Issue One ****************************** March 1996

The International ZX81 Magazine

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Hello Dear ZX81 Friends,

Welcome to this first issue of The International ZX81 Magazine.
Let me first tell you the purpose of this magazine, there are still many ZX81/Timex users all over the world or others who use the ZX81 in emulated on a PC or Atari etc.
There are also others who used their ZX81's very much, but by seeing everybody turning to other machines they felt abandoned and in lack of support and many of them quit with the ZX81 and have gotten other machines.
Now I also work with other machines as do many other ZX81 users, but my and maybe youre first love is still the ZX81 and you have not completely abandoned it, but the thought that you are all by yourself has not encouraged you very much, and that's exactly why we put out this magazine.
This magazine should be some kind of connection point to wich evrybody all over the world can have contact with other users, writing to it, asking questions, searching for hard/software or have a problem with their ZX81.
Now I'm not trying to put out a professional magazine or make money but I'm just a simple hobbyist with a homecomputer trying to make a magazine so I can use all the help I can get in doing this.
You would probably also find some spelling mistakes in this magazine because I'm dutch and my English is not perfect.
But it is the thought that counts, now how the magazine is going to be also depends on youre input and what you send to me, it could be almost anything, from a simple Basic program, a Machinecode course or program or some electronic project you want to share with others or you like to tell others what you do with the ZX81 or ask a question, really... it could be anything.
If you have a program you are looking for or something you want to sell to others I will put it in the magazine.

So I love to hear from you and give me youre hints, tips, comments and anything you would like to see in the magazine.

Many thanks to those who already send in articles and to ZX Team Magazine in Germany who gave me permission to let articles be translated in English and be published.

The author of The International ZX81 Magazine

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The Battle of the giants
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The ZX81 compared with a 80486-33Mhz PC

Dear Friends of the ZX81,

Time and time again we find out that many wellknown magazines that advertise in their magazines, and give less credit to in reality stronger computers simply by doing tests without reall depth.
The ZX81 has suffered many times because of this and has clearly been less appreciated because of this.
The ZX-Team has now done a objective and completely 'neutral' test between this two computers.
The ZX81 in this test is a standard ZX81 with 1K, the 486 PC uses a 130Mb harddisk.
First we looked at the design, the ZX81 sure is in fashion with his nice black colour, also the nice flat case of the ZX81 is much more stylish then a tower PC in this commonly used outfit, a clear case.
The PC reached a 8.5 CU-Value, which is about the same as a coolbox with it's lid open, the ZX81 came with it's keyboard in the direction of the wind, with a great CU-Value of 0.36.
Benchmark 1 is the calculation of a sinus of 30 degrees, it took the ZX81 9.43 seconds, while they where still looking for the appropriate software for the PC to do this.....
Benchmark 2 exists of a complete routine written in machine language in one line and entered as a direct command from the keyboard.
1 REM <SPACE> TAN
RAND USR 16514
The difference in mobility ended up in the advantage of the ZX81.
The PC was to heavy to pick up.....
The ZX81 also has the advantage of easy recycling, the ZX81 does not leave many parts.
The economic test was about consuming electricity, well I guess you know that one already.

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Review of the testresults:
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		ZX81	486 PC
++ = Very Good	Design	++	o
+ = Good	CW-Value	++	--
o = Poor	Benchmark 1	+	--
- = Very Poor	Benchmark 2	+	--
-- = Terrible	Total Size	+	o
	Mobility	++	--
	Recycling	+	o
	Shocktest	++	-
	Noisetest	++	--
	Economics	++	o

Conclusion, we ZX81 users can look optimistic into the future, I certainly would never sell my ZX81

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LowCost Tuning
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Expand youre memory up to 32K - a DIY project in three steps.

