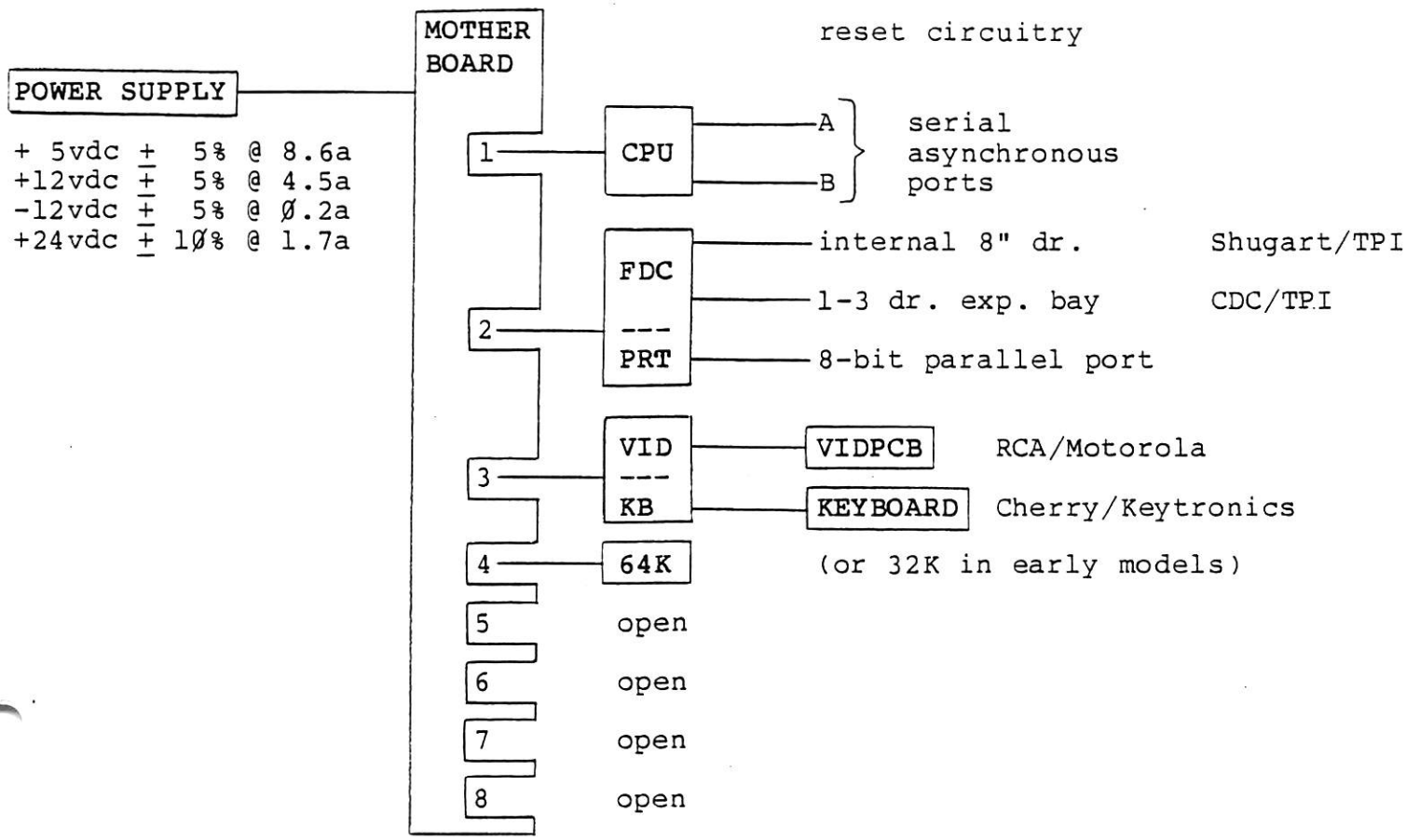
# INTRODUCTION
# MODEL II BLOCKS

## STANDARD CONFIGURATION



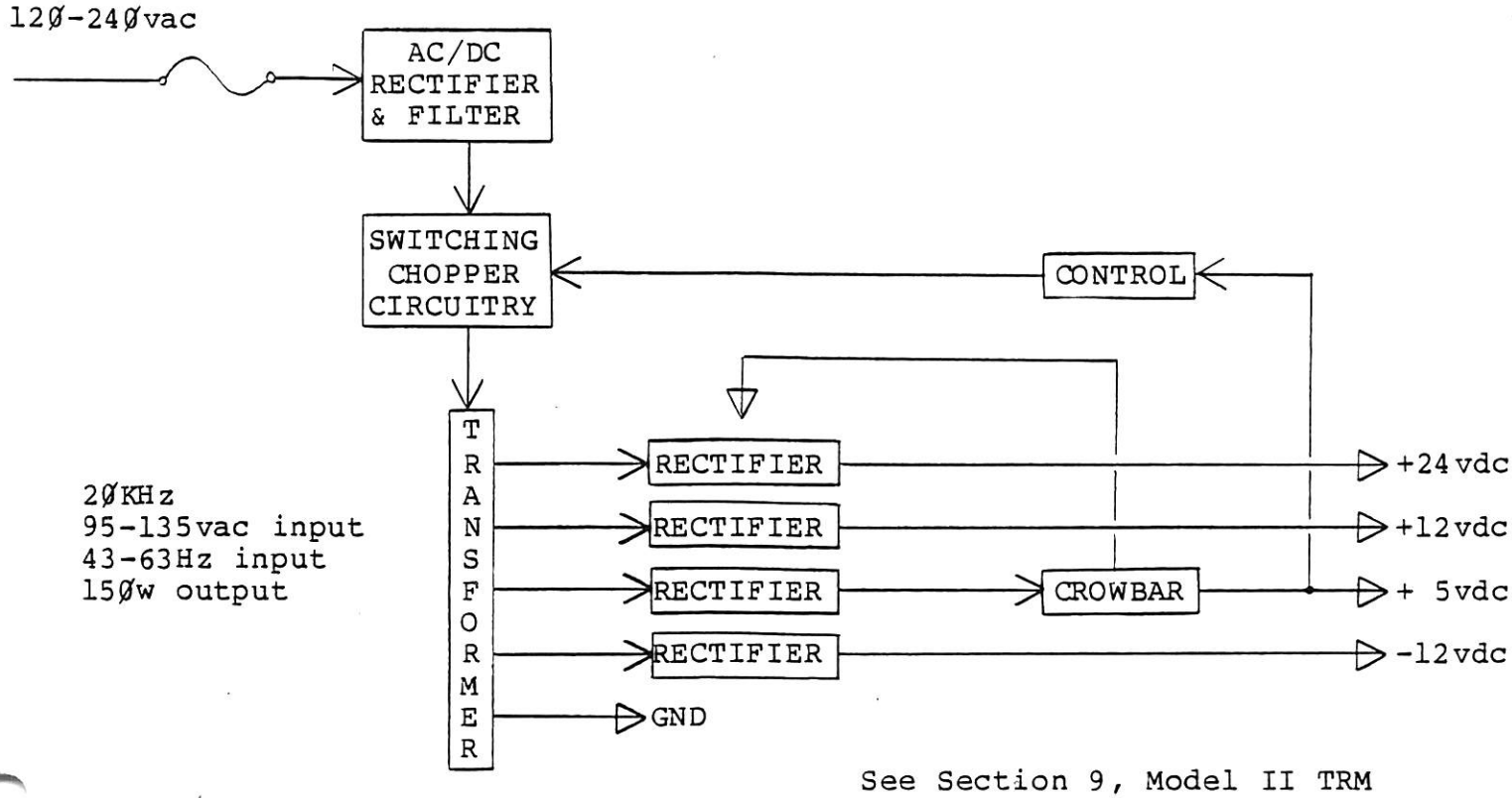

## BOARD ORDER WITH OPTIONAL ADD-ON CONFIGURATIONS

| | Characteristics | Modifications | Versions |
|---|---|---|---|
| 1. CPU | Z8ØA/4MHz, Boot ROM | Hard Disk, Bisynch | Rev. A-D |
| 2. FDC | FM/MFM, pre-comp. | Rev. A/B, sat. bd. | Rev. A-D |
| 3. HARD DISK | 8 Meg or 12 Meg | | |
| 4. ARCNET | 2-255 Machines | | |
| 5. VID/KB | 15 MHz Bandwidth | | |
| 6. HI-RES | 64Ø x 24Ø | | |
| 7. 64K | | 7a. 32K 7b. 32K add-on | |
| 8. 64K | Visicalc only | jumpers | |
| 9. 144K | Arcnet only | | |
| 1Ø. 68ØØØ CPU | 6MHz | | |
| 11. 128/256K | 68ØØØ RAM | jumpers | |
| 12. 384/512K | 68ØØØ RAM | jumpers | |

