Kort beskrivelse af

μ- Basic   hardware.

RCMIC

General Description

The RCMIC is a computer system containing a powerful microprocessor, memory and peripheral interfaces, combined with an operating system specially designed to control this computer system. A full alpha-numeric keyboard is supplied and to complete the system, the user needs to add a 'domestic TV' for a monitor. The user can expand the system with the following backing storage media: standard cassette recorder or floppy disk drive.

SYSTEM CHARACTERISTICS:

A " x " (dubbelt eurocard) card carries:

1. Z 80 A microprocessor.
2. 32 kb Dynamic RAM memory (acc. 480ns).
3. place for up to 16 kb E-PROM memory.
4. 2 V24- interfaces (asynchronous communication).
5. Parallel input port for keyboard.
6. Parallel 8 bits output port.
7. Floppy disk controller (for mini / standard / dual density drives).
8. Built-in video generator , able to show the contents of a piece of CPU ram memory on a video monitor / domestic TV.
9. Standard cassette recorder interface.
10. Optional arithmetic processor.

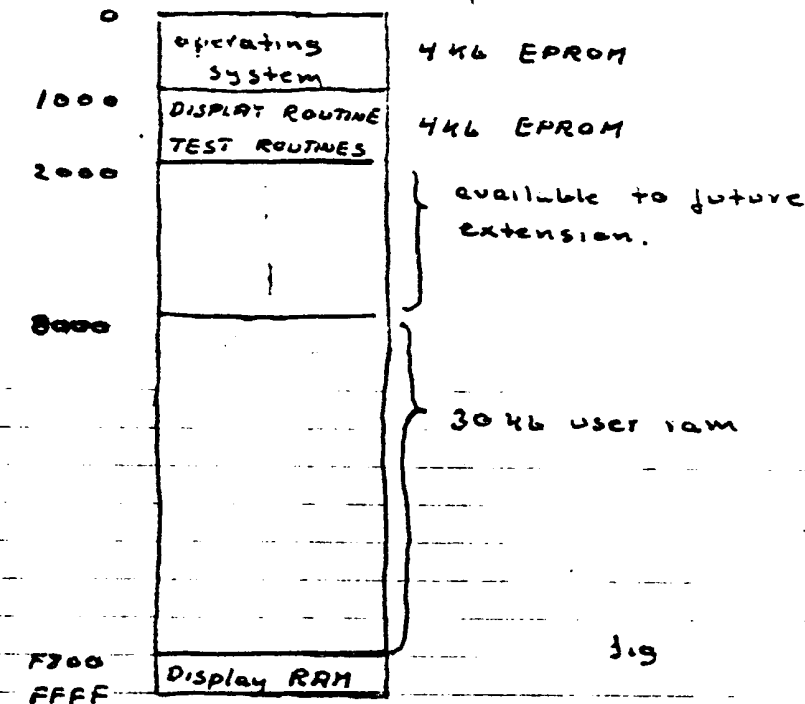ALL CPU busses are carried to an edge connector for future system expansion.

In the following sections the above mentioned logic modules are specified in details.

CPU

Standard Z80A (4 MHZ version) capable of executing 158 instructions including all 8080 code.

MEMORY

addresses (HEX)

0	
	Operating System — 4 kb EPROM
1000	DISPLAY ROUTINE / TEST ROUTINES — 4 kb EPROM
2000	available to future extension.
8000	30 kb user ram
F700	Display RAM
FFFF	

fig   Memory layout.

The split up of memory in PROM / RAM is shown on the figure.

V.24 interfaces

Two identical communication channels following the electrical - logical specifications in the recommendation V24.

The communication form can be either asynchronous or synchronous. If synchronous transmission is selected the baud rate is determined by the external supplied clock frequency. In asynchronous mode hardware straps selects between 16 baud rates between 50 bps and 19200 bps.

Floppy disk Controller

This circuit is built around an LSI Floppy Disk Controller (μPD 765), which contain the circuitry and control functions for interfacing the processor to max 4 Floppy Disk Drives. It is capable of supporting either IBM 3740 single density format (FM), or IBM system 34 Double density format (MFM) including double side recording. The controller supports the following drive types:

Mini Floppy single density ~~capacity 35~~		75 Kb.
- - dual -		150 Kb.
Standard Floppy single density		250 Kb.
- - dual -		500 Kb.

