Tech Info Library

Electrical Specifications: Apple Peripherals (2 of 2) (9/96)

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Security: Everyone

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TOPIC ----------

This article provides the electrical specifications for Apple peripherals, including printers, monitors, scanners, drives, modems, and so on. For information about other Apple hardware, see the Tech Info Library article, "Electrical Specifications: Apple Computers (1 of 2)".

DISCUSSION ----------

The following Apple products are manufactured for use in the USA. In determining whether a particular product can be used internationally, there are three classes, depending on whether a product accepts a range in voltage, frequency or both (for more specific information, see the article, "Using U.S. Apple Equipment Internationally"):

1) Universal

These products can be used internationally out of the box. Some of Apple's products are self-configuring devices or "universal" within a certain range. They can accept a range in both voltage and frequency, and only require a plug adapter for the specific locale.

Example: The Quadra 800 accepts between 100-125 and 200-240 volts, 47-63 Hz.

2) Frequency Independent

These products can be used internationally with a voltage transformer. Generally they are geared for U.S. 120 volt current, but are flexible as to the frequency they accept (for example, 47-63 Hz), and are known as "frequency independent." These products need a stepdown isolation transformer to adapt the voltage, and will handle the different frequency on their own.

Example: The U.S. Performa 200 accepts 120 volts, 47-63 Hz.

3) Frequency Dependent

These products generally cannot be used internationally. These are products that can work only within a narrow range in frequency; they are "frequency dependent." Transformers only transform voltage, so if the product requires a certain frequency, there's no practical way to convert both voltage and frequency.

These products can ONLY be used internationally in countries with the same frequency as the country for which the product was manufactured. Further, a voltage transformer will be required if the destination country has a voltage different from the home country.

Example: The U.S. Apple Color OneScanner accepts 108-132 volts, 58-62 Hz.

NOTE:
Computers with power outlets for peripherals do not condition the current as it passes through. So, for example, a monitor requiring 120v-60Hz current could not be used in a 220v-50Hz environment even if the computer from which it gets its power is able to accept the local current.

The AC output of a Macintosh II is as follows: the monitor receptacle is rated for 3 amps steady state, 40 amps peak power. The power supply is fused for 6 amps to include the Macintosh II and monitor.

The amperage on the back of the computer is what should be used to calculate load on a circuit. Typical circuits in businesses and houses are 15 Amps (some are 20, but rarer, and an electric dryer is usually 30, an electric range may have DUAL 30 Amp circuits wired together). With that capacity, you could have the following configuration (from the back of the CPU):

CPU	5 Amps
Monitor	3 Amps
LaserWriter	7 Amps
Total:	15 Amps

Most of the time, the CPU will draw only 1-1.5 Amps, the Monitor about .5-1 Amp, and the LaserWriter about 2 Amps. The difference is sometimes referred to as Nominal (high) versus Actual draw.

These following values are accurate regardless of peripherals used with each device. For example, a Macintosh II with an EtherTalk NB Card, an 8-bit video card, and HD40 SC draws a maximum of 230 watts and 6 amps from the power outlet it is plugged into.

Begin_Table

PRINTERS

LaserWriter Printers	Watts*	Amps**	BTU/hr**	Volts	Hertz

LaserWriter	760	6.3	2599.2	115	60
LaserWriter II	900	7.5	3078	90-126	50-60
LaserWriter IISC	900	7.5	3078	90-126	50-60
LaserWriter IINT/NTX	900	7.5	3078	90-126	50-60
LaserWriter IIg/IIf	900	7.5	3078	90-126	50-60
Personal LaserWriter SC	600	5	2052	110-115	50-60
Personal LaserWriter LS	600	5	2052	110-115	50-60
Personal LaserWriter NT	600	5	2052	110-115	50-60
Personal LaserWriter NTR	600	5	2052	110-115	50-60
Personal LaserWriter 300	360	3.00	1231	100-115	50-60
Personal LaserWriter 320	120	1.0	410.4	100-115	50-60
LaserWriter Pro 600	560	4.67	1915	90-110	58-62
LaserWriter Pro 630	560	4.67	1915	90-110	58-62
LaserWriter Pro 810	560	4.67	1915	90-110	58-62
LaserWriter Select 300	450	3.75	1539	110-115	50-60
LaserWriter Select 310	450	3.75	1539	110-115	50-60
LaserWriter Select 360	450	3.75	1539	110-115	50-60
LaserWriter 4/600	450	3.75	1539	110-115	50-60
LaserWriter 16/600 PS	790	6.8	2701	100-120	58-62
Clr LaserWriter 12/600 PS	1100	9.2	3762	100-120	50-60

Other Printers	Watts*	Amps**	BTU/hr**	Volts	Hertz
Dot Matrix Printer	180	1.5	615.6	100-115	60
Daisy Wheel Printer	150	1.25	513	120	60
Color Plotter	33	.28	112.9	120	48-63
Scribe	60	.5	205.2	120	60
ImageWriter	180	1.5	615.6	120	60

ImageWriter II	180	1.5	615.6	120	60
ImageWriter LQ	180	1.5	615.6	120	60
StyleWriter	23	.19	78.7	110-120	48-62
StyleWriter II	19.5	.16	67	100-120	48-62
StyleWriter 1200	19.5	.16	67	100-120	48-62
StyleWriter 1500	19.5	.16	67	100-120	48-62
Portable StyleWriter	23	0.19	79	100-115	50-60
Color StyleWriter 2200	31.5	1.0	107	120	60
Color StyleWriter 2400	45	.38	154	100-120	50-60
Color StyleWriter 2500	45	.38	154	100-120	50-60
Color StyleWriter Pro	28	.23	95.8	90-132	50-60
Apple Color Printer	30	.25	103	120	60

