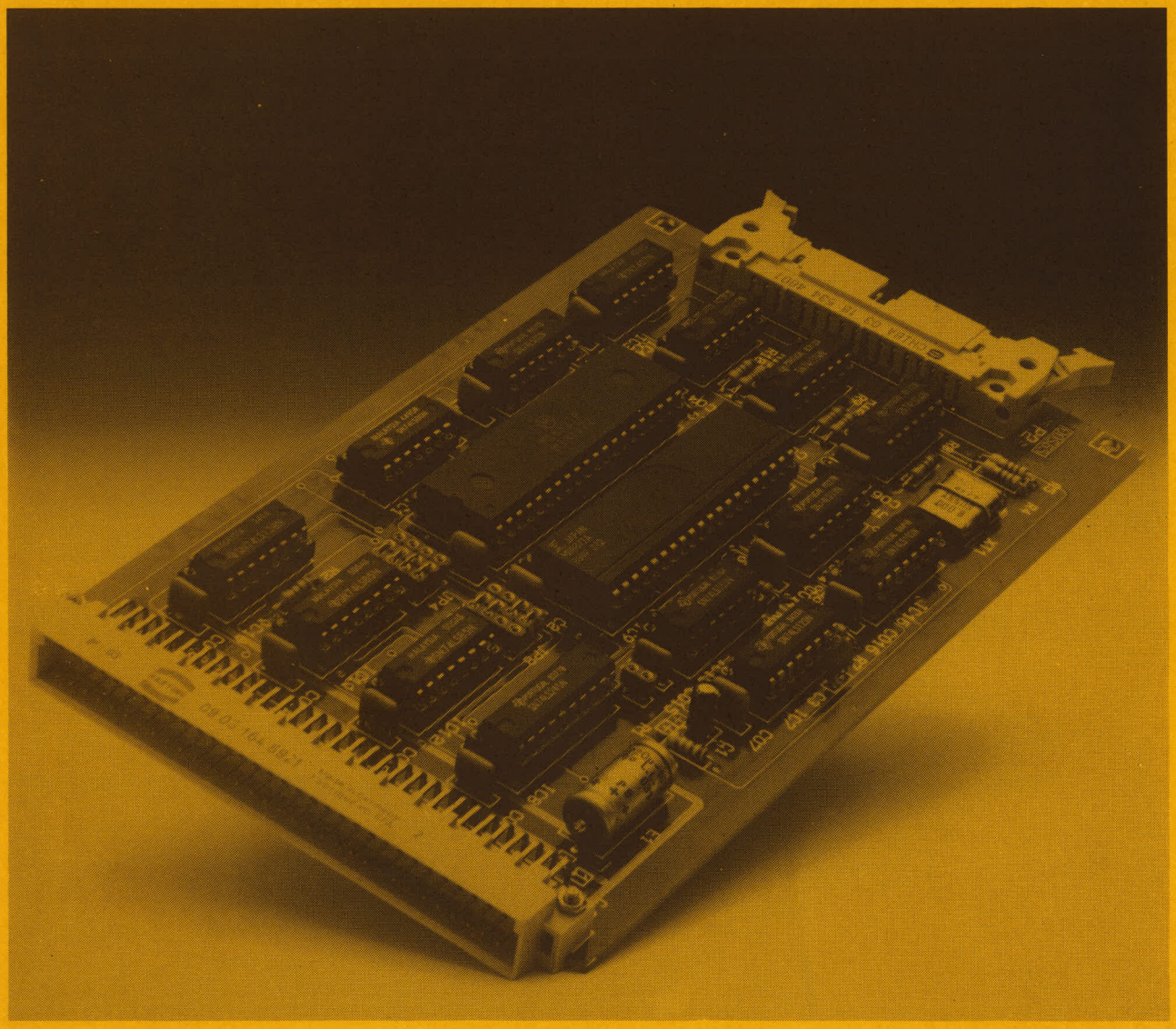
DE 6502 KENNER 47



Tiende Jaargang, Nr. 6
December 1986

DE 6502 KENNER

* DE 6502 KENNERS ** — EEN CLUB VOOR 6XXXX GEBRUIKERS

De vereniging heeft leden in Nederland, Belgie, Duitsland, Frankrijk, Engeland, Denemaarken, Zweden, Spanje, Portugal, Oostenrijk, Finland, Israel, Amerika.
Het doel van de vereniging is: het bevorderen van de kennisuitwisseling tussen gebruikers van 6XXXX-computers, als COMMODORE-64, AMIGA, APPLE II/IIe/IIc/IIGS/III, MACINTOSH, ATARI 600/800XL/512/1024ST, CHE-1, PEARCOM, AIM-65, SYM, PET, BBC, VIC-20, BASIS 108, PROTON-computers, ITT-2020, OSI, ACC 8000, ACORN ELECTRON, SYSTEM 65, PC-100, PALLAS, MINTA, FORMOSA, ORIC-1, STARLIGHT, CV-777, ESTATE III, SBC65/68, KIM, NCS, KEMPAC SYSTEM-4, Elektuur-computers (JUNIOR, en de OCTOPUS), LASER, dus ook 6800, 6809 en 68000-computers.
De kennisuitwisseling wordt o.a. gerealiseerd door 6 maal per jaar DE 6502 KENNER te publiceren, door het houden van landelijke clubbijeenkomsten, door het instandhouden van een cassette-bibliotheek en door het verlenen van paperware-service.

Verschijningsdata
DE 6502 KENNER 1985

derde zaterdag van
februari, april, juni,
augustus, oktober, december.

Bijeenkomsten van de club

derde zaterdag van
januari, maart, mei,
september, november.

Redaktie-adres en informatie over paperware etc.

Willem L. van Pelt
Jacob Jordaensstraat 15
2923 CK Krimpen/IJssel.
Tel.: 01807 - 19881

De vereniging is volledig onafhankelijk, is statutair opgericht en ingeschreven bij de Kamer van Koophandel en Fabrieken voor Hollands Noorderkwartier te Alkmaar, onder nummer 634305.

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	voor 1987: Hfl. 50,=	
	Buiten Europa:	
	voor 1986: Hfl. 109,50 (incl.transfers)	
	voor 1987: Hfl. 114,50 (incl.transfers)	
Advertenties :	Tarieven op aanvraag bij de redaktie.	

** DE 6502 KENNER ** — EEN BLAD VOOR 6XXXX GEBRUIKERS

DE 6502 KENNER is een uitgave van de KIM Gebruikers Club Nederland. Het blad wordt verstrekt aan leden van de club. DE 6502 KENNER wordt van kopij voorzien door leden van de club, bij de opmaak van een publikatie bijgestaan door de redaktie. De inzendingen van programma's dienen voorzien te zijn van kommentaar in de listings en zo mogelijk door een inleiding voorafgegaan. Publikatie van een inzending betekent niet dat de redaktie of het bestuur enige aansprakelijkheid aanvaardt voor de toepassing ervan. De inzendingen kunnen geschieden in assembly-source-listings, in Basic, in Basicode, Forth, Focal, Comal, Pascal, Fortran, Cobol, Logo Elan, etc. etc.
De leden schrijven ook artikelen over de door hen ontwikkelde hardware en/of aanpassingen daarop. Zij schrijven tevens artikelen van algemene aard of reageren op publikaties van andere inzenders.

DE 6502 KENNER IS EEN BLAD VAN EN DOOR DE LEDEN

Micro-ADE Assembler/Disassembler/Editor is een produkt van Micro Ware Ltd., geschreven door Peter Jennings en bestemd voor alle 6502-computers. De KIM Gebruikers Club Ned. heeft de copyrights verworven nadat ons lid Sebo Wolcringh de 4 K KIM-1 versie uitbreidde tot 8 K KIM-1 versie. Adri Hankel paste deze aan voor de JUNIOR. Willem L. van Pelt stelde een nieuwe 8 K source-listing voor de JUNIOR samen.
De implementatie op andere systemen dan de KIM-1 en JUNIOR kan eenvoudig gebeuren door het aanpassen van de I/O-adressen, welke in de source-listing gemakkelijk te vinden zijn

FATE Format-lister/cond. Assembler/Tape-utilities/Editor is de door ons lid Rob Banen geschreven source-listing van een 12 K universeel systeem voor de JUNIOR-computer aan de hand van het universele disk operating system van de fa. Proton Electronics te Naarden.
FATE wordt beschikbaar gesteld met toestemming van Proton.

DOS65 V2.01 is the new system of our club, build with Elektor's CPU, VDU, RAM-cards and our own professional Floppy-Disk-Controllercard for SS, DS, 40 or 80 tracks and a max. of 720 Kbytes capacity. For use with 6502 or 65C02.
For more information, write to E.J.M. Visschedijk
Dillenlaan 11
NL-7641 CX WIERDEN
The new DOS65 V2.01 is hardware compatible with Elektor's OCTOPUS/EC65 computer, except the controllercard.

In de edities van DE 6502 KENNER worden regelmatig mededelingen gedaan over de door de club georganiseerde bijeenkomsten. Ook worden bestuurlijke mededelingen gedaan, naast informaties over hetgeen in de handel te koop is. Leden die iets te koop hebben of iets zoeken kunnen dit in de edities van DE 6502 KENNER bekend maken. Ook worden brieven aan de redaktie gepubliceerd, evenals specifieke vragen van leden. De edities worden samengesteld op basis van een groot aantal prioriteiten, welke door een redaktievergadering worden gemanteerd. Deze vergadering bestaat uit de vaste medewerkers zoals in de colofon vermeld. Het aantal inzendingen is groter dan in een enkele editie van minimaal 48 pagina's is te verwerken. Hierdoor kan het voorkomen dat een inzending eerst na enige tijd kan worden gepubliceerd.

05496-76764

DE 6502 KENNER

De 6502 KENNER is published by the KIM Users Club The Netherlands.

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DE 6502 KENNER appears in Febr, Apr, May, July, Sept, Oct, and Dec.

On frontpage is the DOS65 controllercard, developed by our member Ad Brouwer.
CAD/CAM: E. Visschedijk.
Coop. : A. Hankel
Photo : Fr. Visschedijk.

The redaktion is not resposible for the contents of the articles, programs in the issues. The articles to be published have to be written by the sender.

CONTENTS OF DE 6502 KENNER NO. 47, DECEMBER 1986 VOL. 10/NO. 6

Print your articles, programs etc. with a new ribbon and use 8 lines/inch by max. 73 lines/page.
Write your articles, programs etc. in English unless you need help to do it.

Send the names and addresses of 6xxxx-users you know in your own country or you found in magazines to the editorial office. We will send information to these computerists and try to make them joining our club.

Send the names and addresses of the computer magazines in your country to the editorial office. We will send the magazines informations about our club to give attention to it and to get members in your own area.

PLEASE PAY YOUR 1987 SUBSCRIPTION (Hfl. 59,50)
HAVE A NICE YEAR OF HOBBYCOMPUTING IN 1987.

UITNODIGING LANDELIJKE BIJEENKOMST ASSENDELFT/KROMMENIE

Datum : zaterdag 17 januari 1987 ENTREE: Hfl. 10,=
Lokatie : nieuwe kantine FORBO-Krommenie
Industrieweg 12 te Assendelft. Tel: 075 - 291911

Auto : komende uit de richting Amsterdam

Coentunnel helemaal afrijden. Aan het eind rechtsaf (water aan linkerzijde). Dan 1e afslag rechts richting Uitgeest-Alkmaar. Doorrijden tot stoplichten. Linksaf spoorbaan over. Na 75 meter linksaf = Industrieweg. Links aanhoudende komt men op het FORBO-Krommenie terrein.

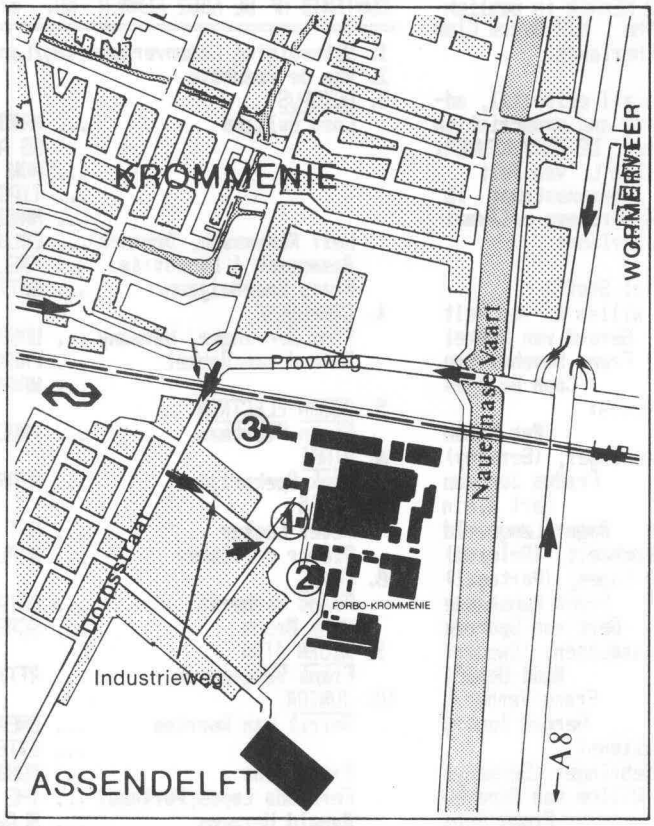
komende uit de richting Alkmaar

Snelweg Alkmaar-Haarlem. Afslag Uitgeest/Zaandam. Bij kruising linksaf. Bij 3e stoplichten rechtsaf spoorbomen over. Na 75 meter linksaf = Industrieweg Links aanhoudende komt men op het FORBO-Krommenie terrein.

Trein: Station Krommenie-Assendelft. Rechtsaf tot over spoorbomen. Na 75 meter linksaf = Industrieweg. Links aanhoudende komt men op het FORBO-Krommenie terrein.

PROGRAMMA:

09.30 - Zaal open. Ontvangst met koffie.
10.00 - Opening door voorzitter en verwelkoming door gastheer Co Filmer. Diashow FORBO-Krommenie.
10.30 - Behandeling Jaarverslag 1986.
10.45 - Nico de Vries behandelt het onderwerp opvoeren van snelheid van 1 naar 2 Mhz.
11.30 - Koffiepauze
12.00 - Forum
Aansluitend lunchpauze
13.00 - MARKT. Ieder die iets aan te bieden heeft kondigt dit aan.
13.15 - INFORMEEL GEDEELTE.
In dit deel bestaat er volop gelegenheid kennis te maken met de meegebrachte systemen en de gebruikers ervan.
BRENG OOK UW SYSTEEM MEE !!!
VERGEET DAARBIJ NIET EEN AANSLUITSNOER EN VERLENGKABELS.
17.00 - Sluiting.



① **Portier**
Portier
Portier
Gateman
Portero

② **Ontvangstcentrum**
Salle de réception
Empfangsraum
Reception building
Sala de recepcion

③ **Kantoor**
Bureaux
Büros
Offices
Oficinas

④ **Centraal magazijn**
Magasin central
Zentrallager
Central warehouse
Almacén central

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forbo

Technische specificaties Apple IIGS.

- 16-bits microprocessor 65C816
- 256 Kilobyte werkgeheugen (RAM), uitbreidbaar tot 4 Megabyte
- 128 Kilobyte systeemgeheugen (ROM)
- ingebouwde RGB-poort voor 12 inch kleurenbeeldscherm
- ingebouwde poort voor 12 inch monochrome beeldscherm
- vijf grafische modi met maximale resolutie van 640 x 200 beeldpunten en kleurenpalet van 4096 kleuren
- 8 uitbreidingssleuven geschikt voor de standaard Apple II uitbreidingskit
- poort voor 3.5 en 5.25 inch schijfeenheden
- 2 RS422 seriële poorten voor modem, printer of AppleTalk-netwerk
- sound kit van 32 oscillatoren/16 gescheiden kanalen
- audio-aansluiting voor stereo-koptelefoon
- poort voor joystick en handregelaars
- toetsenbord met 89 toetsen en numeriek toetsenblok en cursortoetsen
- aansluitingsmogelijkheden voor de muis aan het toetsenbord
- muis

Redaktioneel.

Het jaar 1986 is weer bijna voorbij. Nog wat feesten, nog wat drinken, en dan begroeten we 1987 met goede voornemens. Uw redakteur is daarin even loyaal als U. Hij neemt zich voor de edities van DE 6502 KENNER nog aantrekkelijker te maken. Het bestuur zal hem daarbij nog een handje helpen, door een daisywheelprinter aan te schaffen. Dat betekent nog niet dat alle pagina's daarmee bedrukt kunnen worden. Leden trachten mijn tijd te sparen door in samenspraak met mij zelf hun pagina's op te maken. Tijd, die hard nodig is voor vele andere nog te ontwikkelen of verder uit te bouwen ideeën. Doordat leden proberen hun eigen pagina's op te maken, doordat - vanwege de kans op fouten - niet alles overgetypt kan, zullen altijd pagina's aanwezig blijven die een ander leesbeeld vertonen, enigszins variërend in kwaliteit.
Uw redakteur neemt zich ook voor, net als in 1986, de informatiedichtheid in de edities nog verder tot onderwerp van zijn zorg te maken, zodat er voor hetzelfde lidmaatschapsgeld (in 1987: fl. 50,= voor europese C.E.P.T.-landen) weer meer kennis wordt aangeboden. Om dat te verwezenlijken moet Uw redakteur meer dan nu al het geval is een beroep op U doen U in te zetten voor het verwerven van die kennis. Niet alleen, zoals nu al door een flink aantal leden gebeurt, mijn en Uw applaus verdienend, door programma's ter publikatie aan te bieden, maar door U op te geven als kontaktpersoon voor Uw gemeente, door Uw modem in te zetten voor het plaatsen van redaktionele berichten in databanken in Uw eigen telefoondistrikt, door namen en adressen door te geven van mensen met een 6xxxx-computer die U kunt vinden in Uw eigen omgeving, de lezersrubrieken van computertijdschriften, door mensen bij U uit te nodigen en Uw ervaringen met onze club door te geven en ons blad te laten zien.
Uw redakteur neemt zich voor, gezien zijn verwachtingen dat het moeilijker zal worden uit de nederlandse dreven nieuwe leden aan te trekken, door te gaan met het aantrekken van nieuwe leden in andere landen. In dit verband moet het mij van het hart dat verzuchtingen over het nederlandse karakter van onze club weliswaar begrijpelijk zijn gezien de geschiedenis van de club, maar dat ook van oudsher voor niemand een lidmaatschap kan worden geweigerd, dus ook niet voor in het buitenland wonenden, op grond van onze statuten, tenzij het gaat om niet natuurlijke personen.
Het is geen eenvoudige zaak de konsekwenties van deze openheid te aanvaarden, d.i. het gebruik van de engelse taal in de edities van DE 6502 KENNER te handhaven. Soms kan dat zelfs heel omvangrijk zijn doordat de buitenlandse leden intensief gebruik maken van deze gelegenheid. De enquête, door het bestuur gehouden, wijst uit dat tegen het gebruik van de engelse taal geen overwegende bezwaren zijn in te brengen. Het dient ook ons doel van elders kennis te verwerven. Ik ben mij ervan bewust dat sommigen moeite hebben met het engels. Daar waar dat tot echte problemen voor hen leidt, laten zij zich met mij in verbinding stellen, dan zoeken we naar wegen om moeilijk leesbare artikelen leesbaar te maken. We zijn een club van mensen die elkaar willen helpen. De enkeling die op dit punt problemen heeft verdient van de leden hulp.
Als ik op die manier van dienst kan zijn wordt 1987 voor ons allemaal een fijn hobbyjaar.

Hardware adjustments for Junior/Octopus with VDU-card for use as a VIDEOTEX-Terminal. (PRESTEL-Standard)

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2611 XH Delft
The Netherlands

tel: 015-136812
vidibus: 400029830

Translated by: Elja van der Veer

Interactive VIDEOTEX is the international name for what is called VIDITEL by the Dutch PTT. In using the Junior/Octopus as a videotex terminal a number of hardware adjustments are necessary additional to a programme. In a next issue the software will be described. Below the hardware adjustments follow.

In using the computer as Videotex-terminal it is necessary that reverse- and mosaic-characters can be presented. This can be realised in at least three ways:

1) Construct the new VDU-card of Pieter Visser (see issue nr. 44) This is the most flexible,though the most expensive, solution.
2) Reprogram the charactergenerator. This is an inexpensive solution, but also quite a job and an EPROM-Programmer must be available
3) Carry out the adjustments as described below. Although this takes some time, it is cheap.

The grafic characters from de standard VDU-card are replaced by the reverse characters, which uses the codes $80-$FF. For this purpose the connection between pen 9 IC18 and pen 4 IC19 must be cut. The latter must be placed at zero, the first one must be connected to pen 12 of N33. The wire-bridge S/T must be removed, and will fall into disuse.
Now the adjustments for reverse characters are completed, and can be tested. (Reverse-codes in de VDU-RAM)

The mosaic characters are to be generated by the codes $00-$1F, because these codes are reserved for controlling characters in ASCII, so they are not used in the VDU-RAM. Each bit of the code that has been set corresponds with a fluorescent block (see fig 1). The block on the right below can be put on by using reverse-characters. If the mosaic code is offered to the character generator, the ROM is disabled, and the hardware of fig 2 is selected. This will then take care of transferring the building information.

Personally I have brared the ROM in a wire-wrap foot onto a small piece of print, on wich the rest of the circuit was build as well. As the ROM-foot has long pins it can be placed completely in the foot of the VDU-card. (Be sure you cut pin20 from the VDU-card to the extention print) The numbers between the signalname and the pen number of an IC is the corresponding pen on the ROM.

note: It is possible that there are little lines visible between normal- and reverse characters . This is caused by the differend Propagation-Delay times of IC17 and IC18, which can result in a spike on the output of N34. Using a Edge-triggered Flip-Flop (74LS109, 74LS74, 74LS175) between the output of N31 and the input of N22 will synchronize the reverse- and building information. The DOT-frequentie is used as clock for the Flip-Flop.

For communication with a Videotex databank a modem is used (See Elektuur sept 1984). Communication between the (own) computer and the modem takes place by means of a serial RS232 interface.
However, as the sending and receiving speeds differ, it is not possible to use the interface on the print of the CPU-card. (Note: this does not hold for modems with a built-in re-speeder.) It is possible with the 6551 used on this print to send with a speed which differs from the receiving speed, but in that case we must offer a receive clock on the RxC line (5). Therefore you can use only part of the interface below. If you don't want to adjust the interface on the CPU-card, or when you use a Junior you have to build a new serial interface.
Therefore, an interface was constructed with the help of the 6850 which has separated RxC and TxC lines. By presented different frequencies it will be possible to work on different speeds.
The frequencies are deduced from IC1 which is transferred to the ACIA IC5 through the multiplexers IC2 and IC3. Establishing the multiplexers is done with the help of IC4. By writing 0-7 in the lower nibble and/or the higher nibble the frequencies can be selected.
By using the scalefactors 16 and 64 most of the current speeds can be moderately realised.(see table)
With the Junior the interface must be built twice because the keyboard must be read as well. This can not be done in the usual way, because as a result of the realtime character of the software the computer must be able to test whether a key was pressed or not.
Notice that if you don't want to change the speed of your keyboard you can directly connect the RxC line of the ACIA for the keyboard to one of the lines of IC1.
For generating the /CS signals the article in Elektuur jan 1984 is referred to.
Also, one may use the circuits published earlier or get into contact with the author.
Take into account, after building the interface, that the ACIA's cannot be reset by a hardware reset. In the reset- or bootroutine this must be done by storing $03 in the controlregisters.

Red.: The author also worked out the suggestion to solve the problem with software following this article.

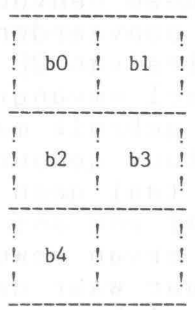
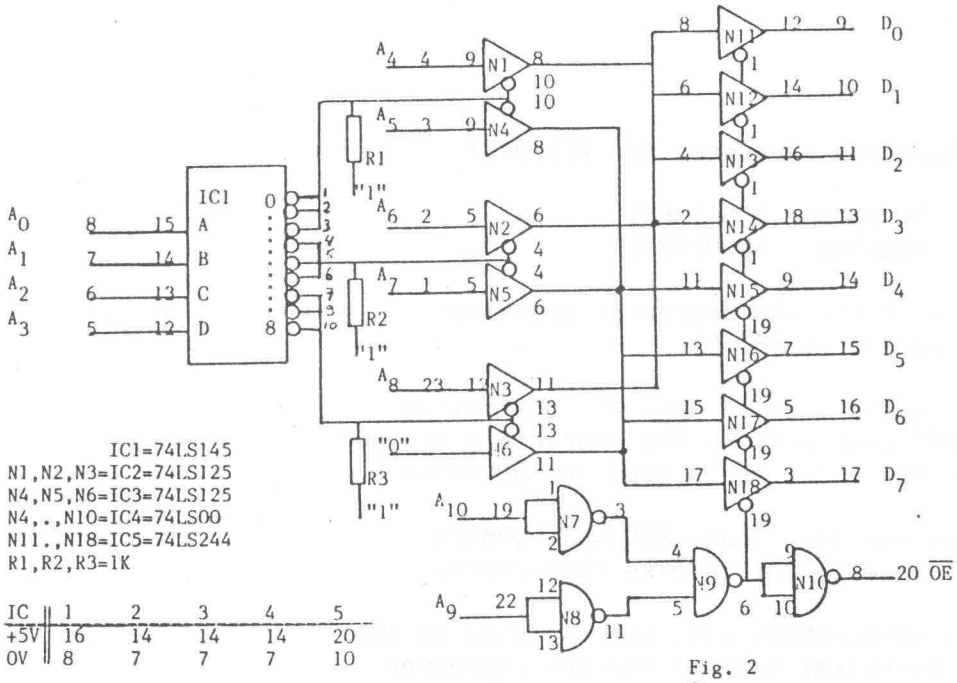


Fig. 1
Mosaic Defenition

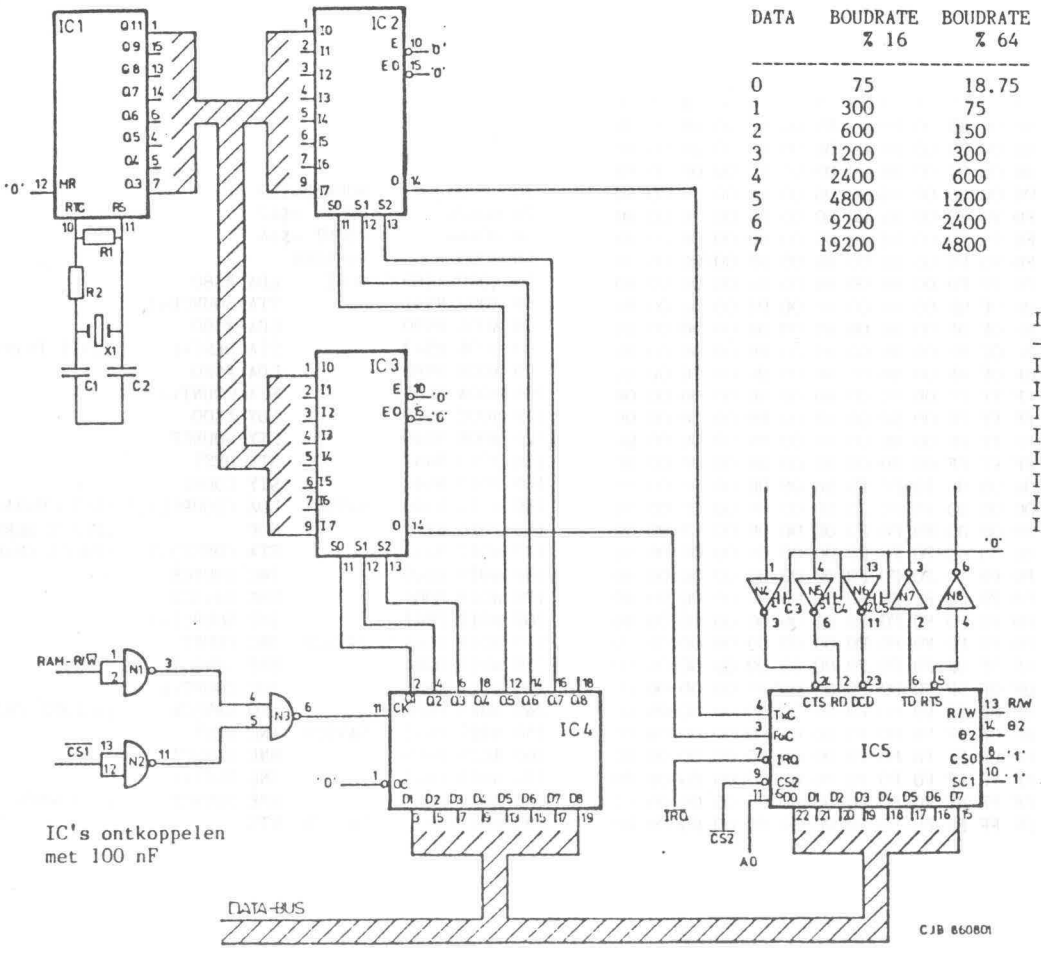


IC1=74LS145
N1,N2,N3=IC2=74LS125
N4,N5,N6=IC3=74LS125
N4,..,N10=IC4=74LS00
N11..,N18=IC5=74LS244
R1,R2,R3=1K

IC	1	2	3	4	5
+5V	16	14	14	14	20
0V	8	7	7	7	10

IC's ontkoppelen met 100 nF

Fig. 2
Character-generator
Extentions



IC's ontkoppelen
met 100 nF

DATA	BOUDRATE % 16	BOUDRATE % 64
0	75	18.75
1	300	75
2	600	150
3	1200	300
4	2400	600
5	4800	1200
6	9200	2400
7	19200	4800

IC	+5	0	+12	-1
IC1	16	8		
IC2	16	8		
IC3	16	8		
IC4	20	10		
IC5	12	1		
IC6	14	7		
IC7	14	7		
IC8		7	14	1

IC1=HEF4060
IC2=CD4512B
IC3=CD4512B
IC4=74LS374
IC5=6850
N1,N2,N3=IC6=3/4 74LS0
N4,N5,N6=IC7=3/4 1489
N7,N8=IC8=2/4 1488
R1=1M
R2=2K2
C1=100pF
C2=22pF
C3,C4,C5=1nF

X1=4.9152 MHz

How to adjust the character generator for VIDEOTEX

By: Coen Boltjes Telephone 015-136812
Vidibus 400029830

1)Load the first half of the old character generator in your system (Starting at $8000)

2)Execute the MOVE program with an "ASL A" instruction instead of the "NOP" instruction. The characters are now shifted one dot to the left, and stored in $9000-$9800.