The data transfer between Floppy Controller and memory is executed during a DMA port without taking CPU capacity.

access times :

	mini floppy	standard floppy	~~altered~~
no. of tracks	35	77	77
no. of sector /track	13 (128 bytes)	26 (128 b.)	5 (128 b.)
step rate time		8 ms	8 ms
average access time			

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access times :

	mini floppy	standard floppy	
no. of tracks	35	77	77
no. of sector /track	18 (128 bytes)	26 (128 b.)	26 (128 b.)
step rate time		8 ms	8 ms
average access time			

CRT Controller.

The CRT Controller simulates a standard TTY-compatible display, using 2Kbytes of the CPU memory area (addr. F800 - FFFF). A video monitor or a standard domestic TV may be used as picture screen.

A hardware strap select between two screen formats:
1. 25 × 80 chars.
2. 20 × 60 chars

Solution 2. is used when a domestic TV set is selected.

Character format : 5 × 7 character contained within a 7 × 10 matrix, 9th line cursor position, blinking underline cursor.

Character recognized:

Displayable Chars :   64 ASCII uppercase alphanumeric
                    + 32   —   lowercase   —
                    + 32 ~~char in semigraf mode~~.
                           grafic picture elements.

control functions : Line feed
                     Carriage Return
                     Back Space
                     Cursor up
                       —   down
                       —   left
                       —   right
                     Home
                     Clear screen
                     Erase to End of Screen
   Erase line
                     Roll up feature

Visual attributes : high intensity
                         blinking field
                         inverse video

Screen Refresh Rate : 50 HZ nominal (locked to the AC-power frequency by a phase locked loop circuit).

Keyboard interface

This interface consists of 8 data inputs + KEYSTROBE.
Electrical these signals are TTL compatible.
The CPU is interrupted by keystrobe and the current
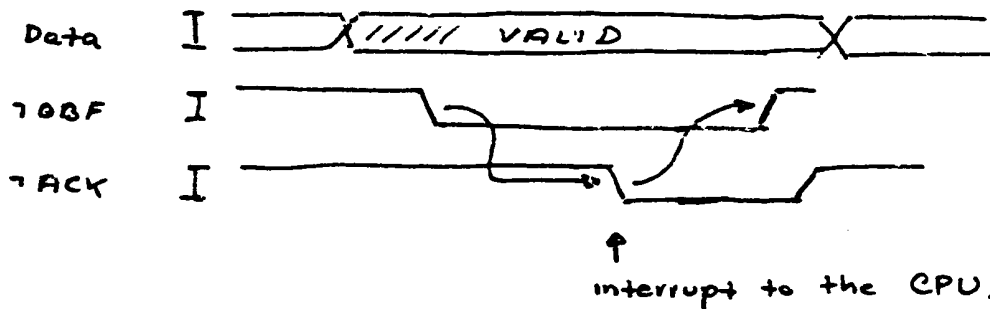keyvalue can be read on the datalines.

OUTPUT interface

```
        RCHIC
              ─────────── 8 DATA ──────────────►
              ─────────── ⌐ OBF ─────────►
              ◄────────── ⌐ ACK ──────────
```
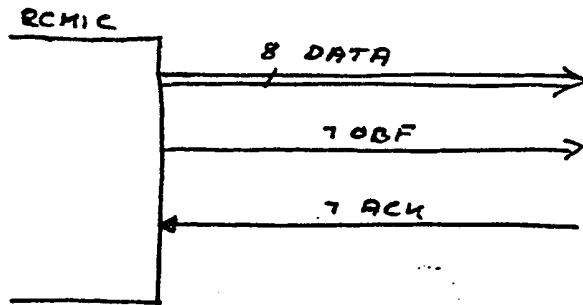
This interface consists of the following TTL compatible
signals :

    8   Data OUT Line
    1   ⌐ Output Buffer Full   (output strobe).
    1   ⌐ ACKnowledge

⌐ ACK is issued by the external device when the
data is accepted. ⌐ ACK interrupt the CPU.

```
Data    I  ─────────X//////  VALID  X──────────

⌐OBF    I  ─────┐          ┌──┐
                └─────────┘

⌐ACK    I  ─────────┐    ┌──────
                    └────┘
                         ▲
              interrupt to the CPU.
```

Cassette interface

This interface can be used to connect a standard audio cassette recorder to the RCMIC system.
The information is stored on the tape in accordance to the "Kansas City standard":

```
logic 0  -   4 period of 1200 HZ
  -   1  -   8    -   of 2400 HZ
```

The transfer rate is 300 bps.