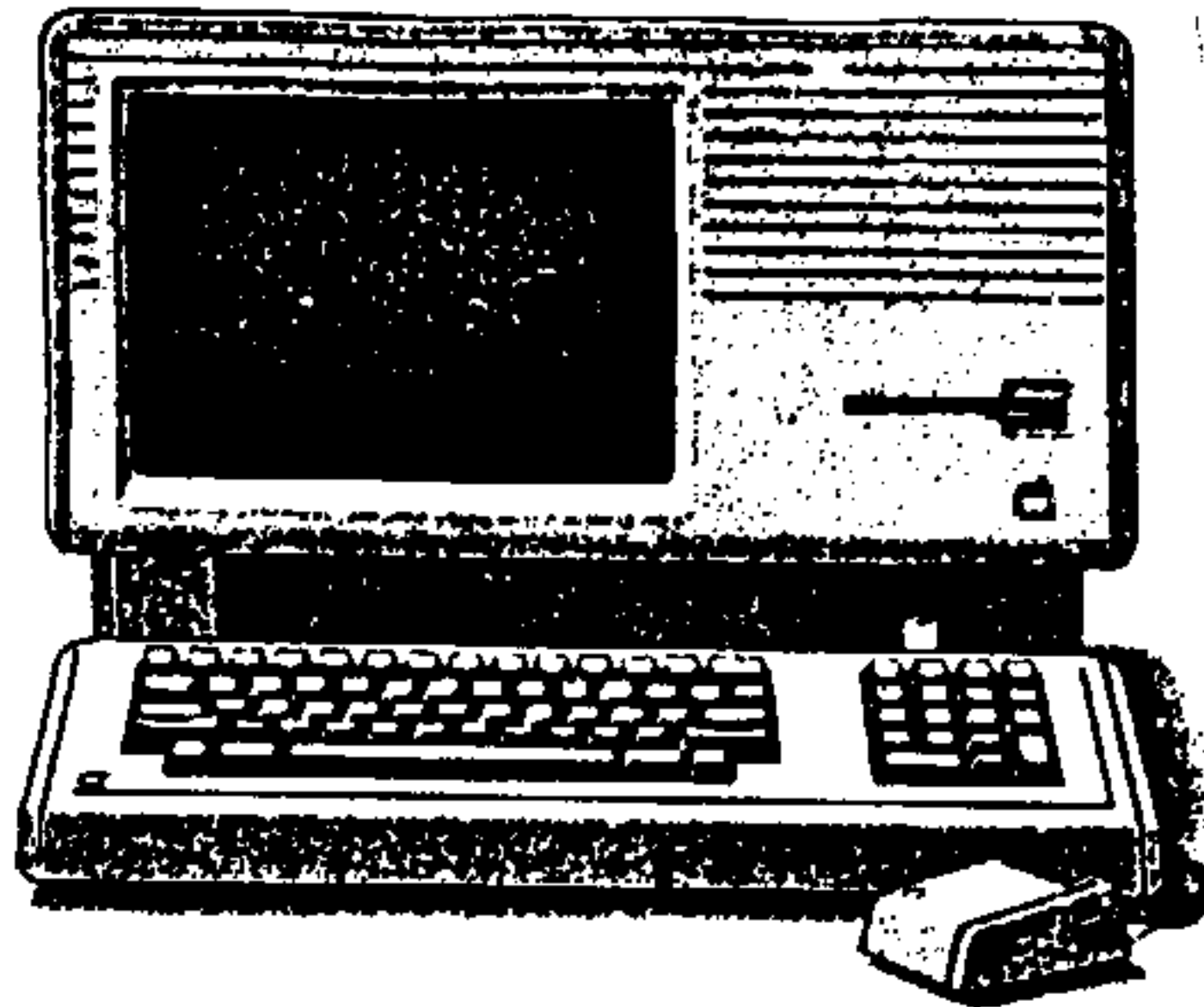


Apple Lisa Information



FILE NAME

Lisa Hardware Unit Disassembly

DISK

COMMENTS

Cleaned version done 2006, on a PC using paint by C.A. Rupp, and then presented to www.macmothership.com from where it came. Any and all copyrights the property of their respective owners, who may or may not have released this as public domain &/or give a #\$\$@&!



The
Lisa
Professional



Lisa Hardware Interface & Implementation

0005A2:	4ED0		JMP	(A0)
0005A4:	2F07			
0005A6:	3E3C	0058	MOVE.L	D7, -(A7)
0005AA:	4E45		MOVE.W	#\$0058, D7
0005AC:	2E1F		TRAP	#\$5
0005AE:	2F40	0004	MOVE.L	(A7)+, D7
0005B2:	4E75		MOVE.L	D0, \$0004(A7)
			RTS	
0005B4:	205F			
0005B6:	201F		MOVE.L	(A7)+, A0
0005B8:	2F07		MOVE.L	(A7)+, D0
0005BA:	3E3C	005A	MOVE.L	D7, -(A7)
0005BE:	4E45		MOVE.W	#\$005A, D7
0005C0:	2E1F		TRAP	#\$5
0005C2:	4ED0		MOVE.L	(A7)+, D7
			JMP	(A0)
0005C4:	4CDF	0300		
0005C8:	201F		MOVEM.L	(A7)+, A0/A1
0005CA:	48E7	1800	MOVE.L	(A7)+, D0
0005CE:	2F07		MOVEM.L	D3/D4, -(A7)
0005D0:	3E3C	005C	MOVE.L	D7, -(A7)
0005D4:	4E45		MOVE.W	#\$005C, D7
0005D6:	2E1F		TRAP	#\$5
0005D8:	32C0		MOVE.L	(A7)+, D7
0005DA:	32C1		MOVE.W	D0, (A1)+
0005DC:	32C2		MOVE.W	D1, (A1)+
0005DE:	32C3		MOVE.W	D2, (A1)+
0005E0:	32C4		MOVE.W	D3, (A1)+
0005E2:	4CDF	0018	MOVE.W	D4, (A1)+
0005E6:	4ED0		MOVEM.L	(A7)+, D3/D4
			JMP	(A0)
0005E8:	4E5E		UNLK	A6

