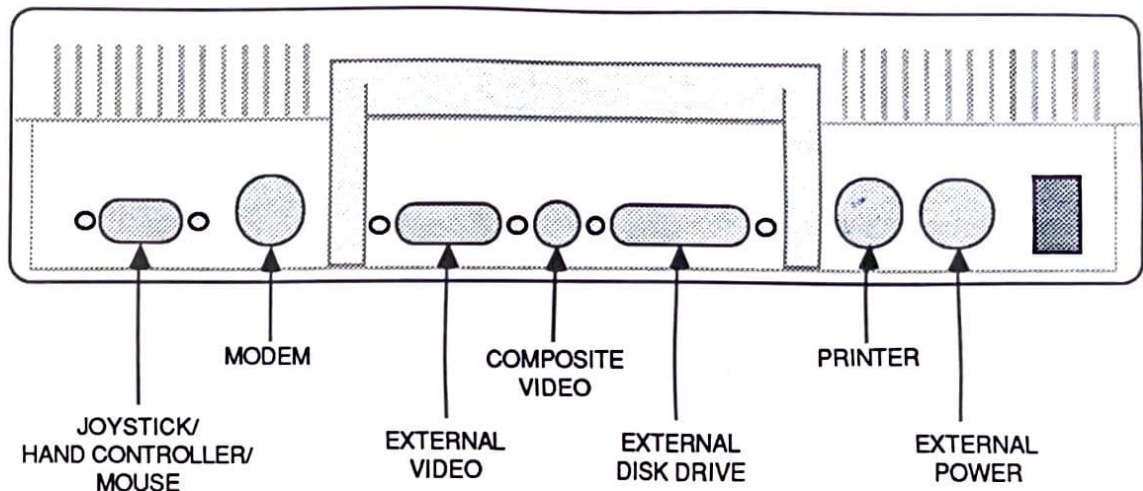
Sound Connector

This connector (J25) is located on the logic board, near the right-front side of the computer. (It is not shown in the illustration.)

<u>Pin No.</u>	<u>Signal Description</u>	<u>Pin No.</u>	<u>Signal Description</u>
1	Analog/Digital Input	5	Channel Address 1
2	Analog Ground	6	Channel Strobe/
3	Analog Output	7	Channel Address 2
4	Channel Address 0		

Connector Type: 7-pin Molex

□ APPLE IIc



Joystick/ Hand Controller/ Mouse Port

This port supports the connection of either a joystick, a hand controller, or a mouse.

Mouse Port Signals

The following table shows the signals when a mouse is in use.

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	MOUSEID/	Mouse identifier. When active, disables hand controller timer.
2	+5V	+5 volts. 100 ma maximum current drain.
3	GND	System ground.
4	XDIR	Mouse x-direction indicator.
5	XMOVE	Mouse x-movement interrupt.
6	NC	No connection.
7	MSW/	Mouse button.
8	YDIR	Mouse y-direction indicator.
9	YMOVE	Mouse y-movement interrupt.

Connector Type: DE-9 Male

**Joystick/
Hand Controller
Port Signals**

The following table shows the signals when either a joystick or hand controller is in use.

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	GAMESW1	Switch input 1.
2	+5V	+5 volts. 100 ma maximum current drain.
3	GND	System ground.
4	NC	No connection.
5	PDL0	Hand controller input. Connected through a 150K-ohm variable resistor to +5V.
6	NC	No connection.
7	GAMESW0	Switch input 0.
8	PDL1	See Switch 5.
9	NC	No connection.

Connector Type: DE-9 Male

**Modem Port
and Printer Port**

Both the modem port and the printer port are serial ports with the following pin-outs.

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	DTR	Data Terminal Ready
2	TD	Transmit Data
3	GND	Signal Ground
4	RD	Receive Data
5	DSR	Data Set Ready

Connector Type: 5-Pin Male DIN

PRINTER port (slot 1) defaults to: 9600 baud, 8 bits, no parity, 2 stop bits, 80 characters per line, LF after CR, hardware handshake. MODEM port (slot 2) defaults to 300 baud. DTR is an output. DSR is an input.

Video Expansion Port

The video expansion port is used for connecting an RGB monitor, RF modulator, or Flat Panel Display.

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	Video	Text signal from GLU.
2	14M	14-MHz timing signal from the system oscillator.
3	SYNC/	Display synch signal from IOU Pin 39.
4	SEGB	Displays vertical counter bit from IOU Pin 4.
5	1VSOUND	One-volt sound signal from AUD Pin 5.
6	LDPS/	Video shift register load enable from TMG Pin 12.
7	WNDW/	Active area display blanking.
8	+12V	+12 volts. 300 ma maximum.
9	PRAS/	RAM row-address strobe from TMG Pin 19.
10	GR	Graphics-mode enable from IOU Pin 2.
11	SEROUT/	Serialized character generator output from 74LS166 (UE6) Pin 1.
12	NTSC	Composite NTSC video signal from VID.
13	GND	Signal ground.
14	VIDD7	Causes half-dot shift if high.
15	CREF	Color reference from TMG Pin 3; 3.58-MHz.

Connector Type: DA-15 Male

CAUTION: The signals on this connector are not the same as on the DA-15 of the Apple III, III Plus, IIgs, or Macintosh II. DO NOT connect an Apple III, III Plus, IIgs, or Macintosh II cable to the IIc or vice versa.

**Composite
Video Connector**

<u>Pin No.</u>	<u>Signal Description</u>	<u>Pin No.</u>	<u>Signal Description</u>
(Sleeve)	System common ground	(Tip)	NTSC composite video

Connector Type: RCA Phono Plug

**External Disk
Drive Port**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	GND	Ground reference
2	GND	Ground reference
3	GND	Ground reference
4	GND	Ground reference
5	-12V	-12 volts
6	+5V	+5 volts
7	+12V	+12 volts
8	+12V	+12 volts
9	EXTINT/	External interrupt
10	WRPROT	Write-protect input
11	PH0	Motor phase 0 output
12	PH1	See Pin 11
13	PH2	See Pin 11
14	PH3	See Pin 11
15	WRREQ/	Write request
16	NC	No connection
17	DR1/	Drive 1 select
18	RDDATA	Read data input
19	WRDATA	Write data input

Connector Type: DB-19 Male

The Disk IIc, Apple 5.25 Drive, or UniDisk 3.5 may be connected to this port.

**External Power
Connector**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	NC	No connection
2	GND	Signal ground
3	GND	Signal ground
4	SGND	Shield ground
5	+15V	+15 volts DC
6	+15V	+15 volts DC
7	NC	No connection

Connector Type: 7-Pin Male DIN

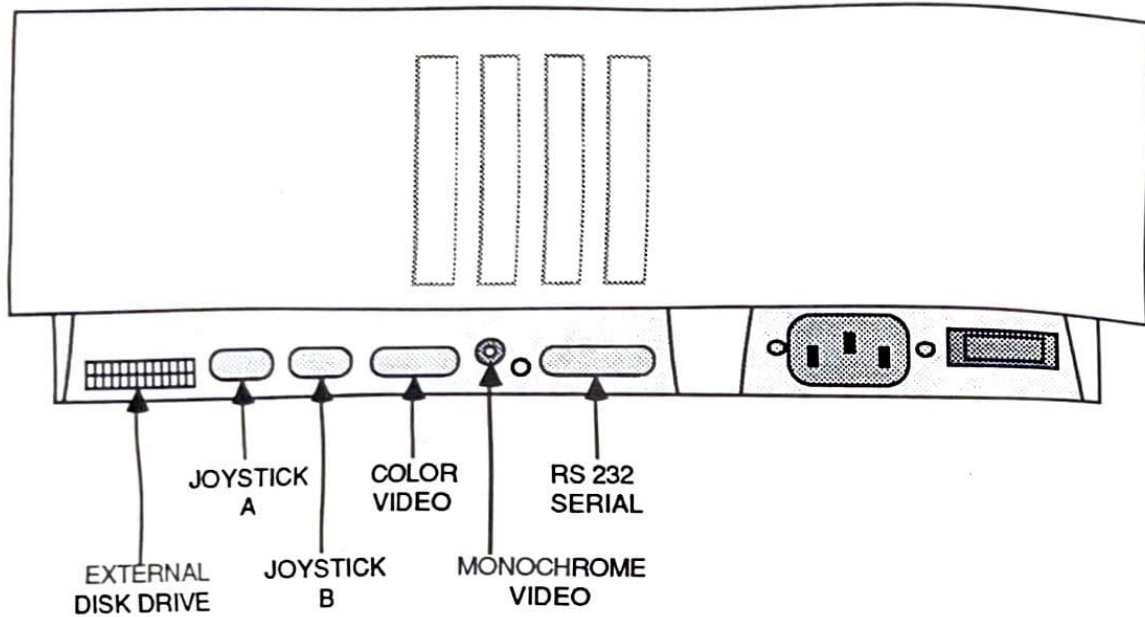
Audio Connector

This connector (not shown in the illustration) is located on the left side of the case near the keyboard. Connecting to this connector disables the internal speaker.

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
(Tip)	AUDIO	Audio signal
(Sleeve)	GROUND	System electrical ground

Connector Type: Subminiature phono plug

□ APPLE III AND III PLUS



Audio Connector

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
(Sleeve)	GND	Signal ground.
(Tip)	AUDIO	.5 volt peak-to-peak audio signal.

Connector Type: Miniature Phone Plug

The internal speaker is disabled when this connector is in use.

Monochrome Video Connector

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
(Sleeve)	GND	Signal ground
(Tip)	BWVID	Monochrome video signal

Connector Type: RCA Phono Plug

**External Disk Drive
Port**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	SGND	Shield ground
2	DPH0	Motor phase 0
3	GND	Signal ground
4	DPH1	Motor phase 1
5	GND	Signal ground
6	DPH2	Motor phase 2
7	GND	Signal ground
8	DPH3	Motor phase 3
9	-12F	-12 volts
10	WRREQ	Write request
11	+5F	+5 volts
12	+5F	+5 volts
13	+12F	+12 volts
14	ENBL1E/	Drive select 1
15	+12F	+12 volts
16	RDDATA	Read data
17	+12F	+12 volts
18	WRDATA	Write data
19	+12F	+12 volts
20	WRPROT	Write protect
21	ENBL3E/	Drive select 3
22	ENBL2E/	Drive select 2
23	AII/	Apple II emulation mode active
24	SIDE2/1	Side select
25	NC	No connection
26	EXT/	External drive

Connector Type: 26-pin Male socket

Joystick Port A

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	GND	Shield ground.
2	+5V	+5 volts.
3	GND	Power and signal ground.
4	JS1-X	Horizontal analog input; read by PDL(2); in Emulation mode, equivalent to Apple II Paddle 0 (GC0) input, read by PDL(0).
5	JS1-B	Joystick pushbutton input, read by button (2); in Emulation mode, equivalent to Apple II Paddle 0 button (PB1) input, read by PEEK(-16287).
6	+12V	+12 volts.
7	GND	Power and signal ground.
8	JS1-Y	Vertical analog input, read by PDL(3); in Emulation mode, equivalent to Apple II Paddle 2 (GC2) input, read by PDL(2).
9	JS1-SW	Joystick switch input, read by button (3); in Emulation mode, equivalent to Apple II Paddle 2 button (PB3) input, read by PEEK(-16285).

Connector Type: DE-9 Male

This port also supports the connection of a Silentype III printer.

Circuitry is provided for two analog devices (potentiometers) and two digital devices (switches). The analog inputs accept input voltage in the range of 0 to 2.2 volts and can sink 3 μ a. The digital inputs are TTL.

Joystick Port B

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	GND	Shield ground.
2	+5V	+5 volts.
3	GND	Power and signal ground.
4	JS0-X	Horizontal analog input, read by PDL(0); in Emulation mode, equivalent to Apple II Paddle 1 (GC1) input, read by PDL(1).
5	JS0-B	Joystick pushbutton input, read by Button (0); in Emulation mode, equivalent to Apple II Paddle 1 button (PB2) input, read by PEEK(-16286).
6	+12V	+12 volts.
7	GND	Power and signal ground.
8	JS0-Y	Vertical analog input, read by PDL(1); in Emulation mode, equivalent to Apple II Paddle 3 (GC3) input, read by PDL(3).
9	JS0-SW	Joystick switch input, read by Button 1; not used in Emulation mode.