Note: not all optional add-ons can be configured in the Model II together

# MODEL II
# POWER SUPPLIES

## LOCK DIAGRAM




See Section 9, Model II TRM

150 watt supplies

## SPECIFICATIONS OF 4 TYPES

| NP STOCK NO. | | AXX-6ØØ3 | | AXX-6ØØ8 | AXX-6ØØ9 | |
|---|---|---|---|---|---|---|
| PART NO. | | 8Ø (big black box) | 81 (no black box) | 81A | 82 (caps standing up) | |
| + 5vdc ± 5% | Note 1 | 8.6a | 8.6a | 13.6a | 13.4a | 1.Øa |
| +12vdc ± 5% | Note 2 | 4.5a | 4.5a | 2.5a | 2.5a | |
| -12vdc ± 5% | Note 3 | Ø.2a | Ø.2a | Ø.2a | Ø.2a | 1.5a |
| +24vdc ±1Ø% | Note 4 | 1.7a | 1.7a | 1.7a | 1.7a | |
| FUSES | | 1 | 1/3 | 1/3 | 1/3 | |
| OTHER | | | | TRIM POT | | |
| NUMBER OF MODEL II BOARDS | | 4 | 4 | 5 | 6-8 | |

WARNING: Never run unloaded, since they can then go into dangerous oscillation.