— *Finis* —

Lisa Hardware Interface & Implementation

Apple Lisa Hardware Unit

UNIT HWINT; INTRINSIC;

INTERFACE (in Lisa Pascal)

TYPE

```
    Ascii          = Char;
    Pixels         = Integer;
    ManyPixels    = LongInt;
    CursorHeight   = Integer;
    CursorPtr      = ^Integer;
    LogicalAddress = LongInt;
    DateArray      = RECORD
                        year   : Integer;
                        day    : Integer;
                        hour   : Integer;
                        minute : Integer;
                        second : Integer;
                    END;

    Frames         = LongInt;
    Seconds        = LongInt;
    MilliSeconds   = LongInt;
    MicroSeconds   = LongInt;
    AlarmNumber    = Integer;
    SpeakerVolume  = Integer;
    ScreenContrast = Integer;
    VisibleScrn    = (PriScrn, AltScrn);
    KeybdQIndex    = 1..1000;
    KeybdId        = Integer;
    KeyCap         = 0..127;
    KeyCapSet      = SET OF KeyCap;
    KeyEvent       = PACKED RECORD
                        key     : KeyCap;
                        ascii   : Char;
                        state   : Integer;
                        mouseX  : Pixels;
                        mouseY  : Pixels;
                        time    : MilliSeconds;
                    END;
```

PROCEDURE DriverInit;

PROCEDURE DiskDriver(routine: LogicalAddress);

PROCEDURE TwiggyDriver(routine: LogicalAddress);

PROCEDURE DiskSync(busy: Boolean);

Lisa Hardware Interface & Implementation

```
PROCEDURE NMISync;

PROCEDURE COPSSync;

PROCEDURE Poll;

PROCEDURE MouseLocation(VAR x: Pixels; VAR y: Pixels);

PROCEDURE MouseUpdates(delay: MilliSeconds);

PROCEDURE MouseScaling(scale: Boolean);

PROCEDURE MouseThresh(threshold: Pixels);

FUNCTION  MouseOdometer: ManyPixels;

PROCEDURE CursorLocation(x: Pixels; y: Pixels);

PROCEDURE CursorTracking(track: Boolean);

PROCEDURE CursorImage(hotX: Pixels; hotY: Pixels; height: CursorHeight;
                      data: CursorPtr; mask: CursorPtr);

PROCEDURE CursorHide;

PROCEDURE CursorShield(left: Pixels; top: Pixels; right: Pixels;
                      bottom: Pixels);

PROCEDURE CursorDisplay;

PROCEDURE CursorObscure;

PROCEDURE CursorInit;

PROCEDURE CursorReInit;

PROCEDURE BusyImage(hotX: Pixels; hotY: Pixels; height: CursorHeight;
                    data: CursorPtr; mask: CursorPtr);

PROCEDURE BusyDelay(delay: MilliSeconds);

FUNCTION  FrameCounter: Frames;

PROCEDURE ScreenSize(VAR x: Pixels; VAR y: Pixels);

FUNCTION  ScreenAddr: LogicalAddress;

FUNCTION  AltScreenAddr: LogicalAddress;

FUNCTION  ScreenKeybd: VisibleScreen;

PROCEDURE SetScreenKeybd(screen: VisibleScreen);
```

Lisa Hardware Interface & Implementation

```
FUNCTION Contrast: ScreenContrast;

PROCEDURE SetContrast(contrast: ScreenContrast);

PROCEDURE RampContrast(contrast: ScreenContrast);

FUNCTION DimContrast: ScreenContrast;

PROCEDURE SetDimContrast(contrast: ScreenContrast);

FUNCTION FadeDelay: MilliSeconds;

PROCEDURE SetFadeDelay(delay: MilliSeconds);

PROCEDURE PowerDown;

PROCEDURE PowerCycle(delay: Seconds);

FUNCTION Volume: SpeakerVolume;

PROCEDURE SetVolume(volume: SpeakerVolume);

PROCEDURE Noise(waveLength: MicroSeconds);

PROCEDURE Silence;

PROCEDURE Beep(waveLength: MicroSeconds; duration: MilliSeconds);

FUNCTION Keyboard: KeybdId;

FUNCTION Legends: KeybdId;

PROCEDURE SetLegends(id: KeybdId);

FUNCTION KeyIsDown(key: KeyCap): Boolean;

PROCEDURE KeyMap(VAR keys: KeyCapSet);

FUNCTION KeybdPeek(repeats: Boolean; index: KeybdQIndex;
                   VAR event: KeyEvent): Boolean;

FUNCTION AltKeyPeek(repeats: Boolean; index: KeybdQIndex;
                   VAR event: KeyEvent): Boolean;

FUNCTION KeybdEvent(repeats: Boolean; wait: Boolean;
                   VAR event: KeyEvent): Boolean;

FUNCTION AltKeyEvent(repeats: Boolean; wait: Boolean;
                   VAR event: KeyEvent): Boolean;

PROCEDURE RepeatRate(VAR initial: MilliSeconds;
                   VAR subsequent: MilliSeconds);
```


Lisa Hardware Interface & Implementation

```
PROCEDURE SetRepeatRate(initial: MilliSeconds; subsequent: MilliSeconds);
PROCEDURE KeyPushed(key: KeyCap);
FUNCTION  NMIKey: KeyCap;
PROCEDURE SetNMIKey(key: KeyCap);
FUNCTION  ToggleKey: KeyCap;
PROCEDURE SetToggleKey(key: KeyCap);
FUNCTION  KeyToAscii(key: KeyCap; State: Integer): Ascii;
FUNCTION  MicroTimer: MicroSeconds;
FUNCTION  Timer: MilliSeconds;
PROCEDURE AlarmAssign(VAR alarm: AlarmNumber; routine: LogicalAddress);
PROCEDURE AlarmReturn(alarm: AlarmNumber);
PROCEDURE AlarmAbsolute(alarm: AlarmNumber; time: MilliSeconds);
PROCEDURE AlarmRelative(alarm: AlarmNumber; delay: MilliSeconds);
PROCEDURE AlarmOff(alarm: AlarmNumber);
PROCEDURE DateTime(VAR date: DateArray);
PROCEDURE SetDateTime(date: DateArray);
PROCEDURE DateToTime(date: DateArray; VAR time: Seconds);
FUNCTION  TimeStamp: Seconds;
PROCEDURE SetTimeStamp(time: Seconds);
PROCEDURE TimeToDate(time: Seconds; VAR date: DateArray);
```