Step 1: if you only want 16K-byte it is very simple:

-remove the original for 2K memory chip(s)
-solder a good ic-socket with 28 pins at the place of IC4
-fit a short wire at the place of LK2 (on the right side of IC4)
-take the 38K*8 RAM-chip and bend pins 1, 2, 22, 23, 26 up, they are not allowed to have contact with the pins of the socket
-put the RAM (43256, 55257 or 62256 e.q) into the socket
-connect pin 1(A14) with ground (pin 14 of IC4)
-connect pin 2(A12) with A12, this is the anode of D3 on the ZX81 pcb
-connect pin 22 with ground
-connect pin 23(A11) with A11, this is the anode of D1 on the ZX81 pcb
-connect pin 26(A13) with A13, this is the anode of D5 on the ZX81 pcb
-that's all

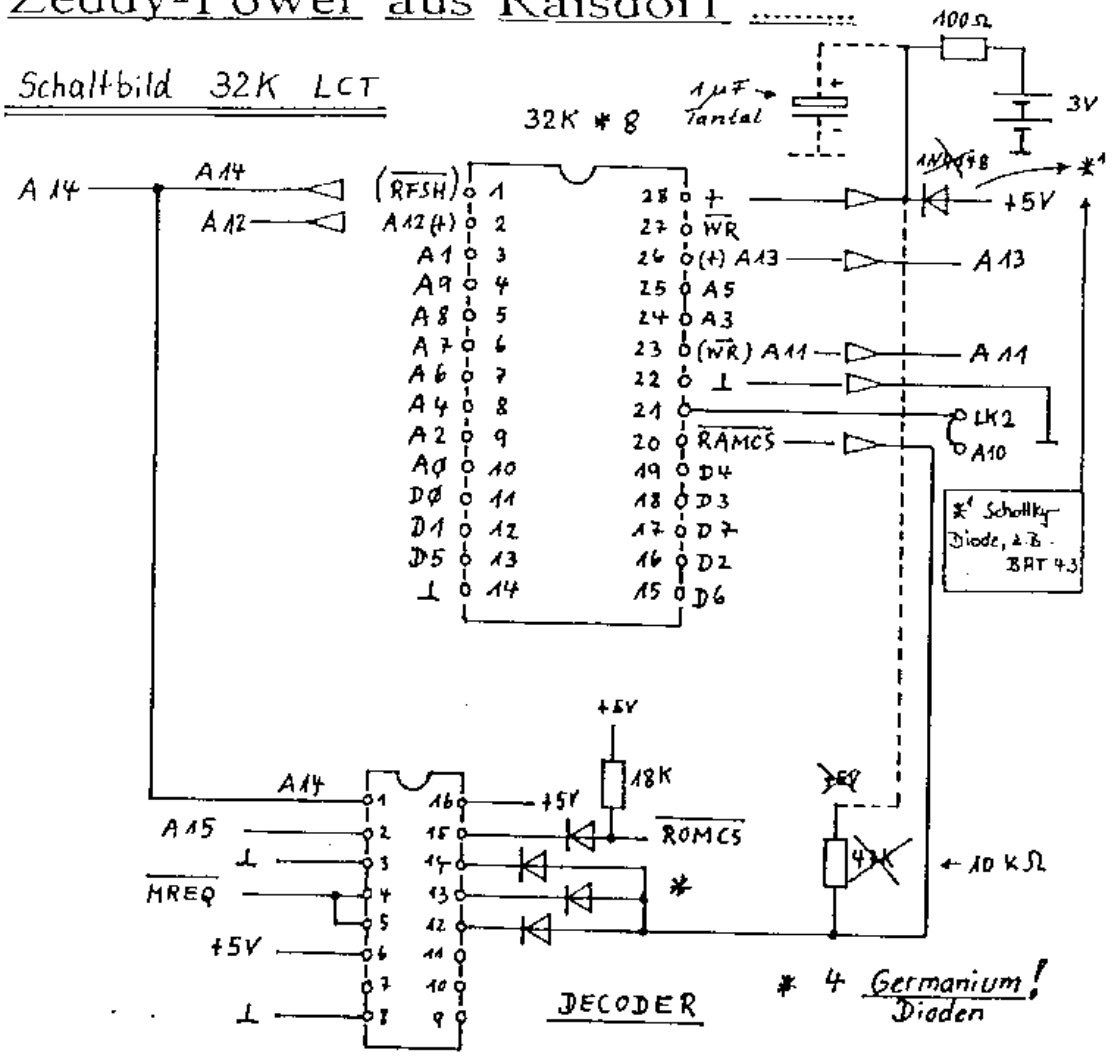
Step 2: full 32K-RAM from 16K to 48K-1

-remove the RAM from the socket and bend pins 20 and 28 up
-put the RAM into the socket
-connect pin 28 with +5 volts
-connect pin 20 with output of the decoder (see schematic of the included GIF file)
-remove R2 and R28 from the ZX81 pcb (RAMCS and ROMCS)
-remove the wire from pin 1 to ground and connect pin 1(A14) with A14, this is the anode of D7 on the ZX81 pcb
-build a simple address decoder with 74LS138 and four germanium diodes.

The function is as follows:
MREQ, A14 and A15 are used to select four area's of 16K, in the first area ROM is selected. The second and third area is the 16-48K RAM area.
In the fourth area RAM must be selected too, as the screen-output in the ZX81 is working with M1=0 and A14=1 and A15=1. Three of the germanium diodes form an OR-gate which pulls RAMCS to low whenever one output is LOW.
-connect the ROMCS output of the decoder with pin 20 of the ZX81 (ROMCS)
-connect A14, A15, MREQ, 0 volts and +5 volts with the decoder.

Step 3: memory-backup
-only effective in the 32K-48K area, (as RESET will delete the 16K-32K area)
-replace the wire from RAM pin 28 to +5 volts by a schottky diode
-connect a backup battery of about 3 - 3.6 volts via a 100R resistor with pin 28

Zeddy-Power aus Raisdorf .....



▷ = hochgebogener IC-PIN, der nicht im Sockel steckt !

Stückliste:

1 RAM 32 K * 8 (z.B. Toshiba TC 55257 BPL-10)
1 74LS138
4 Germaniumdioden
1 Diode 1N4148
1 Widerstand 18K
1 Widerstand 47K
1 " 100Ω
1 Knopfzelle NiCd 3V

(gibts günstig bei Gotthard Schütz - Berlin)

ZX-81 ALLES, was ein Computer

And now good luck! (Peter the translator)