Note 1: Used by TTL throughout Model II
Note 2: Used by RS232C, VCO (old style FDC), RAM, CRT
Note 3: Used by RS232C, VCO (old style FDC), RAM, discrete (not LSI) disk controller board
Note 4: Used by disk driver motors and head load solenoid

# MODEL II/16/12/16B
# DISK OPERATING SYSTEMS

| Version | | Issued For | Upward Compatability | Characteristics |
|---|---|---|---|---|
| TRSDOS | 1.1<br>1.2 | The first system for early RS application packages | XFERSYS to 2.Ø except ML prog's using DOS routines directly | Single Directory<br>No keyahead<br>Slow backup |
| TRSDOS | 2.Ø | Improvement over 1.2 for early packages and for new ML programs | All 1.2 SVC's honored 1.2 data files transferable. Different Directory structure | Alternate Dir.<br>Keyahead<br>Better backup<br>Bigger LIB |
| TRSDOS | 1.2a | Software "fix" to an Ø1-FDC problem | | |
| TRSDOS | 2.Øa | | | |
| TRSDOS | 2.Øb | 2.Øa for Thinlines | All 2.Øa packages | Single-sided |
| | | Versions 1.2 - 2.Øb have 96 file maximum directory, use 26 sectors/Tk (25 user + 1 system), 77 Tracks (Ø-76) with Ø as boot in FM, 1-76 in MFM, Ø.5 MByte storage, pre-comp at Track 44, retry R/W on disk error, use dynamic file allocation (pre-settable) at 5 Sectors per Granule, support both FLR and VLR files | | |
| TRSDOS | 4.Ø | Double-sided Thinline and Hard Disk DOS (Will also manage single-sided floppies in Thinlines) | 2.Ø SVC's honored and expanded. 2.Ø data files transferable, most application packages FCOPY'able | Has defects.<br>Not to be used |
| TRSDOS | 4.1 | Correction of problems in 4.Ø. Packages should be put on 4.2 | | |
| TRSDOS | 4.2 | Improved version of 4.1 for better disk I/O<br>additional 16K mem above 64K | Presently the basis for all RS software Cannot directly R/W with 1.2-2.Øb. FCOPY | Thinlines and 8/12M HD |
| TRSDOS | 4.2.5 | Special version for use with WD-1Ø1Ø | | |
| TRSDOS | 4.2.6 | Special version for Hard Drives with >256 Cylinders. Limited No. | | |
| TRSDOS | 4.3 | Special version for use in ARCNET systems. Not considered an upgrade from 4.2 | | |
| TRSDOS | 4.3.11 | Now available - may use 15 Meg HD's on ARCNET | | |
| TRSDOS | 16 | Operating system for the 68ØØØ CPU: on diskette with TRSDOS 4.2 | | |

4.x versions format single- and double-sided floppies at 32 Sectors/Tk. Single-sided still uses 77 Tracks (Ø-76), Ø.622 MBytes storage. Double-sided uses 154 Tracks (Ø-153), 1.25MBytes storage. Track Ø is boot for both in FM, 1-76 or 1-153 in FM, precomp at level of Track 44, retry R/W on disk error, use dynamic file allocation with single-sector allocation, support both FLR and VLR.

4.x versions format Hard Disks at 17-512 Byte Sectors/Tk. 8M HD uses 256 Cylinders, 4 Heads, 1Ø24 Tracks (8.91MB). 12M HD uses 23Ø Cylinders, 6 Heads, 138Ø Tracks (12.Ø1MB). 15M HD uses 3Ø6 Cylinders, 6 Heads, 1836 Tracks (15.98MB) MFM, precomp, dynamic file allocation single-sector.

CP/M - 3.0 Hardware mods.

XENIX requires 256 K

9 versions of boot ROM
all upward compatible

# INTRODUCTION
# MODEL II/16 POWER UP SEQUENCE AND SELF-DIAGNOSIS

1. On power up, before the "Insert Diskette" message, the Model II:

   .switches BOOT ROM in, addressed as the lower 2K of memory

   .initializes stack at 28ØØH, enables vidram, disables RTC

   .resets DMA, 5 times disables CTC, PIO, resets SIO

   F800-FFF video ram .fills video white (AØ) in 4Ø character mode with a block move

   .initializes CRTC synchronization, cursor (now flashing)

   .does a ROM checksum to test ROM integrity

   .checks main and alternate Z8ØA registers except IR, IX, IY, SP, PC

   .checks lower RAM, 1ØØØH - 7FFFH

   .flushes the keyboard buffer (skips if not ready)

   .looks for HDC, restores all HD's to TkØ

   .programs FDC

   .displays "Insert Diskette" message if no HD, else boot from HD

   .loop resets FDC until diskette is in  2 index pulses - drive closed switch signal => then boots.