OTHER PERIPHERALS

Disk Drives	Watts*	Amps**	BTU/hr**	Volts	Hertz
ProFile	120	1	410.4	110	50-60
Hard Disk 20	30	.25	102.6	85-125/ 200-240	47-64
Apple HD20/40/80/160 SC	30	.25	102.6	85-125/ 200-240	47-64
Apple External160/230/500	40	.33	136.8	85-125/ 200-240	47-64
HD40 SC Tape Backup	15	.125	51.3	85-125/ 200-240	47-64
AppleCD SC	40	.33	136.8	120	47-64
AppleCD SC Plus	40	.33	136.8	100-125/ 200-240	50-60
AppleCD 150	30	.25	102.6	100-125/ 200-240	50-60

AppleCD 300	33	.28	112.9	100-125/ 200-240	50-60
AppleCD 600e	33	.28	112.9	100-125/ 200-240	50/60
Apple PowerCD	15	.125	51.3	100-125/ 200-240	50-60

Scanners	Watts*	Amps**	BTU/hr**	Volts	Hertz
Apple Scanner	65	.54	222.3	120	58-62
Apple OneScanner	45	.38	153.9	120	58-62
Apple Color OneScanner	45	.38	153.9	120	58-62

Modems	Watts*	Amps**	BTU/hr**	Volts	Hertz
AppleFax Modem	10	.08	34.2	120	60
Apple DataModem 2400	7	.06	23.9	110	60

MONITORS

Apple II Monitors	Watts*	Amps**	BTU/hr**	Volts	Hertz
Color Monitor 100	70	.58	239.4	117	50-60
Color Monitor IIe	48	.4	164.2	108-132	50-60
Color Monitor IIc	48	.4	164.2	108-132	50-60
Monitor II	45	.38	153.9	115	50-60
Monitor IIc	35	.29	119.7	115	50-60
Monitor III	30	.25	102.6	115	50-60
AppleColor RGB	90	.75	307.8	108-132	50-60
AppleColor Monitor	75	.6	256.5	108-132	50-60

Macintosh Monitors	Watts*	Amps**	BTU/hr**	Volts	Hertz
12-Inch Monochrome Display	30	.25	102.6	90-125/	47-63

				200-240	
12-Inch RGB Display	90	.75	307.8	110	50-60
Performa Display	85	.71	290.7	100-125	57-63
Performa Plus Display	85	.71	290.7	100-125	57-63
Apple Hi-Res Monochrome	40	.33	136.8	100-125/ 200-240	50-60
AppleColor Hi-Res RGB	160	1.3	547.2	85-125/ 200-240	47-63
14-Inch Color Display	55	.46	188.1	90-125/ 200-240	47-63
Portrait Display	75	.6	256.5	90-125/ 200-240	47-63
16-Inch Color Display	130	1.18	445	90-125/ 200-240	47-63
Two-Page Mono. Monitor	95	.8	324.9	90-125/ 200-240	47-63
21-Inch Color Display	165	1.38	564.3	120	47-63
Apple Basic Color Monitor	70	.58	240	100-125	50-60
AudioVision 14 Display (US)	55	.46	188.1	100-125	47-63
AudioVision 14 Display (INT)	101	.46	350.1	200-240	50
Apple Color Plus Display	70	.58	240	100-125	50-60
Multiple Scan 14 Dis. (US)	80	.66	273.6	100-125	57-63
Multiple Scan 14 Dis. (INT)	80	.33	1.14	200-240	43-53
Multiple Scan 15 Display	90	.75	307.8	100-125/ 200-240	47-63
Multiple Scan 17 Display	150	1.25	513	100-125/ 200-240	47-63
Multiple Scan 20 Display (Rev A)	180	1.38	615.6	100-125/ 200-240	47-63
Multiple Scan 20 Display (Rev B)	165	1.38	564.3	100-125/ 200-240	47-63
AppleVision 1710AV	130	1.8/	445	100-120/	50-60

				200-240	
AppleVision 1710	130	1.8/	445	100-120/ 200-240	50-60
Multiple Scan 1705 Display	100	n/a	342	100-125/ 200-240	47-63

End_Table

Additional Information

"Current leakage" is the amount of current that is passed to earth ground. The current leakage of all Apple equipment meets the following specifications:

- As specified by the UL standard for Apple equipment distributed in the United States, the current leakage will be less than 5.0 milliamperes.

- As specified by the IEC 380 & 950 standards for Apple equipment distributed in France and most of Europe, the current leakage will be less than 3.5 milliamperes.

† The PowerBook 500 series AC adapter has two separate outputs, VBatt and Vmain. The VBatt supply is used for charging the batteries while the VMain supply provides power for the PowerBook. Power from VBatt is automatically diverted to power the PowerBook if additional power is needed.

* Amps calculated based on efficiency of power supply, except for Macintosh PowerBooks (amps calculated at 7.5 volts) and Macintosh Duos (amps calculated at 24 volts).

** The BTU calculation is Watts X 3.42 = BTU/hour.

The BTU ratings for the Macintosh systems take into account any hard disk or expansion card(s) that may be installed internally.

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