Lisa Hardware Interface & Implementation

IMPLEMENTATION (in 68000 assembly language)

```
000000: 4E56 0000      HWINTL      LINK      A6, #$0000

000004: 436F 7079 7269      'Copyright 1983, Apple Computer Inc. '
00000A: 6768 7420 3139
000010: 3833 2C20 4170
000016: 706C 6520 436F
00001C: 6D70 7574 6572
000022: 2049 6E63 2E20

000028: 2F07      DRIVERIN      MOVE.L      D7, -(A7)
00002A: 4247      CLR.W      D7
00002C: 4E45      TRAP      #$5
00002E: 2E1F      MOVE.L      (A7)+, D7
000030: 4E75      RTS

000032: 206F 0004      DISKDRIV      MOVE.L      $0004(A7), A0
000036: 2F07      MOVE.L      D7, -(A7)
000038: 3E3C 0068      MOVE.W      #$0068, D7
00003C: 4E45      TRAP      #$5
00003E: 2E1F      MOVE.L      (A7)+, D7
000040: 205F      MOVE.L      (A7)+, A0
000042: 584F      ADDQ.W      #$4, A7
000044: 4ED0      JMP      (A0)

000046: 206F 0004      TWIGGYDR      MOVE.L      $0004(A7), A0
00004A: 2F07      MOVE.L      D7, -(A7)
00004C: 3E3C 006A      MOVE.W      #$006A, D7
000050: 4E45      TRAP      #$5
000052: 2E1F      MOVE.L      (A7)+, D7
000054: 205F      MOVE.L      (A7)+, A0
000056: 584F      ADDQ.W      #$4, A7
000058: 4ED0      JMP      (A0)

00005A: 205F      DISKSYNC      MOVE.L      (A7)+, A0
00005C: 101F      MOVE.B      (A7)+, D0
00005E: 2F07      MOVE.L      D7, -(A7)
000060: 3E3C 006C      MOVE.W      #$006C, D7
000064: 4E45      TRAP      #$5
000066: 2E1F      MOVE.L      (A7)+, D7
000068: 4ED0      JMP      (A0)

00006A: 2F07      NMISYNC      MOVE.L      D7, -(A7)
00006C: 3E3C 008C      MOVE.W      #$008C, D7
000070: 4E45      TRAP      #$5
000072: 2E1F      MOVE.L      (A7)+, D7
000074: 4E75      RTS
```

Lisa Hardware Interface & Implementation

000076:	2F07		COPSSYNC	MOVE. L	D7, -(A7)
000078:	3E3C	00AA		MOVE. W	#\$00AA, D7
00007C:	4E45			TRAP	#\$5
00007E:	2E1F			MOVE. L	(A7)+, D7
000080:	4E75			RTS	
000082:	2F07		POLL	MOVE. L	D7, -(A7)
000084:	3E3C	009E		MOVE. W	#\$009E, D7
000088:	4E45			TRAP	#\$5
00008A:	2E1F			MOVE. L	(A7)+, D7
00008C:	4E75			RTS	
00008E:	2F07		MOUSELOC	MOVE. L	D7, -(A7)
000090:	3E3C	0002		MOVE. W	#\$0002, D7
000094:	4E45			TRAP	#\$5
000096:	2E1F			MOVE. L	(A7)+, D7
000098:	4CDF	0300		MOVEM. L	(A7)+, A0/A1
00009C:	3281			MOVE. W	D1, (A1)
00009E:	225F			MOVE. L	(A7)+, A1
0000A0:	3280			MOVE. W	D0, (A1)
0000A2:	4ED0			JMP	(A0)
0000A4:	205F		MOUSEUPD	MOVE. L	(A7)+, A0
0000A6:	201F			MOVE. L	(A7)+, D0
0000A8:	2F07			MOVE. L	D7, -(A7)
0000AA:	3E3C	0004		MOVE. W	#\$0004, D7
0000AE:	4E45			TRAP	#\$5
0000B0:	2E1F			MOVE. L	(A7)+, D7
0000B2:	4ED0			JMP	(A0)
0000B4:	205F		MOUSESCL	MOVE. L	(A7)+, A0
0000B6:	101F			MOVE. B	(A7)+, D0
0000B8:	2F07			MOVE. L	D7, -(A7)
0000BA:	3E3C	0006		MOVE. W	#\$0006, D7
0000BE:	4E45			TRAP	#\$5
0000C0:	2E1F			MOVE. L	(A7)+, D7
0000C2:	4ED0			JMP	(A0)
0000C4:	205F		MOUSETHR	MOVE. L	(A7)+, A0
0000C6:	301F			MOVE. W	(A7)+, D0
0000C8:	2F07			MOVE. L	D7, -(A7)
0000CA:	3E3C	0008		MOVE. W	#\$0008, D7
0000CE:	4E45			TRAP	#\$5
0000D0:	2E1F			MOVE. L	(A7)+, D7
0000D2:	4ED0			JMP	(A0)
0000D4:	2F07		MOUSEODO	MOVE. L	D7, -(A7)
0000D6:	3E3C	00A8		MOVE. W	#\$00A8, D7
0000DA:	4E45			TRAP	#\$5
0000DC:	2E1F			MOVE. L	(A7)+, D7
0000DE:	2F40	0004		MOVE. L	D0, \$0004(A7)
0000E2:	4E75			RTS	