2. After insertion of the diskette, the Model II:

   .checks the door close switch

   .clears the screen, seeks TkØ, sets up to read Sector 1, checks FDC

   .checks format of Sector 1, loads at 1ØØØH; loads diagnostic routine from next Sectors at 14ØØH, calls diagnostics

   .checks step direction and step pulse, checks Track Ø, does a head load and disk read, checks high memory (8ØØØH-FFFFH), etc.

   .jumps to bootstrap at 1ØØØH. ROM is now done.

   .bootstrap code now starts process of loading TRSDOS into base page at ØØØØH, and loads the diskette DIRECTORY.

   .TRSDOS displays the Tandy logo, the license notice, and stops for operator input at the date stamp.

TRSDOS @ about 24 K

## INTRODUCTION
## MODEL II BOOT ERROR CODES

.DC - FDC error

.DØ - Drive Ø not ready

.SC - CRC - Bad data or bad diskette

.TK - Record not found on bootstrap track

.LD - Lost data during read

.RS - Non-Radio Shack Diskette

.CK - ROM checksum error

.Z8 - Z8ØA error

.MF - RAM fault, lower 32K or .LM

.PI - PIO chip failure

.DM - DMA chip failure

.MB - RAM fault

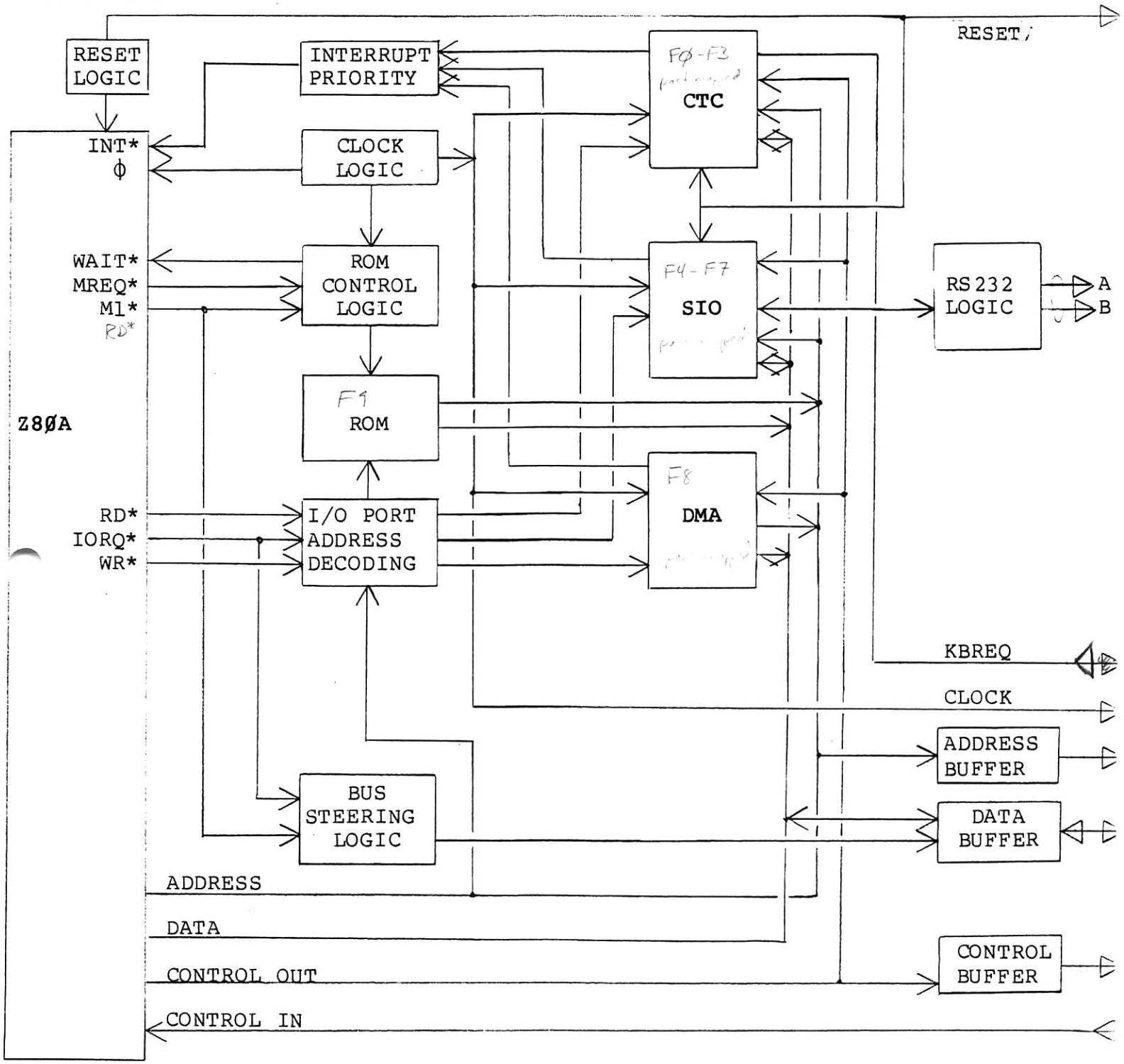
.MH - RAM fault, upper 32K

.SI - SIO chip failure

.TM - turn on 8 meg or hit break ~~left~~ key (time out)