This article is an translation from german ZX-TEAM-MAGAZINE, the words in the schematics are not translated, but I hope everyone will understand.

Z X 8 1 - E V E R Y T H I N G a computer needs

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ZX81 and family

Everyone knows about clones of IBM-PC, most of you will work with one of them. Some of you will remember those times when APPLE II-computers have been cloned. But do you know all members of the great ZX81 family?

(I really don't know them all. Perhaps with your help we can find out more about this nice little computer and his family. Please look at the end of this text.)

Like in real life, they all have their own identity. But they have some special characteristics, which will show us, that they all have the same background:

They all have been cheep and complete little computers, market in the first half of the eighties. Like in those days usual for home computers, their language was BASIC, included in the ROM "operating system". Inflationary ROM and RAM-size was unknown.

(By that way: turn your ZX81 upside down and read the label: It really is not a home computer, it is a PERSONAL COMPUTER = PC.)

The most important difference to all other home computers, and at the same time THE characteristic of the ZX-family is the lack of a special video-controller. This task is managed by the Z80 processor together with some very clever and at the same time very short software routines (less than 300 bytes) and a little hardware. Of course this is the reason why your ZX81 (in SLOW-mode) is a little bit slower than other home computers. Other common characteristics are:

- "keyboard" with 40 keys - simple cassette port with about 300 bd - busconnector with 46 (-2) connections - 3.25 MHz CPU clock - frequency - 9 Volts operating voltage - TV connector for the use with a normal TV-set - the B&W screen has 24 lines, each 32 characters long or in graphic-mode 48 X 64 - no ASCII code

Despite of all these similaritys there are several differences, which may prevent that programms "SAVE"d from one member of the ZX81-family can be "LOAD"ed into an other. The reasons for this incompatibility are differences in: ROM-routines, system variables and display-file handling. But all BASIC-programs typed in keystroke for keystroke should work. (ZX81 and TS1000 are compatible)

You will find a list of all known ZX81-"clones" on next page!