Connector Type: DE-9 Male

Circuitry is provided for two analog devices (potentiometers) and two digital devices (switches). The analog inputs accept input voltage in the range of 0 to 2.2 volts and can sink 3 μ a. The digital inputs are TTL.

Color Video Port

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	SG	Shield ground.
2	XRGB4	This is a TTL output with instantaneous color information. A linear-weighted sum of these four signals will form a true 16-color RGB video signal.
3	SYNCH	Composite sync signal (negative-going).
4	PDI	Not used.
5	XRGB1	See Pin 2.
6	GND	Power and signal ground.
7	-5V	-5 volts. 200 ma maximum current drain.
8	+12V	+12 volts. 500 ma maximum current drain.
9	XRGB2	See Pin 2.
10	XRGB8	See Pin 2.
11	BWVID	Black and white composite video. NTSC-compatible signal with negative-going sync. 1 volt peak-to-peak into a 75-ohm load.
12	NTSC	Color composite video. NTSC-compatible signal with negative-going sync. 1 volt peak-to-peak into a 75-ohm load.
13	GND	Power and signal ground
14	-12V	-12 volts. 200 ma maximum current drain.
15	+5V	+5 volts. 1 amp maximum current drain.

Connector Type: DA-15 Male

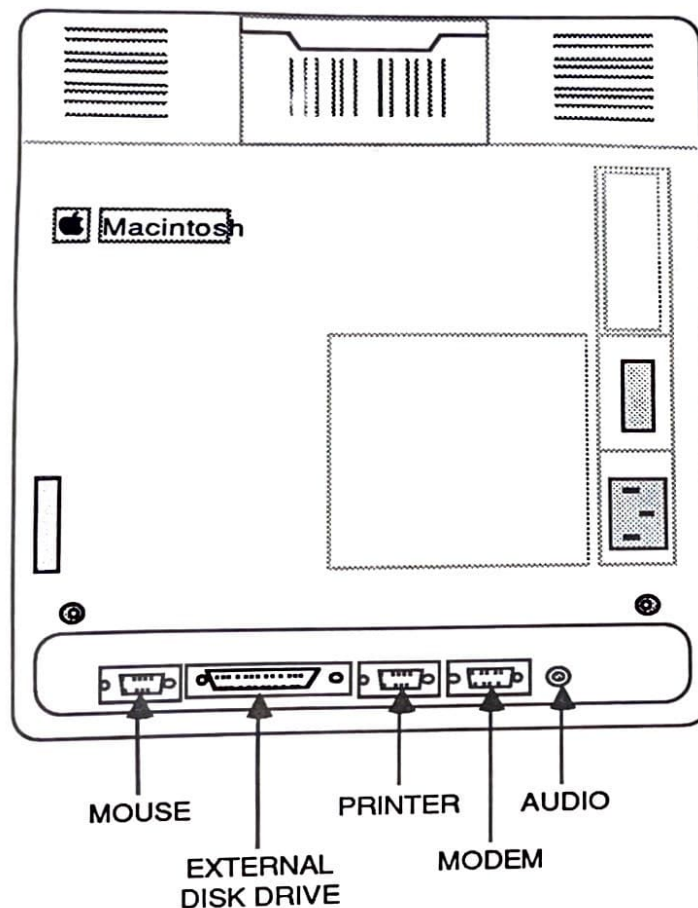
This port supports the connection of any NTSC-compatible color or monochrome monitor. Additional circuitry is required to support an RGB monitor. Current ratings are with no peripheral cards installed.

**RS-232-C Serial
Interface**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	SGND	Shield ground
2	TXD	Transmit Data
3	RCD	Receive Data
4	RTS	Request To Send
5	CTS	Clear To Send
6	DSR	Data Set Ready
7	GND	Signal ground
8	DCD	Data Carrier Detect
9-19	NC	No connection
20	DTR	Data Terminal Ready
21-25	NC	No connection

Connector Type: DB-25 Male

□ MACINTOSH 128K, 512K, AND 512K ENHANCED



Mouse Port

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	GND	Signal ground
2	+5V	+5 volts
3	GND	Signal ground
4	X2	Left-to-right motion indicator
5	X1	Interrupt line (left-to-right motion)
6	NC	No connection
7	SW	Mouse button
8	Y2	Up-down motion indicator
9	Y1	Interrupt line (up-down motion)

Connector Type: DE-9 Male

External Disk Drive

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	GND	Signal ground
2	GND	Signal ground
3	GND	Signal ground
4	GND	Signal ground
5	-12V	-12 volts DC
6	+5V	+5 volts DC
7	+12V	+12 volts DC
8	+12V	+12 volts DC
9	NC	Not connected
10	PWM	Motor speed control
11	PH0	Command control line
12	PH1	Command control line
13	PH2	Command control line
14	PH3	Command control line
15	WRREQ/	Write request
16	HDSEL	Head select
17	ENBL2/	Read line enable
18	RD	Read data
19	WR	Write data

Connector Type: DB-19 Male

**Modem and
Printer Ports***Signal Name*
RS-422

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	GND	Signal Ground
2	+5V	+5 volts
3	GND	Signal Ground
4	TXD+	Transmit Data +
5	TXD-	Transmit Data -
6	+12V	+12 volts
7	HSK	Handshake Input
8	RXD+	Receive Data +
9	RXD -	Receive Data -

Signal Name
RS-232

1	FG	Frame Ground
2	NC	No connection
3	SG	Signal Ground
4	NC	No connection
5	TXD	Transmit Data
6	NC	No connection
7	DSR	Data Set Ready
8	NC	No connection
9	RXD	Receive Data

Connector Type: DE-9 Male

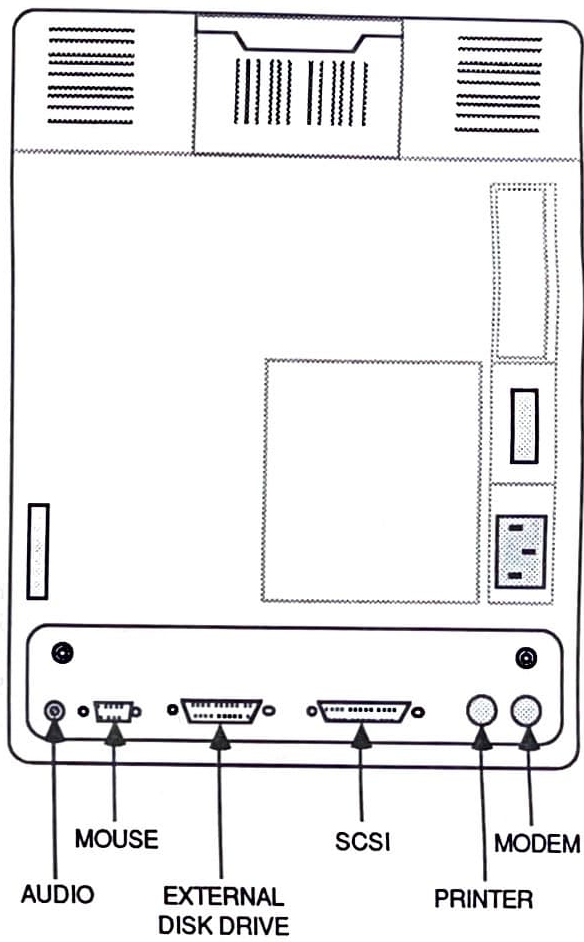
Audio Connector

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
(Sleeve)	GND	Signal ground.
(Tip)	AUDIO	.5 volt peak-to-peak audio signal.

Connector Type: Miniature Phone Plug

The internal speaker is disabled when this connector is in use.

□ MACINTOSH PLUS



...Continued on next page

External Disk Drive

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	GND	Signal ground
2	GND	Signal ground
3	GND	Signal ground
4	GND	Signal ground
5	-12V	-12 volts DC
6	+5V	+5 volts DC
7	+12V	+12 volts DC
8	+12V	+12 volts DC
9	NC	No connection
10	PWM	Motor speed control
11	PH0	Command control line
12	PH1	Command control line
13	PH2	Command control line
14	PH3	Command control line
15	WRREQ/	Write request
16	HDSEL	Head select
17	ENBL2/	Read line enable
18	RD	Read Data
19	WR	Write Data

Connector Type: DB-19 Male

**Modem and
Printer Ports**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	HSKO	Handshake out
2	HSKI	Handshake in
3	TXD-	Transmit Data -
4	GND	Signal ground
5	RXD-	Receive Data
6	TXD+	Transmit Data +
7	NC	No connection
8	RXD+	Receive Data +

Connector Type: Mini DIN-8

To connect DE-9 cables to the Mini DIN-8 port, use adaptor cable 590-0341.

SCSI Port

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	REQ/	Request
2	MSG/	Message
3	I/O/	Input/Output
4	RST/	Reset
5	ACK/	Acknowledge
6	BSY/	Busy
7	GND	Signal ground
8	DB0/	Data Bit 0
9	GND	Signal ground
10	DB3/	Data Bit 3
11	DB5/	Data Bit 5
12	DB6/	Data Bit 6
13	DB7/	Data Bit 7
14	GND	Signal ground
15	C/D/	Control/Data
16	GND	Signal ground
17	ATN/	Attention
18	GND	Signal ground
19	SEL/	Select
20	DBP/	Data Parity
21	DB1/	Data Bit 1
22	DB2/	Data Bit 2
23	DB4/	Data Bit 4
24	GND	Signal ground
25	NC	No connection

Connector Type: DB-25 Male

CAUTION: This port uses the same type of connector as a standard RS-232 serial interface, but is electrically very different. DO NOT connect any RS-232 device to this connector. Doing so can result in damage to both the device and the Macintosh Plus.

Mouse Port

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	GND	Signal ground
2	+5V	+5 volts DC
3	GND	Signal ground
4	X2	Left-to-right motion indicator
5	X1	Interrupt line (left-to-right motion)
6	NC	No connection
7	SW	Mouse switch
8	Y2	Up-down motion indicator
9	Y1	Interrupt line (up-down motion)

Connector Type: DE-9 Male

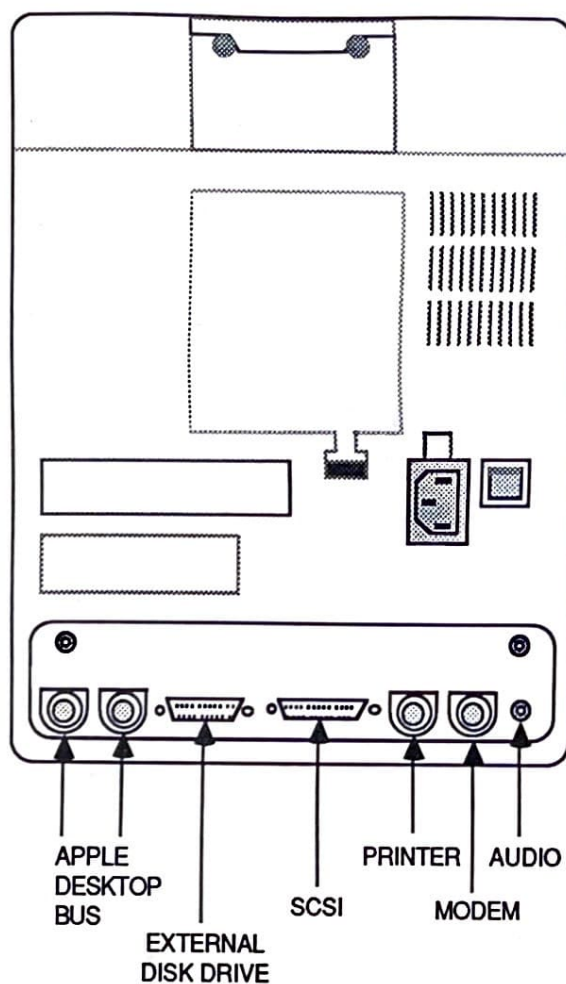
Audio Connector

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
(Sleeve)	GND	Signal ground.
(Tip)	AUDIO	.5 volt peak-to-peak audio signal.