MODEL II
CENTRAL PROCESSING UNIT

LOCK DIAGRAM



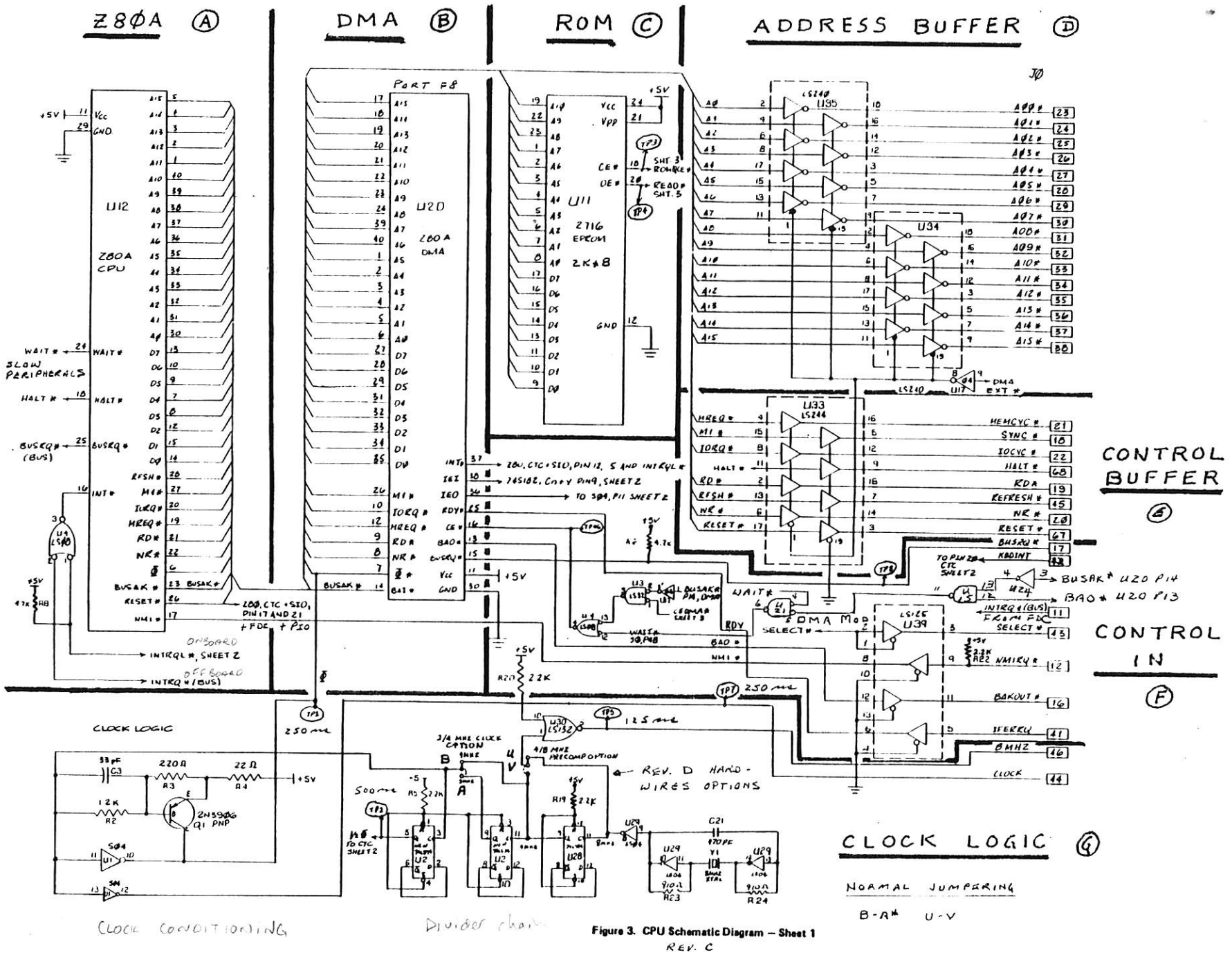



