

# Contents

## Figures and tables / vi

### **Preface / ix**

About this note / ix

Supplemental reference documents / ix

### **1 Introduction / 1**

Features / 2

Compatibility / 5

Floppy disks / 5

Hard disks / 5

Memory / 5

New ADB implementation / 6

New SCSI and SCC implementation / 6

New sound input/output hardware / 6

No on-board mathematics coprocessor (FPU) / 6

Color compatibility / 7

### **2 Address Mapping / 9**

Address space / 10

Programmable memory management / 10

The memory map / 10

### **3 The Memory Interface / 15**

RAM interface / 16

Use of RAM by the video / 18

DRAM requirements and refresh / 19

ROM interface / 21

## **4 The Video Interface / 23**

On-board video / 24

Video cables / 31

## **5 Input/Output Interfaces / 35**

SCC and SCSI interfaces / 37

SCC interface / 37

SCSI interface / 38

Floppy disk interface / 39

Versatile Interface Adapter (VIA) interface / 40

Sound interface / 41

Sound output / 41

Sound input / 41

ADB microcontroller / 42

ADB interface / 42

Real-time clock and parameter RAM / 43

Power control / 43

Soft power control / 43

Power-on reset / 44

Keyboard reset and NMI / 44

Network booting / 44

Programmable wakeup / 45

## **6 Expansion Interface / 47**

Processor-direct expansion interface / 48

Physical implementation of the 68030 Direct Slot adaptor kit / 48

External connections for the PDS expansion card / 49

Design considerations / 52

Electrical implementation of a PDS expansion card / 56

RAM access from a PDS expansion card / 63

NuBus expansion interface / 68

Physical implementation of the NuBus adaptor kit / 68

Electrical implementation of a NuBus expansion card / 69

**7      Software Overview / 73**

The Macintosh IIsi ROM / 74

System software / 74

## **8      Sound Input / 75**

High-level user interface / 76

    Default sound input hardware / 76

    Adding and deleting alert sounds / 77

    Cut, Copy, and Paste / 77

Sound input routines / 77

# Figures and tables

## **1 Introduction / 1**

Figure 1-1 Block diagram of the Macintosh IIsi computer / 4

## **2 Address Mapping / 9**

Figure 2-1 The physical memory maps / 11

Figure 2-2 24- and 32-bit address spaces / 13

Table 2-1 24-bit-to-32-bit mapping mode / 12

## **3 The Memory Interface / 15**

Figure 3-1 RAM configurations / 17

Figure 3-2 RAM and video block diagram / 19

Figure 3-3 RAM SIMM diagram / 20

Table 3-1 DRAM access time requirements / 19

Table 3-2 8-bit DRAM SIMM pinout / 20

Table 3-3 64-pin ROM SIMM pinout / 22

## **4 The Video Interface / 23**

Figure 4-1 Video timing / 25

Figure 4-2 Video signal sync timing / 27

Figure 4-3 Video signal timing for the Apple 13-inch RGB and  
12-inch B & W monitors / 28

Figure 4-4 Video signal timing for the Apple 15-inch B & W portrait  
monitor / 29

Figure 4-5 Video signal timing for the Apple 12-inch RGB monitor. / 30

Figure 4-6 DB-15 video connector / the Macintosh IIsi computer 31

Figure 4-7 DB-15 video connector on the monitor / 31

Figure 4-8 D-25 video connector on the monitor / 31

Table 4-1 Monitor ID values / 24

Table 4-2 RBV signal descriptions / 26

Table 4-3 Macintosh IIsi video connector and monitor cable  
pinouts / 32

Table 4-4 Apple 15-inch portrait monitor cable connections / 33

## **5 Input/Output Interfaces / 35**

Figure 5-1 Macintosh IIsi computer input/output address space / 36

- Table 5-1 Serial port pinouts / 37  
Table 5-2 Pinouts for internal and external SCSI connectors / 38  
Table 5-3 Pinout for internal floppy disk connector / 39  
Table 5-4 Pinout for external DB-19 floppy disk connector / 40  
Table 5-5 ADB connector pinout / 42

## **6 Expansion Interface / 47**

- Figure 6-1 Installing a PDS card and adaptor on the Macintosh IIsi main logic board / 49  
Figure 6-2 Connector card design guide / 50  
Figure 6-3 Connector card mounting requirements / 51  
Figure 6-4 Smallest allowable PDS expansion card / 53  
Figure 6-5 Largest allowable PDS expansion card / 54  
Figure 6-6 Maximum allowable component heights for PDS expansion card / 55  
Figure 6-7 Macintosh IIsi 68030 Direct Slot expansion connector pinout / 57  
Figure 6-8 RAM burst write timing / 64  
Figure 6-9 RAM random write timing / 65  
Figure 6-10 RAM burst read timing / 66  
Figure 6-11 RAM random read timing / 67  
Figure 6-12 Installing a NuBus card and adaptor on the Macintosh IIsi main logic board / 69
- Table 6-1 Macintosh IIsi 68030 Direct Slot expansion connector signals / 58  
Table 6-2 Macintosh IIsi 68030 Direct Slot signals, loading or driving limits / 62  
Table 6-3 NuBus connector pin assignments / 70  
Table 6-4 NuBus signal descriptions / 71