Connector Type: Miniature Phone Plug

The internal speaker is disabled when this connector is in use.

□ MACINTOSH SE



Apple DeskTop Bus

<u>Pin No.</u>	<u>Signal Description</u>	<u>Pin No.</u>	<u>Signal Description</u>
1	Data	3	Power (+5v)
2	Reserved	4	Ground

Connector Type: Mini DIN-4 Male

Total length of all cables not to exceed 16 feet (5 meters)

External Disk Drive

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	GND	Signal ground
2	GND	Signal ground
3	GND	Signal ground
4	GND	Signal ground
5	-12v	-12 volts DC
6	+5v	+5 volts DC
7	+12v	+12 volts DC
8	+12v	+12 volts DC
9	NC	No connection
10	PWM	Motor speed control
11	PH0	Command control line
12	PH1	Command control line
13	PH2	Command control line
14	PH3	Command control line
15	WRREQ/	Write request
16	HDSEL	Head select
17	ENBL2/	Read line enable
18	RD	Read Data
19	WR	Write Data

Connector Type: DB-19 Male

SCSI Port

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	REQ/	Request
2	MSG/	Message
3	I/O/	Input/Output
4	RST/	Reset
5	ACK/	Acknowledge
6	BSY/	Busy
7	GND	Signal ground
8	DB0/	Data Bit 0
9	GND	Signal ground
10	DB3/	Data Bit 3
11	DB5/	Data Bit 5
12	DB6/	Data Bit 6
13	DB7/	Data Bit 7
14	GND	Signal ground
15	C/D/	Control/Data
16	GND	Signal ground
17	ATN/	Attention
18	GND	Signal ground
19	SEL/	Select
20	DBP/	Data Parity
21	DB1/	Data Bit 1
22	DB2/	Data Bit 2
23	DB4/	Data Bit 4
24	GND	Signal ground
25	NC	No connection

Connector Type: DB-25 Male

Total length of all cables not to exceed 20 feet (6 meters)

CAUTION: This port uses the same type of connector as a standard RS-232 serial interface, but is electrically very different. DO NOT connect any RS-232 device to this connector. Doing so can result in damage to both the device and the Macintosh SE.

Modem and Printer Ports

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	HSKO	Handshake out
2	HSKI	Handshake in
3	TXD-	Transmit Data -
4	GND	Signal ground
5	RXD-	Receive Data
6	TXD+	Transmit Data +
7	NC	No connection
8	RXD+	Receive Data +

Connector Type: Mini DIN-8

Modem port only: Connected to Receive/Transmit clock if VIA1 SYNC signal is high.

To connect DE-9 cables to the Mini DIN-8 port, use adapter cable 590-0341.

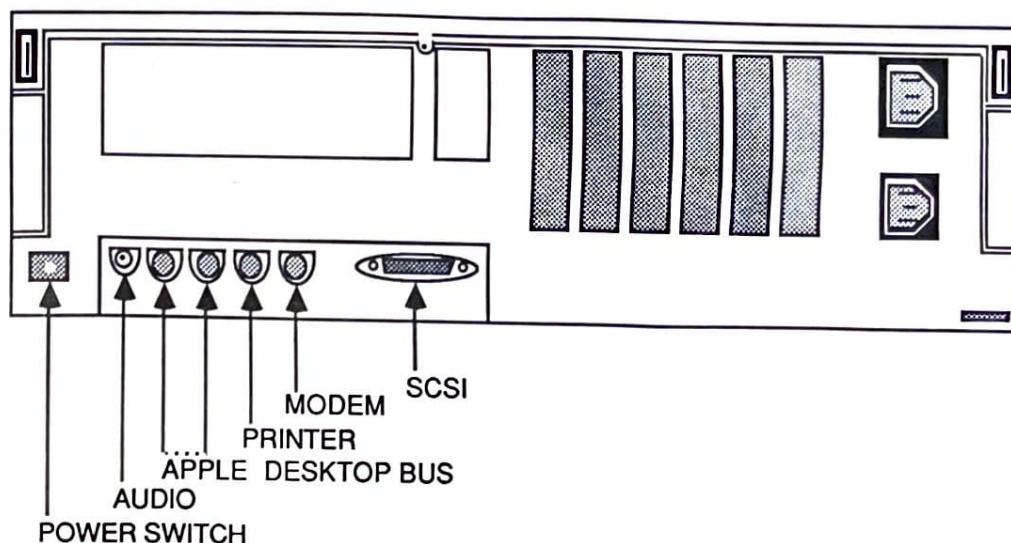
Audio Connector

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
(Sleeve)	GND	Signal ground.
(Tip)	AUDIO	.5 volt peak-to-peak audio signal.

Connector Type: Miniature Phone Plug

The internal speaker is disabled when this port is in use.

MACINTOSH II



Audio Connector

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
(Sleeve)	GND	Signal ground.
(Tip)	AUDIO	1 volt peak-to-peak audio signal with an impedance of 47 ohms.

Connector Type: Miniature Phone Plug

Apple DeskTop Bus

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	Data	Bidirectional data bus
2	Power On	Signal is momentarily grounded to pin 4 to begin power-up sequence in CPU.
3	Power	+5 volts
4	Ground	Signal Ground

Connector Type: Miniature Phone Plug

**Modem and
Printer Ports**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	HSKo	Handshake output. Connected to SCC Data Terminal Ready.
2	KSKi	Handshake input. Connected to SCC Clear to Send and Transmit/Receive Clock.
3	TxD-	Transmit Data (inverted). Connected to SCC transmit Data. Tri-stated when Request To Send is deasserted.
4	SG	Signal Ground. Connected to logic and chassis ground.
5	RxD-	Receive Data (inverted). Connected to SCC Receive Data.
6	TxD+	Transmit Data. Connected to SCC Transmit Data. Tri-stated when Request To Send is deasserted.
7	GPi	General-Purpose input. Connected to SCC Data Carrier Detect.
8	RxD+	Receive Data. Connected to the SCC Receive Data.

Connector Type: Mini DIN-8

Modem port only: Connected to
Receive/Transmit clock if VIA1 SYNC
signal is high.

To connect DE-9 cables to the Mini DIN-8
port, use adapter cable 590-0341.

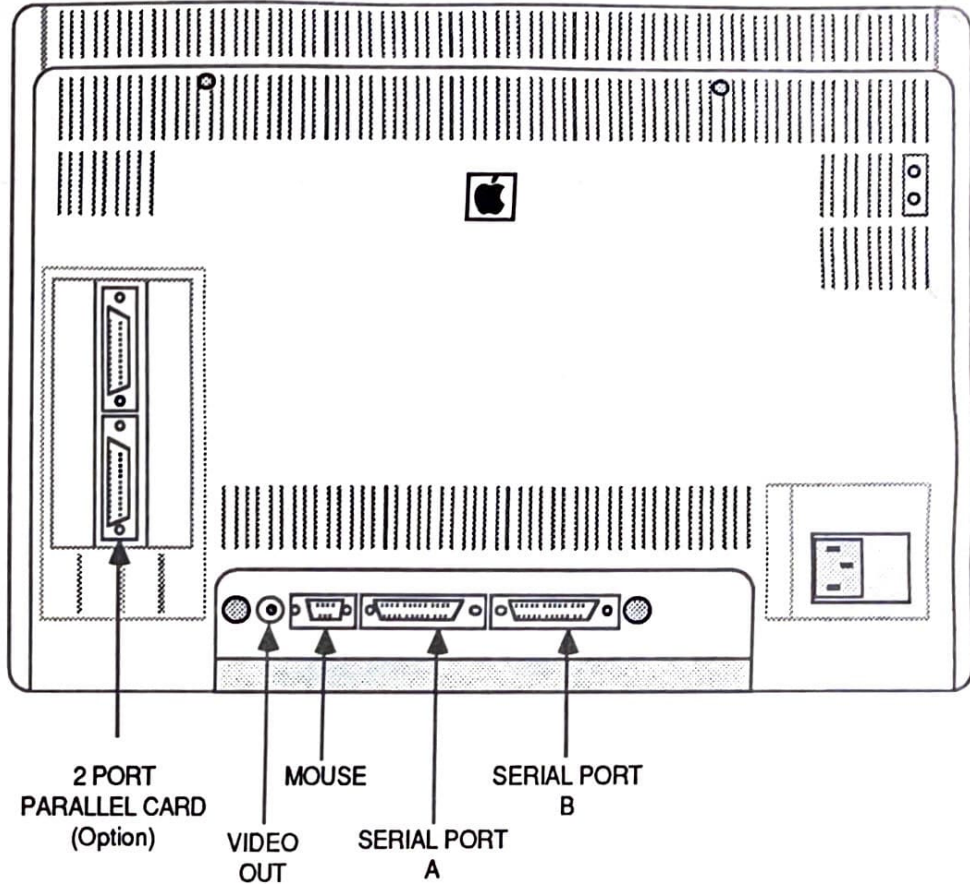
SCSI Port

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	REQ/	Request
2	MSG/	Message
3	I/O/	Input/Output
4	RST/	Reset
5	ACK/	Acknowledge
6	BSY/	Busy
7	GND	Signal ground
8	DB0/	Data Bit 0
9	GND	Signal ground
10	DB3/	Data Bit 3
11	DB5/	Data Bit 5
12	DB6/	Data Bit 6
13	DB7/	Data Bit 7
14	GND	Signal ground
15	C/D/	Control/Data
16	GND	Signal ground
17	ATN/	Attention
18	GND	Signal ground
19	SEL/	Select
20	DBP/	Data Parity
21	DB1/	Data Bit 1
22	DB2/	Data Bit 2
23	DB4/	Data Bit 4
24	GND	Signal ground
25	TERMPWR	+5 volts

Connector Type: DB-25 Male

CAUTION: This port uses the same type of connector as a standard RS-232 serial interface, but is electrically very different. DO NOT connect any RS-232 device to this connector. Doing so can result in damage to both the device and the Macintosh II.

LISA 2/10 AND MACINTOSH XL

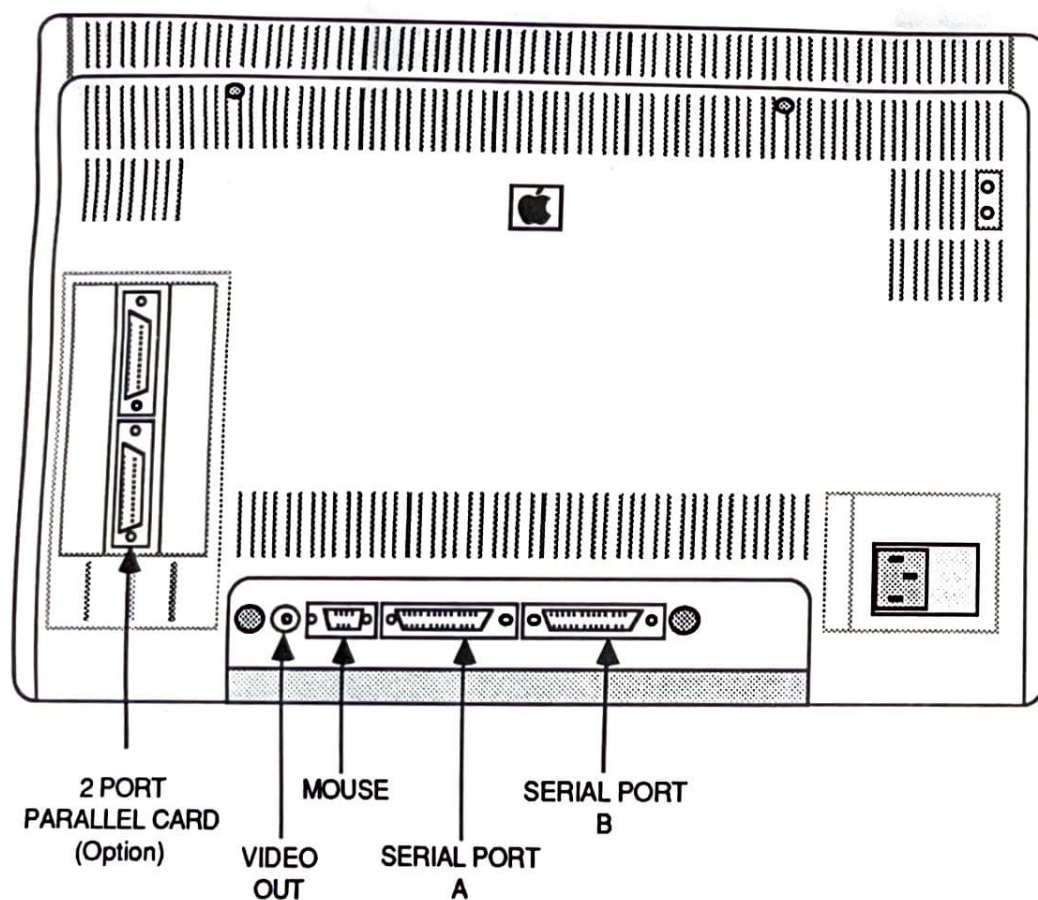


Serial Port A

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
2	TXD	Transmit Data
3	RXD	Receive Data
4	RTS	Request To Send
5	CTS	Clear To Send
8	DCD	Data Carrier Detect
15	TXC	Transmit clock input
17	RXC	Receive clock input
20	DTR	Data Terminal Ready
24	TEXT	Transmit clock output