Lisa Hardware Interface & Implementation

0000E4:	4CDF	0100	CURSORLO	MOVEM.L	(A7)+, A0	
0000E8:	321F			MOVE.W	(A7)+, D1	
0000EA:	301F			MOVE.W	(A7)+, D0	
0000EC:	2F07			MOVE.L	D7, -(A7)	
0000EE:	3E3C	000A		MOVE.W	#\$000A, D7	
0000F2:	4E45			TRAP	#\$5	
0000F4:	2E1F			MOVE.L	(A7)+, D7	
0000F6:	4ED0			JMP	(A0)	
0000F8:	205F		CURSORTR	MOVE.L	(A7)+, A0	
0000FA:	101F			MOVE.B	(A7)+, D0	
0000FC:	2F07			MOVE.L	D7, -(A7)	
0000FE:	3E3C	000C		MOVE.W	#\$000C, D7	
000102:	4E45			TRAP	#\$5	
000104:	2E1F			MOVE.L	(A7)+, D7	
000106:	4ED0			JMP	(A0)	
000108:	302F	0010	CURSORIM	MOVE.W	\$0010(A7), D0	
00010C:	322F	000E		MOVE.W	\$000E(A7), D1	
000110:	342F	000C		MOVE.W	\$000C(A7), D2	
000114:	206F	0008		MOVE.L	\$0008(A7), A0	
000118:	226F	0004		MOVE.L	\$0004(A7), A1	
00011C:	48E7	2030		MOVEM.L	D2/A2/A3, -(A7)	
000120:	247C	00FA	0000	MOVE.L	#\$00FA0000, A2	
000126:	267C	00FA	0040	MOVE.L	#\$00FA0040, A3	
00012C:	5342			SUBQ.W	#\$1, D2	
00012E:	34D8			MOVE.W	(A0)+, (A2)+	
000130:	36D9			MOVE.W	(A1)+, (A3)+	
000132:	51CA	FFFA		DBF	D2, *-\$0004	; 0000012E
000136:	207C	00FA	0000	MOVE.L	#\$00FA0000, A0	
00013C:	227C	00FA	0040	MOVE.L	#\$00FA0040, A1	
000142:	4CDF	0C04		MOVEM.L	(A7)+, D2/A2/A3	
000146:	2F07			MOVE.L	D7, -(A7)	
000148:	3E3C	000E		MOVE.W	#\$000E, D7	
00014C:	4E45			TRAP	#\$5	
00014E:	2E1F			MOVE.L	(A7)+, D7	
000150:	205F			MOVE.L	(A7)+, A0	
000152:	DEFC	000E		ADDA.W	#\$000E, A7	
000156:	4ED0			JMP	(A0)	
000158:	2F07		CURSORHI	MOVE.L	D7, -(A7)	
00015A:	3E3C	0010		MOVE.W	#\$0010, D7	
00015E:	4E45			TRAP	#\$5	
000160:	2E1F			MOVE.L	(A7)+, D7	
000162:	4E75			RTS		
000164:	2F03		CURSORSH	MOVE.L	D3, -(A7)	
000166:	362F	0008		MOVE.W	\$0008(A7), D3	
00016A:	342F	000A		MOVE.W	\$000A(A7), D2	
00016E:	322F	000C		MOVE.W	\$000C(A7), D1	
000172:	302F	000E		MOVE.W	\$000E(A7), D0	
000176:	2F07			MOVE.L	D7, -(A7)	

Lisa Hardware Interface & Implementation

000178: 3E3C 0012		MOVE. W	#\$0012, D7
00017C: 4E45		TRAP	#\$5
00017E: 2E1F		MOVE. L	(A7)+, D7
000180: 261F		MOVE. L	(A7)+, D3
000182: 205F		MOVE. L	(A7)+, A0
000184: 504F		ADDQ. W	#\$8, A7
000186: 4ED0		JMP	(A0)
000188: 2F07	CURSORDI	MOVE. L	D7, -(A7)
00018A: 3E3C 0014		MOVE. W	#\$0014, D7
00018E: 4E45		TRAP	#\$5
000190: 2E1F		MOVE. L	(A7)+, D7
000192: 4E75		RTS	
000194: 2F07	CURSOROB	MOVE. L	D7, -(A7)
000196: 3E3C 006E		MOVE. W	#\$006E, D7
00019A: 4E45		TRAP	#\$5
00019C: 2E1F		MOVE. L	(A7)+, D7
00019E: 4E75		RTS	
0001A0: 2F07	CURSORIN	MOVE. L	D7, -(A7)
0001A2: 3E3C 0070		MOVE. W	#\$0070, D7
0001A6: 4E45		TRAP	#\$5
0001A8: 2E1F		MOVE. L	(A7)+, D7
0001AA: 4E75		RTS	
0001AC: 2F07	CURSORRE	MOVE. L	D7, -(A7)
0001AE: 3E3C 009C		MOVE. W	#\$009C, D7
0001B2: 4E45		TRAP	#\$5
0001B4: 2E1F		MOVE. L	(A7)+, D7
0001B6: 4E75		RTS	
0001B8: 302F 0010	BUSYIMAG	MOVE. W	\$0010(A7), D0
0001BC: 322F 000E		MOVE. W	\$000E(A7), D1
0001C0: 342F 000C		MOVE. W	\$000C(A7), D2
0001C4: 206F 0008		MOVE. L	\$0008(A7), A0
0001C8: 226F 0004		MOVE. L	\$0004(A7), A1
0001CC: 48E7 2030		MOVEM. L	D2/A2/A3, -(A7)
0001D0: 247C 00FA 0000		MOVE. L	#\$00FA0000, A2
0001D6: 267C 00FA 0040		MOVE. L	#\$00FA0040, A3
0001DC: 5342		SUBQ. W	#\$1, D2
0001DE: 34D8		MOVE. W	(A0)+, (A2)+
0001E0: 36D9		MOVE. W	(A1)+, (A3)+
0001E2: 51CA FFFA		DBF	D2, *-\$0004 ; 000001DE
0001E6: 207C 00FA 0000		MOVE. L	#\$00FA0000, A0
0001EC: 227C 00FA 0040		MOVE. L	#\$00FA0040, A1
0001F2: 4CDF 0C04		MOVEM. L	(A7)+, D2/A2/A3
0001F6: 2F07		MOVE. L	D7, -(A7)
0001F8: 3E3C 0086		MOVE. W	#\$0086, D7
0001FC: 4E45		TRAP	#\$5
0001FE: 2E1F		MOVE. L	(A7)+, D7
000200: 205F		MOVE. L	(A7)+, A0
000202: DEFC 000E		ADDA. W	#\$000E, A7