3)Move the characters one line down.(8000=8FFF,9800) These shifts will cause better inverse characters.

4)Fill the locations $8000-$8200 with the contents of the hexdump, and save the first half of the new character generator on disk. (SA 13,1=8000/8)

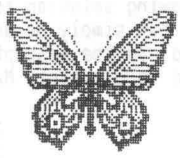
5)Execute the MOVE program with an "EOR #$FF" instruction instead of the "NOP" instruction, and save the second half of the character generator on disk.(SA 14,1=9000/8)

6)Program a new 4K EPROM with track 13 and 14.

```
      0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
8000  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
8010  F0 F0 F0 00 00 00 00 00 00 00 00 00 00 00 00 00
8020  0F 0F 0F 00 00 00 00 00 00 00 00 00 00 00 00 00
8030  FF FF FF 00 00 00 00 00 00 00 00 00 00 00 00 00
8040  00 00 00 F0 F0 F0 00 00 00 00 00 00 00 00 00 00
8050  F0 F0 F0 F0 F0 F0 00 00 00 00 00 00 00 00 00 00
8060  0F 0F 0F F0 F0 F0 00 00 00 00 00 00 00 00 00 00
8070  FF FF FF F0 F0 F0 00 00 00 00 00 00 00 00 00 00
8080  00 00 00 0F 0F 0F 00 00 00 00 00 00 00 00 00 00
8090  F0 F0 F0 0F 0F 0F 00 00 00 00 00 00 00 00 00 00
80A0  0F 0F 0F 0F 0F 0F 00 00 00 00 00 00 00 00 00 00
80B0  FF FF FF 0F 0F 0F 00 00 00 00 00 00 00 00 00 00
80C0  00 00 00 FF FF FF 00 00 00 00 00 00 00 00 00 00
80D0  F0 F0 F0 FF FF FF 00 00 00 00 00 00 00 00 00 00
80E0  0F 0F 0F FF FF FF 00 00 00 00 00 00 00 00 00 00
80F0  FF FF FF FF FF FF 00 00 00 00 00 00 00 00 00 00
8100  00 00 00 00 00 00 F0 F0 F0 00 00 00 00 00 00 00
8110  F0 F0 F0 00 00 00 F0 F0 F0 00 00 00 00 00 00 00
8120  0F 0F 0F 00 00 00 F0 F0 F0 00 00 00 00 00 00 00
8130  FF FF FF 00 00 00 F0 F0 F0 00 00 00 00 00 00 00
8140  00 00 00 F0 F0 F0 F0 F0 F0 00 00 00 00 00 00 00
8150  F0 F0 F0 F0 F0 F0 F0 F0 F0 00 00 00 00 00 00 00
8160  0F 0F 0F F0 F0 F0 F0 F0 F0 00 00 00 00 00 00 00
8170  FF FF FF F0 F0 F0 F0 F0 F0 00 00 00 00 00 00 00
8180  00 00 00 0F 0F 0F F0 F0 F0 00 00 00 00 00 00 00
8190  F0 F0 F0 0F 0F 0F F0 F0 F0 00 00 00 00 00 00 00
81A0  0F 0F 0F 0F 0F 0F F0 F0 F0 00 00 00 00 00 00 00
81B0  FF FF FF 0F 0F 0F F0 F0 F0 00 00 00 00 00 00 00
81C0  00 00 00 FF FF FF F0 F0 F0 00 00 00 00 00 00 00
81D0  F0 F0 F0 FF FF FF F0 F0 F0 00 00 00 00 00 00 00
81E0  0F 0F 0F FF FF FF F0 F0 F0 00 00 00 00 00 00 00
81F0  FF FF FF FF FF FF F0 F0 F0 00 00 00 00 00 00 00
:
```

```
10 0040=        SOURCE=$40
20 0042=        DEST  =$42
30 0044=        COUNT =$44
40 A000         *=$A000
50 A000 A980    MOVE    LDA #$80
60 A002 8541            STA SOURCE+1
70 A004 A990            LDA #$90
80 A006 8543            STA DEST+1      ;INIT TRANSFER POINTER
90 A008 A9F0            LDA #$F0
100 A00A 8545           STA COUNT+1
110 A00C A000           LDY #$00
120 A00E 8440           STY SOURCE
130 A010 8442           STY DEST
140 A012 8444           STY COUNT
150 A014 B140   SAVSCT  LDA (SOURCE),Y ;GET CHARACTER
160 A016 EA             NOP             ;PLACE HERE INSTRUCTION
170 A017 9142           STA (DEST),Y    ;PALCE CHARACTER
180 A019 E640           INC SOURCE
190 A01B D002           BNE SAVSCU
200 A01D E641           INC SOURCE+1
210 A01F E644   SAVSCU  INC COUNT
220 A021 D004           BNE SAVSCV
230 A023 E645           INC COUNT+1
240 A025 F008           BEQ SAVSCW      ;=>LAST CHARACTER
250 A027 E642   SAVSCV  INC DEST
260 A029 D0E9           BNE SAVSCT
270 A02B E643           INC DEST+1
280 A02D D0E5           BNE SAVSCT      ;=>ALWAYS
290 A02F 60     SAVSCW  RTS
```

```
  10REM ***************************
  20REM *** PROCsearching      ***
  30REM *** (c) by S.Voortman ***
  40REM *** Beatrixweg 28     ***
  50REM *** 3253 BB OUDDORP   ***
  60REM *** The Netherlands   ***
  70REM *** Phone 01878-3113  ***
  80REM ***************************
  90REM *** For the Acorn Electron
 100REM *** Program Lenght: 1911 bytes
 110REM *** (p) 1986
 120MODE4:VDU19,0,6;0;19,1,0;0;:lnh=0:lnl=0
 130PRINTTAB(3,3)"This program prints all DEFPROC's"'"and DEFFN's in BASIC-pro
rams."''"Type in the page of the program which"'"DEFPROC's and DEFFN's you want
to know."'
 140PRINT"The program's output is as follows:"
 150PRINTSPC(4)"XXX DEF PROC/FNname"'"XXX stands for the line number of the"'S
C4"DEF PROC/FN, and name for"'SPC4"the name of the PROCedure."
 160PRINT'"At wich PAGE starts the program"'"(between &E00 and &6000)";
 170INPUT page$:page=EVAL("&"+page$):IF page <&E00 OR page >&6000 THEN PRINT":
can't believe this is true!"'"You must have made a mistake!":GOTO 160
 180IF ?page<>&0D THEN PRINT"Bad program at PAGE ";~page:END
 190IF page?1=&FF AND ?page=&0D PROCend_of_program:END
 200VDU12,2:PRINT'SPC3"PAGE &";~page
 210lnh=page?1:lnl=page?2
 220IF lnh=0 THEN linenumber=lnl ELSE linenumber=lnh*256+lnl
 230linelenght=page?3
 240IF page?4=&DD THEN def=TRUE ELSE def=FALSE
 250IF def=TRUE AND page?5=&F2 THEN proc=TRUE ELSE proc=FALSE
 260IF proc THEN 310
 270IF def=TRUE AND page?5=&A4 THEN fn=TRUE ELSE fn=FALSE
 280IF fn THEN 310
 290IF def=TRUE AND proc=FALSE AND page?6=&F2 THEN page=page+1:proc=TRUE ELSE
roc=FALSE
 300IF def=TRUE AND proc=FALSE AND page?6=&A4 THEN page=page+1:fn=TRUE ELSE f
FALSE
 310IF def*proc=1 THEN PROCproc(linenumber)
 320IF def*fn=1 THEN PROCfn(linenumber)
 330page=page+linelenght:IF page?1=&FF THEN PROCend_of_program:VDU2:END
 340GOTO 210
 350
 360DEFPROCend_of_program:REM END
 370PRINT"Program ends at line ";linenumber
 380ENDPROC
 390
 400DEFPROCproc(linenumber)
 410proc$=$(page+6):F%=0:L=LEN(proc$)
 420REPEAT:F%=F%+1
 430UNTIL MID$(proc$,F%,1)=":" OR F%=L+1
 440proc$=LEFT$(proc$,F%-1)
 450PRINT;linenumber;" DEFPROC";proc$
 460ENDPROC
 470
 480DEFPROCfn(linenumber)
 490fn$=$(page+6):F%=0:L=LEN(fn$)
 500REPEAT:F%=F%+1
 510UNTIL MID$(fn$,F%,1)="=" OR F%=L
 520fn$=LEFT$(fn$,F%)
 530PRINT;linenumber;"DEFFN";fn$
 540ENDPROC
```



```
Description of PROCsearch:
Line:    does:
120      MODE4:Set screen size(40*32 characters),VDU19...:Background
     colour magenta(6), Foreground colour black(0)
130      PRINTTAB(3,3)"text..."'"...." The ' means repeating the
     PRINT-statement, like PRINTTAB(3,3)"text...":PRINT"...."
180      IF ?page<>&0D ... Every BASIC-program starts with &0D, if it
     isn't present, it isn't a BASIC-program!
190      IF page?1=&FF... A '&FF' after '&0D' means the end of a
     BASIC-program
200      VDU12,2 This means: Clear screen(12) and printer on(2)
210      page?1 is linenumber MSB, page?2 is linenumber LSB
220      Calculate linenumber
230      page?3 is lenght of BASIC-line (inclusive '&0D' at the begin-
     ning and the '&0D' of the following line)
240      '&DD' is token for 'DEF'
250      '&F2' is token for 'PROC'
270      '&A4' is token for 'FN'
290-300 Search for a space between DEF and FN/PROC
310-340 Perform linenumber , PROC/FN name, set counters for next line
410-450 Read PROC name out of memory, check for ':' and PRINT
490-530 Same for FN's


A program line is stored (in memory) as follows:
      00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F

1D00  0D 00 0A 0F F4 2D 2D 2D 54 45 53 54 2D 2D 2D 0D  .....---TEST---.
1D10  00 14 05 F1 0D 00 1E 1C F1 22 47 65 74 61 6C 6C  .........."Getall
1D20  65 6E 20 65 6E 20 6B 77 61 64 72 61 74 65 6E 22  en en kwadraten"
1D30  0D 00 28 0E E3 20 58 3D 31 20 B8 20 31 30 0D 00  ..(.. X=1 . 10..
1D40  32 0C F1 3B 58 2C 3B 58 5E 32 0D 00 3C 05 ED 0D  2..;X,;X^2..<...
1D50  FF 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  ................
```

```
      ********************************************
      * BREAK-KEY ON JUNIOR WITH SERIAL KEYBOARD *
      ********************************************
        By: Gerrit van Woerkom, The Netherlands

Referring to the article of A.C. Tijmons in issue 37 I
hereby give my solution of a well functioning BREAK-key.
The original situation has two disadvantages:
1. Every key on the keyboard acts as BREAK-key
2. A running BASIC program can only be interrupted during
   screen output
The following solution is made for the JUNIOR with OS-65D
DOS, but can simply be adapted for the cassette JUNIOR. It
is based on the assumption that a separate BREAK-key as
described in Elektuur, May 1983, is present.

 10                    ;stop-key JUNIOR OS-65D V3.3 with
 11                    ;VDU-card
 20             ;
 30 FE81=                     DELBIT=$FE81
 40 FA80=                     SPAD  =$FA80
 50 2325=                     KPDO  =$2325
 60             ;
 70 F01A                      *=$F01A
 80 F01A 4C9DF5         BRKTST JMP BREAK
 90             ;

100 F594                      *=$F594
110 F594 2C80FA         CHECK BIT SPAD   ;key depressed?
120 F597 1004                 BPL BREAK  ;if yes then
                                         ;test BREAK
130 F599 AD2523         RETURN LDA KPDO  ;OS-65D needs
                                         ;this
140 F59C 60                   RTS
150 F59D A20A           BREAK LDX #10    ;bitcounter=10
160 F59F 2081FE         NEXT  JSR DELBIT ;wait 1 bittime
170 F5A2 2C80FA               BIT SPAD   ;serial output
                                         ;still high?
180 F5A5 30F2                 BMI RETURN ;if no, then
                                         ;return
190 F5A7 CA                   DEX        ;decrement bit-
                                         ;counter
200 F5A8 D0F5                 BNE NEXT   ;10 bittimes?
210 F5AA 2C80FA         WAIT  BIT SPAD   ;wait until
                                         ;BREAK-key
220 F5AD 10FB                 BPL WAIT   ;released
230 F5AF 6C7CFA               JMP ($FA7C)
240            ;
250 0819                      *=$0819
260 0819 2094F5         CHKSTP JSR CHECK ;check BREAK-key
```

****
** UPGRADE YOUR C-16 TO 512 KByte **
****

By : Fred Behringer, München/Germany

Actually, it's but 484 K : whenever an address occurs within the first 4 K, the circuit switches to block no. 0. There are 8 blocks of 64 K each and the switching is done by POKE232,0 ... 7 . 232 (i.e. $E8) is the last (zero page) location of a block of addresses reserved for user software. Thus, by loading each 64 K block in turn with BASIC programs and putting the end-of-program vector $2D/$2E sufficiently high, the upgraded machine offers an immediately usable variety of 484 K (!) of BASIC programs which can be called upon by one of the pokes mentioned above.

I don't know yet how reliable my circuit is. The only thing I know is the fact that it works. And I'm happy about it since I had no oscilloscope at my disposal, and I needed some experimentation to find out which type of ICs worked best. This is why I used the ALS type for some of them, LS for others, and HCT for the 137.

And this is how the upgrade works:

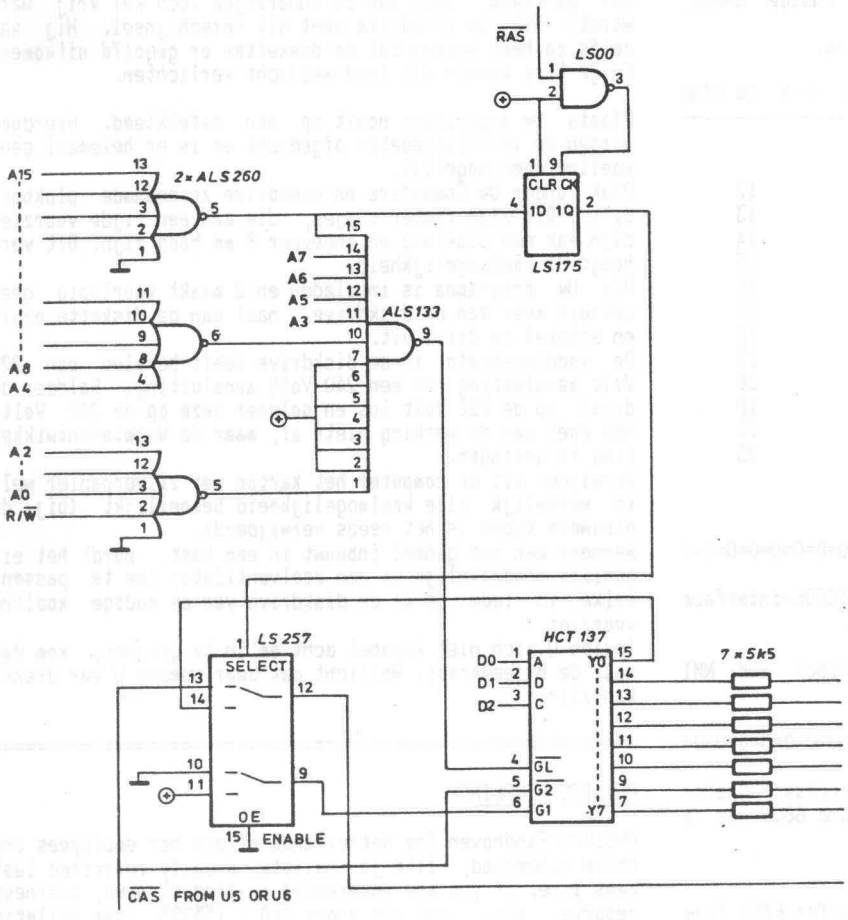
{1} The whole thing is based upon my 64 K upgrade which I reported on recently (replacement of the two 4416s by two 4464s).

{2} Whenever the current address is less then $1000, the output of one of the ALS260s goes high and switches the multiplexer LS257 such that the $\overline{CAS}$ signal is then applied to block no. 0.

{3} If the current address is $1000 or more, the $\overline{CAS}$ signal triggers the $\overline{GE}$ enable input of IC HCT137. The (somewhat delayed) $\overline{CAS}$ pulse then triggers that DRAM block which is determined by the particular output of the HCT137 which has been decoded [see (4)]. In order to wait for the current address to be stable before switching the LS257, the output of the ALS260 mentioned is first applied to the data input of an LS175 (D-type flip-flop). Only when the $\overline{RAS}$ line goes low, this information is transferred to the select input of the LS257 via the Q output of the LS175 (where it is held until the next going low of $\overline{RAS}$). Actually, what was required was a high-going pulse at the clock input of the LS175. So I needed an extra LS00 inversion.

{4} Whenever $E8 is called upon by a write operation (such as POKE, driving R/$\overline{W}$ low), the output of IC ALS 133 (working together with the two ALS260s) goes low. As a result the $\overline{GL}$ input of the HCT137 is driven low. The outputs of the HCT137 are now floating, depending on the data inputs currently applied. The input data (0 ... 7) will be properly decoded as soon as R/$\overline{W}$ goes high (driving $\overline{GL}$ high).
(R/$\overline{W}$ goes high prior to the data becoming invalid.)

In order to get hold of address lines A0 - A15, I glued one ALS260 on top of U7 (LS257), the ALS133 on top of the second ALS260.
(The dynamic RAMs' sockets would supply the multiplexed address lines only).
The rest of the circuit was mounted on a piece of veroboard and connected to the sockets where the two 4464s of my 64 K upgrade, reported on recently, were plugged in (U5 and U6).
The resistors at the outputs of the HCT137 were the results of some experimentation.



A series of tests has shown that the LS type ICs are too slow to guarantee no errors in bankswitching. After replacing LS175, LS257, LS00, and HCT137 by ALS175, ALS257, ALS00, and ALS137 there were no more errors to be observed. The resistors 5.6K should be removed.

TO $\overline{CAS}$ PINS OF DRAMS 4464
EACH LINE TO 2×4464 (HIGH,LOW)

LAST LINE REPRESENTS BLOCK 0,
WHICH IS SWITCHED IN WHENEVER
ADDRESS IS BELOW $1000

HERMAN ZONDAG

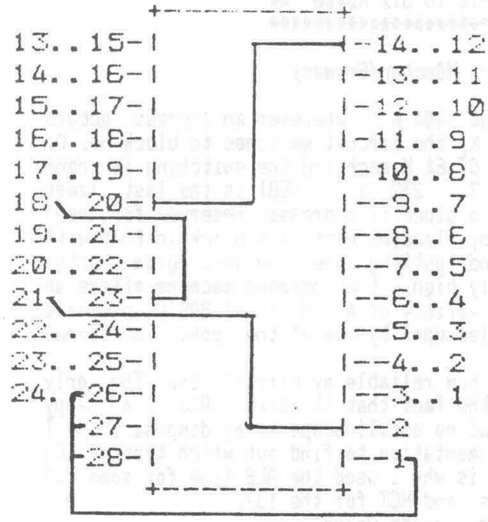
****
*** FROM 2364 TO 2764 EPROM ***
****

COMMODORE 64

TRANSL.: HAKON AUSTBO

In computers and peripherals you'll often find components with strange code numbers. Mostly it's hard to tell what function the component is meant to have. When you have to do with the various kinds of ROM's it's relatively easy to find the pinning, for instance in order to change its contents. One of these types is the 8 K ROM 2364, which comes in a 24 pin package. The only alternative is a 2764 EPROM with 28 pins, making it pin-compatible by means of an adaptor socket. The following is a description of how to do this.

*Take a 28-pin and a 24-pin socket.
*Bend pins 20 & 23 of the 28-pin socket outwards.
*Make the following solder connections on the 28-pin socket:
 -Connect pin 14 to pin 20.
 -Connect pin 1 to pins 26, 27 & 28.
 -Solder a wire, 6 cm long, onto pin 2.
 -Solder a wire, 3 cm long, onto pin 23.
*Now insert the 28-pin socket into the 24-pin.
 -Solder the wire from pin 2 onto pin 21 of the 24-pin socket.
 -Solder the wire from pin 23 onto pin 18 of the 24-pin socket.



The adaptor socket is now ready for use. One of the possible applications is to make alterations inside BASIC, MONITOR or KERNAL of the Commodore 64.
As a control, check the following connections.

28 PINS (--)	24 PINS
1,26,27,28	24
2	21
3	1
4	2
5	3
6	4
7	5
8	6
9	7
10	8
11	9
12	10
13	11

28 PINS (--)	24 PINS
14,20	12
15	13
16	14
17	15
18	16
19	17
20,14	12
21	19
22	20
23	18
24	22
25	23

=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0

Printing errors in the article of the BASICODE-interface Card in Elektuur Computer Special 2 page 62.

IC 1 and IC2 are exchanged and the SYNC (28c) and NMI (12c) are also exchanged.

0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=0=

BRUTECH Electronics, Manufacturer of Microprocessor Application cards in EURO CARD format for 6502 and 6809 has a new address: Industrieweg 42
3641 RM MIJDRECHT

BRUTECH Electronics developed expansioncards for 6XXX from the beginning of the KIM-1 and the SYM-1 computers.

==

WARMTE PROBLEMEN BIJ COMMODORE

Gerard van Roekel

Is het U ook opgevallen dat wanneer Uw computer een paar uur aanstaat, deze aan de onderzijde toch wel vrij warm wordt? Ook de diskdrive kent dit verschijnsel. Hij kan zelfs zo heet worden dat de diskettes er gegolfd uitkomen. Enige tips kunnen dit leed wellicht verlichten.

Plaats Uw apparatuur nooit op een tafelkleed. Hierdoor worden de ventilatiegaten afgedicht en is er helemaal geen koeling meer mogelijk.
Plak onder Uw Commodore en diskdrive zogenaamde plakbuddy's. Dit zijn rubber dopjes, die aan een zijde voorzien zijn van een plaklaag en ongeveer 8 mm hoog zijn. Dit verhoogt de koelmogelijkheid.
Als Uw programma is ingeladen en U maakt voorlopig geen gebruik meer van de diskdrive, haal dan de diskette eruit en schakel de drive uit.
De voedingstrafo in de diskdrive heeft behalve een 220 Volt aansluiting ook een 240 Volt aansluiting. Soldeer de draad op de 220 Volt los en soldeer deze op de 240 Volt. Het doet aan de werking niets af, maar de warmte-ontwikkeling is geringer.
Verwijder uit de computer het karton met zilverpapier welke werkelijk alle koelmogelijkheid bemoeilijkt (bij de nieuwere types is het reeds verwijderd).
Wanneer men het geheel inbouwt in een kast, wordt het eigenlijk noodzakelijk om een koelventilator toe te passen, welke in ieder geval de diskdrive van de nodige koeling voorziet.
Indien U zich niet kapabel acht om in te grijpen, kom dan naar de bijeenkomst. Wellicht dat daar iemand U van dienst kan zijn.

==

PHILIPS NEWSLINE

PHILIPS Eindhoven The Netherlands offers her employees and those concerned, like journalists, a daily refreshed last news line. If you are interested in product-news, business reports, etc., you can phone 040 - 755255. This bulletin takes about one minute of your time.

```
*********************************************
* ATARI 600 XL AND MACHINE CODE PROGRAMMING *
*********************************************
```

Henk Speksnijder, The Netherlands

The manual of the ATARI 600 XL contains almost useless information about machine code programming, but because I've been working on Elektor's JUNIOR computer, I was able to find out how to do. Try this:

```
10 FOR J=0 TO 9
20 READ D
30 POKE 1536+J,D
40 NEXT J
50 LET X=USR(1536)
60 ? X
100 DATA 169,0,133,212,169,1,133,213,104,96
```

When you run this program, there will be 256 printed on the screen.
What happens is this. In line 100 is the machine code, line 10 upto 40 reads the machine code and stores it in RAM at address from 1536. Line 50 makes the machine code working. This machine code program is very small and only to show something:

```
LDAIM   0       169   0
STAZ  212       133   212
LDAIM   1       169   1
STAZ  213       133   213
PLA             104
RTS              96
```

The program in line 100 is in decimal and not hexadecimal because now line 20 and 30 are simple. This program stores a zero in address 212 and a one in 213, then it pulls one byte from stack and returns to BASIC. Then your BASIC makes this calculation:

X=PEEK(212)+256*PEEK(213)

That explains why 256 is printed in line 60.

The PLA instruction is always in this kind of machine code programs just like RTS. The RTS is clear because the program execution must return to BASIC. The PLA is there, because the ATARI BASIC puts one byte at the top of the stack, this byte contains the number of parameters.
The use of parameters with the USR function is very interesting to do great things with machine code.
Make line 50 like this: 50 LET X=USR(1536,555)
and line 100 like this:

```
100 DATA 104,104,133,213,104,133,212,96
```

and line 10 FOR J=0 TO 7
The rest of the program remains the same. Now after RUN you will see printed on your screen 555. That is the same number as in line 50. This number can be any number from zero to 65535, but it is also possible to user variables. What happens in line 50 is: at first the BASIC puts three bytes on stack. The first has the value 1 because there is one parameter. The second and third bytes are the high order and low order of the parameter. The machine code in line 100 is now:

```
PLA          104          pull number of parameters
PLA          104          pull high order byte
STAZ 213     133  213     store this in 213
PLA          104          pull low order byte
STAZ 212     133  212     store this in 212
RTS           96
```

Until now I always used in line 20 and 50 the number 1536. That is the beginaddress for me to work with machine code. The biggest program so far was 140 bytes. If you want to make bigger programs, then it is possible to do so, but the numbers in your program depend on the amount of RAM you have and on the size of the machine code program:

```
10 POKE 106,62:GRAPHICS 0
20 FOR J=0 TO 512
30 READ D
40 POKE 62*256+J,D
50 NEXT J
```

In line 10: If there is 16 K RAM then 64-p, where p is the number of pages (with 256 bytes) you need. In this example 64-2=62.
In line 20: The number of bytes of the program, in this example 512.
In line 40: The same number as used in line 10.

==========

SOME QUESTIONS TO THE EXPERTS:
By: Henk Speksnijder, The Netherlands.

The ATARI BASIC programs usually start at 2060 or in this area. From 0 to 255 is page zero, and I only know the meaning of 35 page zero addresses. From 256 to 511 is the stack. From 512 to 2000 there are some interesting tables, but why is there so much filled with zero?
From 1244 to 1400, 1447 to 1792 and 1820 to 2040 is only zero! Is that 700 bytes RAM wasted?
Who knows about page zero? Send your letter to the editor. He takes note of it and will inform me.

==========

DIRECTORY DISK 5.a
for Elektor's OCTOPUS computers

By : Marc Lachaert, Belgium

TRACK	SEC	PAG	MEMORY	NAME	DESCRIPTION
00 -	1 -	8	2200,29FF	V3.3/1	OS-65D V3.3 part 1
01 -	1 -	8	2A00,31FF	V3.3/2	OS-65D V3.3 part 2
02 -	1 -	8	0200,09FF	BAS/1	BASIC part 1
03 -	1 -	8	0A00,11FF	BAS/2	BASIC part 2
04 -	1 -	8	1200,19FF	BAS/3	BASIC part 3
05 -	1 -	8	1A00,21FF	BAS/4	BASIC part 4
06 -	1 -	1	2200,22FF	B/5V/3	BASIC part 5
	2 -	1	3200,32FF		OS-65D part 3
	3 -	1	0000,00FF		OS-65D part 4
07 -	1 -	8	0200,09FF	ASM/1	OSI Assembler/editor/ext. monitor part 1
08 -	1 -	8	0A00,11FF	ASM/2	part 2
09 -	1 -	8	1200,19FF	ASM/3	part 3
10 -	1 -	8	1A00,21FF	ASM/4	part 4
11 -	1 -	1	2200,22FF	ASM/DI	PART 5
	2 -	1	2E79,2F78		'directory' copy, contains only 'DIRECT' and 'TRKNUL'
	3 -	1	2E79,2F78		Empty 'Directory' copy
	4 -	1	5E00,5EFF		} ML-progs in use } for disk operat.
	5 -	1	5F00,5FFF		} util in BEXEC*
	6 -	1	2E79,2F78		'Directory' copy with users file
	7 -	1	25A0,269F		BASIC overlay
12 -	1 -	1	2E79,2F78		Directory part 1
	2 -	1	2E79,2F78		Directory part 2
	3 -	1	2C04,2D03		BASIC overlay
	4 -	1	2E79,2F78		PUT/GET overlay
13 -	1 -	8	3274,3A73	V3.3/4	OS-65D part 5

==========

DOS65 Basic version 2.10 available now.

For DOS65 users a fine Basic interpreter is available now. It has been developed from the well known Microsoft KB9 Basic, which has been used for many years by KIM and JUNIOR owners in our club. Those of you who are familiar with KB9 Basic will find many changes and enhancements in it. Among the most important are:

- Support of hexadecimal numbers.
- Cursormovement with CURSOR TO command.
- Support of normal and inverse video output.
- Support of all eight I/O devices with DEVICE command.
- Saving programs in disk files both in binary and ascii format.
- Loading programs from disk files both in binary and ascii format. (Now you can write your programs with the full screen editor)
- Executing Basic programs directly from DOS65 or DOS65 command files, without entering the Basic environment.
- Executing DOS commands and utilities within the Basic environment.
- Input/Output redirect.
- Sequential access data-files.
- Random access data-files.
- 'Intelligent' ONERR GOTO command with associated error variables for proper error trapping.
- RESUME command to resume program execution after error handling.
- Advanced control statements for structured programming:
  - * IF ... THEN ... ELSE
  - * WHILE ... ENDWHILE
  - * REPEAT ... UNTIL
- Executing Basic commands from string variables with EXECUTE command.

A comprehensive manual is available with many examples on each subject. Since KB9 Basic is a copyright of Microsoft, we can only supply the object code to those who have bought a legal Microsoft Basic. (send copy of invoice) The manual is available to all members of the '6502 KENNERS'. Please contact Erwin Visschedijk, Dillelaan 11, Wierden.

For those of you who are fed up with writing obscure PRINT statements for Elektors graphics card there is good news too. A graphical Basic is already in preparation. Draw your pictures with easy to use Basic commands like PLOT, MOVE, COLOR etc. The graphical Basic will also support many commercial available plotters.