□ LISA/MACINTOSH XL

LISA 2.0 AND LISA 2/5



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Serial Port B

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
2	TXD	Transmit Data
3	RXD	Receive Data
4	RTS	Request To Send
6	DSR	Data Set Ready
19	RXD	AppleTalk Receive Data
20	DTR	Data Terminal Ready

Mouse Port

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	Switch 1	Mouse switch
2	+5V	+5 Volts DC
3	GND	System electrical ground
4	LEFT	Mouse movement - left
5	RIGHT	Mouse movement - right
6	Switch 2	Connected to CHK on parallel port
7	Button	Not used
8	DOWN	Mouse movement - down
9	UP	Mouse movement - up

Composite Video Connector

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
(Tip)	VIDEO	Composite video output
(Sleeve)	GND	System electrical ground

**Parallel Port
(Lisa 2.0/2.5
Only)**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	GND	System electrical ground
2	GND	System electrical ground
3	DRW/	Data direction
4	GND	System electrical ground
5	DD0	Data bit 0 (Bidirectional)
6	DD1	Data bit 1 (Bidirectional)
7	N/C	No connection - blocked
8	DD2	Data bit 2 (Bidirectional)
9	GND	System electrical ground
10	GND	System electrical ground
11	DD5	Data bit 5 (Bidirectional)
12	DD6	Data bit 6 (Bidirectional)
13	DD7	Data bit 7 (Bidirectional)
14	GND	System electrical ground
15	PSTRB/	Strobe (output)
16	BSY	Busy (input)
17	CMD/	Command
18	PARITY/	Parity (Bidirectional)
19	OCD	Device on-line status
20	GND	System electrical ground
21	CRES/	Reset (output)
22	DD3	Data bit 3 (Bidirectional)
23	DD4	Data bit 4 (Bidirectional)
24	GND	System electrical ground
25	CHK	Interrupt (input)

Peripheral Interface Guide

Section 2 – Interface Cards: Pin-outs and Switch Functions

❑ CONTENTS

2.2	Introduction
2.3	Apple II, II Plus, IIe, and IIGs
2.3	Parallel Printer Interface and Centronics Printer Interface Pin-outs
2.4	Parallel Interface Card Pin-outs
2.4	Parallel Interface Card Switches
2.5	Graphics Tablet Interface - Tablet Pin-outs
2.5	Graphics Tablet Interface - Pen Pin-outs
2.5	Communications Interface Card Pin-outs
2.6	High Speed Serial Interface Card Pin-outs
2.6	High Speed Serial Interface Card Switches
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□ INTRODUCTION

This section contains specifications for Apple interface cards. The information is arranged so that all the interface cards for a particular computer type are grouped together.

Note: This section refers to switches as either "ON" (closed) or "OFF" (open).

□ APPLE II, II PLUS, IIe, AND IIgs

Parallel Printer Interface and Centronics Printer Interface Pin-outs

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	GND	System electrical ground
2	ACK	Acknowledge input
3	NC	No connection
4	F	Not used
5	NC	No connection
6	NC	No connection
7	NC	No connection
8	STROBE	Strobe output
9	NC	No connection
10	DP0	Data bit 0
11	DP1	Data bit 1
12	DP2	Data bit 2
13	DP3	Data bit 3
14	DP4	Data bit 4
15	DP5	Data bit 5
16	DP6	Data bit 6
17	DP7	Data bit 7
18	NC	No connection
19	NC	No connection
20	GND	System electrical ground

Connector Type: Unterminated 20-pin flat cable

Parallel I/F has the P1 (341-0005) PROM that provides a linefeed after carriage return. The jumper block is not wired.

Centronics I/F has the P9 (341-0019) PROM that does not provide a linefeed after carriage return. The jumper block is pre-wired for negative strobe and positive acknowledge.

**Parallel Interface
Card Pin-outs**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	DI0	Data In, bit 0
2	GND	Signal ground
3	DI2	Data In, bit 2
4	GND	Signal ground
5	DO0	Data Out, bit 0
6	DO1	Data Out, bit 1
7	NC	No connection - blocked
8	DO2	Data Out, bit 2
9	NC	No connection
10	NC	No connection
11	DO5	Data Out, bit 5
12	DO6	Data Out, bit 6
13	DO7	Data Out, bit 7
14	DI4	Data In, bit 4
15	STROBE	Strobe output
16	ACK	Acknowledge input
17	DI1	Data In, bit 1
18	DI7	Data In, bit 7
19	DI5	Data In, bit 5
20	GND	Signal ground
21	DI6	Data In, bit 6
22	DO3	Data Out, bit 3
23	DO4	Data Out, bit 4
24	GND	Signal ground
25	DI3	Data In, bit 3

Connector Type: DB-25 Male

**Parallel Interface
Card Switches**

	1	2	3	4	5	6	7
STROBE LENGTH							
1 microsecond	OFF	OFF	OFF				
3 microseconds	ON	OFF	OFF				
5 microseconds	OFF	ON	OFF				
7 microseconds	ON	ON	OFF				
9 microseconds	OFF	OFF	ON				
11 microseconds	ON	OFF	ON				
13 microseconds	OFF	ON	ON				
15 microseconds	ON	ON	ON				
STROBE POLARITY							
Positive					OFF		
Negative					ON		
ACKNOWLEDGE POLARITY							
Positive						OFF	
Negative						ON	
FIRMWARE SELECT							
Parallel Printer (No LF)							OFF
Centronics							ON
INTERRUPTS							
Disabled							OFF
Enabled							ON

**Graphics Tablet
Interface - Tablet
Pin-outs**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	YDRIVE	Y-axis input
2	XDRIVE	X-axis input
3	NC	No connection
4	RESET	
5	GND	System electrical ground
6	-12V	-12 volts DC

**Graphics Tablet
Interface - Pen
Pin-outs**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	NC	No connection
2	GND	System electrical ground
3	PEN	Pen coil
4	PEN	Pen coil

**Communications
Interface Card
Pin-outs**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
2	TXD	Transmit Data
3	RXD	Receive Data
4	RTS	Request To Send (jumped to pin 8)
6	DSR	Data Set Ready (jumped to pin 20)
7	SG	Signal Ground
8	DCD	Data Carrier Detect (jumped to pin 4)
20	DTR	Data Terminal Ready (jumped to pin 6)

Connector Type: DB-25 Male

The Communications Interface Card should be used only with low-speed devices (300 baud or below).

**High Speed Serial
Interface Card
Pin-outs**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
2	RXD	Receive Data
3	TXD	Transmit Data
4	RTS	Request To Send (jumped to pin 5)
5	CTS	Clear To Send (jumped to pin 4)
6	DSR	Data Set Ready (jumped to pins 8 & 20)
7	GND	Signal ground
8	DCD	Data Carrier Detect (jumped to pins 6 & 20)
20	DTR	Data Terminal Ready (jumped to pins 6 & 8)

Connector Type: DB-25 Male

1. This card should be used only with low-speed devices (300 baud or below).
2. PROM P8A should be used with Qume-compatible printers. When using this PROM, the function of Switch 4 is different and the switch must be OFF.

**High Speed Serial
Interface Card
Switches**

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
BAUD RATE							
110	ON	ON	ON				
134.5	OFF	ON	ON				
300	ON	OFF	ON				
1200	OFF	OFF	ON				
2400	ON	ON	OFF				
4800	OFF	ON	OFF				
9600	ON	OFF	OFF				
19200	OFF	OFF	OFF				
CARRIAGE RETURN DELAY							
Disabled					ON		
1/4 Second Delay					OFF		
LINE WIDTH VIDEO							
40 Columns/Video On					ON	ON	
72 Columns/Video Off					OFF	ON	
80 Columns/Video Off					ON	OFF	
132 Columns/Video Off					OFF	OFF	
AUTO LF ON CR							
Disabled							ON
Enabled							OFF

**IEEE-488
Interface
Pin-outs**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	DIO1	Data Input/Output bit 1
2	DIO2	Data Input/Output bit 2
3	DIO3	Data Input/Output bit 3
4	DIO4	Data Input/Output bit 4
5	EOI	End Or Identify
6	DAV	Data Valid
7	NRFD	Not Ready For Data
8	NDAC	Not Data Accepted
9	IFC	Interface clear
10	SRQ	Service request
11	ATN	Attention
12	SHIELD	Earth ground
13	DIO5	Data Input/Output bit 5
14	DIO6	Data Input/Output bit 6
15	DIO7	Data Input/Output bit 7
16	DIO8	Data Input/Output bit 8
17	REN	Remote enable
18	GND	Logic ground
19	GND	Logic ground
20	GND	Logic ground
21	GND	Logic ground
22	GND	Logic ground
23	GND	Logic ground
24	GND	Logic ground

**Super Serial Card
Pin-outs**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	FG	Frame Ground
2	TXD	Transmit Data
3	RXD	Receive Data
4	RTS	Request To Send
5	CTS	Clear To Send
6	DSR	Data Set Ready
7	SG	Signal Ground
8	DCD	Data Carrier Detect
9-18		No connection
19	SCTS	Secondary Clear To Send
20	DTR	Data Terminal Ready
21-25		No connection

Connector Type: DB-25 Male

When the jumper block is installed with the arrow pointing toward MODEM, the signals are as listed above. When the jumper block is pointing toward TERMINAL, the signals are the same as the signals produced when using a modem eliminator.

**Super Serial Card
Printer Mode
Switch 1**

BAUD RATE

1 2 3 4 5 6 7

50	ON	ON	ON	OFF			
75	ON	ON	OFF	ON			
110	ON	ON	OFF	OFF			
135	ON	OFF	ON	ON			
150	ON	OFF	ON	OFF			
300	ON	OFF	OFF	ON			
600	ON	OFF	OFF	OFF			
1200	OFF	ON	ON	ON			
1800	OFF	ON	ON	OFF			
2400	OFF	ON	OFF	ON			
3600	OFF	ON	OFF	OFF			
4800	OFF	OFF	ON	ON			
7200	OFF	OFF	ON	OFF			
9600	OFF	OFF	OFF	ON			
19200	OFF	OFF	OFF	OFF			

MODE SELECT

Printer					OFF	ON
SIC P8 Emulation					ON	OFF
SIC P8A Emulation					OFF	OFF

HANDSHAKING *

Clear To Send (Pin 5)						ON
Secondary Clear To Send (Pin 19)						OFF

* Used in conjunction with Switch 2, position 7.