Lisa Hardware Interface & Implementation

000206:	4ED0		JMP	(A0)
000208:	205F	BUSYDELA	MOVE.L	(A7)+, A0
00020A:	201F		MOVE.L	(A7)+, D0
00020C:	2F07		MOVE.L	D7, -(A7)
00020E:	3E3C	0088	MOVE.W	#\$0088, D7
000212:	4E45		TRAP	#\$5
000214:	2E1F		MOVE.L	(A7)+, D7
000216:	4ED0		JMP	(A0)
000218:	2F07	FRAMECOU	MOVE.L	D7, -(A7)
00021A:	3E3C	0016	MOVE.W	#\$0016, D7
00021E:	4E45		TRAP	#\$5
000220:	2E1F		MOVE.L	(A7)+, D7
000222:	2F40	0004	MOVE.L	D0, \$0004(A7)
000226:	4E75		RTS	
000228:	2F07	SCREENSI	MOVE.L	D7, -(A7)
00022A:	3E3C	008A	MOVE.W	#\$008A, D7
00022E:	4E45		TRAP	#\$5
000230:	2E1F		MOVE.L	(A7)+, D7
000232:	4CDF	0300	MOVEM.L	(A7)+, A0/A1
000236:	3281		MOVE.W	D1, (A1)
000238:	225F		MOVE.L	(A7)+, A1
00023A:	3280		MOVE.W	D0, (A1)
00023C:	4ED0		JMP	(A0)
00023E:	2F07	SCREENAD	MOVE.L	D7, -(A7)
000240:	3E3C	0018	MOVE.W	#\$0018, D7
000244:	4E45		TRAP	#\$5
000246:	2E1F		MOVE.L	(A7)+, D7
000248:	2F48	0004	MOVE.L	A0, \$0004(A7)
00024C:	4E75		RTS	
00024E:	2F07	ALTSCREE	MOVE.L	D7, -(A7)
000250:	3E3C	001A	MOVE.W	#\$001A, D7
000254:	4E45		TRAP	#\$5
000256:	2E1F		MOVE.L	(A7)+, D7
000258:	2F48	0004	MOVE.L	A0, \$0004(A7)
00025C:	4E75		RTS	
00025E:	2F07	SCREENKE	MOVE.L	D7, -(A7)
000260:	3E3C	008E	MOVE.W	#\$008E, D7
000264:	4E45		TRAP	#\$5
000266:	2E1F		MOVE.L	(A7)+, D7
000268:	1F40	0004	MOVE.B	D0, \$0004(A7)
00026C:	4E75		RTS	
00026E:	205F	SETSCREE	MOVE.L	(A7)+, A0
000270:	101F		MOVE.B	(A7)+, D0
000272:	2F07		MOVE.L	D7, -(A7)
000274:	3E3C	0090	MOVE.W	#\$0090, D7
000278:	4E45		TRAP	#\$5

Lisa Hardware Interface & Implementation

00027A: 2E1F		MOVE.L	(A7)+, D7
00027C: 4ED0		JMP	(A0)
00027E: 2F07	CONTRAST	MOVE.L	D7, -(A7)
000280: 3E3C 001C		MOVE.W	#\$001C, D7
000284: 4E45		TRAP	#\$5
000286: 2E1F		MOVE.L	(A7)+, D7
000288: 3F40 0004		MOVE.W	D0, \$0004(A7)
00028C: 4E75		RTS	
00028E: 205F	SETCONTR	MOVE.L	(A7)+, A0
000290: 301F		MOVE.W	(A7)+, D0
000292: 2F07		MOVE.L	D7, -(A7)
000294: 3E3C 001E		MOVE.W	#\$001E, D7
000298: 4E45		TRAP	#\$5
00029A: 2E1F		MOVE.L	(A7)+, D7
00029C: 4ED0		JMP	(A0)
00029E: 205F	RAMPCONT	MOVE.L	(A7)+, A0
0002A0: 301F		MOVE.W	(A7)+, D0
0002A2: 2F07		MOVE.L	D7, -(A7)
0002A4: 3E3C 0020		MOVE.W	#\$0020, D7
0002A8: 4E45		TRAP	#\$5
0002AA: 2E1F		MOVE.L	(A7)+, D7
0002AC: 4ED0		JMP	(A0)
0002AE: 2F07	DIMCONTR	MOVE.L	D7, -(A7)
0002B0: 3E3C 0082		MOVE.W	#\$0082, D7
0002B4: 4E45		TRAP	#\$5
0002B6: 2E1F		MOVE.L	(A7)+, D7
0002B8: 3F40 0004		MOVE.W	D0, \$0004(A7)
0002BC: 4E75		RTS	
0002BE: 205F	SETDIMCO	MOVE.L	(A7)+, A0
0002C0: 301F		MOVE.W	(A7)+, D0
0002C2: 2F07		MOVE.L	D7, -(A7)
0002C4: 3E3C 0084		MOVE.W	#\$0084, D7
0002C8: 4E45		TRAP	#\$5
0002CA: 2E1F		MOVE.L	(A7)+, D7
0002CC: 4ED0		JMP	(A0)
0002CE: 2F07	FADEDELA	MOVE.L	D7, -(A7)
0002D0: 3E3C 0022		MOVE.W	#\$0022, D7
0002D4: 4E45		TRAP	#\$5
0002D6: 2E1F		MOVE.L	(A7)+, D7
0002D8: 2F40 0004		MOVE.L	D0, \$0004(A7)
0002DC: 4E75		RTS	
0002DE: 205F	SETFADED	MOVE.L	(A7)+, A0
0002E0: 201F		MOVE.L	(A7)+, D0
0002E2: 2F07		MOVE.L	D7, -(A7)
0002E4: 3E3C 0024		MOVE.W	#\$0024, D7
0002E8: 4E45		TRAP	#\$5