==========

****
* DUBBELADRESSERING *
****
FRANK BENS

In het verleden heb ik de indruk gekregen dat men de dubbeladressering op de uitbreidingsprint van de JUNIOR niet kon waarderen en daardoor is er naar diverse oplossingen gezocht in relatie met de VIA.
Mijn vraag is nu waarom er op de disk-controllerkaart geen maatregelen getroffen voor dubbeladdressering. Mijn inziens is er dubbeladressering van $1900 t/m $197F, en wel hierom:
A15 t/m A18 gaan via IC3,4 naar IC5,6 t.b.v. CS1,3. A7 gaat via IC4 naar IC7 t.b.v. CS2. A1,0 gaan ook via IC4 naar IC7 als AA1 en AA0.
De adreslijnen A6 t/m A2 blijven ongebruikt, Don't care, hetgeen dus dubbeladressering inhoudt. Een voorbeeld hiervan:

```
A15 14 13 12 11 10  9  8  7  6  5  4  3  2  1  0

 0  0  0  1  1  0  0  1  0  X  X  X  X  X 0/1 0/1
 |                 |     |                    |
 ------------------      ---------------------

    o.a. via IC5,6          Don't care  AA1 AA2
    t.b.v. CS1,3      CS2
```

Hieruit blijkt dat:

A15-A12 = 1 HEX
A11-A 8 = 9 HEX
A 7-A 4 = 0000 tot 0111 => 0-7 HEX
A 3-A 0 = 0000 tot 1111 => 0-F HEX

Achter elkaar opgeschreven wordt dit:
$1900 - $197F

Diegenen die dit ook opgevallen is worden verzocht mij daarvan via de redaktie in kennis te stellen. Mogelijk heeft men tevens ook een oplossing ervoor, dan hoor ik dat graag.

==========

```
**************************
** DATA-INPUT (EXEC)  **
**************************
```

Systeem: APPLE met Disk
Auteur : Frans Verberkt
Hillekensacker 12-10
6546 KG NIJMEGEN
TEL.: 080 - 779555

Dit programma maakt DATA-regels aan middels een EXEC-file. Na het intypen en starten van dit programma zal het mogelijk zijn vanaf regel 25000 DATA-regels toe te voegen. Het geeft U tevens enig inzicht in het werken met EXEC-files. Het programma is traag, maar goed. Na het intypen van elke regel zult U even moeten wachten, omdat deze regel toegevoegd wordt. Het is natuurlijk mogelijk meer regels in te typen voor de disk geactiveerd wordt, maar heeft als nadeel dat bij tussentijdse RESET de ingetoetste informatie verloren raakt. Het voordeel van dit programm is, dat bij een RESET het programma weer gestart kan worden met RUN zonder dat er iets aan mankeert. U moet wel het programma SAVEn als er na een nachtje slapen .... Uw eigen gegevens gelezen of aangevuld moeten worden.

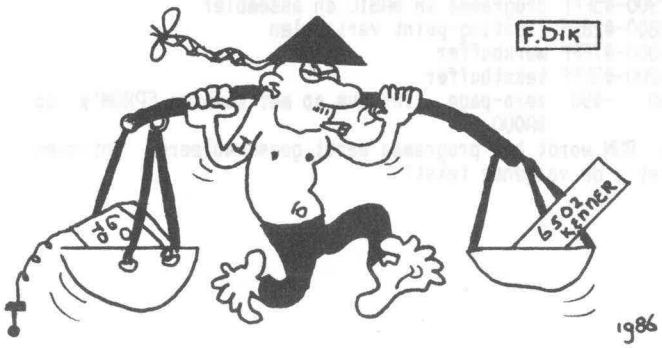
```
1000 REM DATA-INPUT (EXEC)  19sep86
1010 GOSUB 2010: REM  INIT
1020 GOSUB 3010: REM  PRINT DATA-REGELS
1030 GOSUB 4010: REM  REGEL INVOEREN
1040 GOSUB 5010: REM  MAAK TEXT-FILE
1050 PRINT DI$;"EXEC";FI$
1060 END
2000 REM INIT
2010 DI$ = CHR$(4): REM DOS commando
2020 FI$ = "DATA": REM naam van EXEC-file
2030 QO$ = CHR$(34): REM  ASCII voor QUOTE
2040 DR = 25000: REM begin DATA-regels
2050 RETURN
3000 REM PRINT DATA-REGELS
3010 HOME
3020 RESTORE
3030 DR = DR + 10
3040 READ DA$
3050 IF DA$ = "DATAEND" THEN 3080
3060 PRINT " ";DA$
3070 GOTO 3030
3080 RETURN
4000 REM REGEL INVOEREN
4010 PRINT "Type volgende regel:"
4020 INPUT IN$
4030 RETURN
5000 REM MAAK TEXT-FILE
5010 PRINT
5020 PRINT DI$;"OPEN";FI$
5030 PRINT DI$;"DELETE";FI$
5040 PRINT DI$;"OPEN";FI$
5050 PRINT DI$;"WRITE";FI$
5060 GOSUB 5510: REM MAAK EXECFILE
5070 PRINT DI$;"CLOSE";FI$
5080 RETURN
5500 REM MAAK EXECFILE
5510 PRINT DR;"DATA";QO$;IN$;QO$
5520 PRINT "RUN"
5530 RETURN
25000 REM DATA-REGELS
29000 DATA "DATAEND"
```

BOEKINFORMATIE

Bouw zelf een expertsysteem in BASIC; met programma-listings voor APPLE II, Commodore 64/128, GW BASIC, IBM BASIC MSX BASIC en ZX Spectrum.
Chris Naylor, Academic Service 1986, 256 p., Hfl.45,==.
ISBN 90 6233 167 X

Je staat voor de etalage van een boekhandel. Het oog valt op of wordt getrokken door een boektitel die je in je onderbewustzijn al kende: Bouw zelf een expertsysteem in Basic. Laatst op de bijeenkomst werd zo'n expertsysteem, inderdaad met enige trots, getoond in FORTH op de OCTOPUS. Je had er al veel over horen praten. Wie straks geen expertsysteem bezit, blijft achter. Is het 'het einde' in artificial intelligence? Zoiets wil je natuurlijk ook, antwoord krijgen op alle vragen die je stelt. Dus, kopen dat boek.
Thuisgekomen lees je de omslag van het boek. "Een expertsysteem is een computerprogramma dat een bepaalde hoeveelheid menselijke 'kennis' kan opnemen. De gebruiker kan dit programma, de 'expert', vervolgens consulteren om van die kennis gebruik te maken. Huisartsen kunnen het gebruiken voor het helpen stellen van een diagnose; chemici kunnen het gebruiken bij het afleiden van chemische structuren en ingenieurs gebruiken zo'n systeem bij het zoeken naar olie en andere fossiele brandstoffen. Tot nu toe draaien dergelijke programma's hoofdzakelijk op de grotere computers, waarbij van heel bijzondere programmeertalen gebruik gemaakt wordt. Dit boek laat op een eenvoudige manier zien wat zo'n expertsysteem is en hoe je ermee omgaat. De programma's die hierbij gebruikt worden zijn gewone BASIC-programma's, die in elke microcomputer direct ingetikt kunnen worden. De lezer is in staat zich hierdoor een beeld van kunstmatige intelligentie te vormen en kan zelf ervaren hoe een expertsysteem werkt. ...".
Chris Naylor heeft kans gezien een brug te slaan over de kloof tussen de gevoelsmatige afstand tot het begrip 'expertsysteem' - dat een verwijzing in zich draagt naar ingewikkelde dingen die alleen door deskundigen kunnen worden begrepen - en de werkelijkheid van de betrekkelijke eenvoud van de gemiddelde gebruiker van zakelijke en hobbycomputers. Op een wel heel speciaal humoristische wijze, waarbij me soms de tranen in de ogen schoten, ziet hij kans je steeds meer te boeien en voor te bereiden op zijn heel serieuze verhandeling over waarschijnlijkheden en kansen en het daarbij stap voor stap bouwen van het eigen systeem, rekening houdend met de noodzaak dat de lezer zelf variabelen zal moeten vinden en in een matrix vastleggen. Het boek beoogt niet dat de gegeven programma's uitsluitend worden ingetypt, daar is het te duur voor, het is bedoeld om de bouwer te laten begrijpen hoe het systeem in elkaar zit om vervolgens te laten ontdekken dat het feitelijk niet is gebaseerd op ingewikkeldheden, maar op nuchter en logisch redeneren. Chris Naylor ontkomt er echter niet aan wiskundige formules en begrippen te hanteren om het thema van zijn boek overeind te houden. Hier wordt duidelijk dat geboeid worden door de wijze van schrijven niet voldoende is. Een redelijke mate van inzicht in wiskunde is eveneens vereist. Het mooie werk van Chris Naylor lijkt me dan ook eerder geschikt voor gevorderden in Basic, niet voor beginners.

==========



****
** RTTY TX/RX VOOR DE ACORN ATOM VAN PA3ELB **
****

Door: F.ank Vergoossen (PA3ELB), Nederland
Tel.: 04754 - 1972

Inleiding
Er zijn reeds enkele programma's verschenen om RTTY signalen te ontvangen en/of te verzenden, die overigens bij vele zend- en luisteramateurs met succes in gebruik zijn. Nadat ik aan het experimenteren was geslagen met de VIA besloot ik om zelf een (eenvoudig) RTTY-programmaatje te maken. Omdat ik echter voortdurend wijzigingen en verbeteringen aanbracht, is dit korte programma al snel uitgegroeid tot een groter programma, waar ik mogelijkheden heb ingebouwd naar mijn eigen voorkeur, die ik helaas miste bij sommigen andere programma's. Na herhaaldelijke verzoeken van diverse personen heb ik dan ook besloten dit programma aan iedereen beschikbaar te stellen. Graag zou ik zien dat dit programma anderen aanzet om zelf aan de slag te gaan, want ook dit programma bestaat maar uit tamelijk eenvoudige recht-toe-recht-aan instructies, wat toch maar weer bewijst dat leuke programma's niet echt moeilijk moeten zijn. Dan volgt nu de handleiding voor het gebruik van het programma.

Hardware
Voor het ontvangen van RTTY signalen is een telexdecoder benodigd om de mark- en spacefrequenties om te zetten in een "1" of "0", zodat deze signalen eenvoudig door de computer te decoderen zijn. Dergelijke schakelingen zijn te vinden in o.a.:
Acorn Nieuws samenvatting 1982 blz. 96
Elektuur juli/augustus 1982 blz. 8-14
Elektuur juni 1983 blz. 6-58
Deze interface wordt aangesloten op poort c, bit 3 van de 8255 (mark="1", space="0"). Deze aansluiting is de meest rechtse als men van achter de computer naar de DIN-plug kijkt (pen 7). Ik heb voor deze aansluiting gekozen om niet een grote 64-polige connector te hoeven gebruiken voor de aansluiting van de decoder. Desgewenst kunt u het programma wijzigen voor gebruik met de VIA-poort.
Voor het zenden van RTTY wordt een AFSK-signaal opgewekt op PB7 van de VIA. Als u nu een weerstand van 4.7 kOhm tussen PB7 en de cassetterecorder-uitgang opneemt, kunt u voor zenden en ontvangen gebruik maken van slechts 1 zeven-polige DIN-plug, en u kunt de signalen ook nog op de recorder opnemen voor experimenten. Als u de MJCOS kan gebruiken heeft u deze weerstand reeds gemonteerd. Na verzwakking (bij mij een spanningsdeler bestaande uit een weerstand van 10 kOhm en een van 100 Ohm) en eventueel filtering kan men het AFSK-signaal op de ingang van de transceiver aanbieden.
Om de zendontvanger automatisch op zenden te schakelen als u gaat zenden is de mogelijkheid ingebouwd om de push-to-talk ingang van uw set aan te sluiten op PB6 met tussenschakeling van een transistor (TX="1", RX="0").

Software
Geheugengebruik:
#2900-#5FFF programma in BASIC en assembler
#2800-#28FF floating-point variabelen
#6000-#7FFF werkbuffer
#8200-#9FFF tekstbuffer
#80 -#90 zero-page (let dus op met sommige EPROM's op #A000
Na RUN wordt het programma eerst geassembleerd, intussen ziet u de volgende tekst:

BEDIENING:

t = TX (=zenden)
r = RX (=ontvangen)
c = CW ID. (=morse-identificatie)
b = BUFFER (op voorhand intypen)
m = MENU (hier komt u de eerste keer vanzelf in)

Nadat het programma klaar is met assembleren, komt u vanzelf in het menu terecht. Hier kunt u de diverse wijzigingen aanbrengen, en wel door op de gewenste cijfertoets te drukken. De nieuwe (standaard-)waarde komt dan vanzelf op de plaats van de oude waarde. Om ervoor te zorgen dat alle output naar het schem snel genoeg verloopt is een VDU-routine in het programma opgenomen. Hieronder volgen de waarden waarop u alles kunt instellen, waarbij de waarden die bij het de eerste keer binnenkomen van het menu zijn ingesteld hier als eerste staan vermeld:
1 BAUDRATE 45.45/50/57/75/100/110 Baud
2 SHIFT 170/300/425/850/1000/85 Hertz
3 LAAGSTE FREQUENTIE 1275/2125 Hertz
4 POLARITEIT MLSH/MHSL
(mark laag, space hoog/mark hoog, space laag)
5 BLANK TEKEN UIT/AAN
6 AUTO CR/LF UIT/AAN
7 UNSHIFT ON SPACE UIT/AAN
8 STOPBIT 1.5/1 bit
9 LEESTEKENS INT/WU/MIL
(internationaal/Western Union/military)

t = NAAR TX (zenden)
r = NAAR RX (ontvangen)
b = WIJZIG BUFFER (tekstbuffer van 7,5 kB)

Als u het programma alleen voor ontvangen gebruikt is voor u alleen de baudrate, polariteit, unshift on space en leestekens van belang. Tijdens ontvangen wordt het bell-karakter afgedrukt als b, een niet bestaand karakter uit de set leestekens als e. Wilt u de tekst tevens op de printer zetten (ook mogelijk tijdens zenden) dan hoeft u slechts de printer aan te zetten en verder niets. Het programma controleert namelijk zelf of de printer wel of niet aanstaat, en zet zo ja de tekst op papier.
Tijdens zenden is er een werkbuffer die er voor zorgt dat u gerust zo'n 8 kB tekst sneller typen mag dan de computer uitzendt, deze buffer kunt u overigens ook al beginnen vol te typen tijdens ontvangen. Als u dan overschakelt op zenden wordt de tekst hierin direkt uitgezonden. Verder is er een tekstbuffer voor het op voorhand intypen van berichten of standaardteksten. Deze buffer kunt u vanuit het menu kiezen om er tekst in op te slaan en is max. 7,5 kB lang. Als u dan tijdens het zenden b intypt wordt de tekstbuffer gecopiëerd in de werkbuffer en uitgezonden.
Verder is er een call-gever aanwezig waarin u de roepnaam van uw amateurstation kunt plaatsen. Om deze te activeren typt u c, de roepnaam wordt dan in morse uitgezonden en wel met de mark- en spacetoon die ook voor RTTY gebruikt wordt. Verder is er nog een handigheidje ingebouwd om fouten tijden het typen te kunnen verbeteren, want de Baudotcode kent geen code om 1 teken terug te gaan. Als u namelijk sneller typt dan de computer zendt kunt u nog voor het uitzenden van de ingetypte tekst de fout verbeteren met DELETE. Niet voorkomende tekens worden tijdens uitzenden genegeerd. Als u de auto CR/LF aanzet wordt na 64 tekens automatisch carriage return en linefeed gegeven, voor het geval de ontvangstzijde gebruik maakt van een telex-machine (die kunnen na het einde van de regel niet verder).

Indicators
Tijdens ontvangen wordt rechtsonder een r gezet (van RX), tijdens zenden een t (van TX). Links hiervan wisselt een wit streepje in het ritme van de mark- en spacetoon van plaats (omhoog=mark, omlaag=space), dit werkt tijdens zenden en ontvangen.

Wijzigingen
U kunt in de listing de volgende dingen naar eigen voorkeur aanpassen:
$K = string waarin de roepnaam van uw station voor de morseidentificatie, max. 255 karakters, dus meer dan genoeg.
V = snelheid van de morsetekens, 10-30 woorden per minuut, hier 20 want dit is nog net niet te snel volgens de machtigingsvoorwaarden van de PTT.
C = clockfrequentie van uw ATOM, normaal 1 MHz, ik heb echter het programma nog niet getest op andere clockfrequenties.
Ook de beginwaarden van het menu kunt u wijzigen waarbij de volgende variabelen van belang zijn:
%B = baudrate in Baud
S = frequentieshift in Hertz
F = frequentie van de laagste toon in Hertz
I = polariteit 0=MLSH, 8=MHSL
G = blank teken 1=uit, 0=aan
D = auto CR/LF 1=uit, 0=aan
A = unshift on space 3=uit, 0=aan
E = stopbit 1=1.5 bit, 0=1 bit
N = leestekens 1=INT, 2=WU, 3=MIL

Wanneer u de interface aan wilt sluiten op PB0 van de VIA moet u de volgende wijzigingen aanbrengen:
wijzigen : regel 40 REM TTL IN PB0 VAN 6522
regel 1000 de 8 in 1 veranderen
regel 1040 de 8 in 1 veranderen
regel 2580 LDA#B800:AND#1
regel 2750 LDA#B800:AND#1
weglaten : regel 2410, 2420, 3430, 3440
toevoegen: regel 2175 LDA#8A;STA#B003

Verdere gegevens over RTTY (die ik ook heb gebruikt voor dit programma) kunt u vinden in:
Elektuur juni 1983 blz. 6-37
Vademecum VERON blz. 279
(Redaktie: Nog enkele referenties :
-RTTY met de JUNIOR; Telexberichten via korte golf op uw scherm. DE 6502 KENNER 6(1982)23(okt)25-32
-RTTY ontvangst. HCCN 6(1983)2(apr)21-23
-RTTY-decoder. Elektuur 23(1983)6(jun)58.)

Laat het eens weten voor het geval u interessante wijzigingen aanbrengt, misschien hebben meer mensen er iets aan.
Veel succes gewenst.

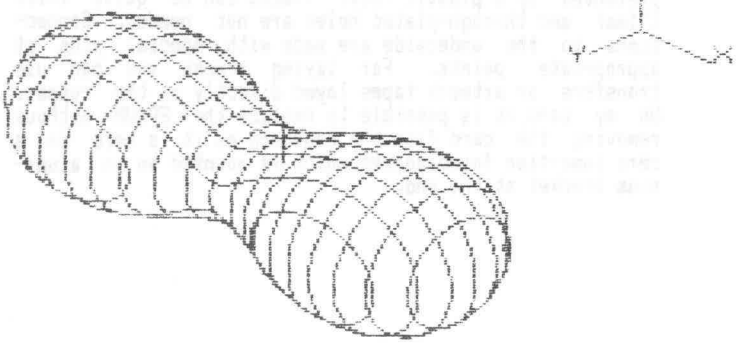
N.B. Het volgende is alleen van belang voor de echte "freaks" die wijzigingen willen aanbrengen.

Zero-page adressen
80 RTTY: Baudotcode bij TX en RX.
morse: Morsecode.
81 Asciiwaarde af te drukken karakter.
82 RTTY: 0=letters, 1=figures (voor TX eerst 3=nog niks).
83 RTTY: 2e Baudotcode na (un)shift of CR/LF.
84 Key-scan routine asciiwaarde vorige ingedrukte toets.
85 Key-scan routine 0=geen toets ingedrukt, 1=wel toets ingedrukt.
86 bewaaradres voor Y, index van computer in buffer.
87 bewaaradres voor Y, index van keyboard in buffer.
88 RTTY: aantal tekens na laatste CR/LF.
89 morse: bewaaradres voor A, lengte morsetoon 1 of 3.
8A RTTY: teller bij RX
morse: bewaaradres voor Y, index karakterno. in call. bewaaradres voor Y bij de buffer.
8B LSB tekstbuffer altijd 0.
8C MSB tekstbuffer 82-9F.
8D LSB computer in werkbuffer altijd 0.
8E MSB computer in werkbuffer 60-7F.
8F LSB keyboard in werkbuffer altijd 0.
90 MSB keyboard in werkbuffer 60-7F.

Variabelen
A unshift on space 0=on 3=off
%B Baudrate in Baud.
B tellerstand lengte in bit, afh. van %B.
C clockfrequentie, normaal 1 MHz.
D auto CR/LF na 64 tekens 0=on 1=off.
E lengte stopbit 0=1 bit 1=1.5 bit.
F frequentie laagste toon in Hertz.
G blankteken 0=on 1=off.
H tellerstand markfrequentie.
L tellerstand spacefrequentie.
I polariteit 0=mlsh 8=mhsl (bij laatste wordt H met L verwisseld).
J tellerstand morse-snelheid, lengte 1/2 punt.
K stringadres call voor cw-identificatie.
N leestekens 1=int 2=wu 3=mil.
P assembleradres tijdens assembleren.
Q beginadres assembler.
R 0-25 baudottabel 26-83 morsetabel.
S frequentieshift tussen mark en space in Hertz.
T stringadres figures int, wu of mil.
V morsesnelheid 0-30 wpm, normaal 20.
W dummy voor inlezen tekstbuffer 8200-9FFF.
Y dummy passno. assembler en H-L verwisseling.
Z dummy asciitoetsleesroutine menu.

Arrays
II initialisatie via, snelle vdu, printerroutine, clear flags.
TT zendprogramma.
RR ontvangstprogramma.
ZZ morseidentificatie en bufferroutine.

DE ASSEMBLY SOURCE-LISTING BEHORENDE TOT DIT ARTIKEL WORDT IN EEN VOLGENDE EDITIE GEPUBLICEERD.



A SIMPLE EPROM DISC FOR 6XXX COMPUTERS

Author: Andrew Gregory, England.

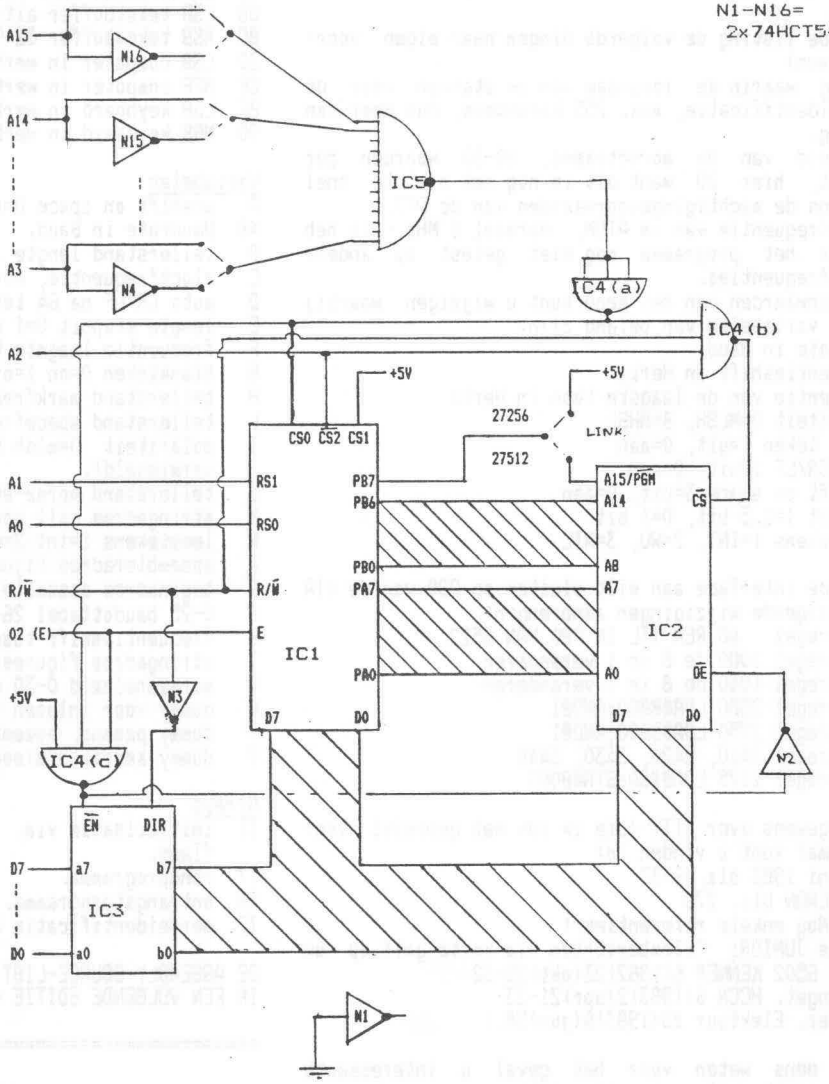
The advent of 32K and 64K EPROMs has made it easy to construct an EPROM 'disc' of useful capacity. It is ideal for storing languages, operating systems and assemblers especially in cassette based systems. I built mine so that I could quickly load Micro-ADE and Eprom programmer software into my expanded JUNIOR. The design has been kept as simple as possible but could be further developed, perhaps into a cartridge system.

HARDWARE DESCRIPTION

As can be seen from the circuit diagram the address lines of the 'disc' EPROM are set up by a 6821 PIA. This occupies four out of the eight memory locations occupied by the card. The EPROM can be read at the others. If the system address lines A0 and perhaps A1 are connected to the EPROM directly (preferably through buffers) then consecutive addresses can be read, but I have not done this. The address decoder is similar to that of Elektor's VDU card. The 74HCT540/74LS540 inverting buffers are functionally identical to 74HCT240/74LS240 but have a pin-out more convenient for home-made PCBs. To make a eurocard sized PCB for the Elekorbus without photograpic techniques is not too difficult provided it is double-sided. The tracks to the 'a' row of the DIN14162 connector are layed and soldered on the component side allowing them to be taken through the 'c' row which has no pads on this side. There are varieties of connector in which this is impossible because soldering from the top is prevented by a plastic foot. Tracks can be quite thick (~1mm) and through-plated holes are not needed. Connections to the underside are made with special pins at appropriate points. For laying tracks you can use transfers or artwork tapes layed directly on the copper. On my card it is possible to replace the EPROM without removing the card from the busboard as it is held in a zero insertion force socket which is mounted on an aluminium bracket at the end.

CIRCUIT OF THE EPROM DISC

IC1=6821
IC2=27256/27512
IC3=74HCT245/74LS245
IC4=74LS10
IC5=74LS133
N1-N16=
2x74HCT540/74LS540



SOFTWARE DESCRIPTION

The source listing is of a 'loader' which copies files to RAM. I have blown this into the JUNIOR PMV ROM at address $1750. The first page of the EPROM is a directory which holds up to 28 entries. Each entry consists of a hex filenumber, EPROM address, load address, length and an execute address, nine bytes in total. Unused entries are left unprogrammed as $FF is an illegal filenumber. The loader has been divided into subroutines to allow calling from within

programs. I have stored Micro-ADE under the filename 'A0'.
It is loaded from the PM monitor as follows:

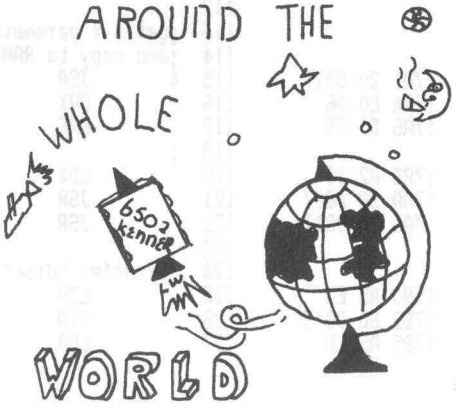
```
1750(space) 20 R     Run loader
?A0(CR)              Filename
READY
JUNIOR
R                    Run execute address
Date(DDMMYY)         Micro-ADE cold start
```

It loads almost instantly.

```
                    2 ;     EPROM DISC SOFTWARE
                    3 ;
                    4 ; This version intended for expanded JUNIOR.
                    5 ; It may be blown into top of PMV or PME rom.
                    6 ;
                    7 ;DIRECTORY FORMAT:-
                    8 ;
                    9 ;     byte 0  file number
                   10 ;     byte 1  eprom address   low
                   11 ;     byte 2    "     "       high
                   12 ;     byte 3  load address    low
                   13 ;     byte 4    "     "       high
                   14 ;     byte 5  length          low
                   15 ;     byte 6    "             high
                   16 ;     byte 7  execute address low
                   17 ;     byte 8    "       "     high
                   18 ;
                   19 ; Up to 28 files are allowed. The directory fills the
                   20 ; first page of the "disc" eprom. (27256/27512)
                   21 ;
                   22 ;MONITOR ROUTINES
                   23 ;
        105F       24 labjun  equ     $105F          warm start monitor
        1334       25 prcha   equ     $1334          print ascii character
        12AE       26 reccha  equ     $12AE          keyboard input
        13A2       27 ipb     equ     $13A2          key input a byte
        11E8       28 crlf    equ     $11E8          carriage ret line feed
        11D6       29 messy   equ     $11D6          print a message
                   30 ;
                   31 ;CARD ADDRESSES
                   32 ;
                   33 ; Note - page $19 on an expanded JUNIOR can be freed by
                   34 ; reconnecting pin 23 of IC1 (6522) to AB8. In my
                   35 ; system the 6845 on the VDU card is addressed at
                   36 ; $1900 and the RTC card at $1920.
                   37 ;
                   38 ; 8 addresses are required.
                   39 ;
        1908       40 card    equ     $1908          convenient i/o space
                   41 ;
        1908       42 dra     equ     card+00        6821 registers
        1909       43 cra     equ     card+01
        190A       44 drb     equ     card+02
        190B       45 crb     equ     card+03
        190C       46 eprom   equ     card+04        address of eprom
                   47 ;
                   48 ;ZERO PAGE ADDRESSES
                   49 ;
        00EA       50         org     $EA
00EA               51 epadl   res     1              points to "disc" byte
00EB               52 epadh   res     1
00EC               53 memadl  res     1              points to RAM byte
00ED               54 memadh  res     1
00EE               55 lenl    res     1              length of file
00EF               56 lenh    res     1
        00FA       57         org     $FA
```

APPLE COMPUTER INC. VERDUBBELT WINST IN FISCAAL JAAR 1986.