**Super Serial Card
Printer Mode
Switch 2**

STOP BITS

1 2 3 4 5 6 7

1	ON						
2	OFF						

DELAY AFTER CR

32 ms.					ON		
Disabled					OFF		

LINE WIDTH/VIDEO

40 Columns/Video On				ON	ON		
72 Columns/Video Off				ON	OFF		
80 Columns/Video Off				OFF	ON		
132 Columns/Video Off				OFF	OFF		

AUTO LF ON CR

Enabled						ON	
Disabled						OFF	

INTERRUPTS

Enabled							ON
Disabled							OFF

HANDSHAKING *

Clear To Send (Pin 5)							OFF
Secondary Clear To Send (Pin 19)							ON

* Used in conjunction with Switch 1, position 7.

**Super Serial Card
Communication
Mode Switch 1**

BAUD RATE

	1	2	3	4	5	6	7
50	ON	ON	ON	OFF			
75	ON	ON	OFF	ON			
110	ON	ON	OFF	OFF			
135	ON	OFF	ON	ON			
150	ON	OFF	ON	OFF			
300	ON	OFF	OFF	ON			
600	ON	OFF	OFF	OFF			
1200	OFF	ON	ON	ON			
1800	OFF	ON	ON	OFF			
2400	OFF	ON	OFF	ON			
3600	OFF	ON	OFF	OFF			
4800	OFF	OFF	ON	ON			
7200	OFF	OFF	ON	OFF			
9600	OFF	OFF	OFF	ON			
19200	OFF	OFF	OFF	OFF			

MODE SELECT

Communication ON ON

HANDSHAKING *

Clear to send ON

* Used in conjunction with Switch 2, position 7.

**Super Serial Card
Communication
Mode Switch 2**

STOP BITS

	1	2	3	4	5	6	7
1	ON						
2	OFF						

DATA BITS

	1	2	3	4	5	6	7
8		ON					
7		OFF					

PARITY

	1	2	3	4	5	6	7
None			ON	ON			
Odd			ON	OFF			
Even			OFF	OFF			

AUTO LF ON CR

	1	2	3	4	5	6	7
Enabled					ON		
Disabled					OFF		

INTERRUPTS

	1	2	3	4	5	6	7
Enabled						ON	
Disabled						OFF	

HANDSHAKING *

Clear To Send OFF

* Used in conjunction with Switch 1, position 7.

Apple II SCSI Card

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	REQ/	Request
2	MSG/	Message
3	I/O/	Input/Output
4	RST/	Reset
5	ACK/	Acknowledge
6	BSY/	Busy
7	GND	Signal ground
8	DB0/	Data Bit 0
9	GND	Signal ground
10	DB3/	Data Bit 3
11	DB5/	Data Bit 5
12	DB6/	Data Bit 6
13	DB7/	Data Bit 7
14	GND	Signal ground
15	C/D/	Control/Data
16	GND	Signal ground
17	ATN/	Attention
18	GND	Signal ground
19	SEL/	Select
20	DBP/	Data Parity
21	DB1/	Data Bit 1
22	DB2/	Data Bit 2
23	DB4/	Data Bit 4
24	GND	Signal ground
25	NC	No connection

Connector Type: DB-25 Male

Not compatible with the original Apple II.

CAUTION: This port uses the same type of connector as a standard RS-232 serial interface, but is electrically very different. DO NOT connect any RS-232 device to this connector. Doing so can result in damage to both the device and the computer.

□ APPLE III AND III PLUS

Universal Parallel Interface Card (UPIC) Pin-outs

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	DO0	Port B, Data Output bit 0
2	DO1	Port B, Data Output bit 1
3	DO2	Port B, Data Output bit 2
4	DO3	Port B, Data Output bit 3
5	DO4	Port B, Data Output bit 4
6	DO5	Port B, Data Output bit 5
7	DO6	Port B, Data Output bit 6
8	DO7	Port B, Data Output bit 7
9	NC	No connection
10	NC	No connection
11	GND	Signal ground
12	ACK	Acknowledge input
13	DI0	Port B, Data Input bit 0
14	DI1	Port B, Data Input bit 1
15	DI2	Port B, Data Input bit 2
16	DI3	Port B, Data Input bit 3
17	DI4	Port B, Data Input bit 4
18	STROBE	Strobe output
19	DI5	Port B, Data Input bit 5
20	DO0	Port A, Data Output bit 0
21	DO1	Port A, Data Output bit 1
22	DO2	Port A, Data Output bit 2
23	DO3	Port A, Data Output bit 3
24	DO4	Port A, Data Output bit 4
25	DO5	Port A, Data Output bit 5
26	DO6	Port A, Data Output bit 6
27	DO7	Port A, Data Output bit 7
28	DI6	Port B, Data Input bit 6
29	DI7	Port B, Data Input bit 7
30	GND	Signal ground
31	NC	No connection
32	NC	No connection
33	DRO	Data Ready Output
34	GND	Signal ground
35	GND	Signal ground
36	GND	Signal ground
37	GND	Signal ground
38	ACK	Acknowledge
39	GND	Signal ground
40	GND	Signal ground

Connector Type: 40-Pin Female socket

Pins 11-30 are used to support a parallel printer.

**Serial Card III
Pin-outs**

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	SGND	Shield ground
2	TXD	Transmit Data
3	RXD	Receive Data
4	RTS	Request To Send
5	CTS	Clear To Send
6	DSR	Data Set Ready
7	GND	Signal ground
8	DCD	Data Carrier Detect
9-19		No connection
20	DTR	Data Terminal Ready
21-25		No connection

Connector Type: DB-25 Male

The signals are as listed above when the modem eliminator button is pushed IN. When the modem eliminator button is in the OUT position, the Serial Card III signals are the same as the signals produced by a modem eliminator cable.

□ LISA / MACINTOSH XL

Two-Port Parallel Card Pin-outs

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	GND	System electrical ground
2	GND	System electrical ground
3	DRW/	Data Direction
4	GND	System electrical ground
5	DD0	Data bit 0 (Bi-directional)
6	DD1	Data bit 1 (Bi-directional)
7	NC	No connection - blocked
8	DD2	Data bit 2 (Bi-directional)
9	GND	System electrical ground
10	GND	System electrical ground
11	DD5	Data bit 5 (Bi-directional)
12	DD6	Data bit 6 (Bi-directional)
13	DD7	Data bit 7 (Bi-directional)
14	GND	System electrical ground
15	PSTRB/	Strobe (output)
16	BSY	Busy (input)
17	CMD/	Command
18	PARITY/	Parity (Bi-directional)
19	OCD	Device on-line status
20	GND	System electrical ground
21	CRES/	Reset (output)
22	DD3	Data bit 3 (Bi-directional)
23	DD4	Data bit 4 (Bi-directional)
24	GND	System electrical ground
25	CHK	Interrupt (input)

□ MACINTOSH II

Macintosh II Video Card

<u>Pin No.</u>	<u>Signal Description</u>	<u>Pin No.</u>	<u>Signal Description</u>
1	Signal ground (RED)	9	Analog BLUE
2	Analog RED	10	No connection
3	Composite SYNC	11	No connection
4	Signal ground (SYNC)	12	No connection
5	Analog GREEN	13	Signal ground (BLUE)
6	Signal ground (GREEN)	14	No connection
7	No connection	15	No connection
8	No connection	(Shield)	Shield ground

Connector Type: DA-15 Male

Peripheral Interface Guide

Section 3 – Peripheral Devices: Pin-outs and Switch Functions

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□ INTRODUCTION

This section contains interface specifications for Apple peripheral devices. The factory switch settings of each device are shown in bold type.

Note: This section refers to switches as either "ON" (closed) or "OFF" (open).

□ DOT MATRIX PRINTER

Pin-outs	Pin No.	Signal Name	Signal Description
	1	DATA STB/	Data Strobe
	2	DATA1	Data bit 1
	3	DATA2	Data bit 2
	4	DATA3	Data bit 3
	5	DATA4	Data bit 4
	6	DATA5	Data bit 5
	7	DATA6	Data bit 6
	8	DATA7	Data bit 7
	9	DATA8	Data bit 8
	10	ACK/	Acknowledge
	11	INPUT-BUSY	Busy
	12	PE	Paper empty
	13	SELECT	On/Off-line status
	14	OV	Ground
	15	NC	No connection
	16	OV	Ground
	17	CGND	Chassis ground
	18	+5V	+5 volts DC
	19	GND	Twisted pair ground (pin 1)
	20	GND	Twisted pair ground (pin 2)
	21	GND	Twisted pair ground (pin 3)
	22	GND	Twisted pair ground (pin 4)
	23	GND	Twisted pair ground (pin 5)
	24	GND	Twisted pair ground (pin 6)
	25	GND	Twisted pair ground (pin 7)
	26	GND	Twisted pair ground (pin 8)
	27	GND	Twisted pair ground (pin 9)
	28	GND	Twisted pair ground (pin 10)
	29	GND	Twisted pair ground (pin 11)
	30	GND	Twisted pair ground (pin 31)
	31	INPUT-PRIME/	Reset input to printer
	32	FAULT/	Error condition
	33	OV	Ground

...Continued on next page

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
34	NC	No connection
35	NC	No connection
36	INPUT-BUSY	Busy input

Connector Type: TRW CINCH 57-30360 or equivalent

Switch 1

	1	2	3	4	5	6	7	8
CHARACTER SET								
English (US)	OFF	OFF	OFF					
Italian	ON	OFF	OFF					
English (UK)	ON	ON	OFF					
German	OFF	OFF	ON					
Swedish	ON	OFF	ON					
French	OFF	ON	ON					
Spanish	ON	ON	ON					
LINES PER PAGE								
66-Lines					OFF			
72-Lines					ON			
REMOTE SELECT								
Disabled					ON			
Enabled					OFF			
CR/LF ON BUFFER FULL								
Enabled						ON		
Disabled						OFF		
PRINT UPON RECEIPT OF								
CR							OFF	
CR, LF, VT, US, or FF							ON	
AUTO CR ON LF								
Enabled								ON
Disabled								OFF

Switch 2

	1	2	3	4	5	6	7	8
ZERO								
Slashed		ON						
Un-slashed		OFF						
BUFFER								
Single-Line		ON						
N-Line		OFF						
NOT USED			XXX					
NOT USED				XXX				
PRINTING								
Proportional (Elite)					ON			
10 CPI (Pica)					OFF			
WORD LENGTH								
7-Bit						ON		
8-Bit						OFF		
POWER-ON STATUS								
Selected							ON	
Deselected							OFF	
PRINTING DIRECTION								
Unidirectional								ON
Bidirectional								OFF

☐ DAISY WHEEL PRINTER

Pin-outs

Pin No.	Signal Description	Pin No.	Signal Description
1	Protective ground	7	Signal ground
2	Transmit Data	8	Carrier Detect
3	Receive Data	9-19	No connection
4	Request To Send	20	Data Terminal Ready
5	Clear To Send	21-25	No connection
6	Data Set Ready		

Connector Type: DB-25 Male

Front Panel DIP Switch

	1	2	3	4	5	6	7	8
TYPE PITCH								
10 CPI	OFF	OFF						
12 CPI	ON	OFF						
15 CPI	OFF	ON						
Proportional	ON	ON						
FORM LENGTH								
3 inches			OFF	OFF	OFF	OFF		
3.5 inches			ON	OFF	OFF	OFF		
4 inches			OFF	ON	OFF	OFF		
5 inches			OFF	OFF	ON	ON		
5.5 inches			ON	ON	OFF	OFF		
6 inches			OFF	OFF	ON	OFF		
7 inches			ON	OFF	ON	OFF		
8 inches			OFF	ON	ON	OFF		
8.5 inches			ON	ON	ON	OFF		
9 inches			ON	OFF	ON	ON		
10 inches			OFF	ON	ON	ON		
11 inches			OFF	OFF	OFF	ON		
11.66 inches			ON	OFF	OFF	ON		
12 inches			OFF	ON	OFF	ON		
14 inches			ON	ON	OFF	ON		
16 inches			ON	ON	ON	ON		
AUTO LF ON CR								
Enabled							ON	
Disabled							OFF	
LINES PER INCH								
8								ON
6								OFF