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0002EA:	2E1F		MOVE.L	(A7)+, D7
0002EC:	4ED0		JMP	(A0)
0002EE:	2F07	POWERDOW	MOVE.L	D7, -(A7)
0002F0:	3E3C	0026	MOVE.W	#\$0026, D7
0002F4:	4E45		TRAP	#\$5
0002F6:	2E1F		MOVE.L	(A7)+, D7
0002F8:	4E75		RTS	
0002FA:	205F	POWERCYC	MOVE.L	(A7)+, A0
0002FC:	201F		MOVE.L	(A7)+, D0
0002FE:	2F07		MOVE.L	D7, -(A7)
000300:	3E3C	0028	MOVE.W	#\$0028, D7
000304:	4E45		TRAP	#\$5
000306:	2E1F		MOVE.L	(A7)+, D7
000308:	4ED0		JMP	(A0)
00030A:	2F07	VOLUME	MOVE.L	D7, -(A7)
00030C:	3E3C	002A	MOVE.W	#\$002A, D7
000310:	4E45		TRAP	#\$5
000312:	2E1F		MOVE.L	(A7)+, D7
000314:	3F40	0004	MOVE.W	D0, \$0004(A7)
000318:	4E75		RTS	
00031A:	205F	SETVOLUM	MOVE.L	(A7)+, A0
00031C:	301F		MOVE.W	(A7)+, D0
00031E:	2F07		MOVE.L	D7, -(A7)
000320:	3E3C	002C	MOVE.W	#\$002C, D7
000324:	4E45		TRAP	#\$5
000326:	2E1F		MOVE.L	(A7)+, D7
000328:	4ED0		JMP	(A0)
00032A:	205F	NOISE	MOVE.L	(A7)+, A0
00032C:	201F		MOVE.L	(A7)+, D0
00032E:	2F07		MOVE.L	D7, -(A7)
000330:	3E3C	002E	MOVE.W	#\$002E, D7
000334:	4E45		TRAP	#\$5
000336:	2E1F		MOVE.L	(A7)+, D7
000338:	4ED0		JMP	(A0)
00033A:	2F07	SILENCE	MOVE.L	D7, -(A7)
00033C:	3E3C	0030	MOVE.W	#\$0030, D7
000340:	4E45		TRAP	#\$5
000342:	2E1F		MOVE.L	(A7)+, D7
000344:	4E75		RTS	
000346:	205F	BEEP	MOVE.L	(A7)+, A0
000348:	221F		MOVE.L	(A7)+, D1
00034A:	201F		MOVE.L	(A7)+, D0
00034C:	2F07		MOVE.L	D7, -(A7)
00034E:	3E3C	0032	MOVE.W	#\$0032, D7
000352:	4E45		TRAP	#\$5
000354:	2E1F		MOVE.L	(A7)+, D7

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000356:	4ED0		JMP	(A0)
000358:	2F07	KEYBOARD	MOVE.L	D7, -(A7)
00035A:	3E3C	0038	MOVE.W	#\$0038, D7
00035E:	4E45		TRAP	#\$5
000360:	2E1F		MOVE.L	(A7)+, D7
000362:	3F40	0004	MOVE.W	D0, \$0004(A7)
000366:	4E75		RTS	
000368:	2F07	LEGENDS	MOVE.L	D7, -(A7)
00036A:	3E3C	0096	MOVE.W	#\$0096, D7
00036E:	4E45		TRAP	#\$5
000370:	2E1F		MOVE.L	(A7)+, D7
000372:	3F40	0004	MOVE.W	D0, \$0004(A7)
000376:	4E75		RTS	
000378:	205F	SETLEGEN	MOVE.L	(A7)+, A0
00037A:	301F		MOVE.W	(A7)+, D0
00037C:	2F07		MOVE.L	D7, -(A7)
00037E:	3E3C	0098	MOVE.W	#\$0098, D7
000382:	4E45		TRAP	#\$5
000384:	2E1F		MOVE.L	(A7)+, D7
000386:	4ED0		JMP	(A0)
000388:	205F	KEYISDOW	MOVE.L	(A7)+, A0
00038A:	4240		CLR.W	D0
00038C:	101F		MOVE.B	(A7)+, D0
00038E:	2F07		MOVE.L	D7, -(A7)
000390:	3E3C	0034	MOVE.W	#\$0034, D7
000394:	4E45		TRAP	#\$5
000396:	2E1F		MOVE.L	(A7)+, D7
000398:	1E81		MOVE.B	D1, (A7)
00039A:	4ED0		JMP	(A0)
00039C:	4CDF	0300	MOVEM.L	(A7)+, A0/A1
0003A0:	2F03		MOVE.L	D3, -(A7)
0003A2:	2F07		MOVE.L	D7, -(A7)
0003A4:	3E3C	0036	MOVE.W	#\$0036, D7
0003A8:	4E45		TRAP	#\$5
0003AA:	2E1F		MOVE.L	(A7)+, D7
0003AC:	22C3		MOVE.L	D3, (A1)+
0003AE:	22C2		MOVE.L	D2, (A1)+
0003B0:	22C1		MOVE.L	D1, (A1)+
0003B2:	22C0		MOVE.L	D0, (A1)+
0003B4:	261F		MOVE.L	(A7)+, D3
0003B6:	4ED0		JMP	(A0)
0003B8:	4CDF	0300	MOVEM.L	(A7)+, A0/A1
0003BC:	321F	KEYBDPEE	MOVE.W	(A7)+, D1
0003BE:	101F		MOVE.B	(A7)+, D0
0003C0:	48E7	1E00	MOVEM.L	D3-D6, -(A7)
0003C4:	2F07		MOVE.L	D7, -(A7)
0003C6:	3E3C	003C	MOVE.W	#\$003C, D7