Cupertino/Zeist, 15 oktober 1986.
De netto winst en de winst per aandeel van Apple Computer Inc. zijn in het fiscaal jaar 1986, dat loopt van oktober t/m september, meer dan verdubbeld. In het afgelopen jaar steeg de winst met 151 procent tot 154 miljoen US dollar, vergeleken met 61.2 miljoen dollar in het jaar ervoor. De winst per aandeel steeg met 141 procent tot 2.39 US dollar vergeleken met 0.99 US dollar per aandeel in het fiscale jaar 1985. De omzet in het afgelopen jaar bedroeg 1.902 miljard US dollar. In 1985 was dit 1.918 miljard US dollar. De omzet in het vierde fiscale kwartaal bedroeg 510.8 miljoen US dollar, een stijging van 25 procent t.o.v. het jaar ervoor toen de omzet 409.7 miljoen dollar bedroeg. De winst in het vierde kwartaal steeg met 47 procent tot 32.9 miljoen US dollar ofwel 0.51 US dollar per aandeel vergeleken met 22.4 miljoen ofwel 0.36 Us dollar per aandeel in dezelfde periode van het jaar ervoor. De bruto marge uitgedrukt in percentages van de omzet bedroeg in het vierde kwartaal 53.3 hetgeen over het gehele jaar genomen neerkomt op 53.1 procent. De overeenkomstige percentages van het jaar ervoor bedroegen respectievelijk 45.9 en 41.7. In Nederland is Apple Computer gegroeid met een percentage van maar liefst 42 procent in vergelijking met het fiscale jaar 1985.



```
00FA                58 pointl  res     1
00FB                59 pointh  res     1
                    60 ;
                    61 ;
                    62 ;**********MAIN PROGRAM**********
                    63 ;
          1750      64         org     $1750
1750 20 E811        65         JSR     crlf            CR + LF
1753 A9 3F          66         LDA     #'?
1755 20 3413        67         JSR     prcha           print "?"
1758 20 A213        68         JSR     ipb             filenumber in A reg
175B 20 6A17        69         JSR     load            load the file
175E A0 4C          70         LDY     #$4C            "READY" message
1760 90 02          71         BCC     1.f             branch if loaded OK
1762 A0 46          72         LDY     #$46            "WHAT" message
1764 20 D611        73 1       JSR     messy           print message
1767 4C 5F10        74         JMP     labjun          warm start monitor
                    75 ;
                    76 ;**********SUBROUTINES**********
                    77 ;
                    78 ;Separate subroutines here to allow calling by programs
                    79 ;
176A C9 FF          80 load    CMP     #$FF            illegal entry?
176C F0 31          81         BEQ     err
176E 48             82         PHA                     save entry
                    83 ;
                    84 ;initialise PIA
176F A9 04          85         LDA     #$04
1771 A0 FF          86         LDY     #$FF
1773 A2 00          87         LDX     #$00
1775 8E 0919        88         STX     cra             access direction reg A
1778 8E 0B19        89         STX     crb             access direction reg B
177B 8C 0819        90         STY     dra             A is outputs
177E 8C 0A19        91         STY     drb             B is outputs
1781 8D 0919        92         STA     cra             access data reg A
1784 8D 0B19        93         STA     crb             access data reg B
                    94 ;
1787 8E 0819        95         STX     dra             "disc" address = $0000
178A 8E 0A19        96         STX     drb
                    97 ;
178D 68             98         PLA                     retrieve entry
178E A8             99         TAY
                   100 ;
                   101 ;Search for correct directory entry
178F CC 0C19       102 2       CPY     eprom           is this it?
1792 F0 0D         103         BEQ     4.f             branch if yes
1794 A9 09         104         LDA     #$09            set up next address
1796 18            105         CLC
1797 6D 0819       106         ADC     dra
179A 8D 0819       107         STA     dra
179D 90 F0         108         BCC     2.b             branch if more entries
                   109 ;
179F 38            110 err     SEC                     set carry if not found
17A0 60            111         RTS
                   112 ;
                   113 ;get six parameter bytes from directory
                   114 ;and copy to RAM.
17A1 20 D817       115 4       JSR     get-param
17A4 E0 06         116         CPX     #$06            more?
17A6 D0 F9         117         BNE     4.b             branch if yes
                   118 ;
17A8 A2 10         120         LDX     #$10
17AA 20 D817       121         JSR     get-param
17AD 20 D817       122         JSR     get-param
                   123 ;
                   124 ;transfer "disc" start address to PIA
17B0 A5 EA         125         LDA     epadl           low byte
17B2 8D 0819       126         STA     dra
17B5 A5 EB         127         LDA     epadh           high byte
```

Tips and tricks for the EC65K/Junior.

By: Coen Boltjes
Nw. Plantage 9
2611 XH Delft.

1) It's possible that while the computer don't acces the VDU-Ram, some video-noise is visible on the screen. This is caused by the fact that between valid address-lines the VDU-Ram address is offered to N37 of the VDU-card. This results in resetting the flip-flops FF1-FF4, which causes the video-noise. Connecting pen 1 of N37 with 02, instead of logic one, will solve this problem.

2) There is a lot of misunderstanding about the track to track access time. If you want to speed up this time, don't change location $26A5. This must be $D4. Loacation $26A3 must contain the time in miliseconds. Standard is this $28, but in a lot of configurations lower values will work.

3) If you want to run your computer on 2 MC, a parameter in a 10 milisecond loop must be changed. $267B contains this parameter, which is $31 or $62 for 1 MC and 2 MC respectively. To avoid manual adjusting of this parameter if you use another speed than usual a little routine is developed which can be referred in the bootroutine.

4) If you want to use a bootroutine which is too large to fit in $2200-$2300 you can temporary use the space $2E79-$3179. Because this area is used for the directory and for the page 0 and 1 swap, the routines in this area will be available until a DIR command or a swap is executed.

5) If you use the CPU-card with a 65C02, you don't need special software to program EPROM's with the Elektuur programmer (jan 1982). The RDY line will hold the processor during the program pulse, so you can use the MOVE routine of the monitor.

==========

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```
17B7 8D 0A19      128          STA     drb
                  129  ;
                  130  ;copy file from "disc" to ram
17BA A0 00        131          LDY     #$00
17BC AD 0C19      132  3       LDA     eprom          get byte
17BF 91 EC        133          STA     [memadl],Y     store in RAM
                  134  ;
17C1 EE 0819      135          INC     dra            next "disc" address
17C4 D0 03        136          BNE     1.f
17C6 EE 0A19      137          INC     drb
17C9 C8           138  1       INY                    increment ram pointer
17CA D0 02        139          BNE     1.f
17CC E6 ED        140          INC     memadh
17CE C6 EE        141  1       DEC     lenl           decrement length
17D0 D0 EA        142          BNE     3.b
17D2 C6 EF        143          DEC     lenh
17D4 D0 E6        144          BNE     3.b            branch if more
                  145  ;
17D6 18           146          CLC                    clear carry as OK
17D7 60           147          RTS
                  148  ;
                  149  ;SUBROUTINE
                  150  ;
17D8 EE 0819      151  get-param INC     dra            get next entry
17DB AD 0C19      152          LDA     eprom
17DE 95 EA        153          STA     epadl,X
17E0 E8           154          INX
17E1 60           155          RTS
                  156  ;
                  157  ;END
```

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KIMTAP is a Tape Read/Write utility program written for Elektor's OCTOPUS/EC-65 in combination with Elektor's BASICODE/KIM tape interface card 65028 (Computer Special 2). by Marc Lachaert, Belgium. The tapes written by KIMTAP are fully compatible with those written on any KIM or JUNIOR. Through this tapes, the OCTOPUS / EC-65 can communicate either with a KIM, a basic JUNIOR, an extended JUNIOR or a DOS-JUNIOR This document together with the TAPUTL subroutines in assembly-source listings.
Send cheque of Hfl. 31,50 to W.L. van Pelt (eurocheque 22,=) at the editorial office.

++++++++++++++++++++++++++++++
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++++++++++++++++++++++++++++++

==========

****
** MON65 OP JUNIOR **
****

Door: Erik v.d. Broek, Nederland.

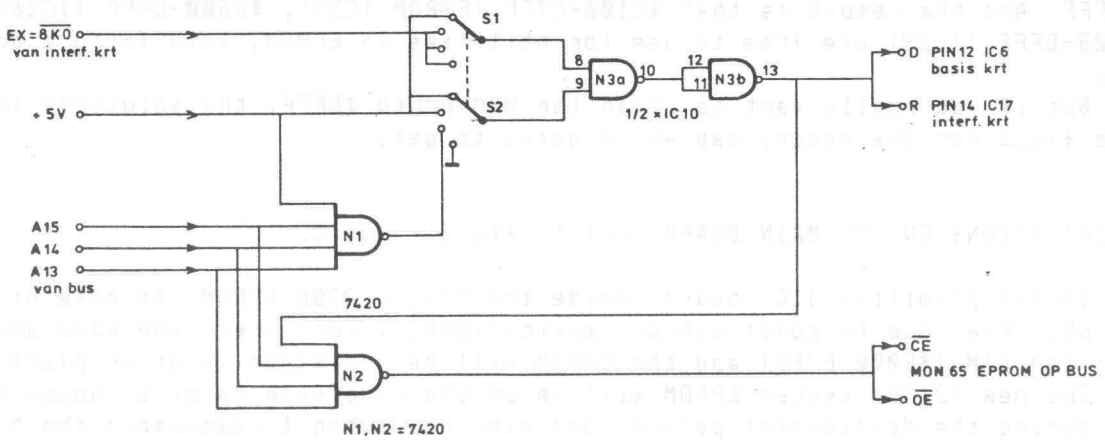
Waarom een Octopus gebouwd, als je al een JUNIOR hebt? Om MON65 te implementeren? Dan bouw je JUNIOR toch om! En al mijn software dan? Dan bouw je toch een uitschakelbare, omschakelbare overschakeling! Kortom, een JUNIOR in native-mode met een Octopus-MON65-simulationmode.
De schakeling bevat een vier-standen-schakelaar met de volgende funkties:

1) JUNIOR met afgekoppelde bus, voor het foutzoeken in uitbreidingen.
2) JUNIOR met bus. Reset vektor en standaard monitor worden opgezocht, echter in die ouwe 2708, waarvoor de bovenste 8 K (op bus zit daar MON) op de basis- en interface kaart wordt geaddresseerd. Cassette en video-routines blijven bruikbaar.
3) MON65-halfsimulatie :
   - Een nieuwe VIA voor keyboard op C110 - C1FF
   - 2 K RAM op C800 - CFFF
   - VDU RAM op D000 - D7FF
   - MON65 Eprom uiteraard op E000 - FFFF
   - Toeters en bellen naar eigen inzicht te bevestigen.

   Verschil met de Octopus MON65:
   - De ACIA, nog een VIA (de 'centronics') en de pieper. Dit is door eenieder zelf in te vullen, dunkt me.
   - De onderste 8 K blijft op standaard geadresseerd. Software die op 0800 - 1FFF RAM verwacht, gaat dus de mist in, maar JUNIOR programma's blijven bruikbaar.
4) Idem 3), doch ook onderste 8 K wordt op de bus geadresseerd. Hier hebben we de meest realistische OCTMON65 simulatie.

De schakeling : 2 nieuwe poortjes, een 6522 en een 6116 + adres-dekodering. En niet te vergeten! de schakelaar.

- De RST draadbrug en D - EX verbinding verwijderen.
- Adres-dekoderingen voor de EPROM, de VIA en de 6116 spreken voor zich.



HERMAN ZONDAG

THE JUNIOR COMPUTER REVISITED

I - *THE COMPLETE ADDRESS DECODING*

Did you built the Junior Computer before the SAMSON/OCTOPUS project appeared? Are you reluctant to leave great part of the Junior, to go to the architecturaly new SAMSON system? Are you one of those who loves to pick up your soldering iron, some ICs, resistors and other hardware stuff, and to ASSEMBLE, and to test, and to debug, as much as you program in software?

Then this is for you.

We can improve our old J.C. in many ways, up to an extent where it turns far more perfect (in terms of memory) than the latter *elektor computing* project.

One of the first steps is to resolve one of the greatest drawbacks of the J.C.: the memory organization. The Junior was born with 1024 bytes of RAM in the lowest address space, and other 1024 bytes of EPROM in the $1C00-1FFF range; more, the basic input/output device, the 6532 PIA-RAM-TIMER, was laid in the address range of $1A00-1BFF, occupying that way 512 places, where 128+32 were more than enough. Then the interface board came, with RAM growing from $0400 to 07FF, EPROMs at $0800-17FF, and a new I/O device at $1800-19FF, this being another loss: 512 bytes where only 16 needed.

The bus board opened the frontiers to an endless growing, with marks as the dynamic RAM card, the VDU board, and the floppy controller card. And it was so, that in Nov.82 we were told how to change the memory scheme, turning its organization upside-down, in a way that we got RAM from $0000 to BFFF, but with the 8K upper space disorganized as before. To complicate matters further, the PROM 82S23, IC 17 on the interface card, was surveying what could be modified or not, in the way that it forbides writing on certain locations or reading from other sources. And, of course, adapting the disk software from Ohio Scientific, brought further losses: the disk "controllers", located on $C000-C0FF could be satisfied with only 6 locations! In the same way, the VDU board lost 6 addresses on the CRTC decoding, leaving aside other 2K in the whole project.

Soon I realized that, and found a way to gain the undecoded addresses in the $C000 → DFFF (disk + video) space. Although this now went beyond the scope of this article, may be some users will benefit from the idea, so it follows. I've used for some time the 8K RAM + EPROM card (2) with some utility programs by means of the addition of only one IC. A 4-input and gate (fig.1) enables the card in the locations unused by the VDU or the FLOPPY cards; two lines must run to this gate: one ($C000→C0FF) is already wired in the DISK board from pin 6 of IC2 (74LS10) to pin 6c of the bus connector (ref.4, fig.9); the other ($D800→D807), in the VDU board, can be wired by an insulated jump from pin 9 of IC9 (74S133) to pin 6a of the bus (ref.6, fig.4). The opposite is done in the EPROM card from these bus-connector pins to the inputs of the new gate as ilustrated here. Every time one of these signals is low, the card cannot be read; this memory board shall work only with EPROM (3x2716) and addressed in the base address of $C000-DFFF. And the result is that $C100-C7FF (EPROM IC25), $C800-CFFF (IC26) and $D808-DFFF (IC28) are free to use for utilities in EPROM, totalizing a good 6K space.

But if you really want to clean the RAM up to $DFFF, the solutions follow. See fig.2 for the memory map we're going to get.

A - MODIFICATIONS ON THE MAIN BOARD (ref.1, fig.2); fig.3.

In the primitive J.C. board reside the CPU, a 2708 EPROM, 1K byte of RAM and the 6532 PIA. Due to construction implications, I left there the 6532 and the CPU; the RAM ($E000-E3FF) and the EPROM will be addressed in other place.

The new (2732) system EPROM will be on the interface card. I choose so, because during the development period, and even now, when I reassemble the MONI-

TOR, erasing and burning another EPROM, I do not have to detach the interface from the main board; it's just a matter of turning them upside-down to change the EPROMs.

The RAM chips (IC4 and 5) and R16 must jump out of their sockets, and the 6532 IC3 re-addressed; this is done with the addition of a 74LS85 (plus a 74 S30 if possible) in a little PCB.

The PIA has 128 bytes of RAM, two I/O ports, timers, flags and edge detectors. Elektor scattered all the PIA registers by $1A80 → 1AFF, but we can learn from a manufacturer's sheet how to put them in 32 bytes (7). It's enough to decode the $XX80-XX9F space after the 128 bytes of RAM (XX00-XX7F). A 4-bit comparator, the 74LS85 will be preset to $A in one of its sets of inputs, while the other set will read the four address lines A4 through A7. Then, the three outputs will flag the addresses $XX0X → XX9X (A<B, pin 5), the 16 addresses $XXAX (A=B, pin 6) and the remaining $XXBX → XXFX addresses (A>B, pin 7).

Using an (available) signal of $EFXX, the PIA is laid down on the addresses $EF00-EF9F, as shown in the drawing. The $EFXX line is generated with an 8-input nand gate 74S30, which I've located on the disk board, for convenience; but I agree that this gate would better be joint with the 74LS85 on the main board, so that the system could work without the disk card, for debugging purposes. The new addresses of the PIA will be:

```
$EF00 → EF7F : RAM
$EF80 - PAD    (FA80)
$EF81 - PADD   (FA81)      BETWEEN BRACKETS: the old addresses
$EF82 - PBD    (FA82)
$EF83 - PBDD   (FA83)          $EF94 - CNTA  (FAF4)
$EF84 - RDTDIS (FA84)          $EF95 - CNTB  (FAF5)
$EF85 - RDFLAG (FAD5)          $EF96 - CNTC  (FAF6)
$EF8C - RDTEN  (FADC)          $EF97 - CNTD  (FAF7)
$EF84 - EDETA  (FAE4)          $EF9C - CNTE  (FAFC)
$EF85 - EDETB  (FAE5)          $EF9D - CNTF  (FAFD)
$EF86 - EDETC  (FAE6)          $EF9E - CNTG  (FAFE)
$EF87 - EDETD  (FAE7)          $EF9F - CNTH  (FAFF)
```

This is the first part of the input/output page ($EF00-EFFF) which will contain, besides the PIA, the CRTC, the disk PIA and ACIA, the VIA (Centronics), the real-time-clock,... and other user-defined addresses.

The PIA re-addressing can not be done independently of the other modifications because the new $EF00-EF9F space is enabled in the interface/bus by the PROM + bus buffers, and if they are enabled, something will be buffered from them to the main board, surely different from what should be read from the PIA.

B - MODIFICATIONS ON THE INTERFACE CARD (ref.3, fig.1); fig.4

This will be one of the more heavily modified boards.

The bus-buffers must "close" the traffic in one only address range, IC5 will turn into a 4K EPROM, IC4 in a 2K CMOS RAM without one page, the VIA re-addressed, and a new IC added.

Following fig.4, let us begin with IC1, 6522 VIA: previously located at $F800-F9FF ($1800-19FF) it shall fall into the tiny $EFA0-EFAF 16 addresses that it deserves. Line $EFXX, already mentioned, will substitute K6 on the $\overline{CS2}$. And A=B, from the 'LS85 (main board) will be linked to CS1 instead of the old VIA line (the output of gate N35).

Second, the bus buffers problem:

The traffic of information between the main board and the interface card (the bus board is connected to the interface, *after* the bus buffers), is controlled by the PROM IC17. This PROM, 82S23, was programmed in a way that the bus buffers 74LS243 IC11 and 12, are disabled in 2 ranges, $E000-E3FF (or $0000-03FF)

and $FA00-FFFF ($1A00-1FFF) corresponding respectively to the 1K RAM, and to the PIA + EPROM, all in the main board, so that no read no write is permitted on or from the interface card and bus.

With the proposed location of the PIA (only) in the main board, it will be enough to limit the limitations to the range $EF00-EF9F, of the sole device addressed above the interface card's buffers. All the remaining space can be addressed as required. So, the PROM is extracted and "substituted" by a 'LS157 selector. Its Y output is made low in the PIA address space, so that the buffers permit writing to the interface and the bus (no harm if no other device is located there in the same addresses) but no byte is read from there.

A (new, left unused from the memory reorganization for the floppy-disk interface) (ref.5, fig.1) 3-input nor gate (N33 or 34), will *add* signals $EFXX, A=B (or XXAX) and A>B (or XXBX → XXFX). What means that the SEL input of the 'LS 157 will only be logic high when neither of the 3 nor-inputs is high: what means finally, the space $EF00-EF9F. The consequence of this SEL input being high, is that the B input is "connected" to the Y output, and so the bus buffers' controller lines are fed with a low level, what determines that only write is permitted to the interface and bus, and no read is possible.

Third, IC4, RAM 6116 (or 51xx) was already addressed at $E800-EFFF (or $0800-0FFF, EPROM, originally), but now it must be disabled in the new I/O address page or $EF00-EFFF. It's just enough to utilize one of the unused 3-input nand gates (again after the disk-interface, ref.5 fig.1 and 3). This gate N46, will replace functionally N41 on the $\overline{CS}$ and the $\overline{OE}$ RAM pins. Its inputs will be the K2 as before, the inverted K2 and K3 as before, plus the $EFXX line. The effect is the subtraction of $EF00-EFFF from this RAM. If you want, you can unsolder R2, R4.

Fourth, the new system-monitor EPROM, on IC5, (previously 2716). The $\overline{OE}$ doesn't suffer modifications neither the $\overline{CE}$ pin; but pin 21 is now line A11. Of course, gate N43 must add the four K lines (K4 through K7) which must be linked together on points D-E-F, while R14 and R15 must withraw from their places on the main board.

C - DISK BOARD - fig.5; (ref.4, fig.9)

Some ICs must be added to this card if the complete address decoding is desired. Six addresses are needed. A 13-input nand gate ('S133) will decode up to 8 addresses, and the so obtained $\overline{\$EFC0-EFC7}$ line is directed to $\overline{CS2}$ of either the 6850 ACIA and 6821 PIA. Then the ACIA's CS1 is linked with A2 and CS0 with $\overline{A1}$, so it lies at $EFC4-EFC5, where A2 is high and A1 is low. The CS1 of the 6821 links to $\overline{A2}$, CS0 with ⊕ and RS1 and RS0 with A1 and A0 as before; this chip will be active on $EFC0,1,2,3. A drawback of this arrangement is that the data buffers of the board (IC13, 'LS245) must be active on the 2+4 addresses. I ougth to do that with two new gates, a 3-input-and, plus a 2-input-or, as drew in figure 5. Summing it all, it is a '133, a '240 (six inverters), a '11, a '32 and a '30 if this last gate was not put on the main board.

This card was already "backed" with the logic necessary to the control of the drive motor (10) so in the end, it will be a heavy one!

D - VDU BOARD - fig.6; (ref.6, fig.4)

This is the slightest modified one, with one more gate, necessary to reduce the decoding from 8 to 2 bytes, the only two registers necessary for the comunication with the 6845 CRTC. The 3-input and gate (74S11) adds two more address lines to the 13 already present to the 'S133 IC9. The remaining address lines present to N38 and to N37 must follow the chosen addresses for the 6845 CRTC ($EFC6,7) and to the circuitry conducting to the 6116 (or 51xx) RAM IC. The video RAM is now at $E000-E7FF; the first K of this 2K space corresponds to the

RAM in the main board, and the (previously) closed bus-buffers. It implies that those RAM chips in the main board and the PROM on the interface card, be already out. The second 1K was the RAM in the interface card, which must be out too.

The location of the video memory may be arguable; I decided so, because, at the end, I have RAM *continuously* from $0000 to $EF80, which passes through the VIDEO RAM, and includes the PIA RAM, some 61312 RAM addresseswhich can be usefull to some applications.

If you want to verify each step, a possible time-table to do all these modifications, could be:

1- install 'LS85 + 'LS30 on the main board, to get signals $\overline{\text{EFXX}}$, A<B, A=B & A>B
2- "subtract" I/O page from RAM IC4 on the interface board: wire new N46; (reprogram the VIDEO routines on EPROM, relocating the video vectors from $EFXX to other place). Take off R2 (K3).
3- re-address all your "user" I/O addresses, as the real-time clock, A/D boards, peripheral control..., to the new I/O page unused addresses; if not enough space, subtract one more page (previous point 2-).
4- re-address the VIA 6522 in the interface board; (reprogram the Centronics routines on EPROM: $F800-F9FF → $EFA0-EFAF).
5- re-address the ACIA 6850 and PIA 6821 on the disk board; (reprogram the boot-up routines on EPROM, and OS65DV3.3 addresses on diskettes: $C0XX → $EFC0-EFC5, tracks 00, 01, 06-4, 17 & 18 (COPIER), 39-1).
6- re-address the 6845 CRTC on the VDU board; (reprogram the VIDEO routines on EPROM, addresses on diskettes as in BEXEC*: $D800-D807 → $EFC6,7).
7- program, beforehand, a 2732 EPROM with all your system/monitor routines; you will have: $F000-F7FF as before, $F800-FBFF afresh (old 6522 VIA + 6532 PIA), and $FC00-FFFF, the old system monitor space at the main board, with all the new addresses.
8- a) *on the interface board:* take off the PROM and associated N40-IC15 ('LS30),
unsolder the pull-up resistors R32, 34 & 35
take off the RAM chips IC2 and IC3 plus R33 (K1)
install the 'LS 157
and re-address the new EPROM 2732: wire A11 to it

b) *on the main board:* take off the EPROM and R14 (K7)
take off the RAM chips IC4 and IC5, plus R16 (K0)
and re-address the 6532 PIA; unsolder R15 (K6)

c) *on the VDU board:* re-address the CMOS video-refresh-RAM.

CONCLUSION

If you feel skilfull to undertake such an enterprise, don't give up. It is worthy! And be patient... it took me months.

If you need, I'll try to answer your questions.

References:

1. *junior computer* - elektor MAY.80
2. *8K RAM + 4, 8 or 16K EPROM on a single card* - elektor SEP.80
3. *the fully fledged junior computer* - elektor MAY.81
4. *floppy-disk interface for the Junior (I)* - elektor NOV.82
5. *floppy-disk interface for the Junior (II)* - elektor DEC.82
6. *VDU card* - elektor SEP.83
7. *R6532 - RAM-I/O-TIMER (RIOT)* - Rockwell data sheet D42-Rev.6 - OCT.83
8. *address decoding* - elektor JAN.84
9. *memory timing* - elektor FEB.84
10. *controlling the floppy-disk drive motor* - elektor APR.84

Next time: *ANOTHER VIEW OF THE DOS JUNIOR (SOFTWARE TIPS FOR THE DOS JUNIOR)*

(F.LOPES, Colégio dos Orfãos, Lg, Baltazar Guedes, 4300 PORTO PORTUGAL)

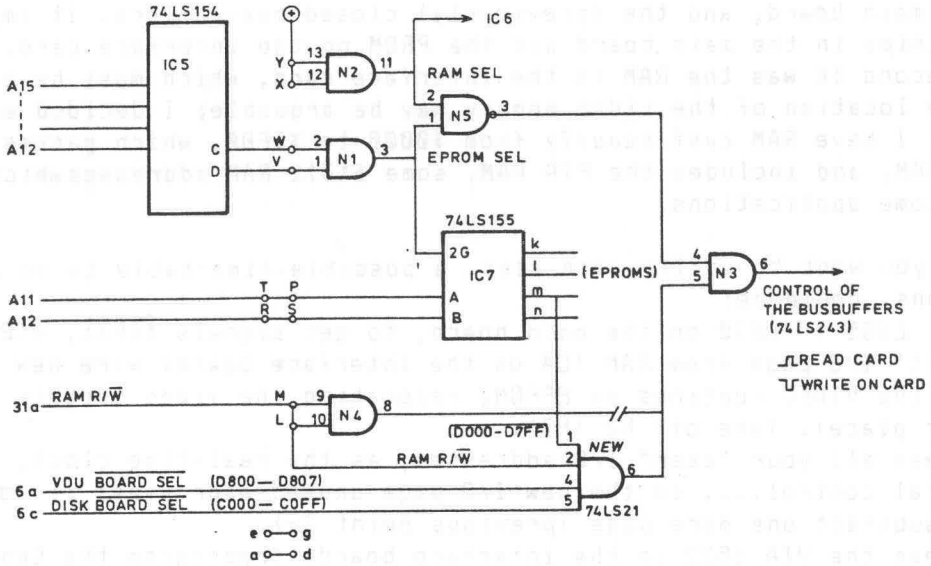


figure.1 - modifications on the RAM EPROM card: how to take advantage of the undecoded memory in the FLOPPY + VDU cards, to use 3 EPROMs in the area C100-C7FF, C800-CFFF and D800-DFFF.

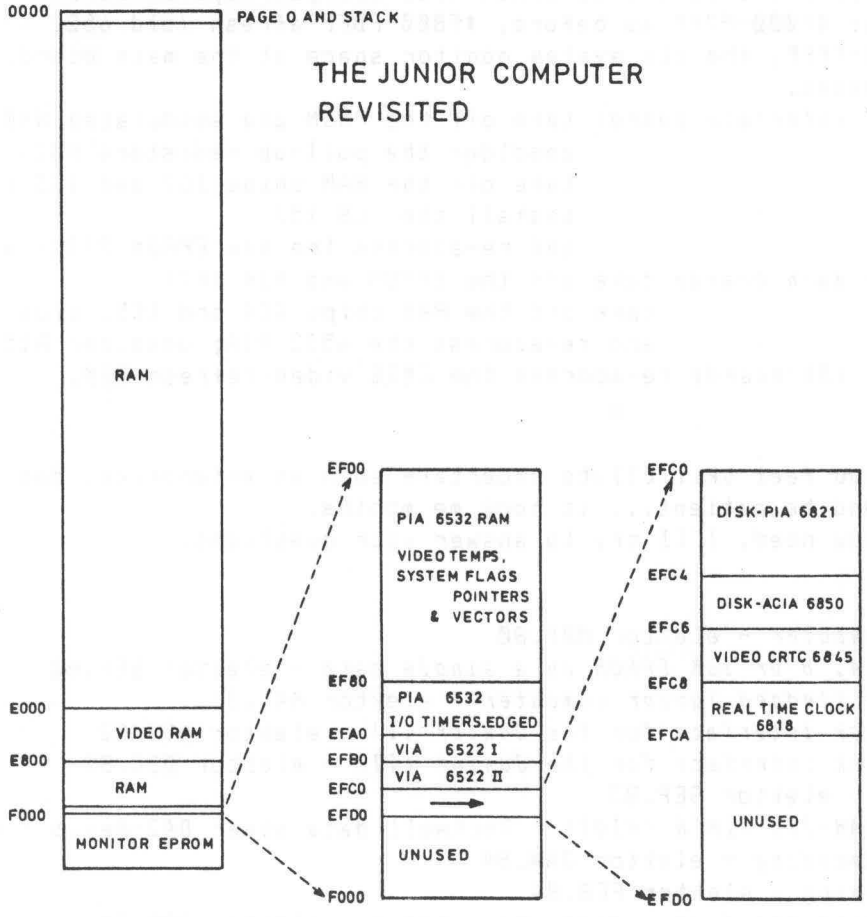


figure.2 - a new memory map for the Junior: a maximum clear-up of the user RAM, and a condensed I/O page.

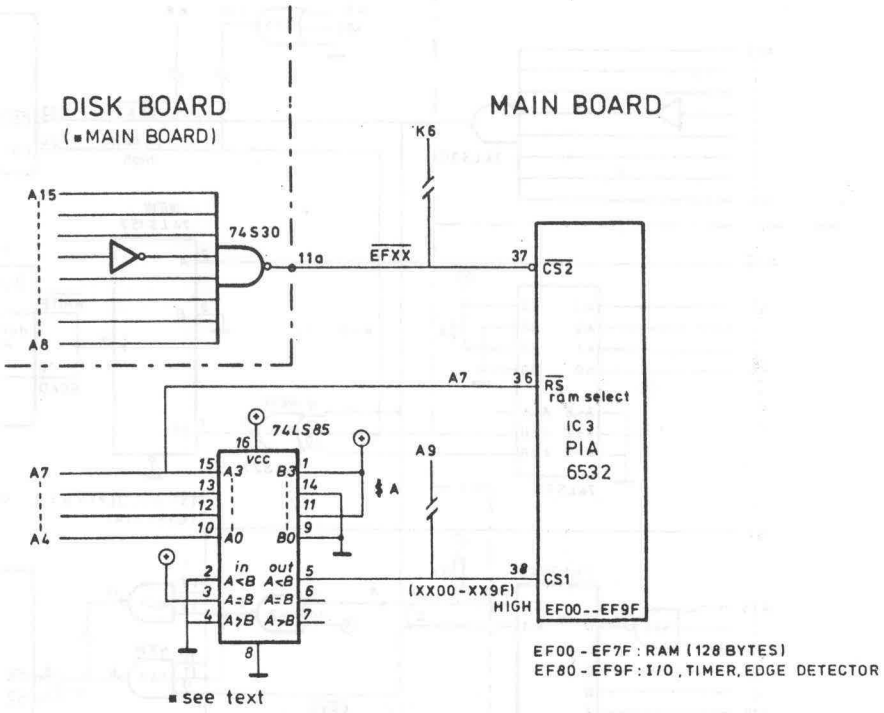


figure.3 - a 'LS85 plus a 'S30 re-address the PIA, from a 512 wide to a 32 tiny address.

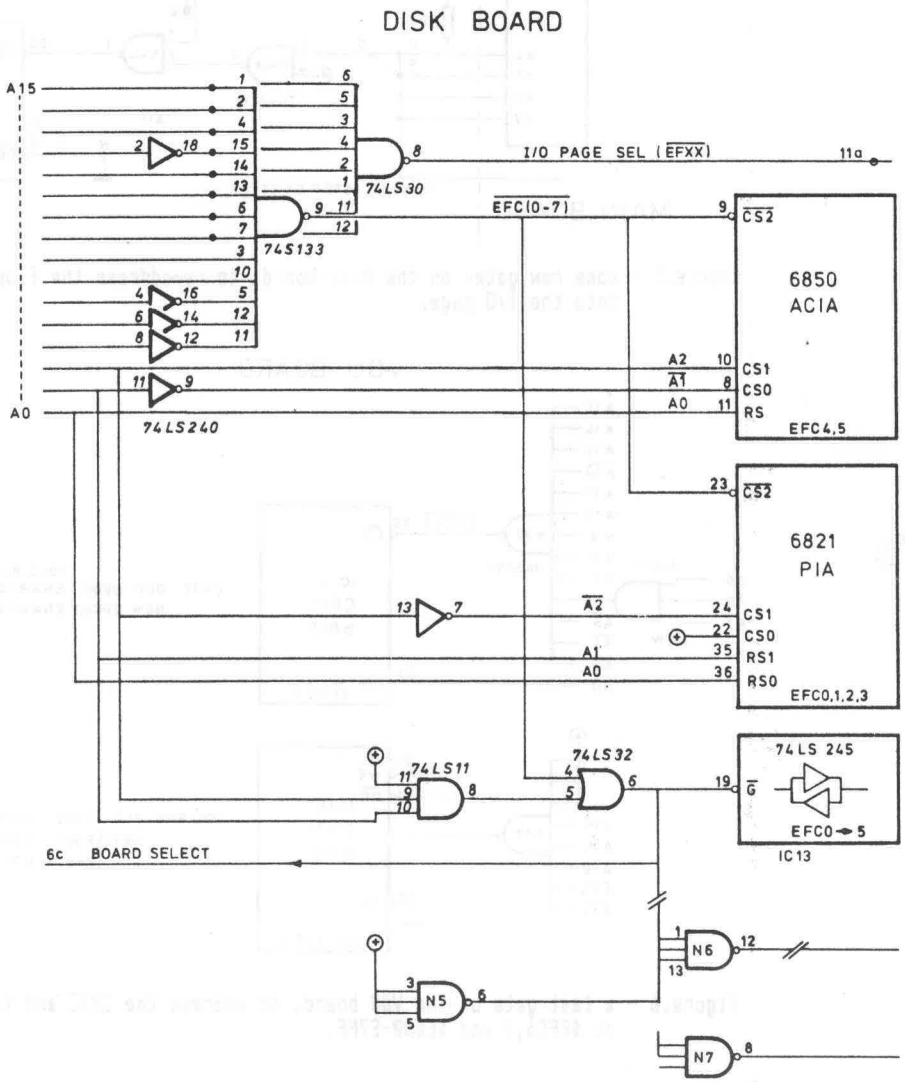


figure.4 - on the interface board, the PROM retires, and the bus-buffers are only disabled on the PIA addresses.

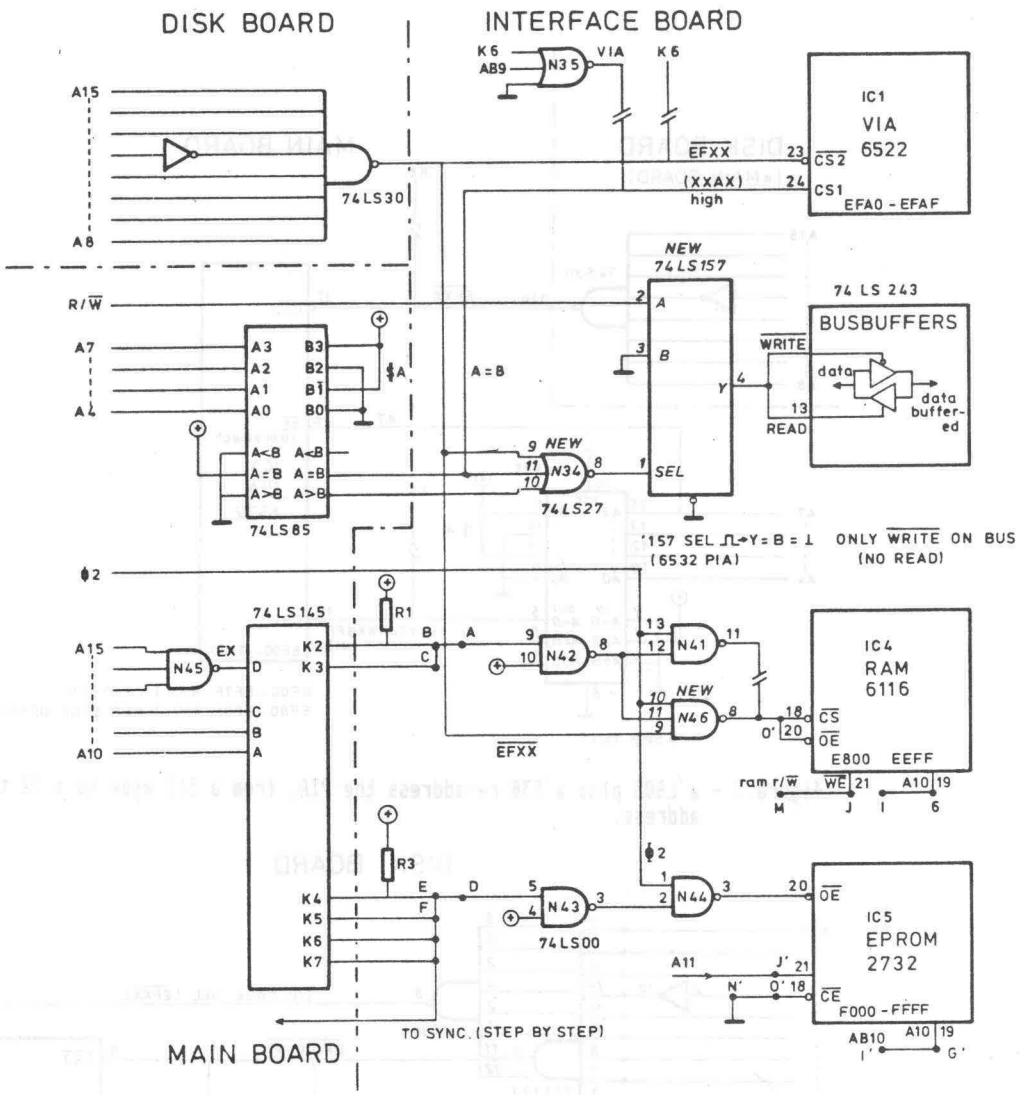


figure.5 - some new gates on the disk board, to re-address the floppy addresses into the I/O page.

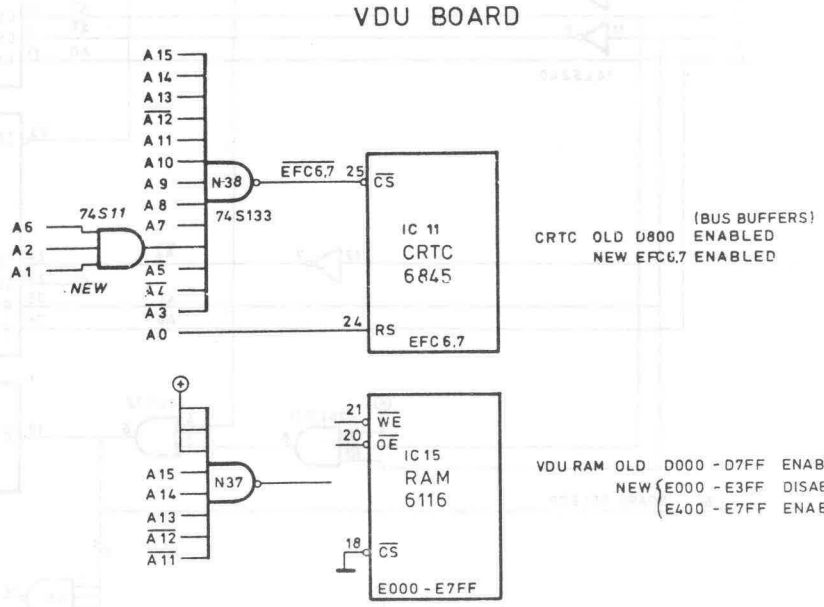


figure.6 - a last gate on the VDU board, to address the CRTC and the Video RAM at $EFC6,7 and $E000-E7FF.

HET LEZEN VAN BASICODE-2 VOOR DOS-65

1 INLEIDING

Nadat ik mijn JUNIOR omgebouwd had naar een DOS-65-computer, wilde ik nog steeds programma's van het NOS radio-programma HOBBYSCOOP ontvangen. Hiervoor heb ik het BASICODE READ PROGRAM (ELEKTUUR oktober 1983) herschreven. Als cassette-recorder interface gebruik ik het ELEKTUUR C64-cassette-interface. Het programma kan BASICODE pro-gramma's van max 32K ontvang-en en opslaan op schijf.

2 GEBRUIK

Nadat de cassette in de recorder geplaatst is kan het programma gestart worden door 'RBC filenaam' in te typen. De computer meldt zich met 'READ BCODE-2'. Nu kan de recorder gestart worden. De data wordt nu ingelezen. Zodra dit gebeurd is, 'piept' de computer ten teken dat er weer gewerkt moet worden. Er kunnen twee fouten gemeld worden:

- OUT OF MEMORY = Het geheugen van de computer is te klein voor het programma,
- CHECKSUM ERROR = De ontvangen check sum is niet gelijk aan de berekende checksum.

Daarna wordt de ontvangen data weggeschre-ven (SAVE DATA) op de gebruikersschijf onder de opgegeven filenaam.

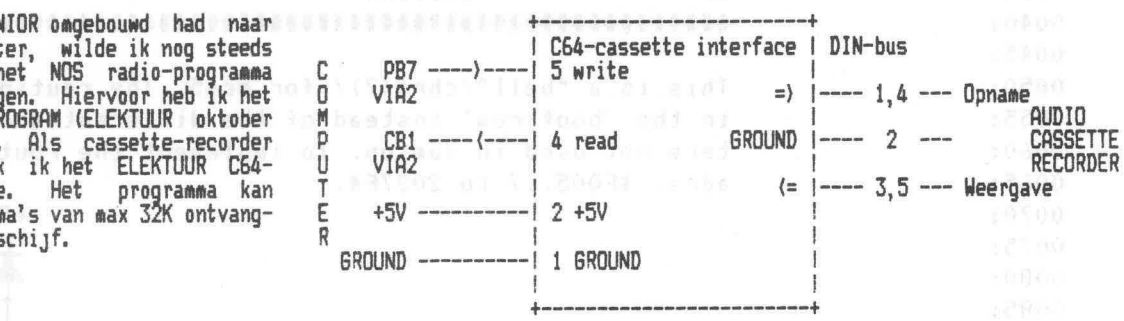
Met behulp van de EDITOR kan de ontvangen ASCII-file aangevuld worden met de stan-daard subroutines (BCSTRT). Deze nieuwe file kan door BASIC ingelezen worden mid-dels het input redirect. Daarna kan de BASIC-file gesaved worden en kan het pro-gramma gerund worden.

3 CASSETTE-INTERFACE

De cassette-interface staat beschreven in de ELEKTUUR van januari 1985. Hiervan wordt alleen het gedeelte voor het lezen en schrijven van data gebruikt. De relais-schakeling voor de motor-sturing wordt niet gebruikt. Ik gebruik een PHILIPS cassette recorder type D 6410 (audio-recorder).

- R13 was 100 Ohm wordt 3300 Ohm,
- R14 was 1500 Ohm wordt 56000 Ohm,
- C6 was 100 nF wordt 56 nF.

Het interface heb ik als volgt met de computer verbonden:



4 ONTVANG-PROGRAMMA

Het READ-BASICODE-2 programma is afgeleid van het BASICODE READ PRO-GRAM van ELEKTUUR (oktober 1983).

Het oude programma maakte gebruik van de timer in de 6532. Aangezien deze niet standaard aanwezig is in de DOS-65 computer maakt het nieuwe programma gebruik van de timer in de 6522 (VIA-2). Omdat deze geen programmeerbare deelfactor heeft, heb ik het timing gedeelte van het programma zodanig aangepast dat de gemeten tijden door vier gedeeld worden. Hierdoor kan de periode-tijd weer in acht bits bewaard worden.

De machine-code van het programma moet op de systeem-schijf gezet worden onder de naam RBC. De mode van de file moet in de command mode (C) gezet worden, zodat het programma gerund kan worden door het intypen van RBC filenaam.

5 STANDAARD ROUTINES

Na het ontvangen van een Basicode-programma moet het programma nog uitgebreid worden met de standaard routines (BCSTRT). Deze routines maken gebruik van enkele subroutines die niet standaard aanwezig zijn in de DOS-65 computer. Daarom moet het programma BCSUBR ook op de systeemschijf gezet worden.
Om ervoor te zorgen dat de subroutines aanwezig zijn als BASIC geladen wordt, moet dit programma aan BASIC worden toegevoegd, of moet een commando gemaakt worden waarmee eerst BCSUBR geladen wordt en daarna BASIC wordt opgestart.

Voorbeeld: BASICODE (ASCII commando file)