Figure 3. CPU Schematic Diagram — Sheet 1
REV. C

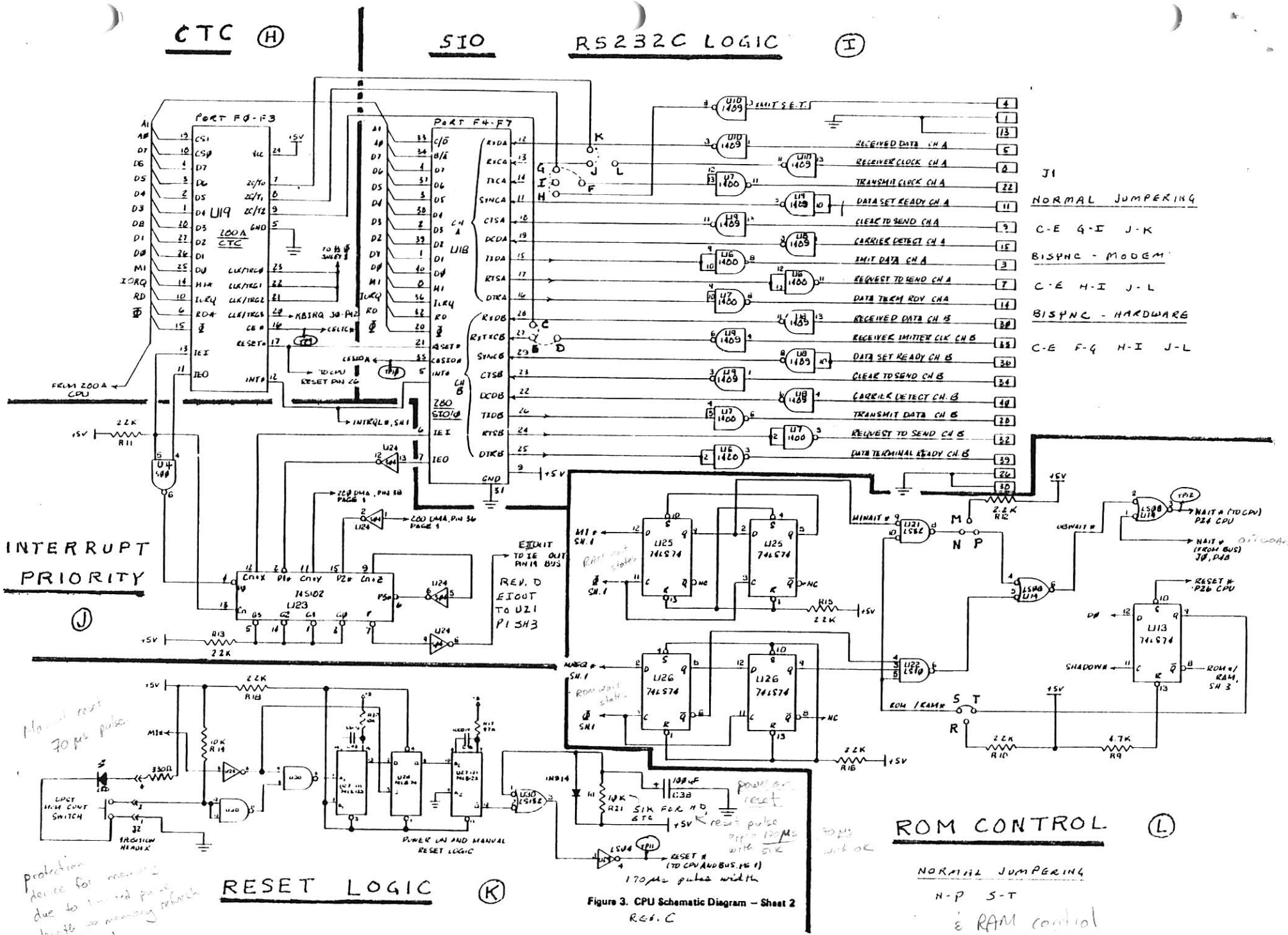



Figure 3. CPU Schematic