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0003CA: 4E45		TRAP	#\$5	
0003CC: 2E1F		MOVE. L	(A7)+, D7	
0003CE: 6016		BRA. S	*+\$0018	; 000003E6
0003D0: 4CDF 0300	ALTKEYPE	MOVEM. L	(A7)+, A0/A1	
0003D4: 321F		MOVE. W	(A7)+, D1	
0003D6: 101F		MOVE. B	(A7)+, D0	
0003D8: 48E7 1E00		MOVEM. L	D3-D6, -(A7)	
0003DC: 2F07		MOVE. L	D7, -(A7)	
0003DE: 3E3C 0092		MOVE. W	#\$0092, D7	
0003E2: 4E45		TRAP	#\$5	
0003E4: 2E1F		MOVE. L	(A7)+, D7	
0003E6: 12C1		MOVE. B	D1, (A1)+	
0003E8: 12C2		MOVE. B	D2, (A1)+	
0003EA: 32C3		MOVE. W	D3, (A1)+	
0003EC: 32C4		MOVE. W	D4, (A1)+	
0003EE: 32C5		MOVE. W	D5, (A1)+	
0003F0: 22C6		MOVE. L	D6, (A1)+	
0003F2: 4CDF 0078		MOVEM. L	(A7)+, D3-D6	
0003F6: 1E80		MOVE. B	D0, (A7)	
0003F8: 4ED0		JMP	(A0)	
0003FA: 4CDF 0300	KEYBDEVE	MOVEM. L	(A7)+, A0/A1	
0003FE: 121F		MOVE. B	(A7)+, D1	
000400: 101F		MOVE. B	(A7)+, D0	
000402: 48E7 1E00		MOVEM. L	D3-D6, -(A7)	
000406: 2F07		MOVE. L	D7, -(A7)	
000408: 3E3C 003A		MOVE. W	#\$003A, D7	
00040C: 4E45		TRAP	#\$5	
00040E: 2E1F		MOVE. L	(A7)+, D7	
000410: 6016		BRA. S	*+\$0018	; 00000428
000412: 4CDF 0300	ALTKEYEV	MOVEM. L	(A7)+, A0/A1	
000416: 121F		MOVE. B	(A7)+, D1	
000418: 101F		MOVE. B	(A7)+, D0	
00041A: 48E7 1E00		MOVEM. L	D3-D6, -(A7)	
00041E: 2F07		MOVE. L	D7, -(A7)	
000420: 3E3C 0094		MOVE. W	#\$0094, D7	
000424: 4E45		TRAP	#\$5	
000426: 2E1F		MOVE. L	(A7)+, D7	
000428: 12C1		MOVE. B	D1, (A1)+	
00042A: 12C2		MOVE. B	D2, (A1)+	
00042C: 32C3		MOVE. W	D3, (A1)+	
00042E: 32C4		MOVE. W	D4, (A1)+	
000430: 32C5		MOVE. W	D5, (A1)+	
000432: 22C6		MOVE. L	D6, (A1)+	
000434: 4CDF 0078		MOVEM. L	(A7)+, D3-D6	
000438: 1E80		MOVE. B	D0, (A7)	
00043A: 4ED0		JMP	(A0)	
00043C: 2F07	REPEATRA	MOVE. L	D7, -(A7)	
00043E: 3E3C 003E		MOVE. W	#\$003E, D7	
000442: 4E45		TRAP	#\$5	

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000444:	2E1F		MOVE. L	(A7)+, D7
000446:	4CDF	0300	MOVEM. L	(A7)+, A0/A1
00044A:	2281		MOVE. L	D1, (A1)
00044C:	225F		MOVE. L	(A7)+, A1
00044E:	2280		MOVE. L	D0, (A1)
000450:	4ED0		JMP	(A0)
000452:	205F	SETREPEA	MOVE. L	(A7)+, A0
000454:	221F		MOVE. L	(A7)+, D1
000456:	201F		MOVE. L	(A7)+, D0
000458:	2F07		MOVE. L	D7, -(A7)
00045A:	3E3C	0040	MOVE. W	#\$0040, D7
00045E:	4E45		TRAP	#\$5
000460:	2E1F		MOVE. L	(A7)+, D7
000462:	4ED0		JMP	(A0)
000464:	205F	KEYPUSHE	MOVE. L	(A7)+, A0
000466:	4240		CLR. W	D0
000468:	101F		MOVE. B	(A7)+, D0
00046A:	2F07		MOVE. L	D7, -(A7)
00046C:	3E3C	0042	MOVE. W	#\$0042, D7
000470:	4E45		TRAP	#\$5
000472:	2E1F		MOVE. L	(A7)+, D7
000474:	4ED0		JMP	(A0)
000476:	2F07	NMIKEY	MOVE. L	D7, -(A7)
000478:	3E3C	0072	MOVE. W	#\$0072, D7
00047C:	4E45		TRAP	#\$5
00047E:	2E1F		MOVE. L	(A7)+, D7
000480:	1F40	0004	MOVE. B	D0, \$0004(A7)
000484:	4E75		RTS	
000486:	205F	SETNMIKE	MOVE. L	(A7)+, A0
000488:	4240		CLR. W	D0
00048A:	101F		MOVE. B	(A7)+, D0
00048C:	2F07		MOVE. L	D7, -(A7)
00048E:	3E3C	0074	MOVE. W	#\$0074, D7
000492:	4E45		TRAP	#\$5
000494:	2E1F		MOVE. L	(A7)+, D7
000496:	4ED0		JMP	(A0)
000498:	2F07	TOGGLEKE	MOVE. L	D7, -(A7)
00049A:	3E3C	00A0	MOVE. W	#\$00A0, D7
00049E:	4E45		TRAP	#\$5
0004A0:	2E1F		MOVE. L	(A7)+, D7
0004A2:	1F40	0004	MOVE. B	D0, \$0004(A7)
0004A6:	4E75		RTS	
0004A8:	205F	SETTOGGL	MOVE. L	(A7)+, A0
0004AA:	4240		CLR. W	D0
0004AC:	101F		MOVE. B	(A7)+, D0
0004AE:	2F07		MOVE. L	D7, -(A7)
0004B0:	3E3C	00A2	MOVE. W	#\$00A2, D7