```
LO 0:BCSUBR
BASIC
```

Hierna kan het BASICODE programma geladen en gerund worden.

6 LITERATUUR

Basicode-2 Hans G. Janssen
Hilversum: Nederlandse Omroep Stichting
ISBN 90-6833-001-2

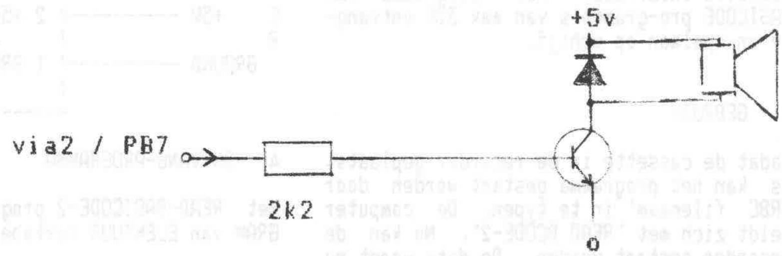
Elektuur oktober 1983
Basicode-2 pag. 40-43
Basicode-2 voor de junior pag. 57-63

7 PETER LASKER, DRAKENSTEYN 291, 7608 TR ALMELO, 05490 - 72178

```
F427                     ORG    $F427

                    ##############################################################
                    ##          "B E L L"   for   E C 6 5                       ##
                    ##         by Lindstrøm & Rasmussen                         ##
                    ##         Parkvej 1, DK-4534 Hørve                         ##
                    ##         juli/86                                          ##
                    ##############################################################

                    This is a "bell"/chr$(7)/ for ec65. The routine is placed
                    in the 'boot-rom' instead of the different screen-parame-
                    ters not used in samson. To implement the routine, change
                    adrs. $F005..7 to 2027F4.
```




```
                    PB7 of via 2 is used for output of the tone. Use a high-
                    ohm speaker or a mini-buzzer and add a transistor for lo-
                    uder sound (but not too loud! it will get on your nerves)

                    # via 2  adresses #
F427                VBPBD   *     $E110
F427                VBTACH  *     VBPBD  +05 timer 1, counter-high
F427                VBTALL  *     VBPBD  +06 timer 1, latch low
F427                VBTALH  *     VBPBD  +07 timer 1, latch high
F427                VBTBCL  *     VBPBD  +08 timer 2, latch low, counter low
F427                VBTBCH  *     VBPBD  +09 timer 2, counter high
F427                VBACR   *     VBPBD  +0B auxillary control register
F427                VBIFR   *     VBPBD  +0D interrupt flag register
F427                AHOLD   *     $2363

F427 AD 63 23             LDA    AHOLD   get character
F42A C9 07                CMPIM  $07     is it CHR$(07)?
F42C F0 01                BEQ    BELL    if yes, goto bell
F42E 60                   RTS            else return
F42F 48             BELL  PHA            save A
F430 A9 C0                LDAIM  $C0     set bit 7,6 "1"->T1:en.PB7 out/fre run
F432 8D 1B E1             STA    VBACR   bit 5 to "0"--> T2: one shot
F435 A9 00                LDAIM  $00     timer 1 generates the tone
F437 8D 16 E1             STA    VBTALL
F43A A9 02                LDAIM  $02     set tone-frequency to approx. 1000 Hz
F43C 8D 17 E1             STA    VBTALH
F43F 8D 15 E1             STA    VBTACH  start the tone
F442 A9 00                LDAIM  $00     timer 2 controls duration of the tone
F444 8D 18 E1             STA    VBTBCL
F447 A9 C3                LDAIM  $C3     gives a duration of approx. 50 ms.
F449 8D 19 E1             STA    VBTBCH
F44C A9 20                LDAIM  $20     timer 2 set bit 5 of IFR
F44E 2C 1D E1       TIMOUT BIT   VBIFR   is time out ?
F451 F0 FB                BEQ    TIMOUT  if not wait,
F453 AD 18 E1             LDA    VBTBCL  time out, clear timer 2 interrupt flag
F456 A9 00                LDAIM  $00
F458 8D 1B E1             STA    VBACR   and stop tone.
F45B 68                   PLA            restore A
F45C 60                   RTS            and return
```

```
Cassette routines              20-Sep-86 13:23              Page 0

                        ; ***** APPLE COMPATIBLE CASSETTE INTERFACE *****
                        ;
                        ; Pieter de Visser
                        ; Nijverheidslaan 6
                        ; 5506 EE Veldhoven
                        ;
                        ; The system I am using is a DOS65 computer with a couple of chánges; one of
                        ; these is the addition of a cassette interface. The hardware of it is quite
                        ; straightforward; it can also be used for Basicode. I use a 6522 VIA; input
                        ; is on PB7, output on PB6.
                        ; The original Apple format has some disadvantages; I have improved it on two
                        ; points:
                        ; The header can now be varied in length; by default, I use one of 5 seconds
                        ; (that of the Apple is 10 seconds).
                        ; The read routine searches the start of a next transmission; it does this by
                        ; requiring 256 consecutive 'long 1's'.
                        ; Also, I have included a verify routine; it counts the number of differences
                        ; between a memory block and a cassette data block.
                        ; I have used some 65C02 instructions; it won't be easy to do without them.
                        ; The same applies to adapting the routines to a 2 MHz 65C02.

          00D2                  org     $00d2           8 zero page addresses used

00D2                    chksum  res     1               checksum in read routine
00D3                    lastin  res     1               bit 7 is a copy of last input state read
00D4                    begad   res     2               begin address of memory block
00D6                    endad   res     2               end address of memory block
00D8                    ercnt   res     2               error counter used in verify routine

          0200          header  equ     $0200           length of header must have been stored here
                        ; ($40 is 10 seconds, like Apple's)
          F780          orb     equ     $f780           VIA address; the port must have been
                        ; initialized properly

          2000                  org     $2000

                        ; Cassette write routine
                        ; Write memory block from begad until endad (inclusive) to cassette.

2000 08                 cassw   php
2001 78                         sei                     no interrupts
2002 AD 0002                    lda     header          write header
2005 20 2A20                    jsr     headr
2008 A0 26                      ldy     #$26
200A 52 D4              cassw1  eor     [begad]         update checksum
200C 48                         pha
200D B2 D4                      lda     [begad]         get byte
200F 20 2120                    jsr     wrbyte          write it
2012 20 5420                    jsr     next            next address
2015 A0 1C                      ldy     #$1c
2017 68                         pla
2018 B0 F0                      bcs     cassw1          not yet ready ?
201A A0 1F                      ldy     #$1f
201C 20 2120                    jsr     wrbyte          write checksum
201F 28                         plp
2020 60                         rts

2021 A2 10              wrbyte  ldx     #$10            write A as a byte
2023 0A                 1       asla
2024 20 3720                    jsr     wrbit           write one bit
2027 D0 FA                      bne     1.b             not yet written 8 bits ?
2029 60                         rts

202A A0 49              headr   ldy     #$49            write header
```

```
assette routines                20-Sep-86 13:23                Page 1

02C 20 3C20             jsr     zerdly          A * 256 long 1's
02F D0 F9               bne     headr
031 69 FE               adc     #$fe
033 B0 F5               bcs     headr
035 A0 1F               ldy     #$1f            and a short 0
037 20 3C20     wrbit   jsr     zerdly          write bit
03A C8                  iny
03B C8                  iny
03C 88          zerdly  dey                     write half bit
03D D0 FD               bne     zerdly
03F 90 05               bcc     2.f             zero bit ?
041 A0 32               ldy     #$32            delay for half '1' bit
043 88          1       dey
044 D0 FD               bne     1.b
046 A8          2       tay                     toggle output
047 AD 80F7             lda     orb
04A 49 40               eor     #$40
04C 8D 80F7             sta     orb
04F 98                  tya
050 A0 2A               ldy     #$2a
052 CA                  dex
053 60                  rts

054 E6 D4       next    inc     begad           increment begad
056 D0 02               bne     1.f
058 E6 D5               inc     begad+1
05A A5 D6       1       lda     endad           compare with endad
05C C5 D4               cmp     begad
05E A5 D7               lda     endad+1
060 E5 D5               sbc     begad+1
062 60                  rts                     C = (not ready)

                ; Cassette read routine
                ; Read into memory block from begad until endad (inclusive).
                ; Afterwards, C = 1 indicates error.

063 08          cassr   php
064 78                  sei                     no interrupts
065 A9 FF               lda     #$ff            initialise checksum
067 85 D2               sta     chksum
069 20 A920             jsr     findst          find start of transmission
06C A0 3A               ldy     #$3a
06E 20 BF20     cassr1  jsr     rdbyte          read byte
071 92 D4               sta     [begad]
073 45 D2               eor     chksum          adapt chksum
075 85 D2               sta     chksum
077 A0 35               ldy     #$35
079 20 5420             jsr     next            next address
07C B0 F0               bcs     cassr1          not yet ready ?
07E 20 BF20             jsr     rdbyte          read checksum
081 38                  sec
082 E5 D2               sbc     chksum          A should be 0 now
084 28                  plp
085 C9 01               cmp     #$01            else C becomes 1
087 60                  rts

                ; Cassette verify routine
                ; Compare transmission with memory block from begad until endad (inclusive).
                ; Afterwards, ercnt holds number of differences.
                ; The checksum is not checked.

088 08          cassv   php
089 78                  sei                     no interrupts
08A 64 D8               stz     ercnt           no errors yet
08C 64 D9               stz     ercnt+1
08E 20 A920             jsr     findst          find start of transmission
```

```
ssette routines                    20-Sep-86 13:23          Page 2

91 A0 3A                 ldy     #$3a
93 20 BF20     cassv1    jsr     rdbyte          read byte
96 D2 D4                 cmp     [begad]         check it
98 F0 06                 beq     1.f             ok ?
9A E6 D8                 inc     ercnt           then it's an error
9C D0 02                 bne     1.f
9E E6 D9                 inc     ercnt+1
A0 A0 35       1         ldy     #$35
A2 20 5420               jsr     next            next address
A5 B0 EC                 bcs     cassv1          not yet ready ?
A7 28                    plp
A8 60                    rts

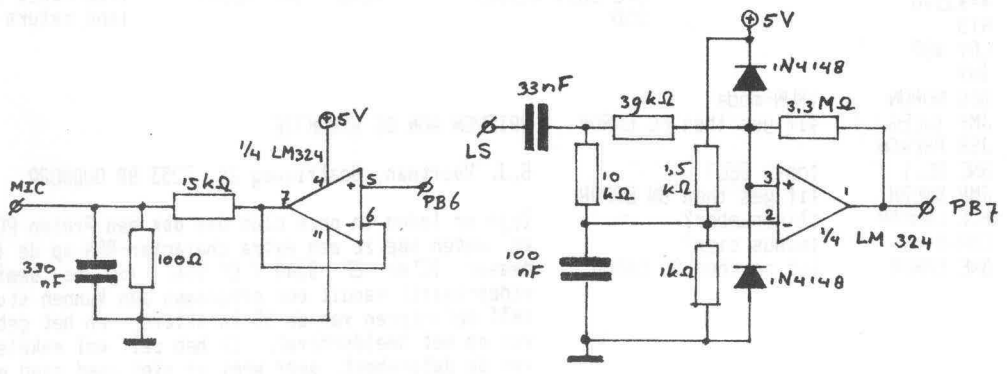
A9 A2 00       findst    ldx     #$00            find start of transmission
AB A0 2B       1         ldy     #$2b
AD 20 D020               jsr     rdbit           read half bit
B0 90 F7                 bcc     findst          if it's not a 'long 1', then restart
B2 CA                    dex
B3 D0 F6                 bne     1.b             check for another 'long 1' (256 needed)
B5 A0 22       2         ldy     #$22            search 'short 0'
B7 20 D020               jsr     rdbit
BA B0 F9                 bcs     2.b
BC 4C D020               jmp     rdbit           skip other half of 'short 0'

BF A2 08       rdbyte    ldx     #$08            read byte = 8 bits
C1 48          1         pha
C2 20 CD20               jsr     rd2bit          read bit
C5 68                    pla
C6 2A                    rola                    rotate new bit
C7 A0 3A                 ldy     #$3a
C9 CA                    dex
CA D0 F5                 bne     1.b
CC 60                    rts

CD 20 D020     rd2bit    jsr     rdbit           read full bit
D0 88          rdbit     dey                     read half bit
D1 AD 80F7               lda     orb             wait for transition
D4 45 D3                 eor     lastin
D6 10 F8                 bpl     rdbit
D8 45 D3                 eor     lastin
DA 85 D3                 sta     lastin
DC C0 80                 cpy     #$80
DE 60                    rts

                         end

rors detected: 0
```



EXTENSION OF OS-65D V3.3 WITH DEL COMMAND

This extension applies to the JUNIOR with OS-65D V3.3 DOS.

While developing BASIC programs it is often necessary to remove a number of lines at the same time. For this purpose many BASIC interpreters have a DELETE command with which it is possible to remove several lines at the same time. This extension adds a DEL command to the BASIC interpreter from address $3591 where some cursor-routine resides that is not effective on the JUNIOR.
The DEL command replaces the LET statement that is not really used mostly (one could make a small program that enables either DEL or LET).
In the addresstable and the keywordtable the following changes have to be made:

address	old	new
$020E	$A5	$90
$020F	$09	$35
$029E	$4C	$44
$029F	$45	$45
$02A0	$D4	$CC

Directions for use:

```
DEL10       :deletes line 10
DEL-10      :deletes up to line 10 inclusive
DEL10-      :deletes from line 10
DEL10-20    :deletes from line 10 up to 20 inclusive
DEL-        :deletes the entire program
```

Gerrit van Woerkom
Appelaar 55
4907 KD Oosterhout
The Netherlands

```
  10                    ;BASIC DEL CMD
  20 0019=                      INTEG =$19
  30 006F=                      INDEX1=$6F
  40 0071=                      INDEX2=$71
  50 007A=                      STVAR =$7A
  60 00AC=                      LOWTR =$AC
  70                ;
  80 00C0=                      CHRGET=$00C0
  90 00C6=                      PREVCH=$00C6
 100 051D=                      RECOMP=$051D
 110 0633=                      RECHER=$0633
 120 096C=                      COLL  =$096C
 130 0E1E=                      SNERR =$0E1E
 140 10D0=                      ILLEG =$10D0
 150                ;
 160 3590                       *=$3590
 170 3590 60                    RTS
 180 3591 A487          DEL     LDY $87
 190 3593 C8                    INY
 200 3594 F003                  BEQ NORUN       ;RUN-mode?
 210 3596 4CD010                JMP ILLEG       ;if yes then FC ERROR
 220 3599 20C600        NORUN   JSR PREVCH
 230 359C D003                  BNE DEL1        ;only DEL?
 240 359E 4C1E0E        ERROR   JMP SNERR       ;if yes then SN ERROR
 250 35A1 9004          DEL1    BCC LNNMBR      ;linenumber?
 260 35A3 C9A4                  CMP #$A4        ;minus sign?
 270 35A5 D0F7                  BNE ERROR       ;if no then SN ERROR
 280 35A7 20C609        LNNMBR  JSR COLL        ;fetch 1st linenumber
 290 35AA 203306                JSR RECHER      ;search for 1st line
 300 35AD 20C600                JSR PREVCH
 310 35B0 F00C                  BEQ DEL2        ;2nd linenumber?
 320 35B2 C9A4                  CMP #$A4        ;minus sign?
 330 35B4 D0E8                  BNE ERROR       ;if no then SN ERROR
 340 35B6 20C000                JSR CHRGET
 350 35B9 20C609                JSR COLL        ;fetch 2nd linenumber
 360 35BC D0E0                  BNE ERROR       ;more, then SN ERROR
 370 35BE A519          DEL2    LDA INTEG
 380 35C0 051A                  ORA INTEG+1
 390 35C2 D006                  BNE NONUL
 400 35C4 A9FF                  LDA #$FF
 410 35C6 8519                  STA INTEG
 420 35C8 851A                  STA INTEG+1
 430 35CA A5AC          NONUL   LDA LOWTR
 440 35CC A6AD                  LDX LOWTR+1
 450 35CE 8571                  STA INDEX2
 460 35D0 8672                  STX INDEX2+1
 470 35D2 203306                JSR RECHER
 480 35D5 9012                  BCC DEL3
 490 35D7 A001                  LDY #$01
 500 35D9 B1AC                  LDA (LOWTR),Y
 510 35DB 88                    DEY
 520 35DC AA                    TAX
 530 35DD D004                  BNE DEL4
 540 35DF B1AC                  LDA (LOWTR),Y
 550 35E1 F006                  BEQ DEL3
 560 35E3 B1AC          DEL4    LDA (LOWTR),Y
 570 35E5 85AC                  STA LOWTR
 580 35E7 86AD                  STX LOWTR+1
 590 35E9 A571          DEL3    LDA INDEX2
 600 35EB 38                    SEC
 610 35EC E5AC                  SBC LOWTR
 620 35EE AA                    TAX
 630 35EF A572                  LDA INDEX2+1
 640 35F1 E5AD                  SBC LOWTR+1
 650 35F3 A8                    TAY
 660 35F4 B01E                  BCS READY       ;remove to end program
 670 35F6 8A                    TXA
 680 35F7 18                    CLC
 690 35F8 657A                  ADC STVAR
 700 35FA 857A                  STA STVAR
 710 35FC 98                    TYA
 720 35FD 657B                  ADC STVAR+1
 730 35FF 857B                  STA STVAR+1
 740 3601 A000                  LDY #$00
 750 3603 B1AC          NEXT    LDA (LOWTR),Y   ;shift BASIC text
 760 3605 9171                  STA (INDEX2),Y  ;upward in workspace
 770 3607 C8                    INY
 780 3608 D0F9                  BNE NEXT
 790 360A E6AD                  INC LOWTR+1
 800 360C E672                  INC INDEX2+1
 810 360E A57B                  LDA STVAR+1
 820 3610 C572                  CMP INDEX2+1
 830 3612 B0EF                  BCS NEXT        ;are we ready?
 840 3614 4C1D05        READY   JMP RECOMP      ;rearrange BASIC lines
 850                            ;and return to BASIC
```

BRIEVEN AAN DE REDAKTIE

S.J. Voortman, Beatrixweg 28, 3253 BB OUDDORP

Zijn er leden in onze club die ook een Proton PC-2 hebben, en weten hoe ze een extra character-RAM op de (Video-processor IC's) EF 9340 / EF 9341 (op de semi-grafische video-kaart) vanuit een programma aan kunnen sturen? (het zelf definieren van de 96 karakters, en het gebruik hiervan op het beeldscherm). Ik heb zelf wel enkele kopietjes van de data-sheet, maar weet er niet goed raad mee.