**Rear Panel
Switch 1**

	1	2	3	4	5	6	7	8
BAUD RATE								
110	OFF	OFF	OFF					
150	ON	OFF	OFF					
300	OFF	ON	OFF					
600	ON	ON	OFF					
1200	OFF	OFF	ON					
2400	ON	OFF	ON					
4800	OFF	ON	ON					
9600	ON	ON	ON					
HANDSHAKING								
ETX/ACK & DTR					OFF	OFF		
X-On/X-Off					ON	OFF		
DTR					OFF	ON		
MODEM								
Modem							OFF	
No modem							ON	
PARITY								
Space								ON ON
Mark								OFF ON
Even								ON OFF
Odd								OFF OFF

**Rear Panel
Switch 2**

	1	2	3	4	5	6	7	8
CHARACTER SET								
ASCII Standard	OFF	OFF	OFF	OFF				
USA WP	ON	OFF	OFF	OFF				
Italian	OFF	ON	OFF	OFF				
Swedish	ON	ON	OFF	OFF				
English (UK)	OFF	OFF	ON	OFF				
French	ON	OFF	ON	OFF				
German	OFF	ON	ON	OFF				
Spanish	ON	ON	ON	OFF				
PRINT DIRECTION								
Bidirectional					ON			
Unidirectional					OFF			
AUTO CR/LF								
Enabled						ON		
Disabled						OFF		
DUPLEX								
Half							ON	
Full							OFF	
PAPER OUT CONDITION								
Stop printing								ON
Continue printing								OFF


☐ SCRIBE

Pin-outs

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	FG	Frame ground
2	SD	Send Data
3	RD	Receive Data
4	RTS	Request To Send
7	SG	Signal ground
20	DTR	Data Terminal Ready

Connector Type: DB-25 Male

Switch 1

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
CHARACTER SET								
American	OFF	OFF	OFF					
Italian	OFF	OFF	ON					
American	OFF	ON	OFF					
British	OFF	ON	ON					
German	ON	OFF	OFF					
Swedish	ON	OFF	ON					
French	ON	ON	OFF					
Spanish	ON	ON	ON					
AUTO LF ON CR								
Enabled				ON				
Disabled				OFF				
PRINT INTENSITY								
Darkest					OFF	OFF		
					OFF	ON		
Lightest					ON	OFF		
					ON	ON		
BAUD RATE								
9600							OFF	
1200							ON	
HANDSHAKING								
DTR								OFF
X-On/X-Off								ON

IMAGEWRITER AND IMAGEWRITER 15-INCH

Pin-outs	Pin No.	Signal Name	Signal Description
	1	FG	Frame ground
	2	SD	Send Data - output
	3	RD	Receive Data - input
	4	RTS	Request To Send - output
	7	SG	Signal ground
	14	FAULT/	Fault
	20	DTR	Data Terminal Ready - output

Connector Type: DB-25 Male

Switch 1

	1	2	3	4	5	6	7	8
CHARACTER SET								
American	OFF	OFF	OFF					
British	ON	ON	OFF					
German	OFF	OFF	ON					
French	OFF	ON	ON					
Swedish	ON	OFF	ON					
Italian	ON	OFF	OFF					
Spanish	ON	ON	ON					
PAGE LENGTH								
72 Lines					ON			
66 Lines					OFF			
EIGHTH DATA BIT								
Ignore						ON		
Recognize						OFF		
CHARACTER PITCH								
Pica						OFF	OFF	
Elite						ON	OFF	
Ultra Condensed						OFF	ON	
Elite Proportional						ON	ON	
AUTO LF ON CR								
Enabled								ON
Disabled								OFF

Switch 2

	1	2	3	4
BAUD RATE				
300	OFF	OFF		
1200	ON	OFF		
2400	OFF	ON		
9600	ON	ON		
HANDSHAKING				
X-On/X-Off			ON	
DTR			OFF	

□ IMAGEWRITER II

Pin-outs

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
1	DTR	Data Terminal Ready (output)
2	DSR	Data Set Ready (input)
3	TXD-	Transmit Data
4	SG	Signal ground
5	RXD-	Receive Data
6	TXD+	Balanced transmit +
7	NC	No connection
8	RXD+	Balanced receive +
(Shield)	PG	Protective ground

Connector Type: Mini DIN-8 Male

Switch 1

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
CHARACTER SET								
American	OFF	OFF	OFF					
Italian	ON	OFF	OFF					
Danish	OFF	ON	OFF					
British	ON	ON	OFF					
German	OFF	OFF	ON					
Swedish	ON	OFF	ON					
French	OFF	ON	ON					
Spanish	ON	ON	ON					
FORM LENGTH								
11 inches					OFF			
12 inches					ON			
PERFORATION SKIP								
Enabled						ON		
Disabled						OFF		
CHARACTERS PER INCH								
10						OFF	OFF	
12						ON	OFF	
17						OFF	ON	
Proportional						ON	ON	
AUTO LF ON CR								
Enabled								ON
Disabled								OFF

Switch 2

	1	2	3	4	5	6
BAUD RATE						
300						
1200	OFF	OFF				
2400	ON	OFF				
9600	OFF	ON				
	ON	ON				
HANDSHAKING						
Hardware (DTR)						
X-On/X-Off				OFF		
				ON		
OPTION CARD						
Installed					ON	
Not installed					OFF	
HAMMER FIRING						
Factory set						xxx xxx
Factory set						xxx xxx

Note: Refer to *Technical Procedures* for information on the "Hammer Firing" adjustment.

□ LASERWRITER AND LASERWRITER PLUS

AppleTalk

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
3	SG	Signal Ground
4	TXD+	Transmit Data +
5	TXD-	Transmit Data -
8	RXD+	Receive Data +
9	RXD-	Receive Data -

Connector Type: DB-9 Male

Mode switch set to "AppleTalk" selects this port.

RS-232

<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
2	TD	Transmit Data
3	RD	Receive Data
4	RTS	Request To Send
7	SG	Signal Ground
20	DTR	Data Terminal Ready

Connector Type: DB-25 Male

Mode switch set to "1200" or "9600" selects this port.

☐ MODEM 300/1200

Pin-outs	Pin No.	Signal Name	Signal Description
	2	DSR	Data Set Ready
	3	SGND	Signal ground
	5	RCD	Receive Data
	6	DTR	Data Terminal Ready
	7	DCD	Data Carrier Detect
	8	GND	Chassis ground
	9	TXD	Transmit Data

Connector Type: DB-9 Male

Modem 300

	1	2	3	4	5	6	7	8
CARRIER DETECT								
Normal	OFF							
Always high	ON							
NOT USED		XXX						
DATA TERMINAL READY								
Computer supplies			OFF					
Modem supplies			ON					

Modem 1200

	1	2	3	4	5	6	7	8
CARRIER DETECT								
Normal	OFF							
Always high	ON							
PBX/CBX								
Meets Bell standard		OFF						
Doesn't meet Bell standard		ON						
DATA TERMINAL READY								
Computer supplies			OFF					
Modem supplies			ON					

☐ APPLE PERSONAL MODEM

Pin-outs	<u>Pin No.</u>	<u>Signal Name</u>	<u>Signal Description</u>
	1	DSR	Data Set Ready
	2	DTR	Data Terminal Ready
	3	RXD	Receive Data
	4	SG	Signal Ground
	5	TXD	Transmit Data
	6	SG	Signal Ground
	7	DCD	Data Carrier Detect
	8	NC	No connection

Connector Type: Mini DIN-8 Male

Peripheral Interface Guide

Section 4 – Computer and Peripheral Configurations

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4.5	Apple III and III Plus
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- 4.14 ImageWriter II
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□ INTRODUCTION

This section contains the information necessary to connect any Apple peripheral device to any Apple computer. The cables are listed with both Service/Engineering and Marketing part numbers (the Marketing part numbers are given in parentheses). Option switch settings and any special notes or requirements are also listed.

Notes:

1. Accessory kit part numbers followed with an asterisk (*) include items in addition to the cable (software and/or manuals, for example).
2. Accessory kit part numbers followed with a † include a modem eliminator cable (590-0166).

□ DOT MATRIX PRINTER

Standard Switch Settings

Standard switch settings are:

SW1	1	2	3	4	5	6	7	8
	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
SW2	1	2	3	4	5	6	7	8
	OFF	ON	OFF	OFF	OFF	ON	ON	OFF

These settings configure the printer as follows:

- US English character set
- 66 Lines/page
- Respond to select codes
- No line feed on buffer overflow
- Print on CR, LF, VT, US, or FF
- No LF after CR
- Unslashed zero
- Single-line buffer
- 10 Chars/inch
- 7 data bits
- Power-on select
- Bidirectional printing

Apple II, II Plus, IIe, and IIGS

With a **Parallel Interface Card**, use cable 590-0042. Set the DIP switches on the card as follows:

SW1	1	2	3	4	5	6	7
	OFF	OFF	OFF	ON	ON	OFF	OFF

With a **Centronics Printer Card**, use cable 590-0036.

Note: When using the Centronics Printer Card, set Dot Matrix Printer Switch 1 (SW1) position 8 to ON to provide a line feed on receipt of a carriage return.

Apple III and III Plus

With a **Universal Parallel Interface Card (UPIC)**, use cable 590-0036.

Driver Configuration Block - Printer Driver

0	1	2	3	4
0E	00	00	00	00

Lisa/ Macintosh XL

Connect cable 590-0042 to either the internal parallel port or one of the two ports on the Two-port parallel card (if installed).

□ DAISY WHEEL PRINTER

Standard Switch Settings

Standard switch settings are:

SW1	1	2	3	4	5	6	7	8
	ON	ON	ON	OFF	OFF	ON	ON	ON

SW2	1	2	3	4	5	6	7	8
	OFF	OFF	OFF	OFF	ON	OFF	OFF	ON

Front Panel Switch

1	2	3	4	5	6	7	8
ON	OFF	OFF	OFF	OFF	ON	OFF	OFF

These settings configure the printer as follows:

- 9600 Baud
- ETX/ACK & DTR Handshaking
- No modem connected
- Space parity
- 12 Chars/inch
- 11-inch form
- No LF after CR
- 6 Lines/inch
- ASCII Standard character set
- Bidirectional printing
- No auto CR/LF
- Full duplex
- Stop printing on paper out condition

Apple II, II Plus, and IIe

With a **High Speed Serial Card**, use cable 590-0037. Set the DIP switches on the card as follows:

SW1	1	2	3	4	5	6	7
	OFF	OFF	ON	OFF	OFF	OFF	OFF

These settings configure the interface as follows:

- 1200 Baud
- No delay after CR
- 132 columns/video off
- Auto LF on CR

Note: You must use a P8A PROM in place of a P8 PROM on the High Speed Serial Card to avoid losing characters. Set Daisy Wheel Printer Switch 1 (SW1) position 2 to OFF for 1200 baud.

With a **Super Serial Card**, use cable 590-0037 (A2C0351*). Set the DIP switches on the card as follows:

SW1	1	2	3	4	5	6	7
	OFF	OFF	OFF	ON	OFF	ON	ON

SW2	1	2	3	4	5	6	7
	ON	ON	OFF	OFF	ON	OFF	OFF

These settings configure the interface as follows:

- 9600 Baud
- Printer mode
- Normal Clear To Send
- 8 data bits, 1 stop bit
- 32 msec delay after CR
- 132 columns/video off
- Auto LF on CR
- Interrupts OFF

Note: Install the jumper block on the card with the arrow pointing towards TERMINAL.

Apple IIGS

Connect cables 590-0037 (A2C0351*) and 590-0550 (A9M0333) to the PRINTER port.

Use the default port settings.

Apple IIc

Connect cable 590-0191 to the PRINTER port.

Use the default port settings.

Apple III and III Plus

Connect cables 590-0037 and 590-0166 (A3C0351*†) to the RS-232 serial port. Either the Printer driver or the RS232 driver may be used.