Diagram – Sheet 2

R6.C

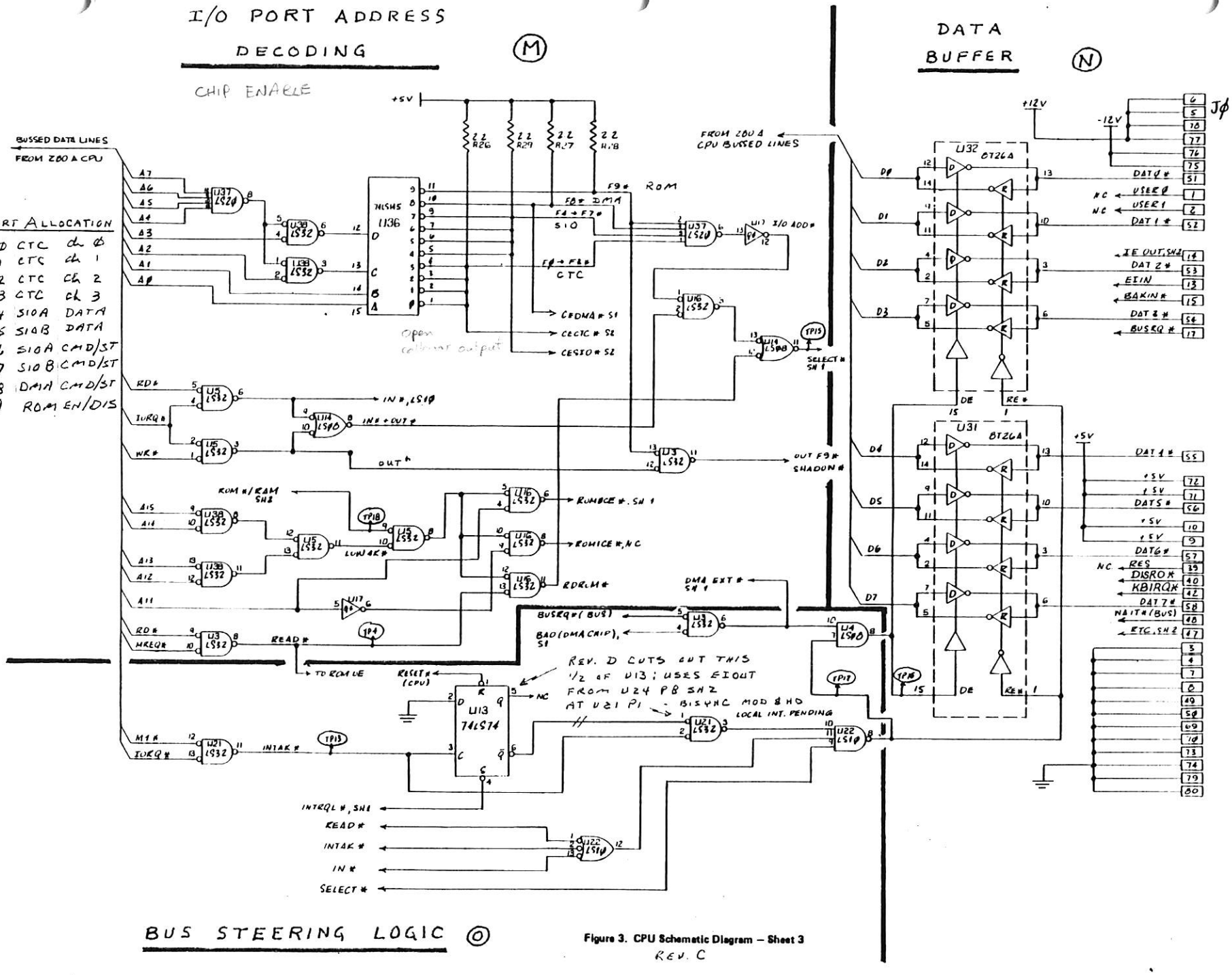
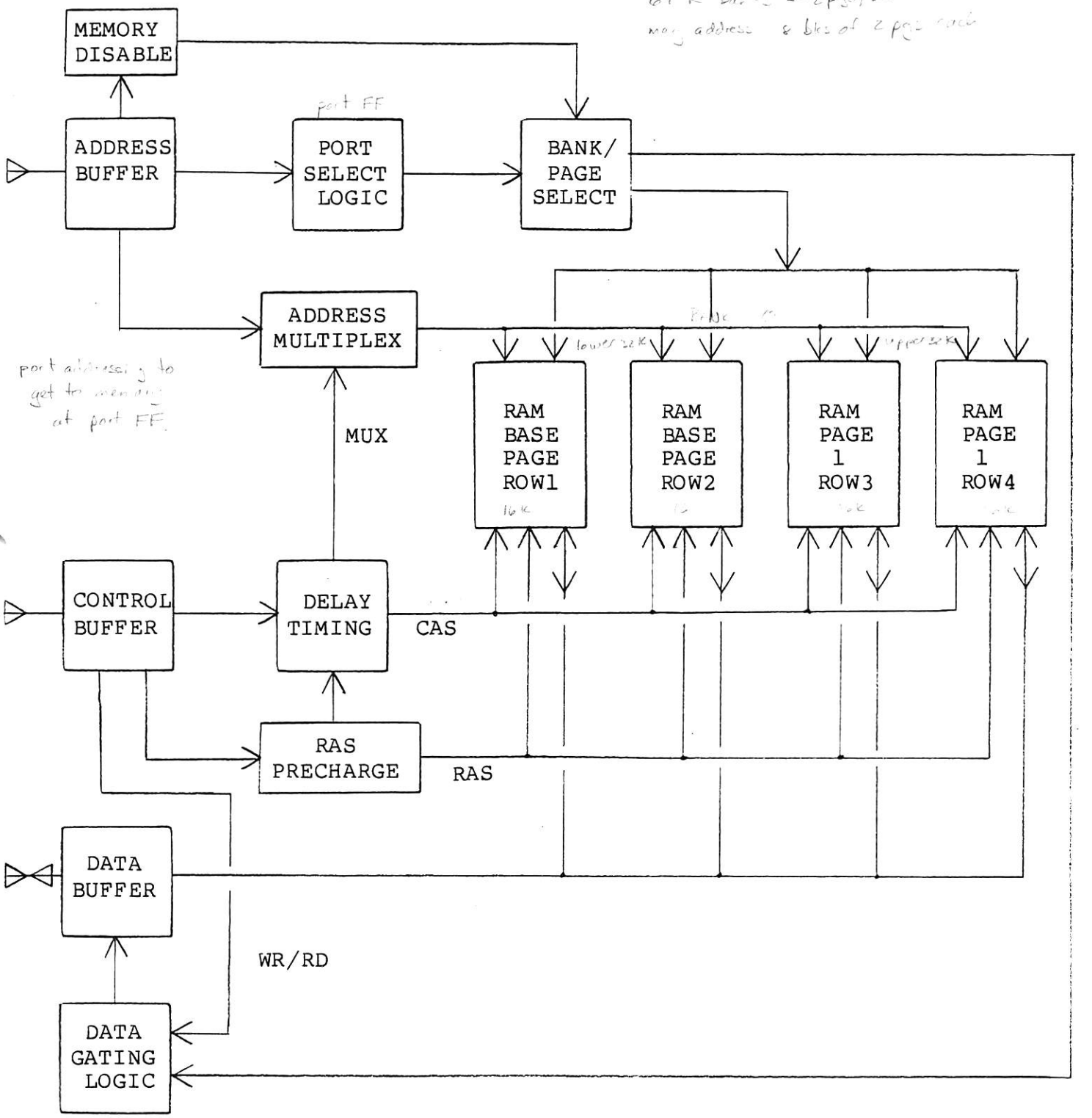