```
SETTING TALLY-PRINTER          PROTON 650X ASSEMBLER  V4.4   PAGE: 0001

0001  0000                .TIT 'SETTING TALLY-PRINTER'
0002  0000          ;
0003  0000          ; ******************************************************
0004  0000          ;
0005  0000          ; THIS ROUTINE IS DEVELOPED TO CHANGE SEVERAL FUNCTION
0006  0000          ; SETTINGS OF A TALLY 1612 IMPACT PRINTER VIA THE SERIAL
0007  0000          ; INTERFACE, USING THE ACIA OF ELEKTOR'S CPU CARD.
0008  0000          ; THE ROUTINE IS RUNNING ON AN ELEKTOR'S CPU/VDU SYSTEM
0009  0000          ; USING THE PROTON DOS.
0010  0000          ; AN EXPLANATION OF THE VARIOUS MONITOR ROUTINES IS GIVEN
0011  0000          ; AT THE END OF THE SOURCE LISTING.
0012  0000          ; THE ROUTINE IS STARTED BY A FUNCTION KEY WICH VECTOR
0013  0000          ; IS LOADED AT THE ADDRESS $0521.
0014  0000          ;
0015  0000          ; ******************************************************
0016  0000          ;
0017  0000          ; AUTHOR : F.J.M. SMEEHUIJZEN
0018  0000          ;          LIPPEDAL 19
0019  0000          ;          2904 CL CAPELLE AAN DEN IJSSEL
0020  0000          ;          TEL: 010-4512507
0021  0000          ;
0022  0000                     *=$0000
0023  0000          ;
0024  0000          HULP       *=*+2
0025  0002          PARAM      *=*+3
0026  0005          ;
0027  0005                     *=$0506
0028  0506          ;
0029  0506  0011               .WOR TALLY
0030  0508          ;
0031  0508                     *=$0521
0032  0521          ;
0033  0521          OUTFLG     *=*+1          ; OUTPUT DEVICE FLAG
0034  0522          ;
0035  0522                     *=$1100
0036  1100          ;
0037  1100  A9AD    TALLY      LDA #(TEXT0    ; DISPLAY
0038  1102  A213               LDX #)TEXT0    ; SCREEN HEADING
0039  1104  208F13             JSR OUTPUT
0040  1107  A970    TAL1       LDA #(TEXT1    ; DISPLAY
0041  1109  A214               LDX #)TEXT1    ; '6 LINES PER INCH'
0042  110B  208F13             JSR OUTPUT
0043  110E  203A16             JSR REDOUT     ; GET KEYBOARD
0044  1111  C959               CMP #'Y'       ; IF YES, CHANGE
0045  1113  F007               BEQ LPI6       ; INTO 6 LPI
0046  1115  C94E               CMP #'N'       ; IF NOT, CHANGE
0047  1117  F010               BEQ TAL2       ; VALUE ON SCREEN
0048  1119  4C0711             JMP TAL1       ; WRONG CHOICE, ALWAYS BACK
0049  111C  A9FD    LPI6       LDA #(TEXT13   ; SEND 6 LPI
0050  111E  A215               LDX #)TEXT13   ; ESCAPE STRING
0051  1120  20A313             JSR OUTP3      ; TO PRINTER
0052  1123  203D16             JSR OUTLOW     ; SET OUTPUT TO DISPLAY
0053  1126  4C4811             JMP TAL3       ; JUMP TO NEXT QUESTION
0054  1129  A991    TAL2       LDA #(TEXT2    ; DISPLAY
0055  112B  A214               LDX #)TEXT2    ; ' 8 LINES PER INCH'
0056  112D  208F13             JSR OUTPUT
0057  1130  203A16             JSR REDOUT     ; GET KEYBOARD
0058  1133  C959               CMP #'Y'       ; IF YES, CHANGE
0059  1135  F007               BEQ LPI8       ; INTO 8 LPI
0060  1137  C94E               CMP #'N'       ; IF NOT, CHANGE
0061  1139  F0CC               BEQ TAL1       ; VALUE ON SCREEN
0062  113B  4C2911             JMP TAL2       ; WRONG CHOICE, ALWAYS BACK
0063  113E  A901    LPI8       LDA #(TEXT14   ; SEND 8 LPI
0064  1140  A216               LDX #)TEXT14   ; ESCAPE STRING
0065  1142  20A313             JSR OUTP3      ; TO  PRINTER
0066  1145  203D16             JSR OUTLOW     ; SET OUTPUT TO DISPLAY
0067  1148  203716  TAL3       JSR CRLF
0068  114B  203716             JSR CRLF
0069  114E  A9B2    TAL3A      LDA #(TEXT3    ; DISPLAY
0070  1150  A214               LDX #)TEXT3    ; '10 CHAR/INCH'
0071  1152  208F13             JSR OUTPUT
0072  1155  203A16             JSR REDOUT     ; GET KEYBOARD
0073  1158  C959               CMP #'Y'       ; IF YES, CHANGE
0074  115A  F007               BEQ CPI10      ; TO 10 CPI
```

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SETTING TALLY-PRINTER          PROTON 650X ASSEMBLER  V4.4   PAGE: 0002

0075  115C  C94E            CMP #'N'          ; IF NO, CHANGE
0076  115E  F010            BEQ TAL4          ; VALUE ON SCREEN
0077  1160  4C2911          JMP TAL2
0078  1163  A905    CPI10   LDA #(TEXT15      ; CHANGE TO
0079  1165  A216            LDX #)TEXT15      ; 10 CPI
0080  1167  20A313          JSR OUTP3
0081  116A  203D16          JSR OUTLOW        ; SET OUTPUT TO DISPLAY
0082  116D  4CB111          JMP TAL6
0083  1170  A9D3    TAL4    LDA #(TEXT4       ; DISPLAY
0084  1172  A214            LDX #)TEXT4       ; '12 CHAR/INCH'
0085  1174  208F13          JSR OUTPUT
0086  1177  203A16          JSR REDOUT        ; GET KEYBOARD
0087  117A  C959            CMP #'Y'          ; IF YES, CHANGE
0088  117C  F007            BEQ CPI12         ; INTO 12 CPI
0089  117E  C94E            CMP #'N'          ; IF NO, CHANGE
0090  1180  F010            BEQ TAL5          ; VALUE ON SCREEN
0091  1182  4C7011          JMP TAL4
0092  1185  A909    CPI12   LDA #(TEXT16      ; CHANGE TO
0093  1187  A216            LDX #)TEXT16      ; 12 CPI
0094  1189  20A313          JSR OUTP3
0095  118C  203D16          JSR OUTLOW        ; SET OUTPUT TO DISPLAY
0096  118F  4CB111          JMP TAL6
0097  1192  A9F4    TAL5    LDA #(TEXT5       ; DISPLAY
0098  1194  A214            LDX #)TEXT5       ; '16.5 CHAR/INCH'
0099  1196  208F13          JSR OUTPUT
0100  1199  203A16          JSR REDOUT        ; GET KEYBOARD
0101  119C  C959            CMP #'Y'          ; IF YES, CHANGE
0102  119E  F007            BEQ CPI16         ; INTO 16.5 CPI
0103  11A0  C94E            CMP #'N'          ; IF NO, CHANGE
0104  11A2  F0AA            BEQ TAL3A         ; VALUE ON SCREEN
0105  11A4  4C9211          JMP TAL5          ; WRONG CHOICE, REPEAT
0106  11A7  A90D    CPI16   LDA #(TEXT17      ; SEND
0107  11A9  A216            LDX #)TEXT17      ; ESCAPE STRING
0108  11AB  20A313          JSR OUTP3         ; TO PRINTER
0109  11AE  203D16          JSR OUTLOW        ; SET OUTPUT TO DISPLAY
0110  11B1  203716  TAL6    JSR CRLF
0111  11B4  203716          JSR CRLF
0112  11B7  A915    TAL6A   LDA #(TEXT6       ; DISPLAY
0113  11B9  A215            LDX #)TEXT6       ; 'CHARACTER WIDTH'
0114  11BB  208F13          JSR OUTPUT
0115  11BE  203A16          JSR REDOUT        ; GET KEYBOARD
0116  11C1  C94E            CMP #'N'          ; NORMAL WIDTH ?
0117  11C3  F007            BEQ NORMAL        ; IF YES, CHANGE INTO NORMAL
0118  11C5  C944            CMP #'D'          ; DOUBLE WIDTH ?
0119  11C7  F010            BEQ DOUBLE        ; IF YES, CHANGE INTO DOUBLE
0120  11C9  4CB711          JMP TAL6A         ; WRONG CHOICE, REPEAT
0121  11CC  A911    NORMAL  LDA #(TEXT18      ; SEND NORMAL WIDTH
0122  11CE  A216            LDX #)TEXT18      ; ESCAPE STRING
0123  11D0  20A313          JSR OUTP3         ; TO PRINTER
0124  11D3  203D16          JSR OUTLOW        ; SET OUTPUT TO DISPLAY
0125  11D6  4CE311          JMP TAL7
0126  11D9  A915    DOUBLE  LDA #(TEXT19      ; SEND DOUBLE WIDTH
0127  11DB  A216            LDX #)TEXT19      ; ESCAPE STRING
0128  11DD  20A313          JSR OUTP3         ; TO PRINTER
0129  11E0  203D16          JSR OUTLOW        ; SET OUTPUT TO DISPLAY
0130  11E3  203716  TAL7    JSR CRLF
0131  11E6  203716          JSR CRLF
0132  11E9  A936    TAL7A   LDA #(TEXT7       ; DISPLAY
0133  11EB  A215            LDX #)TEXT7       ; 'SET LEFT MARGIN'
0134  11ED  208F13          JSR OUTPUT
0135  11F0  203A16          JSR REDOUT        ; GET KEYBOARD
0136  11F3  C959            CMP #'Y'          ; IF YES, ASK
0137  11F5  F007            BEQ SETLM         ; FOR MARGIN VALUE
0138  11F7  C94E            CMP #'N'          ; IF NO, JUMP
0139  11F9  F037            BEQ TAL8          ; TO NEXT QUESTION
0140  11FB  4CE911          JMP TAL7A         ; WRONG CHOICE, ALWAYS BACK
0141  11FE  A919    SETLM   LDA #(TEXT20      ; SEND LEFT MARGIN
0142  1200  A216            LDX #)TEXT20      ; ESCAPE STRING
0143  1202  20A313          JSR OUTP3         ; TO PRINTER
0144  1205  203D16          JSR OUTLOW        ; SET OUTPUT TO DISPLAY
0145  1208  A92D            LDA #(TEXT25      ; DISPLAY ' = '
0146  120A  A216            LDX #)TEXT25
0147  120C  208F13          JSR OUTPUT
0148  120F  A200            LDX #$00          ; TYPE IN
0149  1211  203A16  SETLM1  JSR REDOUT        ; LEFT MARGIN
0150  1214  9502            STA PARAM,X       ; VALUE
0151  1216  E002            CPX #$02          ; MAX 3 DIGITS
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SETTING TALLY-PRINTER PROTON 650X ASSEMBLER V4.4 PAGE: 0003

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0152  1218  F004          BEQ SETLM2
0153  121A  E8             INX
0154  121B  4C1112         JMP SETLM1
0155  121E  A941   SETLM2  LDA #'A'        ; SET OUTPUT
0156  1220  8D2105         STA OUTFLG      ; TO SERIAL PRINTER
0157  1223  A200           LDX #$00        ; SET PRINTER
0158  1225  B502   SETLM3  LDA PARAM,X     ; TO LEFT MARGIN
0159  1227  203416         JSR OUTALL      ; USING INPUT
0160  122A  E8             INX             ; VIA KEYBOARD
0161  122B  E003           CPX #$03
0162  122D  D0F6           BNE SETLM3
0163  122F  203D16         JSR OUTLOW      ; SET OUTPUT TO DISPLAY
0164  1232  203716 TAL8     JSR CRLF
0165  1235  203716         JSR CRLF
0166  1238  A957   TAL8A    LDA #(TEXT8     ; DISPLAY
0167  123A  A215           LDX #)TEXT8     ; 'SET RIGHT MARGIN'
0168  123C  208F13         JSR OUTPUT
0169  123F  203A16         JSR REDOUT
0170  1242  C959           CMP #'Y'        ; IF YES, ASK
0171  1244  F007           BEQ RIGHTM      ; FOR MARGIN VALUE
0172  1246  C94E           CMP #'N'        ; IF NOT
0173  1248  F037           BEQ TAL9        ; SKIP SETTING
0174  124A  4C3812         JMP TAL8A       ; WRONG CHOICE, ALWAYS BACK
0175  124D  A91D   RIGHTM  LDA #(TEXT21    ; SEND RIGHT MARGIN
0176  124F  A216           LDX #)TEXT21    ; ESCAPE STRING
0177  1251  20A313         JSR OUTP3       ; TO PRINTER
0178  1254  203D16         JSR OUTLOW      ; SET OUTPUT TO DISPLAY
0179  1257  A92D           LDA #(TEXT25    ; DISPLAY ' = '
0180  1259  A216           LDX #)TEXT25
0181  125B  208F13         JSR OUTPUT
0182  125E  A200           LDX #$00        ; TYPE IN
0183  1260  203A16 SETRM1  JSR REDOUT      ; RIGHT MARGIN
0184  1263  9502           STA PARAM,X     ; VALUE
0185  1265  E002           CPX #$02        ; MAX 3 DIGITS
0186  1267  F004           BEQ SETRM2
0187  1269  E8             INX
0188  126A  4C6012         JMP SETRM1
0189  126D  A941   SETRM2  LDA #'A'        ; SET OUTPUT
0190  126F  8D2105         STA OUTFLG      ; TO SERIAL PRINTER
0191  1272  A200           LDX #$00        ; SET RIGHT
0192  1274  B502   SETRM3  LDA PARAM,X     ; MARGIN USING
0193  1276  203416         JSR OUTALL      ; INPUT VIA
0194  1279  E8             INX             ; KEYBOARD
0195  127A  E003           CPX #$03
0196  127C  D0F6           BNE SETRM3
0197  127E  203D16         JSR OUTLOW      ; SET OUTPUT TO DISPLAY
0198  1281  203716 TAL9     JSR CRLF
0199  1284  203716         JSR CRLF
0200  1287  A978   TAL9A    LDA #(TEXT9     ; DISPLAY
0201  1289  A215           LDX #)TEXT9     ; 'SET PAGE LENGTH'
0202  128B  208F13         JSR OUTPUT
0203  128E  203A16         JSR REDOUT
0204  1291  C959           CMP #'Y'        ; IF YES, ASK FOR
0205  1293  F007           BEQ LENGTH      ; PAGE LENGTH VALUE
0206  1295  C94E           CMP #'N'        ; IF NOT
0207  1297  F037           BEQ TAL10       ; SKIP SETTING
0208  1299  4C8712         JMP TAL9A       ; WRONG CHOICE, ALWAYS BACK
0209  129C  A921   LENGTH   LDA #(TEXT22    ; SEND PAGE LENGTH
0210  129E  A216           LDX #)TEXT22    ; ESCAPE STRING
0211  12A0  20A313         JSR OUTP3       ; TO PRINTER
0212  12A3  203D16         JSR OUTLOW      ; SET OUTPUT TO DISPLAY
0213  12A6  A92D           LDA #(TEXT25    ; DISPLAY ' = '
0214  12A8  A216           LDX #)TEXT25
0215  12AA  208F13         JSR OUTPUT
0216  12AD  A200           LDX #$00        ; TYPE IN
0217  12AF  203A16 SETPL1  JSR REDOUT      ; PAGE LENGTH
0218  12B2  9502           STA PARAM,X     ; VALUE
0219  12B4  E002           CPX #$02        ; MAX 3 DIGITS
0220  12B6  F004           BEQ SETPL2
0221  12B8  E8             INX
0222  12B9  4CAF12         JMP SETPL1
0223  12BC  A941   SETPL2  LDA #'A'        ; SET OUTPUT
0224  12BE  8D2105         STA OUTFLG      ; TO SERIAL PRINTER
0225  12C1  A200           LDX #$00        ; SET PRINTER
0226  12C3  B502   SETPL3  LDA PARAM,X     ; TO PAGE LENGTH
0227  12C5  203416         JSR OUTALL      ; USING INPUT
0228  12C8  E8             INX             ; VIA KEYBOARD
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SETTING TALLY-PRINTER          PROTON 650X ASSEMBLER  V4.4   PAGE: 0004


0229  12C9  E003            CPX #$03
0230  12CB  D0F6            BNE SETPL3
0231  12CD  203D16          JSR OUTLOW        ; SET OUTPUT TO DISPLAY
0232  12D0  203716  TAL10   JSR CRLF
0233  12D3  203716          JSR CRLF
0234  12D6  A999    TAL10A  LDA #(TEXT10      ; DISPLAY
0235  12D8  A215            LDX #)TEXT10      ; 'SET TOP MARGIN'
0236  12DA  208F13          JSR OUTPUT
0237  12DD  203A16          JSR REDOUT
0238  12E0  C959            CMP #'Y'          ; IF YES, ASK FOR
0239  12E2  F007            BEQ TOPM          ; TOP MARGIN VALUE
0240  12E4  C94E            CMP #'N'          ; IF NOT
0241  12E6  F037            BEQ TAL11         ; SKIP SETTING
0242  12E8  4CD612          JMP TAL10A        ; WRONG CHOICE
0243  12EB  A925    TOPM    LDA #(TEXT23      ; SEND TOP MARGIN
0244  12ED  A216            LDX #)TEXT23      ; ESCAPE STRING
0245  12EF  20A313          JSR OUTP3         ; TO PRINTER
0246  12F2  203D16          JSR OUTLOW        ; SET OUTPUT TO DISPLAY
0247  12F5  A92D            LDA #(TEXT25      ; DISPLAY ' = '
0248  12F7  A216            LDX #)TEXT25
0249  12F9  208F13          JSR OUTPUT
0250  12FC  A200            LDX #$00          ; TYPE IN
0251  12FE  203A16  SETTM1  JSR REDOUT        ; TOP MARGIN
0252  1301  9502            STA PARAM,X       ; VALUE
0253  1303  E002            CPX #$02          ; MAX 3 DIGITS
0254  1305  F004            BEQ SETTM2
0255  1307  E8              INX
0256  1308  4CFE12          JMP SETTM1
0257  130B  A941    SETTM2  LDA #'A'          ; SET OUTPUT
0258  130D  8D2105          STA OUTFLG        ; TO SERIAL PRINTER
0259  1310  A200            LDX #$00          ; SET TOP
0260  1312  B502    SETTM3  LDA PARAM,X       ; MARGIN USING
0261  1314  203416          JSR OUTALL        ; INPUT VIA
0262  1317  E8              INX               ; KEYBOARD
0263  1318  E003            CPX #$03
0264  131A  D0F6            BNE SETTM3
0265  131C  203D16          JSR OUTLOW        ; SET OUTPUT TO DISPLAY
0266  131F  203716  TAL11   JSR CRLF
0267  1322  203716          JSR CRLF
0268  1325  A9BA    TAL11A  LDA #(TEXT11      ; DISPLAY
0269  1327  A215            LDX #)TEXT11      ; 'SET BOTTOM MARGIN'
0270  1329  208F13          JSR OUTPUT
0271  132C  203A16          JSR REDOUT
0272  132F  C959            CMP #'Y'          ; IF YES, ASK FOR
0273  1331  F007            BEQ BOTM          ; BOTTOM MARGIN VALUE
0274  1333  C94E            CMP #'N'          ; IF NOT
0275  1335  F037            BEQ TAL12         ; SKIP SETTING
0276  1337  4C2513          JMP TAL11A        ; WRONG CHOICE
0277  133A  A929    BOTM    LDA #(TEXT24      ; SEND BOTTOM MARGIN
0278  133C  A216            LDX #)TEXT24      ; ESCAPE STRING
0279  133E  20A313          JSR OUTP3         ; TO PRINTER
0280  1341  203D16          JSR OUTLOW        ; SET OUTPUT TO DISPLAY
0281  1344  A92D            LDA #(TEXT25      ; DISPLAY ' = '
0282  1346  A216            LDX #)TEXT25
0283  1348  208F13          JSR OUTPUT
0284  134B  A200            LDX #$00          ; TYPE IN
0285  134D  203A16  SETBM1  JSR REDOUT        ; BOTTOM MARGIN
0286  1350  9502            STA PARAM,X       ; VALUE
0287  1352  E002            CPX #$02          ; MAX 3 DIGITS
0288  1354  F004            BEQ SETBM2
0289  1356  E8              INX
0290  1357  4C4D13          JMP SETBM1
0291  135A  A941    SETBM2  LDA #'A'          ; SET OUTPUT
0292  135C  8D2105          STA OUTFLG        ; TO SERIAL PRINTER
0293  135F  A200            LDX #$00          ; SET BOTTOM
0294  1361  B502    SETBM3  LDA PARAM,X       ; MARGIN USING
0295  1363  203416          JSR OUTALL        ; INPUT VIA
0296  1366  E8              INX               ; KEYBOARD
0297  1367  E003            CPX #$03
0298  1369  D0F6            BNE SETBM3
0299  136B  203D16          JSR OUTLOW        ; SET OUTPUT TO DISPLAY
0300  136E  203716  TAL12   JSR CRLF
0301  1371  203716          JSR CRLF
0302  1374  A9DB    TAL12A  LDA #(TEXT12      ; DISPLAY
0303  1376  A215            LDX #)TEXT12      ; 'SETTING OK ? : '
0304  1378  208F13          JSR OUTPUT
0305  137B  203A16          JSR REDOUT
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SETTING TALLY-PRINTER          PROTON 650X ASSEMBLER  V4.4   PAGE: 0005


0306  137E  C959          CMP #'Y'          ; IF YES,
0307  1380  F00A          BEQ END           ; SETTING COMPLETED
0308  1382  C94E          CMP #'N'          ; IF NO, START
0309  1384  F003          BEQ TAL12B        ; OVER AGAIN
0310  1386  4C7413        JMP TAL12A
0311  1389  4C0011 TAL12B JMP TALLY
0312  138C  4C3116 END     JMP COMIN         ; RETURN TO MONITOR
0313  138F                ;
0314  138F                ; ROUTINE TO DISPLAY TEXT-STRINGS POINTED BY A & X
0315  138F                ;
0316  138F  8500  OUTPUT  STA HULP
0317  1391  8601          STX HULP+1
0318  1393  A000          LDY #$00
0319  1395  B100  OUTP1   LDA (HULP),Y
0320  1397  C903          CMP #$03          ; END OF TEXT
0321  1399  F007          BEQ OUTP2
0322  139B  203416        JSR OUTALL        ; OUTPUT CHARACTER
0323  139E  C8            INY
0324  139F  4C9513        JMP OUTP1
0325  13A2  60    OUTP2   RTS
0326  13A3                ;
0327  13A3                ; ROUTINE TO SEND ESCAPE STRINGS VIA ACIA TO PRINTER
0328  13A3                ;
0329  13A3  48    OUTP3   PHA
0330  13A4  A941          LDA #'A'          ; SET OUTFLG TO ACIA
0331  13A6  8D2105        STA OUTFLG
0332  13A9  68            PLA
0333  13AA  4C8F13        JMP OUTPUT
0334  13AD                ;
0335  13AD                ; TEXT-STRINGS FOR DISPLAY & PRINTER
0336  13AD                ;
0337  13AD  1A    TEXT0   .BYT $1A,'            ************************'
0338  13D4  2A2A           .BYT '************************'
0339  13EC  0A              .BYT $0A,$0D,'              ***** PRINTER SETTING'
0340  1411  204D            .BYT ' MENU FOR TALLY 1612  *****' ,$0A,$0D
0341  142E  2020            .BYT '                 ************************'
0342  1454  2A2A           .BYT '************************' ,$0D,$0A,$0A,$03
0343  1470  0D    TEXT1   .BYT $0D,'-  6   LINES PER INCH        : ',$03
0344  1491  0D    TEXT2   .BYT $0D,'-  8   LINES PER INCH        : ',$03
0345  14B2  0D    TEXT3   .BYT $0D,'- 10   CHARS PER INCH        : ',$03
0346  14D3  0D    TEXT4   .BYT $0D,'- 12   CHARS PER INCH        : ',$03
0347  14F4  0D    TEXT5   .BYT $0D,'- 16,5 CHARS PER INCH        : ',$03
0348  1515  0D    TEXT6   .BYT $0D,'- CHAR WIDTH (NORM/DOUBLE)   : ',$03
0349  1536  0D    TEXT7   .BYT $0D,'- SET LEFT MARGIN            : ',$03
0350  1557  0D    TEXT8   .BYT $0D,'- SET RIGHT MARGIN           : ',$03
0351  1578  0D    TEXT9   .BYT $0D,'- SET PAGE LENGTH            : ',$03
0352  1599  0D    TEXT10  .BYT $0D,'- SET TOP MARGIN             : ',$03
0353  15BA  0D    TEXT11  .BYT $0D,'- SET BOTTOM MARGIN          : ',$03
0354  15DB  0A    TEXT12  .BYT $0A,$0A,$0D,'                  SETTING OK ? : ',$03
0355  15FD  1B    TEXT13  .BYT $1B,$37,$30,$03; 6 LPI
0356  1601  1B    TEXT14  .BYT $1B,$37,$31,$03; 8 LPI
0357  1605  1B    TEXT15  .BYT $1B,$37,$33,$03; 10 CPI
0358  1609  1B    TEXT16  .BYT $1B,$37,$34,$03; 12 CPI
0359  160D  1B    TEXT17  .BYT $1B,$37,$35,$03; 16.5 CPI
0360  1611  1B    TEXT18  .BYT $1B,$37,$37,$03; NORMAL WIDTH
0361  1615  1B    TEXT19  .BYT $1B,$37,$38,$03; DOUBLE WIDTH
0362  1619  1B    TEXT20  .BYT $1B,$35,$31,$03; SET LEFT MARGIN
0363  161D  1B    TEXT21  .BYT $1B,$35,$32,$03; SET RIGHT MARGIN
0364  1621  1B    TEXT22  .BYT $1B,$35,$33,$03; SET PAGE LENGTH
0365  1625  1B    TEXT23  .BYT $1B,$35,$34,$03; SET TOP MARGIN
0366  1629  1B    TEXT24  .BYT $1B,$35,$35,$03; SET BOTTOM MARGIN
0367  162D  203D20 TEXT25  .BYT ' = ' ,$03
0368  1631                ;
0369  1631                ; MONITOR ROUTINES
0370  1631                ;
0371  1631  6C00E0 COMIN   JMP ($E000)       ; WARM START OF MONITOR
0372  1634  6C08E0 OUTALL  JMP ($E008)       ; OUTPUT TO ACTIVE OUTPUT DEVICE
0373  1637  6C0EE0 CRLF    JMP ($E00E)       ; CRLF TO ACTIVE OUTPUT DEVICE
0374  163A  6C1CE0 REDOUT  JMP ($E01C)       ; READ KEYBOARD AND ECHO CHARACTER
0375  163D  6C56E0 OUTLOW  JMP ($E056)       ; SET OUTPUT DEVICE TO DISPLAY
0376  1640                ;
0377  1640                .END


ERRORS: 0000                        (0000)
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SLAVE     THE JUNIOR PROMOTING CY (W&J)   7JUL86

0010: 0200            SLAVE  ORG   $0200    BOOTSTRAP LOADER
0011:
0020:                 THIS PROGRAM LOADS FILES WITH ID=01 AND FURTHER,
0030:                 IF FILE IS LOADED THE ID NUMBER WILL BE PRINTED.
0040:                 FILES MUST BE IN NUMERICAL ORDER.
0050:
0060:                 USE THIS PROGRAM TO LOAD PATCHES (E.G. MICRO-ADE).
0070:                 PLACE THIS PROGRAM ON THE BEGINNING OF THE TAPE
0080:                 AND THE PATCHES DIRECTLY BEHIND.
0090:
0100:                 AUTHOR : RONALD HERMENS, THE NETHERLANDS
0110:
0120:                 * CONSTANTS *
0130:          0D 0D  NUMBER *     $0D     THE # OF FILES TO BE READ
0140:                 * ROUTINES OF PM *
0150:          02 0B  RDTAPE *     $0B02   READ FILE FROM TAPE
0160:          6A 10  RESALL *     $106A   WARM START OF PM
0170:          F3 11  PRSP   *     $11F3   PRINT A SPACE ON SCREEN
0180:          F8 11  PRBUFS *     $11F8   PRINT CURRENT ADDRESS & CONTENTS
0190:          8F 12  PRBYT  *     $128F   CONTENTS ACCU (HEX) TO SCREEN
0200:                 * POINTERS USED BY PM *
0210:          FA 00  POINTL *     $00FA   ADDRESS POINTER
0220:          FB 00  POINTH *     POINTL +01
0230:          79 1A  ID     *     $1A79   ID OF FILE TO BE READ
0240:                 * I/O ADDRESSES *
0250:          83 1A  PBDD   *     $1A83   DIRECTION REGISTER OF PORT B
0260:          82 1A  PBD    *     $1A82   DATA REGISTER OF PORT B
0270:
0280: 0200 A9 01      BEGIN  LDAIM $01     FIRST ID TO BE READ
0290: 0202 8D 79 1A          STA   ID       IN ID COUNTER
0300: 0205 A2 0D      LOOP   LDXIM NUMBER  CHECK IF ALL
0310: 0207 EC 79 1A          CPX   ID       FILES ARE READ
0320: 020A 30 15             BMI   END      IF SO: BRANCH
0330:
0340: 020C 20 02 0B          JSR RDTAPE     READ A FILE
0350: 020F 20 2F 02          JSR   SETPIA   SET I/O FOR TERMINAL
0360:                                       AND DISPLAY OFF
0370: 0212 AD 79 1A          LDA   ID       PRINT JUST READ ID
0380: 0215 20 8F 12          JSR   PRBYT
0380: 0218 20 F3 11          JSR   PRSP     SOME SPACE
0390: 021B EE 79 1A          INC   ID       INCREMENT ID COUNTER
0400: 021E 4C 05 02          JMP   LOOP
0410:
0420: 0221 A9 00      END    LDAIM $00     SET PM ADDRESSPOINTER
0430: 0223 85 FA             STA   POINTL  ON COLD START ADDRESS
0440: 0225 A9 20             LDAIM $20     USER PROGRAM
0450: 0227 85 FB             STA   POINTH  ( $2000 )
0460: 0229 20 F8 11          JSR   PRBUFS  PRINT ADDRESSPOINTER
0470: 022C 4C 6A 10          JMP   RESALL  GOTO PM
0480:
0490: 022F A9 7F      SETPIA LDAIM $7F     SET OUTPUTS
0500: 0231 8D 83 1A          STA   PBDD     FOR TERMINAL
0510: 0234 AD 82 1A          LDA   PBD      SWITCH
0520: 0237 09 58             ORAIM $58     MOTORS
0530: 0239 8D 82 1A          STA   PBD      OFF
0540: 023C 60                RTS
```

Te koop org. Apple II+, 48 + 16 kb RAM, num. keyb., 80 koll., 2 drives, serial port, monitor, Silentype printer, RS232 port, VIA (Centronics) par. ports, Veel software met zèèr veel doc. (100+ disks: Assemblers, Forth, Lisp, Logo, Pascal, etc, etc). Veel boeken (assembly lang., technisch voor Apple) en tijdschr. (Micro, Nibble, Apple Orchard; 100 + nummers). T.e.a.b. M. de Vries, 020-711253 ('s avonds).