Driver Configuration Block - Printer Driver

0	1	2	3	4
0E	00	00	00	00

Driver Configuration Block - RS232 Driver

0	1	2	3	4	5
0E	00	00	00	00	00
6	7	8	9	A	B
13	11	DF	84	50	80

Lisa/ Macintosh XL

Connect cables 590-0037 and 590-0166 (A6C0351*†) to the SERIAL A port.

□ SCRIBE

Standard Switch Settings

Standard switch settings are:

SW1	1	2	3	4	5	6	7	8
	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF

These settings configure the printer as follows:

- American character set
- Auto LF on CR
- Low intensity print
- 9600 Baud
- DTR handshaking

Apple II, II Plus, and IIe

With a **Super Serial Card**, use cable 590-0037 (A2C0355*). Set the DIP switches on the card as follows:

SW1	1	2	3	4	5	6	7
	OFF	OFF	OFF	ON	OFF	ON	ON

SW2	1	2	3	4	5	6	7
	ON	OFF	OFF	ON	ON	OFF	OFF

These settings configure the interface as follows:

- 9600 baud
- Printer mode
- Normal Clear To Send
- 8 data bits, 1 stop bit
- No delay on carriage return
- 80 columns/video off
- Auto LF on CR
- Interrupts Off

Note: Install the jumper block on the card with the arrow pointing towards TERMINAL.

Apple IIgs

Connect cables 590-0037 (A2C0355*) and 590-0550 (A9M0333) to the PRINTER port.

Use the default port settings.

Apple IIc

Connect cable 590-0191 (A2C4520*) to the PRINTER port.

Use the default port settings.

Apple III and III Plus

Connect cables 590-0037 and 590-0166 to the RS-232 Serial port. Either the Printer driver or the RS232 driver may be used.

Driver Configuration Block - Printer Driver

0	1	2	3	4
0E	00	00	00	00

Driver Configuration Block - RS232 Driver

0	1	2	3	4	5
0E	00	00	00	00	00
6	7	8	9	A	B
13	11	DF	84	50	80

**Lisa/
Macintosh XL**

Connect cables 590-0037 and 590-0166 (A6C0355*†) to the SERIAL A port.

□ IMAGEWRITER AND IMAGEWRITER 15-INCH

Standard Switch Settings

Standard switch settings are:

SW1	1	2	3	4	5	6	7	8
	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF
SW2	1	2	3	4	5	6	7	8
	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF

These settings configure the printer as follows:

US character set
66 Lines/page
Ignore eighth bit
Elite character pitch
No LF after CR
9600 baud
DTR handshaking

Apple II, II Plus, and IIe

With a **High Speed Serial Card**, use cable 590-0037. Set the DIP switches on the card as follows:

SW1	1	2	3	4	5	6	7
	ON	OFF	ON	ON	OFF	OFF	OFF

These settings configure the interface as follows:

300 baud
Delay on CR
132 columns/video off
Auto LF on CR

Note: You must use a P8 PROM (not a P8A PROM) on the High Speed Serial Card. Set ImageWriter Switch 2 (SW2) positions 1 and 2 to OFF (300 baud).

...Continued on next page

With a **Super Serial Card**, use cable 590-0037 (A2C0352*). Set the DIP switches on the card as follows:

SW1	1	2	3	4	5	6	7
	OFF	OFF	OFF	ON	OFF	ON	ON

SW2	1	2	3	4	5	6	7
	ON	OFF	OFF	OFF	ON	OFF	OFF

These settings configure the interface as follows:

- 9600 baud
- Printer mode
- Normal Clear To Send
- 8 data bits, 1 stop bit
- No delay on CR
- 132 columns/video off
- Auto LF on CR
- Interrupts off

Note: Install the jumper block on the card with the arrow pointing towards TERMINAL.

Apple IIgs

Connect cables 590-0037 (A2C0352*) and 590-0550 (A9M0333) to the PRINTER port.

Use the default port settings.

Apple IIc

Connect cable 590-0191 (A2C4515*) to the PRINTER port.

Use the default port settings.

Apple III and III Plus

Connect cables 590-0037 and 590-0166 (A3C0352*†) to the RS-232 serial port. Either the Printer driver or the RS232 driver may be used.

Driver Configuration Block - Printer Driver

0	1	2	3	4
0E	00	00	00	00

Driver Configuration Block - RS232 Driver

0	1	2	3	4	5
0E	00	00	00	00	00
6	7	8	9	A	B
13	11	DF	84	50	80

Macintosh

Connect cable 590-0169 (M0150*) to the PRINTER port.

Macintosh Plus

Connect cables 590-0169 (M0150*) and 590-0341 (M0189) or 590-0553 (M0199) to the PRINTER port.

Macintosh SE

Connect cables 590-0169 (M0150*) and 590-0341 (M0189) or 590-0553 (M0199) to the PRINTER port.

Macintosh II

Connect cables 590-0169 (M0150*) and 590-0341 (M0189) or 590-0553 (M0199) to the PRINTER port.

Lisa/ Macintosh XL

Connect cables 590-0037 and 590-0166 (A6C0352*†) to the SERIAL A port.

□ IMAGEWRITER II

Standard Switch Settings

The standard switch settings are:

SW1	1	2	3	4	5	6	7	8
	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
SW2	1	2	3	4				
	ON	ON	OFF	OFF				

These settings configure the printer as follows:

- American character set
- 11-inch form
- Perforation skip inactive
- No LF on CR
- 12 chars/inch
- 9600 baud
- DTR handshaking
- No option card installed

Apple II, II Plus, and IIe

With a **High Speed Serial Card**, use cable 590-0335. Set the DIP switches on the card as follows:

SW1	1	2	3	4	5	6	7
	ON	OFF	ON	OFF	OFF	OFF	OFF

These settings configure the interface as follows:

- 300 baud
- No delay on CR
- 132 columns/video off
- Auto LF on CR

Note: You must use a P8 PROM (not a P8A PROM) on the High Speed Serial Card. Set ImageWriter II Switch 2 (SW2) positions 1 and 2 to OFF (300 baud).

For a **Super Serial Card**, use either cable 590-0335 (A9C0313) or 590-0556 (A9C0314). Set the DIP switches on the card as follows:

SW1	1	2	3	4	5	6	7
	OFF	OFF	OFF	ON	OFF	ON	ON

SW2	1	2	3	4	5	6	7
	ON	OFF	OFF	OFF	ON	OFF	OFF

These settings configure the interface as follows:

- 9600 baud
- Printer mode
- Normal Clear To Send
- 8 data bits, 1 stop bit
- No delay on CR
- 132 columns/video off
- Auto LF on CR
- Interrupts off

Note: Install the jumper block on the card with the arrow pointing toward TERMINAL.

Apple IIgs

Connect cable 590-0552 (M0197) to the PRINTER port.

Use the default port settings.

Apple IIc

Connect cable 590-0333 (A2C4312) or 590-0554 (A2C4313) to the PRINTER port.

Use the default port settings.

Apple III and III Plus

Connect cable 590-0331 (A2C0311) or 590-0555 (A2C0312) to the RS-232 serial port. Either the Printer driver or the RS-232 driver may be used.

Driver Configuration Block - Printer Driver

0	1	2	3	4
0E	00	00	00	00

Driver Configuration Block - RS232 Driver

0	1	2	3	4	5
0E	00	00	00	00	00
6	7	8	9	A	B
13	11	DF	84	50	80

Macintosh

Connect cable 590-0332 (M0185) or 590-0551 (M0196) to the PRINTER port.

Macintosh Plus

Connect cable 590-0340 (M0187) or 590-0552 (M0197) to the PRINTER port.

Macintosh SE

Connect cable 590-0340 (M0187) or 590-0552 (M0197) to the PRINTER port.

Macintosh II

Connect cable 590-0340 (M0187) or 590-0552 (M0197) to the PRINTER port.

**Lisa/
Macintosh XL**

Connect cable 590-0331 (A2C0311) or 590-0555 (A2C0312) to the SERIAL A port.

□ MODEM 300/1200

Standard Switch Settings

For both the the Modem 300 and Modem 1200, standard switch settings are:

SW1	1	2	3
	ON	OFF	OFF

Note: ON is the same as DOWN, OFF is the same as UP.

Apple II, II Plus, and IIe

With a **High Speed Serial Card**, use cable 590-0121. Set the DIP switches on the card as follows:

For the Modem 300:

SW1	1	2	3	4	5	6	7
	ON	OFF	ON	OFF	OFF	OFF	ON

These settings configure the interface as follows:

- 300 baud
- No delay after CR
- 132 columns/video off
- No LF after CR

For the Modem 1200:

SW1	1	2	3	4	5	6	7
	OFF	OFF	ON	OFF	OFF	OFF	ON

These settings configure the interface as follows:

- 1200 baud
- No delay after CR
- 132 columns/video off
- No LF after CR

...Continued on next page

With a **Super Serial Card**, use cable 590-0121 (A2C0354*). Set the DIP switches on the card as follows:

For the Modem 300:

SW1	1	2	3	4	5	6	7
	ON	OFF	OFF	ON	ON	ON	ON

SW2	1	2	3	4	5	6	7
	ON	ON	OFF	ON	OFF	OFF	OFF

These settings configure the interface as follows:

- 300 baud
- Communications mode
- Normal RS-232 signals
- 8 data bits, 1 stop bit
- No parity
- No LF after CR
- Interrupts off

For the Modem 1200:

SW1	1	2	3	4	5	6	7
	OFF	ON	ON	ON	ON	ON	ON

SW2	1	2	3	4	5	6	7
	ON	ON	OFF	ON	OFF	OFF	OFF

These settings configure the interface as follows:

- 1200 baud
- Communications mode
- Normal RS-232 signals
- 8 data bits, 1 stop bit
- No parity
- No LF after CR
- Interrupts off

Note: Install the jumper block on the card with the arrow pointing towards MODEM.

Apple IIgs

Connect cables 590-0121 (A2C0354*) and 590-0550 (A9M0333) to the MODEM port.

For the **Modem 300**, change the baud rate of the modem port to 300 baud.

For the **Modem 1200**, use the default port settings.

Apple IIc

Connect cable 590-0192 (A2C4505*) to the MODEM port.

For the **Modem 300**, use the default port settings.

For the **Modem 1200**, change the baud rate of the MODEM port to 1200 baud.

Apple III and III Plus

Connect cable 590-0121 (A3C0354*) to the RS-232 serial port.

Macintosh

Connect cable 590-0197 (M0170*) to the MODEM port.

Macintosh Plus

Connect cables 590-0197 (M0170*) and 590-0341 (M0189) or 590-0553 (M0199) to the MODEM port.

Macintosh SE

Connect cables 590-0197 (M0170*) and 590-0341 (M0189) or 590-0553 (M0199) to the MODEM port.

Macintosh II

Connect cables 590-0197 (M0170*) and 590-0341 (M0189) or 590-0553 (M0199) to the MODEM port.

Lisa/ Macintosh XL

Connect cable 590-0121 (A6C0354*) to the SERIAL A port.

□ APPLE PERSONAL MODEM

Standard Switch Settings

No switches.

Apple II, II Plus, and IIe

With a **High Speed Serial Card**, use cable 590-0331 (A2C0311) or 590-0555 (A2C0312). Set the DIP switches on the card as follows:

SW1	1	2	3	4	5	6	7
	OFF	OFF	ON	OFF	OFF	OFF	ON

These settings configure the interface as follows:

- 1200 baud
- No delay after CR
- 132 columns/video off
- No LF after CR

With a **Super Serial Card**, use cable 590-0331 (A2C0311) or 590-0555 (A2C0311). Set the DIP switches on the card as follows:

SW1	1	2	3	4	5	6	7
	OFF	ON	ON	ON	ON	ON	ON

SW2	1	2	3	4	5	6	7
	ON	ON	OFF	ON	OFF	OFF	OFF

These settings configure the interface as follows:

- 1200 baud
- Communications mode
- Normal RS-232 signals
- 8 data bits, 1 stop bit
- No parity
- No LF after CR
- Interrupts off

Note: Install the jumper block on the card with the arrow pointing towards MODEM.

Apple IIgs

Connect cable 590-0552 (M0197) to the MODEM port.