**Figure 3. CPU Schematic Diagram – Sheet 3**

REV. C

# MODEL II
# 64K MEMORY BOARD

## BLOCK DIAGRAM



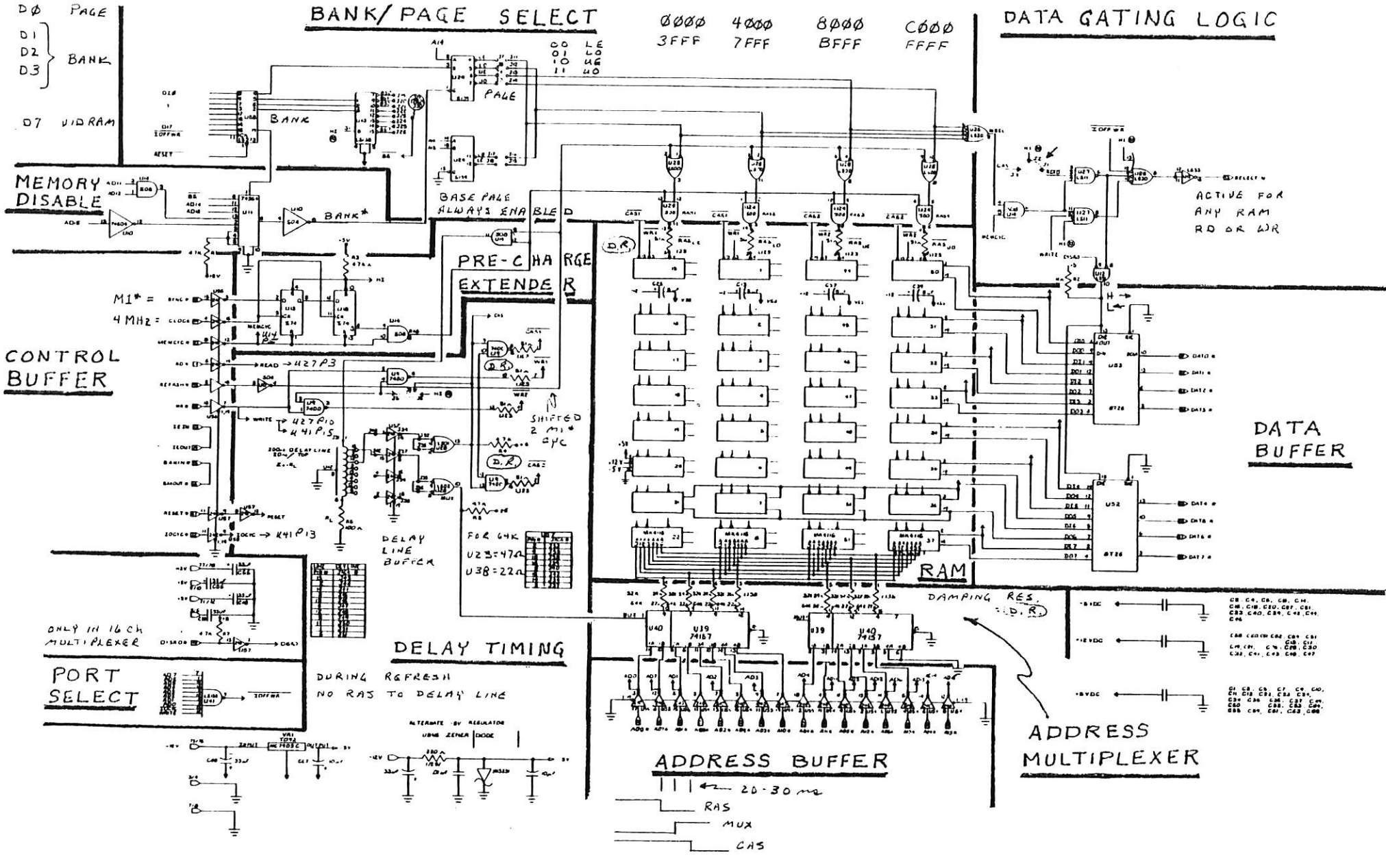



Figure 5. Memory Board Schematic Diagram