STEVE CIARCIA (Ame rica) to
JEFF CHATFIELD (Australia)

The KIM-1 was a single board microcomputer that was manufactured by MOS Technology in the late 1970's. It features a 2K monitor ROM supporting a teletype and cassette interface, and had 1K of RAM and a hex keypad on board. It had expansion capability to 64K with external cards, and was an extremely popular device. Many articles for expanding and modifying the KIM appeared in the 1977 and 1978 issues of BYTE and KILOBAUD (later Microcomputing) magazines.
MOS Technology Inc., is now a division of Commodore Corp., and no longer makes or supports the KIM. The Synertek SYM-1, and the Rockwell AIM were similar type computers.
A 9K BASIC was configured for the KIM by Microsoft Corp., and was distributed by Micro-Z Co., P.O.Box 2426, Rolling Hills, CA 90274 for $100. This included a cassette tape and complete documentation.
The Ohio Scientific OS-65D was an operating system for their 6502 based computers. Like many of the pioneers in microcomputers, Ohio Scientific is no longer in business.
My research manager, Harv Weiner, mentioned that he had the KIM 9K BASIC and some other cassette programs that he would be willing to sell for "any reasonable offer". If you are interested, contact him at 67 Scott Drive, South Windsor, CT 06074.

Steve Ciarcia, Ciarcia's Circuit Cellar, P.O.Box 582, Glastonbury, Connecticut 06033.

==========

DID YOU PAY YOUR 1987 SUBSCRIPTION ?

==========

* * * * * * * * * * * * * *
* * SCREEN FLIKKERING * *
* * * * * * * * * * * * * *

By: Andrew Gregory, England.

In issue No. 45 I found an article on how to modify the VDU-card to prevent screen flikker. Well, quite by accident I have found another solution which works on TTL LS or TTL HC versions at 1 or 2 MHz. All you have to do is replace the 74LS30 or 74HC30 (IC8) with a 74L30. This is probably not useful to many people as the device is obsolete. I discovered this when I was short of 74LS30's and opportunistically tried a 74L30 instead.

==========

```
)ASS L

                0010 :*******************************************
                0020 :*  T E L E X  PROGRAMMA  MCB 1984          *
                0030 :*  Telex programma voor de JUNIOR computer *
                0040 :*******************************************
                0050 :
                0060 : DOOR: M.C. BREUKINK
                0070 :       SCHOUTENDREEF 66
                0080 :       2542 LN DEN HAAG
                0090 :
                0100 : DIT PROGRAMMA IS GESCHIKT VOOR EEN JUNIOR MET
                0110 : INTERFACE-KAART.  HET ZET EEN  ASCII-KARAKTER
                0120 : IN DE ACCU  OM NAAR  BAUDOT  EN PRINT DEZE OP
                0130 : EEN TELEX. DE BAUDOTCODE BESTAAT UIT 1 START-
                0140 : BIT, 5 DATA-BITS EN 1 STOP-BIT.
                0150 : DE SNELHEID VAN  DE MEESTE  TELEXEN LIGT ROND
                0160 : DE 50 BAUD.  IN DE PRAKTIJK  KOMT DIT NEER OP
                0170 : ONGEVEER 6 KARAKTERS PER SECONDE.
                0180 : BIJ HET OMZETTEN VAN  ASCII NAAR BAUDOT WORDT
                0190 : GEBRUIK GEMAAKT VAN EEN OPZOEKTABEL.
                0200 : EEN  CARRIAGE RETURN  WORDT  2 MAAL AFGEDRUKT
                0210 : AANGEZIEN SOMMIGE  OUDERE  TELEXEN  NOGAL WAT
                0220 : TIJD NODIG HEBBEN OM DE WAGEN VANAF HET EINDE
                0230 : NAAR HET BEGIN VAN EEN REGEL TE BRENGEN.
                0240 :
                0250 :
                0260 : DE SERIELE DATA KOMT VIA PB0 NAAR BUITEN. TER-
                0270 : OP PB1 EEN SCHAKELAAR WORDT AANGESLOTEN.  WEL-
                0280 : KE DIENT ALS AAN/UIT SCHAKELAAR VOOR DE TELEX
                0290 : (PB1=0 TELEX IS AAN).
                0300 : DE TELEX  KAN NATUURLIJK NIET ZONDERMEER  AAN-
                0310 : GESLOTEN WORDEN OP DE VIA 6522.  DIT MOET  GE-
                0320 : BEUREN  VIA EEN (GALVANISCH GESCHEIDEN !)  IN-
                0330 : TERFACE.  WELKE O.A. BESTAAT UIT EEN 20-60 mA
                0340 : STROOMBRON.  SCHEMA'S HIERVAN ZIJN TE  VINDEN
                0350 : IN DE BEKENDE ELECTRONICA BLADEN.
                0360 :
                0370 : VIA 6522 ADRESSEN
                0380 :
                0390 PBD        .DE $1800     : ORB/IRB INPUT/OUTPUT REG."B"
                0400 PAD        .DE $1801     : ORA/IRA INPUT/OUTPUT REG."A"
                0410 PBDD       .DE $1802     : DDRB DATA DIRECTION REG."B"
                0420 PADD       .DE $1803     : DDRA DATA DIRECTION REG."A"
                0430 T2C/L      .DE $1808     : T2 LOW-ORDER LATCHES/COUNTER
                0440 T2C/H      .DE $1809     : T2 HIGH-ORDER COUNTER
                0450 ACR        .DE $180B     : AUXILARY CONTROL REGISTER
                0460 IFR        .DE $180D     : INTERRUPT FLAG REGISTER
                0470 :
                0480 : TEMPS IN 6532 PIA-RAM
                0490 :
                0500 X/TEMP     .DE $1A56
                0510 BAUDOT     .DE $1A57
                0520 CYFLET     .DE $1A58
                0530 X/SAVE     .DE $1A60
                0540 SACCU      .DE $1A62
                0550 :
                0560 :
                0570            .BA $0D0C
                0580 :
0D0C- 8E 60 1A  0590 TELEX      STX X/SAVE    : RED X-REGISTER
0D0F- 20 1D 0D  0600            JSR TPRINT    : PRINT KARAKTER
0D12- AD 62 1A  0610            LDA SACCU
0D15- C9 0D     0620            CMP #$0D      : CARIAGE RETURN ?
0D17- D0 03     0630            BNE RETURN
0D19- 20 1D 0D  0640            JSR TPRINT    : JA. NOGMAALS PRINTEN
0D1C- 60        0650 RETURN     RTS
                0660 :
                0670 :
0D1D- 29 7F     0680 TPRINT     AND #$7F
0D1F- 8D 62 1A  0690            STA SACCU     : RED ACCU
0D22- A9 FD     0700            LDA #$0FD     : PB0=UITGANG PB1=INGANG
```

```
0D24- 8D 02 18  0710            STA PBDD
0D27- A9 01     0720            LDA #$01      : PB0=1 (RUSTTOESTAND)
0D29- 8D 00 18  0730            STA PBD
0D2C- A9 02     0740            LDA #2
0D2E- 2C 00 18  0750            BIT PBD       : TELEX AAN ?
0D31- F0 01     0760            BEQ OK
0D33- 60        0770            RTS
0D34- AE 62 1A  0780 OK         LDX SACCU     : X=ASCII
0D37- E0 60     0790            CPX #$60      : KLEINE LETTER ?
0D39- 90 04     0800            BCC BIG
0D3B- 8A        0810 SMALL      TXA
0D3C- 29 DF     0820            AND #$0DF     : BIT 6=0
0D3E- AA        0830            TAX
0D3F- 8E 56 1A  0840 BIG        STX X/TEMP
0D42- E0 41     0850            CPX #$41      : LETTER ?
0D44- 30 17     0860            BMI CIJFER    : ZONEE. TELEX OP CIJFERS
0D46- E0 5B     0870            CPX #$5B
0D48- 10 13     0880            BPL CIJFER    : ZONEE. TELEX OP CIJFERS
0D4A- AD 58 1A  0890            LDA CYFLET
0D4D- C9 FE     0900            CMP #$0FE     : TELEX OP LETTERS ?
0D4F- F0 08     0910            BEQ OUT
0D51- A9 FE     0920            LDA #$0FE     : CODE VOOR LETTERS
0D53- 8D 58 1A  0930            STA CYFLET
0D56- 20 6C 0D  0940 DOUT       JSR OUTPUT    : CODE --) TELEX
0D59- 20 69 0D  0950 OUT        JSR OUTCH     : ASCII-BAUDOT-TELEX
0D5C- 60        0960            RTS
0D5D- AD 58 1A  0970 CIJFER     LDA CYFLET
0D60- C9 F6     0980            CMP #$0F6     : TELEX OP CIJFERS ?
0D62- F0 F5     0990            BEQ OUT       : JA. PRINT KARAKTER
0D64- A9 F6     1000            LDA #$0F6     : NEE. ZET TELEX OP CIJFERS
0D66- 4C 56 0D  1010            JMP DOUT
                1020 :
0D69- BD 9E 0D  1030 OUTCH      LDA TABEL,X   : ASCII--)TABEL--)BAUDOT
0D6C- 8D 57 1A  1040 OUTPUT     STA BAUDOT
0D6F- A2 07     1050            LDX #$7       : 1 START 5 DATA 1 STOP
0D71- AD 57 1A  1060 OUTBIT     LDA BAUDOT
0D74- 8D 00 18  1070            STA PBD       : B0--)PB0
0D77- 20 84 0D  1080            JSR DELAY     : DELAY 20 MS (50 BAUD)
0D7A- 6E 57 1A  1090            ROR BAUDOT    : VOLGENDE BIT
0D7D- CA        1100            DEX
0D7E- D0 F1     1110            BNE OUTBIT
0D80- AE 56 1A  1120            LDX X/TEMP    : RESTORE X-REGISTER
0D83- 60        1130            RTS
                1140 :
0D84- A9 00     1150 DELAY      LDA #$00
0D86- 8D 0B 18  1160            STA ACR       : RESET ACR REGISTER
0D89- A9 20     1170            LDA #$20
0D8B- 8D 08 18  1180            STA T2C/L     : LOW ORDER
0D8E- A9 4E     1190            LDA #$4E
0D90- 8D 09 18  1200            STA T2C/H     : HIGH ORDER. START TIMER
0D93- A9 20     1210            LDA #$20
0D95- 2C 0D 18  1220 TEST       BIT IFR       : TIME OUT ?
0D98- F0 FB     1230            BEQ TEST
0D9A- AD 08 18  1240            LDA T2C/L
0D9D- 60        1250            RTS
                1260 :
                1270 : TABEL VOOR OMZETTING VAN ASCII NAAR BAUDOT
                1280 :
0D9E- FF FF FF  1290 TABEL      .BY $FF $FF $FF $FF $FF $FF $FF $D6
0DA1- FF FF FF
0DA4- FF D6
0DA6- FF FF C4  1300            .BY $FF $FF $C4 $FF $FF $D0 $FF $FF
0DA9- FF FF D0
0DAC- FF FF
0DAE- C8 FF FF  1310            .BY $C8 $FF $FF $FF $FF $FF $FF $FF
0DB1- FF FF FF
0DB4- FF FF
0DB6- FF FF FF  1320            .BY $FF $FF $FF $FF $FF $FF $FF $FF
0DB9- FF FF FF
0DBC- FF FF
0DBE- C8 EE CA  1330            .BY $C8 $EE $CA $E8 $CA $FA $E8 $CA
0DC1- E8 CA FA
0DC4- E8 CA
```

```
0DC6- DE E4 F8  1340            .BY $DE $E4 $F8 $E2 $D8 $C6 $F8 $FA
0DC9- E2 D8 C6
0DCC- F8 FA
0DCE- EC EE E6  1350            .BY $EC $EE $E6 $C2 $D4 $E0 $EA $CE
0DD1- C2 D4 E0
0DD4- EA CE
0DD6- CC F0 DC  1360            .BY $CC $F0 $DC $DC $DE $FC $E4 $F2
0DD9- DC DE FC
0DDC- E4 F2
0DDE- E8 C6 F2  1370            .BY $E8 $C6 $F2 $DC $D2 $C2 $DA $F4
0DE1- DC D2 C2
0DE4- DA F4
0DE6- E8 CC D6  1380            .BY $E8 $CC $D6 $DE $E4 $F8 $D8 $F0
0DE9- DE E4 F8
0DEC- D8 F0
0DEE- EC EE D4  1390            .BY $EC $EE $D4 $CA $E0 $CE $FC
0DF1- CA E0 CE
0DF4- FC
              1400 :
              1410              .EN
```

```
SOURCE FILE: SCREEN DUMP/BP
0000:              1 ;   *** APPLE'S TEXT SCREEN COPIER ***
0000:              2 ;
0000:              3 ;        AFDRUK VAN HET SCHERM
0000:              4 ;        MET PRINTER MATE PARALLEL INTERFACE IN SLOT#1
0000:              5 ;        ZONDER GEBRUIK VAN PR#1
0000:              6 ;        BLANKO REGELS KUNNEN WORDEN OVERGESLAGEN
0000:              7 ;
0000:              8 ;  DOOR HANS BOSCH
0000:              9 ;        REELAAN 35
0000:             10 ;        7522LS ENSCHEDE
0000:             11 ;
0000:             12 ;GEHEUGEN RUIMTE
0028:             13 BASL     EQU  $28        BASIS ADRES
00D7:             14 VLAG     EQU  $D7        SPATIE MARKER
FBC1:             15 BASCALC  EQU  $FBC1      BEREKEN BASIS ADRES VOOR LINE# IN A
0000:             16 ;
----- NEXT OBJECT FILE NAME IS SCREEN DUMP/BP.OBJ0
0300:             17          ORG  $300
0300:             18 ;
0300:A2 00        19 START    LDX  #0         EERSTE REGEL
0302:A0 00        20 NXTLIN   LDY  #0         EERSTE KARAKTER
0304:84 D7        21          STY  VLAG       (RE)SET VLAG
0306:8A           22          TXA
0307:20 C1 FB     23          JSR  BASCALC    BEREKEN BASIS ADRES
030A:B1 28        24 GCHAR    LDA  (BASL),Y   HAAL KARAKTER VAN SCHERM
030C:C9 A0        25          CMP  #$A0       IS DIT EEN SPATIE?
030E:F0 02        26          BEQ  PRINT
0310:85 D7        27          STA  VLAG       NEE, ASCII CODE IN VLAG
0312:18           28 PRINT    CLC
0313:48           29          PHA
0314:8D 00 CC     30          STA  $CC00      PRINTER BUFFER
0317:AD 98 C0     31 BUSY     LDA  $C098
031A:30 FB        32          BMI  BUSY
031C:AD 90 C0     33          LDA  $C090
031F:AD 98 C0     34          LDA  $C098
0322:68           35          PLA
0323:C9 0D        36          CMP  #$0D       CR?
0325:F0 12        37          BEQ  TRYNXT
0327:2A           38          ROL  A          EINDE VAN REGEL ($0A)?
0328:90 0B        39          BCC  CR
032A:C8           40          INY             VOLGENDE KARAKTER
032B:C0 28        41          CPY  #$28       DEZE REGEL KLAAR?
032D:30 DB        42          BMI  GCHAR
032F:A9 0A        43          LDA  #$0A
0331:26 D7        44          ROL  VLAG       JA, STUUR LF
0333:B0 DD        45          BCS  PRINT      ALS VLAG  EEN ASCII CODE BEVAT
0335:A9 0D        46 CR       LDA  #$0D       NU NOG EEN CR
0337:10 D9        47          BPL  PRINT
0339:E8           48 TRYNXT   INX             VOLGENDE REGEL
033A:E0 18        49          CPX  #$18       ALLE REGELS GEDAAN?
033C:30 C4        50          BMI  NXTLIN
033E:60           51          RTS             KLAAR

*** SUCCESSFUL ASSEMBLY: NO ERRORS
```

GAME

High-Low game

The object of this game is to guess a number
between 1 and 9999. The computer will tell you
if your guess is too high or too low.
If you want to give up, type in Ø for your guess
or just press RETURN.

GOOD LUCK !!!

The game starts if the <ESC> key is hit.....

```
Your guess? 5ØØØ       Too low
Your guess? 7ØØØ       Too low
Your guess? 9ØØØ       Too high
Your guess? 8ØØØ       Too low
Your guess? 85ØØ       Too high
Your guess? 83ØØ       Too low
Your guess? 84ØØ       Too low
Your guess? 845Ø       Too low
Your guess? 847Ø       Too high
Your guess? 846Ø       Too high
Your guess? 8457       Too low
Your guess? 8458       Too low
Your guess? 8459       You found it !!

You needed 13 turns.


Another game (Y/N) ? Y
```

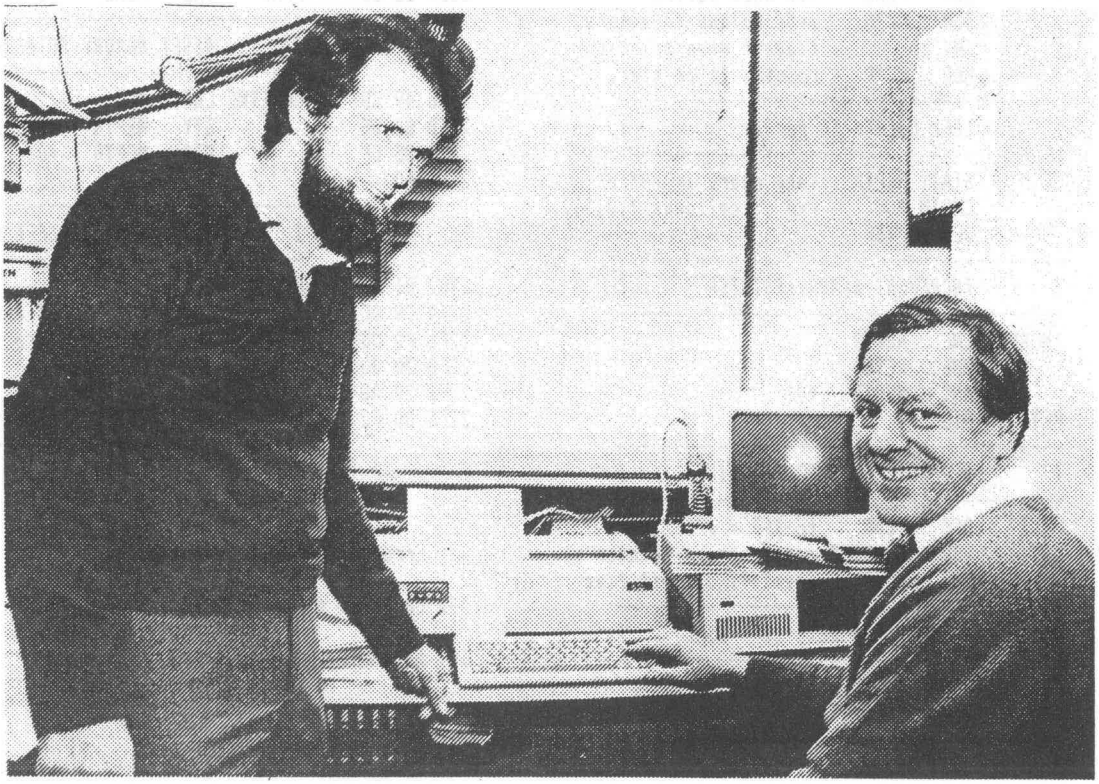
```
SCR # 4Ø
  Ø ( HIGH-LOW GAME   DECLARATIONS ) 1 .
  1 ( Simple game written by A.G.Megens 861Ø24 )
  2 Ø VARIABLE NUM    Ø VARIABLE INP
  3 Ø VARIABLE RND    Ø VARIABLE TS
  4 Ø VARIABLE LEN    Ø VARIABLE TURNS
  5 HERE RND !
  6 : HIGH 1Ø LEN @ - SPACES ." Too high" ;
  7 : LOW  1Ø LEN @ - SPACES ." Too low" ;
  8 : OK   1Ø LEN @ - SPACES ." You found it !!" 7 EMIT CR CR
  9       ." You needed " TURNS @ . ." turns."  CR ;
 1Ø : QUEST CR ." Your guess? " 7 EMIT ;
 11 : ANOTHER CR CR ." Another game (Y/N) ? " 7 EMIT
 12    BEGIN KEY TS ! TS @ 78 = TS @ 89 = OR UNTIL TS @ EMIT ;
 13 : RANDOM RND @ 31421 * 6927 + DUP RND ! ;
 14 : CHOOSE ( U1 ---U2) RANDOM U* SWAP DROP ;
 15 -->

SCR # 41
  Ø ( HIGH-LOW GAME    INPUT ) 2 .
  1 ( This input routine accepts digits Ø-9, RUBOUT and RETURN  )
  2 ( Call INPUT, result is stored in variable INP, length is   )
  3 ( stored in LEN, variable TS is last typed character.       )
  4 ( Note: FORTH works with 16 bits numbers, so maximum number )
  5 (       you may type in is 32767, else it will be negative. )
  6
  7 : INPUT Ø INP !  Ø LEN !
  8   BEGIN KEY TS !
  9     TS @ 95 = IF LEN @ 1 < IF    7 EMIT Ø TS !
 1Ø                          ELSE 95 EMIT -1 LEN +!
 11                               INP @ 1Ø / INP ! THEN
 12             THEN
 13     TS @ 47 > TS @ 58 < AND IF TS @ EMIT -48 TS +!
 14                 1 LEN +!  INP @ 1Ø * TS @ + INP ! THEN
 15   TS @ 13 = UNTIL ; -->
```

```
SCR # 42
  Ø ( HIGH-LOW GAME     INFO )  3 .
  1 : INFO CR CR
  2         1Ø SPACES ." High-Low game" CR
  3         9 SPACES ." ---------------" CR CR CR
  4         ." The object of this game is to guess a number " CR
  5         ." between 1 and 9999. The computer will tell you " CR
  6         ." if your guess is too high or too low." CR
  7         ." If you want to give up, type in Ø for your guess" CR
  8         ." or just press RETURN." CR CR
  9         ." GOOD LUCK !!!" CR CR
 1Ø         ." The game starts if the <ESC> key is hit......."
 11         7 EMIT ;
 12
 13 : STUPID CR ." Maximum is  9999, DUMMY!!" 7 EMIT ;
 14 : GIVEUP CR CR ." The secret number was " NUM @ . CR ;
 15 -->

SCR # 43
  Ø ( HIGH-LOW GAME     MAIN LOOP ) 4 .
  1 : GAME BEGIN
  2             Ø TURNS ! INFO
  3             BEGIN RANDOM DROP KEY 27 = UNTIL CR CR
  4             BEGIN 9999 CHOOSE NUM ! NUM @ Ø > UNTIL
  5             BEGIN
  6                QUEST INPUT 1 TURNS +!
  7                LEN @ 4 > IF STUPID 1ØØØØ INP ! THEN
  8                INP @ Ø > IF INP @ NUM @ < IF LOW  THEN
  9                            INP @ NUM @ > IF HIGH THEN
 1Ø                         THEN INP @ NUM @ = INP @ Ø = OR
 11             UNTIL  INP @ Ø = IF GIVEUP ELSE OK THEN
 12             ANOTHER TS @ 78 =
 13          UNTIL CR ;
 14 ;S
 15
OK
```