Use the default port settings.

Apple IIc

Connect cable 590-0333 (A2C4312) or 590-0554 (A2C4313) to the MODEM port.

Change the baud rate of the MODEM port to 1200 baud.

Apple III and III Plus

Connect cables 590-0331 and 590-0166 (A2C0311) or 590-0555 and 590-0166 (A2C0312) to the RS-232 serial port.

Macintosh

Connect cable 590-0332 (M0185) or 590-0551 (M0196) to the MODEM port.

Macintosh Plus

Connect cable 590-0340 (M0187) or 590-0552 (M0197) to the MODEM port.

Macintosh SE

Connect cable 590-0340 (M0187) or 590-0552 (M0197) to the MODEM port.

Macintosh II

Connect cable 590-0340 (M0187) or 590-0552 (M0197) to the MODEM port.

**Lisa/
Macintosh XL**

Connect cable 590-0331 (A2C0311) or 590-0555 (A2C0312) to the SERIAL A port.

□ COLOR PLOTTER

Standard Switch Settings

Standard switch settings are:

SW1	1	2	3	4	5	6	7	8
	OFF	ON	ON	OFF	ON	ON	OFF	OFF

These settings configure the plotter as follows:

8 data bits
No parity
1 stop bit
1200 baud

Apple II, II Plus, and IIe

With a **Super Serial Card**, use cable 590-0037 (A2C0302*). Set the DIP switches on the card as follows:

SW1	1	2	3	4	5	6	7
	OFF	ON	ON	ON	OFF	ON	ON

SW2	1	2	3	4	5	6	7
	ON	OFF	OFF	OFF	OFF	OFF	OFF

Note: Install the jumper block on the card with the arrow pointing towards TERMINAL.

Apple IIgs

Connect cables 590-0037 (A2C0302*) and 590-0550 (A9M0333) to the PRINTER port.

Set the baud rate of the PRINTER port to 1200 baud.

Apple IIc

Connect cable 590-0191 (A2C4510*) to the PRINTER port.

Set the baud rate of the PRINTER port to 1200 baud.

Apple III and III Plus

Connect cables 590-0037 and 590-0166 (A2C0302*†) to the RS-232 serial port. Either the Printer driver or the RS-232 driver may be used.

Note: Set Color Plotter Switch 1 (SW1) position 1 to ON and position 2 to OFF. This will configure the plotter for 7 data bits and odd parity.

Driver Configuration Block - Printer Driver

0	1	2	3	4
08	22	00	00	00

Driver Configuration Block - RS232 Driver

0	1	2	3	4	5
08	22	00	00	00	00
6	7	8	9	A	B
13	11	DF	84	50	80

Peripheral Interface Guide

Section 5 – Cable and Connector Specifications

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□ INTRODUCTION

This section contains the pin connections, colors, and connector types for Apple peripheral cables. A diagram at the end of the section shows the pin numbering of each connector.

□ CABLE SPECIFICATIONS

Cable	<u>DB-25 Male</u>	<u>DB-25 Male</u>
590-0029	1	1
	2	3
	3	2
	4 & 5	8
	6	20
	7	7
	8	4 & 5
	20	6

Color: light gray

This is a modem eliminator cable, used to connect the Apple III, III Plus, and Lisa/Macintosh XL to serial ports on devices other than modems.

This cable has been replaced by 590-0166.

Cable	<u>20-Pin Socket Connector</u>	<u>TRW Cinch 57-30360 Male</u>
590-0036	1	14
	2	10
	3	33
	4	32
	5	31
	6	17
	7	11
	8	1
	9	12
	10	2
	11	3
	12	4
	13	5
	14	6
	15	7
	16	8
	17	9
	18	13
	19	18
	20	16

Color: varies

Used to connect the following devices:

Apple II, II Plus, IIe, IIGS Centronics Printer Card to a Dot Matrix Printer.

Apple III, III Plus Universal Parallel Interface Card to a Dot Matrix Printer.

**Cable
590-0037**

DB-25 Male

1
2
3
4
5
6
7
8
20

DB-25 Male

1
2
3
4
5
6
7
8
20

Color: light gray

Used to connect the following devices:

Apple II, II Plus, IIe High Speed Serial Card or Super Serial Card to a Daisy Wheel Printer or ImageWriter/ImageWriter 15-Inch.

Apple II, II Plus, IIe Super Serial Card to a Scribe or Color Plotter.

Apple IIGS to a Daisy Wheel Printer, Scribe, ImageWriter/ImageWriter 15-Inch, or Color Plotter (also requires cable 590-0550).

Apple III, III Plus to a Daisy Wheel Printer, Scribe, ImageWriter/ImageWriter 15-Inch, or Color Plotter (also requires cable 590-0029).

Lisa/Macintosh XL to a Daisy Wheel Printer, Scribe, or ImageWriter/ImageWriter 15-Inch (also requires cable 590-0029).

Cable
590-0042

DB-25 Male

AMP-36 Male

2	19
5	2
6	3
8	4
11	7
12	8
13	9
14	11
15	1
16	10
18	35
19	12
21	13
22	5
23	6
24	16
25	32

Color: light gray

Used to connect the following devices:

Apple II, II Plus, IIe, IIGS Parallel Interface Card to a Dot Matrix Printer.

Lisa/Macintosh XL to a Dot Matrix Printer.

Cable
590-0121

DE-9 Male

DB-25 Male

3	7
9	2
7	8 & 5
6	20
2	6
5	3
8	1

Color: beige

Used to connect the following devices:

Apple II, II Plus, IIe High Speed Serial Card or Super Serial Card to a Modem 300 or Modem 1200.

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Apple IIGs to a Modem 300 or Modem 1200 (also requires cable 590-0550).

Apple III, III Plus to a Modem 300 or Modem 1200.

Lisa/Macintosh XL to a Modem 300 or Modem 1200.

Cable
590-0166

DB-25 Male

1
2
3
4 & 5
6
7
8
20

DB-25 Male

1
3
2
8
20
7
4 & 5
6

Color: gray

This is a modem eliminator cable, used to connect the Apple III, III Plus, and Lisa/Macintosh XL to serial ports on devices other than modems.

Cable
590-0169

DE-9 Male

1
3 & 8
5
7
9

DB-25 Male

1
7
3
20
2

Color: medium brown

Used to connect the following devices:

Apple IIGs to a Scribe, ImageWriter/ImageWriter 15-Inch, or Color Plotter (also requires cable 590-0341).

Macintosh to an ImageWriter/ImageWriter 15-Inch.

Macintosh Plus, Macintosh SE, Macintosh II to an ImageWriter/ImageWriter 15-Inch (also requires either cable 590-0341 or 590-0553).

Cable
590-0191

DIN-5 Male

DB-25 Male

1	6
2	3
3	7
4	2
5	20

Color: beige

Used to connect the following devices:

Apple IIc to a Daisy Wheel Printer, Scribe,
ImageWriter/ImageWriter 15-Inch, or Color Plotter.

Cable
590-0192

DIN-5 Male

DE-9 Male

1	6
2	9
3	3
4	5
5	2
Case Shield	8

Color: beige

Used to connect the following devices:

Apple IIc to a Modem 300 or Modem 1200.

Cable
590-0197

DE-9 Male

DE-9 Male

3 & 8	3 & 8
5	9
6	6
7	7

Color: medium brown

Used to connect the following devices:

Apple IIGs to a Modem 300 or Modem 1200 (also
requires cable 590-0341).

Macintosh to a Modem 300 or Modem 1200

Macintosh Plus, Macintosh SE, Macintosh II to a Modem
300 or 1200 (also requires cable 590-0341 or 590-0553).

Cable
590-0331
and 590-0555

Mini
DIN-8 Male

1
2
3
4 & 8
5

DB-25 Male

6 & 8
20
3
7
2

Color: 590-0331—beige, 590-0555—smoke

Used to connect the following devices:

Apple II, II Plus, IIe High Speed Serial Card or Super Serial Card to an Apple Personal Modem.

Apple III, III Plus to an ImageWriter II or Apple Personal Modem.

Lisa/Macintosh XL to an ImageWriter II or Apple Personal Modem.

Cable
590-0332
and 590-0551

Mini
DIN-8 Male

1 & 7
2
3
4
5
6
8

DE-9 Male

7
6
9
1
5
8
4

Color: 590-0332—beige, 590-0551—smoke

Used to connect the following devices:

Macintosh to an ImageWriter II or Apple Personal Modem.

Cable
590-0333
and 590-0554

<u>Mini</u> <u>DIN-8 Male</u>
2
3
4 & 8
5

<u>DIN-5 Male</u>
1
4
3
2

Color: 590-0333—beige, 590-0554—smoke

Used to connect the following devices:

Apple IIc to an ImageWriter II or Apple Personal Modem.

Cable
590-0335
and 590-0556

<u>Mini</u> <u>DIN-8 Male</u>
1
2
3
4 & 8
5

<u>DB-25 Male</u>
20
6 & 8
2
7
3

Color: 590-0335—beige, 590-0556—smoke

Used to connect the following devices:

Apple II, II Plus, IIe High Speed Serial Card or Super Serial Card to an ImageWriter II.

Cable
590-0340
and 590-0552

<u>Mini</u> <u>DIN-8 Male</u>
1
2
3
4
5
6
7
8

<u>Mini</u> <u>DIN-8 Male</u>
2
1
5
4
3
8
7
6

...Continued on next page

Color: 590-0340—beige, 590-0552—smoke

Used to connect the following devices:

Apple IIGs to an ImageWriter II or Apple Personal Modem.

Macintosh Plus, Macintosh SE, Macintosh II to an ImageWriter II or Apple Personal Modem.

Cable
590-0341
and 590-0553

Mini
DIN-8 Male

1
2
3
4
5
6
8

Mini
DE-9 Female

6
7
5
3 & 1
9
4
8

Color: 590-0341—beige, 590-0553—smoke

This is an adapter cable used to connect DE-9 cables to devices with Mini DIN-8 ports.

Cable
590-0345

BR-50 Male

1, 2, & 3
4, 5, & 6
7, 8, 9, & 11
16, 18, & 19
20, 21, & 22
23, 24, & 25
26
27
28
29
30
31
32
33
34
38
41
43
44
45
46
47
48
49
50

DB-25 Male

14
16
18
7
9
24
8
21
22
10
23
11
12
13
20
25
17
6
5
4
2
19
15
1
3

Color: beige

Used to connect the following devices:

Apple II SCSI Interface, Macintosh Plus, Macintosh SE,
Macintosh II to a Hard Disk 20SC, 40SC or 80SC.

Cable
590-0346

This cable is wired straight through (1-to-1, 2-to-2, 3-to-3, etc.).

Color: beige

Used to daisy chain SCSI devices (male-to-male).

Cable
590-0347

This cable is wired straight through (1-to-1, 2-to-2, 3-to-3, etc.).

Color: beige

Used to daisy chain SCSI devices (male-to-female).

Cable
590-0550

Mini DIN-8

1
2
3
4 & 8
5
6
7
Shield

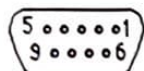
DB-25 Female

6
20
3
7
2
8
4 & 5
Shield

Color: smoke

Apple IIGs Peripheral Adapter Cable. Used to connect DB-25 cables to the Mini DIN-8 ports.

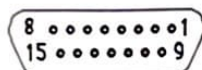
□ CONNECTOR SPECIFICATIONS



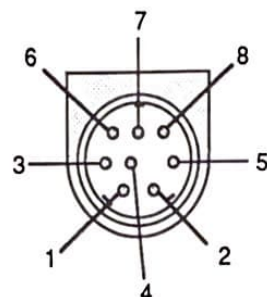
DE-9



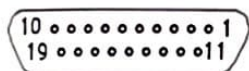
MINI DIN-4



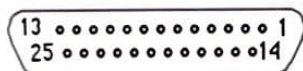
DA-15



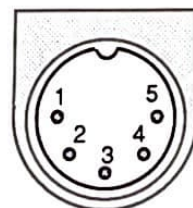
MINI DIN-8



DB-19



DB-25



DIN-5

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