Did you find some new information in this article? Are you still working with ZX80/ZX81/TS1000/TS1500/TKxx/CZxxxx ? Do you need more information? Are you interestet to join a ZX81 user club?

******** YES, we are still working with ZX81 and "clones" **********

Please write for more information. I can send information about ZX81-user groups in Canada, the Netherlands and Germany. This information is from spring 1994.

Do you know more about one of the listed members of the ZX-81 family? Or are there some unknown members? I am searching

information about ZX81 user groups worldwide. I would be very glad if you could send me more information.

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by snail-mail: Peter Liebert-Adelt, Or via E-Mail:
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Braunschweig, Germany
******* or via PACKET RADIO: DK4BF @ DK0MAV.#NDS.DEU.EU **********

***** ZX80 (SINCLAIR)
This was the pedecessor of ZX81. It was the first computer sold for less than 100 Pounds. If you want to learn how the ZX81-ULA is working, have a look inside a ZX80, there is no ULA, but hardware with 17 TTL-IC's, CPU, ROM, RAM.
- 4 k ROM, 1 k RAM, only "FAST"-mode and integer BASIC

***** MICRO ACE
Seems to bee the american version of ZX80 ????
- 4 k ROM, 1 k RAM

***** ZX81 (SINCLAIR)
One of the most popular home computers. (I say: THE BEST!!!!)
- 8 k ROM, 1 k RAM, SLOW and FAST mode, only 4 IC's

***** TS1000 (TIMEX)
The american version of ZX81, with only some little differences:
- 2 K RAM, shielded case, TV-output on channel 3 or 4

***** CZ1000 (CZERWENY ELECTRONICA, Argentina)
The argentinan version of TS1000 ????
- 8 k ROM, 2 k RAM

***** TK82, TK83 (MICRODIGITAL, Brazil)
The brazilian version of TS1000 ????
- 8 k ROM, 2 k RAM

***** TS1500 (TIMEX)
Timex developped this improved version of TS1000 for the american market.
- new CMOS-ULA chip, 16 k RAM (dyn.), new ROM, soft rubber keyboard

***** CZ1500 (CZERWENY ELECTRONICA)
The argentinian version of TS1500 ????

***** TK85 (MICRODIGITAL)
An improved version of TS1500 ????
- 10 k ROM, 16 k RAM, joystick port, SPECTRUM-style case, two speed for SAVE and LOAD: 300 + 4200 bd

***** POWER 3000, LAMBDA, PC8300
Are these far east products identical? They have improved keyboard facilitys, you can type in each BASIC-command letter by letter, the soft rubber keyboard has two SHIFT and one RESET key.
- 8 k ROM, 2 k RAM, joystick port, monitor and TV output, sound
- A color-module was sold for LAMBDA (it is working on the ZX81, ask ZX-TEAM!)
- Little changes in the character set for playing games.
- no RAM-delete after RESET

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I found most information about the "clones" were in:
- SARUG newsletter, (Great Britain, out of work)
- QZX journal (USA, out of work)
- ZX-TEAM-MAGAZIN (Germany, still alive!)

********* vy 73 de Peter, DK4BF - member of german ZX-TEAM ********

How to Subscribe (This info is for the paper version only!!)

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It is very cheap and easy to subscribe for the next issue.

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Free ads:

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Wanted: MICRO ACE, TIMEX/SINCLAIR 1500, CZ1000/1500, TK82/83/85 and each Memotech-module for ZX81 except memory modules 16k and 32k and printer i/f.
Write youre offer to: Peter Liebert-Adelt

Wanted: All Information about Colorworks or plus + color graphics,
Distributed by Plus + Pac System International Chicago.
Write to: Henning Raeder, Emmerich Str. 35, d-46147 Oberhousen, Germany.

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