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0004B4: 4E45		TRAP	#\$5
0004B6: 2E1F		MOVE.L	(A7)+, D7
0004B8: 4ED0		JMP	(A0)
0004BA: 2F07	MICROTIM	MOVE.L	D7, -(A7)
0004BC: 3E3C 009A		MOVE.W	#\$009A, D7
0004C0: 4E45		TRAP	#\$5
0004C2: 2E1F		MOVE.L	(A7)+, D7
0004C4: 2F40 0004		MOVE.L	D0, \$0004(A7)
0004C8: 4E75		RTS	
0004CA: 2F07	TIMER	MOVE.L	D7, -(A7)
0004CC: 3E3C 0044		MOVE.W	#\$0044, D7
0004D0: 4E45		TRAP	#\$5
0004D2: 2E1F		MOVE.L	(A7)+, D7
0004D4: 2F40 0004		MOVE.L	D0, \$0004(A7)
0004D8: 4E75		RTS	
0004DA: 206F 0004	ALARMAS	MOVE.L	\$0004(A7), A0
0004DE: 2F07		MOVE.L	D7, -(A7)
0004E0: 3E3C 0046		MOVE.W	#\$0046, D7
0004E4: 4E45		TRAP	#\$5
0004E6: 2E1F		MOVE.L	(A7)+, D7
0004E8: 205F		MOVE.L	(A7)+, A0
0004EA: 584F		ADDQ.W	#\$4, A7
0004EC: 225F		MOVE.L	(A7)+, A1
0004EE: 3280		MOVE.W	D0, (A1)
0004F0: 4ED0		JMP	(A0)
0004F2: 205F	ALARMRET	MOVE.L	(A7)+, A0
0004F4: 301F		MOVE.W	(A7)+, D0
0004F6: 2F07		MOVE.L	D7, -(A7)
0004F8: 3E3C 0048		MOVE.W	#\$0048, D7
0004FC: 4E45		TRAP	#\$5
0004FE: 2E1F		MOVE.L	(A7)+, D7
000500: 4ED0		JMP	(A0)
000502: 205F	ALARMABS	MOVE.L	(A7)+, A0
000504: 221F		MOVE.L	(A7)+, D1
000506: 301F		MOVE.W	(A7)+, D0
000508: 2F07		MOVE.L	D7, -(A7)
00050A: 3E3C 004A		MOVE.W	#\$004A, D7
00050E: 4E45		TRAP	#\$5
000510: 2E1F		MOVE.L	(A7)+, D7
000512: 4ED0		JMP	(A0)
000514: 205F	ALARMREL	MOVE.L	(A7)+, A0
000516: 221F		MOVE.L	(A7)+, D1
000518: 301F		MOVE.W	(A7)+, D0
00051A: 2F07		MOVE.L	D7, -(A7)
00051C: 3E3C 004C		MOVE.W	#\$004C, D7
000520: 4E45		TRAP	#\$5
000522: 2E1F		MOVE.L	(A7)+, D7

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000524:	4ED0		JMP	(A0)
000526:	205F	ALARMOFF	MOVE. L	(A7)+, A0
000528:	301F		MOVE. W	(A7)+, D0
00052A:	2F07		MOVE. L	D7, -(A7)
00052C:	3E3C	004E	MOVE. W	#\$004E, D7
000530:	4E45		TRAP	#\$5
000532:	2E1F		MOVE. L	(A7)+, D7
000534:	4ED0		JMP	(A0)
000536:	4CDF	0300	MOVEM. L	(A7)+, A0/A1
00053A:	48E7	1800	MOVEM. L	D3/D4, -(A7)
00053E:	2F07		MOVE. L	D7, -(A7)
000540:	3E3C	0050	MOVE. W	#\$0050, D7
000544:	4E45		TRAP	#\$5
000546:	2E1F		MOVE. L	(A7)+, D7
000548:	32C0		MOVE. W	D0, (A1)+
00054A:	32C1		MOVE. W	D1, (A1)+
00054C:	32C2		MOVE. W	D2, (A1)+
00054E:	32C3		MOVE. W	D3, (A1)+
000550:	32C4		MOVE. W	D4, (A1)+
000552:	4CDF	0018	MOVEM. L	(A7)+, D3/D4
000556:	4ED0		JMP	(A0)
000558:	4CDF	0300	MOVEM. L	(A7)+, A0/A1
00055C:	48E7	1800	MOVEM. L	D3/D4, -(A7)
000560:	3019		MOVE. W	(A1)+, D0
000562:	3219		MOVE. W	(A1)+, D1
000564:	3419		MOVE. W	(A1)+, D2
000566:	3619		MOVE. W	(A1)+, D3
000568:	3819		MOVE. W	(A1)+, D4
00056A:	2F07		MOVE. L	D7, -(A7)
00056C:	3E3C	0052	MOVE. W	#\$0052, D7
000570:	4E45		TRAP	#\$5
000572:	2E1F		MOVE. L	(A7)+, D7
000574:	4CDF	0018	MOVEM. L	(A7)+, D3/D4
000578:	4ED0		JMP	(A0)
00057A:	226F	0008	MOVE. L	\$0008(A7), A1
00057E:	48E7	1800	MOVEM. L	D3/D4, -(A7)
000582:	3019		MOVE. W	(A1)+, D0
000584:	3219		MOVE. W	(A1)+, D1
000586:	3419		MOVE. W	(A1)+, D2
000588:	3619		MOVE. W	(A1)+, D3
00058A:	3819		MOVE. W	(A1)+, D4
00058C:	2F07		MOVE. L	D7, -(A7)
00058E:	3E3C	0054	MOVE. W	#\$0054, D7
000592:	4E45		TRAP	#\$5
000594:	2E1F		MOVE. L	(A7)+, D7
000596:	4CDF	0018	MOVEM. L	(A7)+, D3/D4
00059A:	4CDF	0300	MOVEM. L	(A7)+, A0/A1
00059E:	2280		MOVE. L	D0, (A1)
0005A0:	584F		ADDQ. W	#\$4, A7