HET VRIJE VOLK **DINSDAG 11 NOVEMBER 1986**



De heren van Opbroek en Van Pelt in het zenuwcentrum van hun computerclub. (Foto Persbureau Jota)

```
COLUMNS PRINT                          Page: 0001

                ----------------------------------------
                I          COLUMNS PRINT               I
                I                                      I
                I  for printing in two collumns (f.ex. I
                I  from Wordprocessor or ASS114). The  I
                I  printer-initialising-routine must:  I
                I  1. send condensed pitch, set left   I
                I  margin (04), set horizontal tabu-   I
                I  lator (70). 2. change printer out-  I
                I  vector to this routine, reset buf-  I
                I  ferpointer, set flag=00.            I
                I  The processor must send $0C at the  I
                I  end of each page, and finish the    I
                I  last page with If's and send $0C,   I
                I  $03 at the end of text.             I
                I          Leif Rasmussen, Parkvej 1 I I
                I          4534 Hørve Danmark          I
                ----------------------------------------

229B                    ORG   $229B
                        TTL   COLUMNS PRINT

2363            AHOLD   EQU   $2363   holds character
F7B0            CENTRON EQU   $F7B0   send chr. to printer
00DD            FLAG    EQU   $DD     =00 if save,=ff if print
00DE            MEPTR   EQU   $DE     pointer to buffer
C800            ME      EQU   $C800   buffer for left column


                ----------------------------------------
                I       MAIN ENTRANCE                  I
                I       (character in A)               I
                ----------------------------------------

229B A4 DD              LDY   FLAG    =00 when saving
229D F0 03              BEQ   LCTM    left column to memory.
229F C8                 INY           flag=ff when printing
22A0 F0 35              BEQ   RCTP    columns to printer.
                ----------------------------------------
                I       LEFT COLUMN TO MEMORY          I
                ----------------------------------------

22A2 91 DE      LCTM    STAIY MEPTR   save char. in buffer
22A4 C9 0C              CMPIM $0C     end of collumns 1,3,5,,,?
22A6 F0 07              BEQ   PTSP
                ----------------------------------------
                I       INCREMENT MEMORY-POINTER       I
                ----------------------------------------

22A8 E6 DE      INCRPTR INC   MEPTR
22AA D0 02              BNE   RETUR
22AC E6 DF              INC   MEPTR   +01
22AE 60         RETUR   RTS
                ----------------------------------------
                I       PREPARE TO START PRINTING      I
                ----------------------------------------

22AF C6 DD      PTSP    DEC   FLAG    to $FF = printing
22B1 20 EB 22           JSR   RESETME reset memory-pointer
22B4 D0 06              BNE   LCTP    print first left line
                ----------------------------------------
                I       PREPARE FOR NEXT LEFT LINE     I
                ----------------------------------------

22B6 20 A8 22   PFNLL   JSR   INCRPTR skip 0D,0A
22B9 20 A8 22           JSR   INCRPTR
                ----------------------------------------
                I       LEFT COLUMN TO PRINTER         I
                ----------------------------------------

22BC B1 DE      LCTP    LDAIY MEPTR   get char. from buffer
```

```
COLUMNS PRINT                          Page: 0002

22BE C9 0D              CMPIM $0D     end of line ?
22C0 F0 0C              BEQ   PFRL
22C2 C9 0C              CMPIM $0C     end of left column ?
22C4 F0 E8              BEQ   RETUR
22C6 20 D0 22           JSR   CENTRO  print character
22C9 20 A8 22           JSR   INCRPTR increment pointer
22CC D0 EE              BNE   LCTP    get next chr.
                ----------------------------------------
                I       PREPARE FOR RIGHT LINE         I
                ----------------------------------------

22CE A9 09      PFRL    LDAIM $09     send tab. (70)
                ----------------------------------------
                I       SEND CHARACTER TO PRINTER      I
                ----------------------------------------

22D0 8D 63 23   CENTRO  STA   AHOLD   send to printer
22D3 20 B0 F7           JSR   CENTRON
22D6 60                 RTS
                ----------------------------------------
                I       RIGHT COLUMN TO PRINTER        I
                ----------------------------------------

22D7 C9 03      RCTP    CMPIM $03     end of text ?
22D9 F0 17              BEQ   PROLC
22DB 48                 PHA
22DC 20 D0 22           JSR   CENTRO
22DF 68                 PLA
22E0 C9 0A              CMPIM $0A     new line ?
22E2 F0 D2              BEQ   PFNLL
22E4 C9 0C              CMPIM $0C     new page ?
22E6 F0 01              BEQ   PFNP
22E8 60                 RTS           return to processor
                ----------------------------------------
                I       PREPARE FOR NEXT PAGE          I
                ----------------------------------------

22E9 E6 DD      PFNP    INC   FLAG    to $00 = save left column
                ----------------------------------------
                I       RESET MEMORY-POINTER           I
                ----------------------------------------

22EB A9 C8      RESETME LDAIM ME      /256
22ED 84 DE              STY   MEPTR   (Y allways = 0)
22EF 85 DF              STA   MEPTR   +01
22F1 60                 RTS
                ----------------------------------------
                I       PRINT REST OF LEFT COLUMN      I
                ----------------------------------------

22F2 B1 DE      PROLC   LDAIY MEPTR
22F4 C9 0C              CMPIM $0C     if end of text, print
22F6 F0 D8              BEQ   CENTRO  form feed and return.
22F8 20 D0 22           JSR   CENTRO
22FB 20 A8 22           JSR   INCRPTR
22FE D0 F2              BNE   PROLC   allways, get next char.
                ----------------------------------------


>>> Error in 0000 statement(s)

>>> Op-Code: $B000 - $B064 / $229B - $22FF / 0101 Bytes / 01 Pag.

>>> Assembled by ASS114 / 3.4
```

```
10              ;Hardcopy routine for Octopus
20              ;By: Coen Boltjes 015-136812 Vidibus 400029830
30              ;For Junior: Use the (addresses)
40              ;The routine PRCHA is printer dependent.
50              ;The first prints only ASCII characters, and
60              ;can be used with all ASCII printers. The
70              ;second is an example of a routine which also
80              ;can print the VIDEOTEX block grafics.
90              ;
100             ;VARIABELES
110 235F=       XHOLD =$235F
120 2361=       YHOLD =$2361
130 2363=       AHOLD =$2363
140 E7CD=       FLN   =$E7CD            ;($EFC0)
150 E7DB=       RAMBEG=$E7DB            ;($EFCE)START VIDEO
160 E7DD=       CHAPLN=$E7DD            ;($EFD0)#CHAR./LINE
170 E7DE=       LPSCR =CHAPLN+1         ;#LINES/SCREEN
180 006C=       RAMPTR=$6C
190 F7B0=       CENTRO=$F7B0            ;($F3E2)
200             ;
210 B000        *=$B000
220             ;
230 B000 18     HRDC0   CLC
240 B001 ADCDE7         LDA FLN
250 B004 6DDBE7         ADC RAMBEG
260 B007 856C           STA RAMPTR
270 B009 ADCEE7         LDA FLN+1
280 B00C 6DDCE7         ADC RAMBEG+1
290 B00F 856D           STA RAMPTR+1
300 B011 AEDEE7         LDX LPSCR       ;LINES PER SCREEN
310 B014 2047B0 HRDC01  JSR CRLF        ;START NEW LINE
320 B017 201EB0         JSR PRTLN       ;PRINT LINE
330 B01A CA             DEX
340 B01B D0F7           BNE HRDC01      ;=>NOT LAST LINE
350 B01D 60             RTS
360             ;
370 B01E 8E5F23 PRTLN   STX XHOLD       ;SAVE # LINES
380 B021 ACDDE7         LDY CHAPLN
390 B024 8C6123         STY YHOLD       ;SAVE # CHARACTERS
400 B027 A000   PRTLN1  LDY #$00
410 B029 B16C           LDA (RAMPTR),Y  ;GET CHARACTER
420 B02B 205EB0         JSR PRCHA       ;PRINT IT
430 B02E E66C           INC RAMPTR
440 B030 D00C           BNE PRTLN2
450 B032 E66D           INC RAMPTR+1
460 B034 A56D           LDA RAMPTR+1
470 B036 2907           AND #$07
480 B038 18             CLC
490 B039 6DDCE7         ADC RAMBEG+1
500 B03C 856D           STA RAMPTR+1
510 B03E CE6123 PRTLN2  DEC YHOLD       ;ONE CHAR DONE
520 B041 D0E4           BNE PRTLN1      ;=>LINE NOT FINISHED
530 B043 AE5F23         LDX XHOLD       ;RESTORE # LINES
540 B046 60             RTS
550             ;
560 B047 8E5F23 CRLF    STX XHOLD
570 B04A A90A           LDA #$0A
580 B04C 8D6323         STA AHOLD
590 B04F 20B0F7         JSR CENTRO
600 B052 A90D           LDA #$0D
610 B054 8D6323         STA AHOLD
620 B057 20B0F7         JSR CENTRO
630 B05A AE5F23         LDX XHOLD
640 B05D 60             RTS
650             ;
660             ;Only prints codes $20-$7F. Others as a space.
670 B05E 3004   PRCHA   BMI PRCHA1      ;=>GRAFICS
680 B060 C920           CMP #$20
690 B062 1002           BPL PRCHA2      ;=>NORMAL CHARACTER
700 B064 A920   PRCHA1  LDA #$20
710 B066 8D6323 PRCHA2  STA AHOLD
720 B069 20B0F7         JSR CENTRO
730 B06C 60             RTS
740             ;
750             ;Prints all codes using EPSON MX-80 format
760             ;and VIDEOTEXT-modifications of issue 47
770             ;May be adjusted for other configurations
780             ;
790 B06D 10F7   PRCHA   BPL PRCHA2      ;=>NORMAL  CHARACTERS
800 B06F 297F           AND #$7F        ;NORMAL CHARACTERS
810 B071 C920           CMP #$20
820 B073 D0EF           BNE PRCHA1      ;=>NO BLOCK
830 B075 A9DF           LDA #$DF
840 B077 D012           BNE PRCHA3      ;=>ALLWAYS
850 B079 1010   PRCHA1  BPL PRCHA3
860 B07B 49FF           EOR #$FF
870 B07D 291F           AND #$1F        ;ONLY GRAFIC INFO
880 B07F 09C0           ORA #%11000000  ;ADJUST FOR EPSON-CODE
890 B081 D008           BNE PRCHA3      ;=>ALLWAYS
900 B083 C920   PRCHA2  CMP #$20
910 B085 1004           BPL PRCHA3      ;=>NO COMMAND CHARACTER
920 B087 291F           AND #$1F        ;ONLY GRAFIC INFO
930 B089 09A0           ORA #%10100000  ;ADJUST FOR EPSON-CODE
940 B08B 8D6323 PRCHA3  STA AHOLD
950 B08E 20B0F7         JSR CENTRO
960 B091 60             RTS
```

```
100 REM File merge & -split program version 2.1 (860904)
110 REM For Octopus/DOS-Junior
120 REM By:C.J. Boltjes  Tel.      015-136812
130 REM                  Vidibus   400029830
140 REM Why a new File-Merge program?
150 REM 1)This program don't use an objectcode file,
160 REM   so it can be run as a standalone program.
170 REM 2)This program list only the first file in
180 REM   memory. So larger files can be merged, and
190 REM   the execution is faster.
200 REM 3)A file split option is implemented too.
210 REM 4)By using DOS-Commands instead of POKE's
220 REM   the program is easyer to understand, and
230 REM   to adapt.
240 REM When the program is used on a Junior  "GO F71D"
250 REM in line 630 must be changed into "GO FE1B".
260 REM The "ME D800,...." must be changed into a value
270 REM where RAM is present.
280 REM When using the SPLIT option you have to give the
290 REM first and last line seperated by a "-"
300 DISK!"ME D800,D800":REM SET PRINT POINTER
310 DI$="DISK!"+CHR$(34)
320 INPUT "S)plit or M)erge ";A$
330 MO=0
340 IF (A$="S"OR A$="s") THEN MO=1
350 IF (A$="M"OR A$="m") THEN MO=2
360 IF MO=0 THEN PRINT CHR$(7):GOTO 320
370 GOSUB 510: REM LOAD FIRST FILE
380 PRINT#5, "LIST#5";
390 IF MO=2 THEN GOTO 420
400 GOSUB 560: REM ENTER DELIMETERS
410 GOTO 440
420 PRINT#5, :REM CLOSE LINE
430 GOSUB 600:GOSUB 510:REM SECOND FILE
440 PRINT#5, "PRINT#5, ";CHR$(34);"DISK!";
450 PRINT#5, CHR$(34);";CHR$(34);";
460 PRINT#5, CHR$(34);"IO 01,01";CHR$(34)
470 PRINT#5, DI$;"ME 9000,9000";CHR$(34)
480 DISK!"ME D800,9000":REM SET START
490 DISK!"IO 10,01"
500 END
510 INPUT"Which drive ";D$
520 INPUT"Which file  ";F$
530 PRINT#5, DI$;"SE ";D$
540 PRINT#5, DI$;"LO ";F$
550 RETURN
560 INPUT "List FROM-TO ";A$
570 PRINT#5, ", ";A$
580 PRINT#5, "NEW"
590 RETURN
600 PRINT#5, :PRINT#5, "REM ";CHR$(34);
610 PRINT#5, "*** Place next disk, and press ";
620 PRINT#5, "any key to continue ***"
630 PRINT#5, "DISK!";CHR$(34);"GO F71D"
640 RETURN
```

SHOPPING AROUND

Anyone of us who is building and expanding his own computersystem will face a moment that he (or she ?) has to buy or order the neccesary components.As we here in Holland will always try to pay less and get more I spended some time to check wether my local shop was the best deal for a larger project.As example I used the EC 65K card together with the new I/O card as published by Elektor in special 4 and 5 For a good reference I selected two shops each in Holland and Germany and one shop in England and Belgium.
In the first colom you can find the part list as published by Elektor and in the other coloms the 6 different shops.

In the Netherlands NL1:TIMTRONIX,tel 050-140937
NL2:MEEK IT/GORIS,tel 015-130489

In Germany D1 :RATEV ELEKTRONIK,tel 02102-42051/52
D2 :SIMONS ELEKTRONIC,tel 02272-81619

In Great Brittain GB1:TECHNOMATIC Ltd,tel 01-2081177

In Belgium B1 :TRIAC ,TEL 03-2382352/53

All prices in local currency

CPU CARD		NL1	NL2	D1	D2	GB1	B1
R1,R2	:470	0.20	0.20	0.18	0.20	n.a.	2.4
R3,R9,R10,R16	:3K3	0.40	0.40	0.36	0.40	n.a.	4.8
R4,R8,R11...R14,R17	:2K2	0.70	0.70	0.63	0.70	n.a.	8.4
R5,R6,R7	:1M	0.30	0.30	0.27	0.30	n.a.	3.6
R15	:1K	0.10	0.10	0.10	0.10	n.a.	1.2
C1	:12 PF Ker.	0.15	0.30	0.25	0.08	n.a.	2.5
C2,C4,C5	:330 N	1.95	1.80	1.35	1.47	n.a.	30.0
C3,C6...C15	:100 N	3.85	5.50	4.95	3.19	n.a.	110.0
C16	:10u/12V Tantal	0.70	0.50	1.65	0.39	n.a.	20.0
D1...D3	:HSCH 1001(hp)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
T1	:2N2222	0.90	1.25	0.90	0.35	0.30	19.0
IC1	:74LS04	0.95	0.95	0.90	0.59	0.24	25.0
IC2	:74LS93	1.75	1.95	1.05	1.24	0.54	42.0
IC3	:74F74	n.a.	9.50	1.85	1.78	0.70	65.0
IC4,IC7	:74F00	n.a.	2.40	3.50	2.56	1.00	112.0
IC5	:74F04	n.a.	1.20	1.75	1.28	0.50	56.0
IC6	:74LS125	1.50	1.85	1.15	1.18	0.50	39.0
IC8...IC10	:74F245	n.a.	12.00	23.70	3.54	14.25	1785.0
IC11	:NE555	1.10	1.10	1.10	0.78	0.22	30.0
IC12	:74LS74	1.35	1.40	1.00	0.88	0.35	32.0
IC13	:74LS00	0.95	0.95	0.65	0.55	0.24	25.0
IC14	:74S30	1.65	2.50	n.a.	1.28	0.50	38.0
IC15	:74F373	n.a.	3.00	6.45	3.68	4.00	295.0
IC16	:74F138	n.a.	2.00	3.55	1.98	1.80	132.0
IC17	:74S260	1.85	2.00	2.40	n.a.	1.00	95.0
IC18	:65SC816P2	n.a.	79.50	n.a.	n.a.	n.a.	n.a.
IC19	:2716 EPROM	11.95	14.95	8.90	9.95	3.50	365.0
X1	:8 MHz	4.95	6.95	2.10	2.28	1.50	150.0
64 pen male din 41612		5.95	4.95	2.15	2.98	2.25	90.0
Connectorstrip 1row,12pin		n.a.	3.95	2.50	3.48	1.10	35.0
Connectorstrip 2row,30pin		3.95	4.50	5.00	6.98	1.95	180.0
10 shortcutconnector		2.30	8.00	2.70	2.20	n.a.	n.a.

PAPERWARE SERVICE (ENGLISH VERSION) LIST OF PRICES

All prices including forwarding charges, etc.
All prices only for European (C.E.P.T.)-countries.

NEW :
MICRO-WARE Assembler/Disassembler/Editor for 6502
Manual for Elektor's OCTOPUS/EC65-computer.
Documented by Marc Lachaert, Belgium.
Send cheque of Hfl. 49,50 to W.L.v.Pelt (eurocheque 40,00)

NEW:
MICRO-WARE Assembler/Disassembler/Editor for 6502
Complete Source-listing for Elektor's Octopus/EC65-comp.
Documented by Marc Lachaert, Belgium
Send cheque of Hfl. 74,50 to W.L.v.Pelt (eurocheque 65,00)

EXTENSIONS ON OS-65D V3.3 FOR ELEKTOR'S JUNIOR-computer.
Gert Klein, The Netherlands.
Dutch version published in DE 6502 KENNER nr.39, Aug.'85.
With the new DOS-commands :
DI to supply the directory of a diskette, SD to replace the old DI command in OS-65D, FO to format a diskette and to write an empty directory to track 12, CR to write a filename into the directory with trackrange to match, DE to delete a filename from the directory, CH to change filename1 into filename2, NU to supply the number of tracks by the Basic of assemoly sourcefile. With four commands for further extensions: FT to load the FORTH interpreter/compiler, WF to warmstart the FORTH, MA to load the macro assembler by C. Moser, WS to warmstart the Moser-assembler.
Complete English assembly source listing with introduction for users of JUNIOR, but easy to adapt on your OCTOPUS.
Send cheque of Hfl. 17,50 to W.L.v.Pelt (eurocheque 8,00)

MICRO-WARE Assembler/Editor with bank-switching
Complete source-listing (Disassembler not included)
Author: Fernando Lopes, Portugal.
System: Elektor's JUNIOR-computer with VDU and OS65-D DOS
With new commands: PUT FILE, PUT TT, LOAD FILE, LOAD TT, toggle centronics flag, return to kernal, and modified error routine, and new subroutines DECBPF, INCBPF, SETDM-SETSC-SETPF, PRTDAT to read data and time from the Real Time Clock and to print it in the header lines, SETBKO-SWAPDN-SAVBNK-RSTBNK to manage the bankswitching, LINE NUMBERS.
Refer : DE 6502 KENNER, May 1986, p.44-47
Hardware article "Bank Switching for the JUNIOR-computer" by Fernando Lopes, Portugal.
Send cheque of Hfl. 45,00 to W.L.v.Pelt (eurocheque 35,50)

DATBAS. A database-program written in Basic for Elektor's JUNIOR-computer with VDU-card and OHIO Scientific OS-65D V3.3 disk operating system.
Jan van Heuven, The Netherlands. Modified by Fernando Lopes, Portugal.
Send cheque of Hfl. 30,00 to W.L.v.Pelt (eurocheque 20,50)

And for the I/O card the following:

R1...R8	:2K2	0.80	0.80	0.72	0.80	n.a.	9.6
R9	:330K	0.10	0.10	0.09	0.10	n.a.	1.2
R10	:20M	0.10	0.10	0.09	0.10	n.a.	1.2
R11...R14,R17,R18	:100K	0.60	0.60	0.54	0.60	n.a.	7.2
R15 trim	:10K	0.60	0.80	0.65	0.55	n.a.	12.0
R16	:30K	0.10	0.15	0.12	0.10	n.a.	1.2
R19...R21	:2K2	0.30	0.30	0.27	0.30	n.a.	3.6
C1	:22pf ker.	0.15	0.30	0.25	0.08	n.a.	2.5
C2	:10...40 pf	0.90	1.25	1.00	1.00	n.a.	23.0
C3,C5..C7,C9,C10	:100 N	2.10	3.00	2.70	2.94	n.a.	60.0
C4,C8,C11,C12	:10u/16v tant.	2.80	2.00	6.60	1.56	n.a.	80.0
D1...D3	:1N4148	0.15	0.12	0.09	0.10	0.12	30.0
D4	:AA136	n.a.	0.50	0.45	n.a.	n.a.	n.a.
D5	:HSCH 1001(hp)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
T1...T3	:BC130C	n.a.	1.80	1.29	0.57	n.a.	n.a.
IC1	:74F245	n.a.	4.00	7.90	3.98	4.75	595.0
IC2	:74LS02	0.95	0.95	0.65	0.55	0.24	25.0
IC3	:74LS688	6.95	8.00	5.55	4.98	3.50	199.0
IC4,IC6	:74LS00	1.90	1.80	1.30	1.10	0.24	25.0
IC5	:74LS27	1.05	1.10	0.65	0.64	0.24	25.0
IC7	:MC146818	26.60	27.95	24.80	n.a.	n.a.	495.0
IC8	:6551	16.30	15.95	13.40	13.50	6.00	495.0
IC9	:1488	2.75	1.45	2.17	1.68	0.60	50.0
IC10	:1489	2.75	1.45	2.17	1.68	0.60	50.0
IC11,IC12	:6521 or 6821	14.30	19.00	9.00	8.68	5.60	290.0
X1	:32.768 KHz	n.a.	1.70	4.95	1.75	1.00	150.0
X2	:1.8432 MHz	5.95	7.15	2.10	11.50	2.25	150.0
64 pen male din 41612		5.95	4.95	2.15	2.98	2.75	90.0
connectorstrip 2 row 72 pen		7.90	9.00	5.00	3.92	3.90	200.0
shortcutconnector		0.25	0.80	0.27	0.22	n.a.	n.a.
Ni/Cd battery 3.6V/100 mAH		n.a.	29.30	n.a.	n.a.	n.a.	230.0

Not all the shops could offer me the complete list special the Skotky diode in not avaible.The 65SC816 can be obtained at the GTE resalesoffice in Holland or Germany.

As You can see I left the price of the two componentplates out of this list because You can order them directly at Elektor in Your own country.Also the 65SC816 is not yet avaible in most of the stores, if You are interested best to call GTE office in Your own country.

The shops selected where choisen because of the advertisements in Elektor wich made the writing of the story easier.As everybody has realized during the last years the prices of electronic spareparts are fluctuating very strongly.Date of the a.m. prices is july 1986.

All mentioned prices are included VAT .For ordering parts from a different country substract VAT and add shipping and custom taxes.

Will Cuijpers

CENTRONICS PRINTER INTERFACE DEVICE 4 OR 5 ON COMMODORE 64
Ruud Uphoff, The Netherlands. Machinecode.
Send cheque of Hfl. 15,00 to W.L.v.Pelt (eurocheque 5,50)

THE VDU CARD
Article to assure that Elektor's VDU card works well.
Software (machinecode) with introduction.
Many members of the club use this software instead of the software from Elektor.
Authors: J.J.A. and J.A.J. Janssen, The Netherlands.
Transl.: Willem van Asperen.
System : Elektor's JUNIOR computer with VDU card.
Publ. : DE 6502 KENNER 31, Apr. 1984, p.17-26.
Send cheque of Hfl. 19.00 to W.L.v.Pelt (eurocheque 9,50)

THE GRAPHIC DISPLAY
Article with schematic diagram to do graphical work (plotting of graphs etc.) together with Elektor's VDU card.
Authors: J.J.A. and J.A.J. Janssen
Transl.: Willem van Asperen
System : Elektor's JUNIOR computer with VDU card.
Publ. : DE 6502 KENNER 36, Febr. 1985, p.5-11
Send cheque of Hfl. 14,50 to W.L.v.Pelt (eurocheque 5,00)

MON65/DOS65 is the new system of our club, build with Elektor's CPU, VDU, RAM-cards and our professional FDC controller card, for 6502 or 65C02.
For more information, write to E.J.M. Visschedijk
Drakensteyn 299
NL - 7608 TR ALMELO
Source-listings of the monitor and the disk operating system, complete with comments, already in English language.
Hardware description, English version, translated by Albert v.d. Beukel, The Netherlands, and corrected by Andrew Gregory, England.
DOS-manual to be translated soon. Helpfile available on diskette.
Monitor-manual to be translated soon.
Editor-manual to be translated soon.
For those who want to be informed about the hardware first it is possible to order for the hardware description, only the English version. If wanted:
Send cheque of Hfl. 29,50 to W.L.v.Pelt (eurocheque 20,00)

TOKENIZED Microsoft Basic Keywords and addresses VIC-20
Commodore Basic V2.
Nico de Vries, The Netherlands.
Send cheque of Hfl. 14,50 to W.L.v.Pelt (eurocheque 5,00)

PATCHES ON KIM-1 MICROSOFT BASIC FOR ELEKTOR'S JUNIOR-comp
Koen van Nieuwenhove, Belgium/W.L. van Pelt, The Netherl.
With PMODE, TRACE, STEP RESET, PRINTER PG., VIDEO, AUTO, RENUMBER, DATASAVE, EDIT LINE, APPEND.
Send cheque of Hfl. 24,50 to W.L.v.Pelt (eurocheque 15,00)

HINTEXT Basic Texteditor
for Elektor's JUNIOR and OCTOPUS-computers
Author : M.R. van Hintum, The Netherlands
Transl.: Maarten van Lieshout (Introduction)
Willem van Asperen (Basic-progr.)
The Dutch version was published in DE 6502 KENNER nr. 41, Dec. 1986, p.6-14.
Send cheque of Hfl. 14,50 to W.L.v. Pelt (eurocheque 5,00)

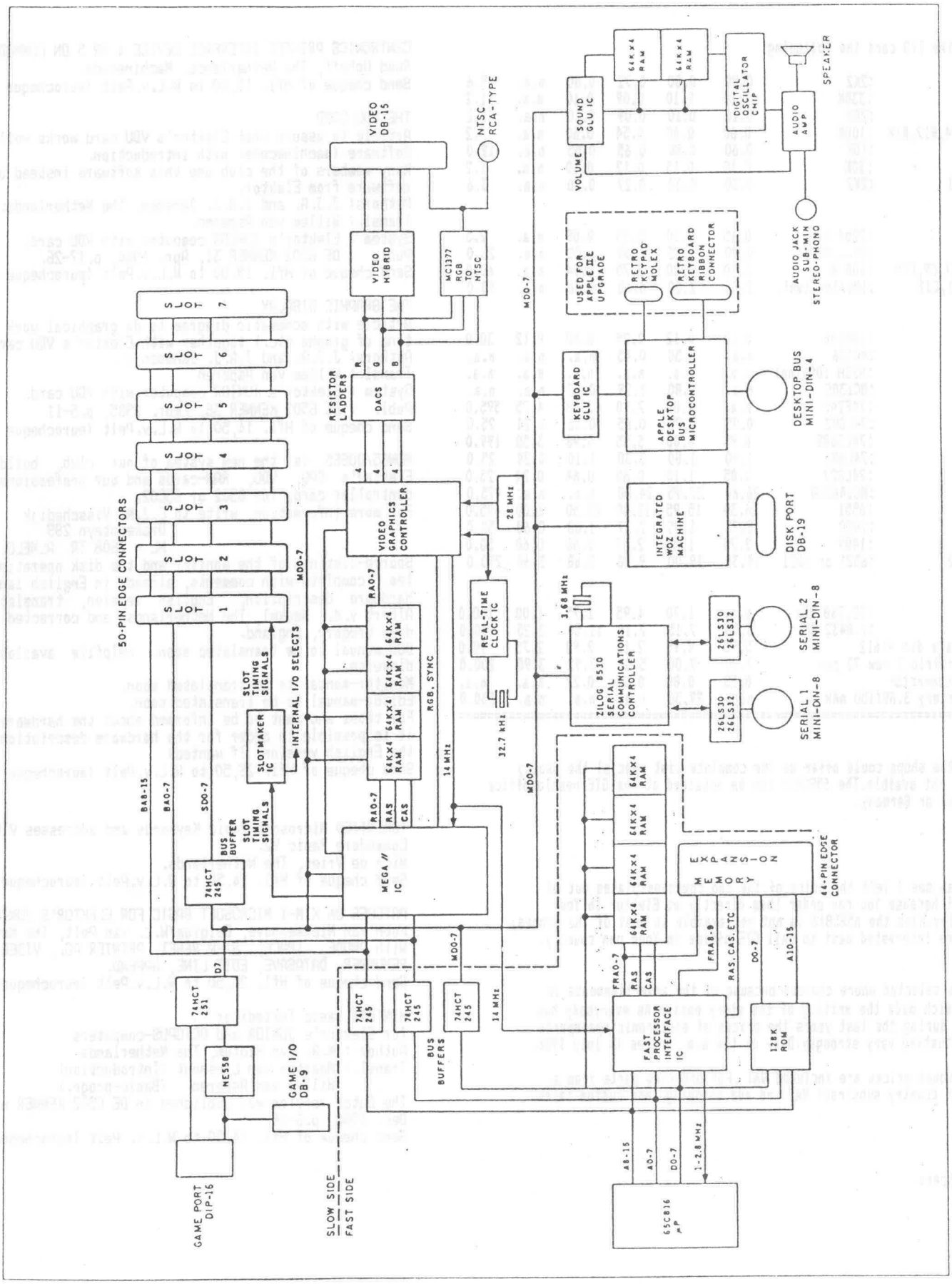


Figure 1: A *block diagram of the* Apple II GS

OCTOPUS-FORTH 1.2

OCTOPUS-FORTH 1.2 is a Forth-system, specially build for Elektor's Octopus/EC65 6502-computer as published in the Elektor's Special Editions. It uses the the OHIO-DOS which functions as a host for the Forth-system. OCTOPUS-FORTH 1.2 is based on the model of the Forth Interest Group as published in their FIG-Forth Installation Manual and the FIG-Forth 6502 Assembly Source Listing (both of them can be ordered by our club). Several bugs in this model are removed and a lot of hifh level words are rewritten in code to increase speed. Although a lot of other publications about Forth have been used, most of this system is written by our clubmember Fridus Jonkman.

OCTOPUS-FORTH 1.2 consists of:
- A precompiled section:
  * kernel
  * I/O
  * assembler
  * full screen editor
  * directory-system
  * copy-facilities
  * words to support the VDU-card
  * etc.
- Utilities:
  * recursive decompiler
  * tracer for debugging colon-definitions
  * breakpoint-setting for debugging
  * vectoring
  * strings
  * sysgen for generating Forth-diskettes
  * etc.
- A meta-compiler:
  The source screens of the precompiled section are included; they can be loaded to build a new precompiled Forth elsewhere in memory. This powerful tool allows full control to build a customized system.
- Documentation screens (English):
  All words used in the precompiled section are fully documentated as far as they are not included in the FIG-Forth model. Also utilities and the use of the meta-compiler are described.

Memory map:
- $0000-0100 : zero page
  computation-stack
- $0100-0200 : terminal input buffer
- $0200-2200 : kernel, I/O, assembler
- $2200-3200 : OHIO-DOS
- $3200-5042 : extensions
- $5042-BF60 : word-, textbuffers, free for compilation
- $BF60-DF80 : 8 diskbuffers, each 1 Kbyte
- $DF80-E000 : user-area

Diskettes:
The system as described here will be available on 80 track systems, which are single sided (2 diskettes).

Prices and distribution:
Because OHIO-DOS is part of the system and is not placed in the public domain, you must prove you bought it yourself before we can deliver the Forth-system.
For OCTOPUS-FORTH 1.2 : all rights reserved by our club.
Send 2 blank diskettes with labels and R/W-protectors and a cheque of Hfl. 59,50 (eurocheque Hfl. 50,=) to W.L. van Pelt at the editorials office, Krimpen a.d. IJssel.

THE APPLE][GS: A 16-BITS APPLE][

By : Gert van Opbroek, The Netherlands.

The Apple][-series has a new member: the Apple][GS which stands for Graphic and Sound. The machine has the following specifications:

- CPU: 65C816
- Memory: 256 kB RAM expandable to 4 mB; 128 kB ROM
- Graphics: five modes rangeing from 40 by 48 points in 16 colours to 640 by 200 points in four colours; total number of colours: 4096
- Sound: synthesizer with 32 oscillators for 15 simultaneous, independent tones
- Connections: RGB-port, monochrome Video, Audio stereo headphone, 2 RS422 seerial ports, joystick or paddles, connector for 5 1/4 and/or 3 1/2 inch disk drives, connector for the separate keyboard and on this keyboard a connector for a mouse
- 7 Apple][compatible expasion slots

The machine is hard- and software compatible with the other members of the series. This means that most of the old Apple][software will run on the Apple][GS and that the Apple][expansion boards can be used. The old software will run a factor 2.5 to 3 faster on this new machine

In Holland, the machine can be bought from 1 February 1987 When ordered before this date, a system containing:

- An Apple][GS with keyboard and mouse
- An Unified 800 kB 3.5 inch disk
- An Apple][GS B&W monitor
- An Apple][GS 256 kB expansion card

will cost Dfl. 4794.00 incl. 20% VAT.

Information about this machine:

- In Holland: Apple Computer B.V.
  Postbus 7
  3712 ZG Huis ter Heide
  03404 - 86922

  Refer to our clubs magazine.

- A Poruct Review can be found in BYTE October 1986.

ML BASICODE UTILITY-DISK FOR ELEKTOR'S OCTOPUS/EC65

Our member Marc Lachaert developed the new bootable disk for 40 trs, SS, DD on your Octopus. Because OHIO-DOS is part of the system and not is placed in the public domain, you must prove you bought it yourself, before we can deliver the diskette.
The diskette boots up with a menu to choice:
1. Loading the standard BASICODE-2 subroutines from DISK and the BASICODE program of your choice from TAPE
2. Loading the BASICODE program of your choice from TAPE
3. Loading a program from DISK and MERGE it with a BASICODE program from TAPE
4. Saving the program of your choice from DISK in BASICODE format on TAPE
5. Enable/Disable the RSEQ/EDIT commands
6. End of program. (EXTRA: BASIC GAME "SLIDING GRID")

To order the diskette send cheque of Hfl. 22,00 (eurocheque Hfl. 12,50) and a blank diskette to W.L. van Pelt.

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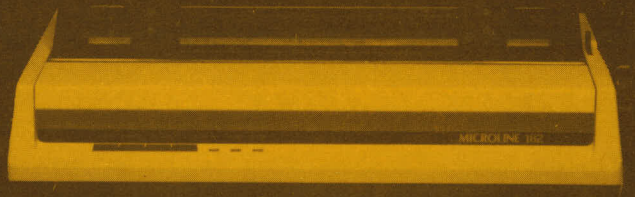

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