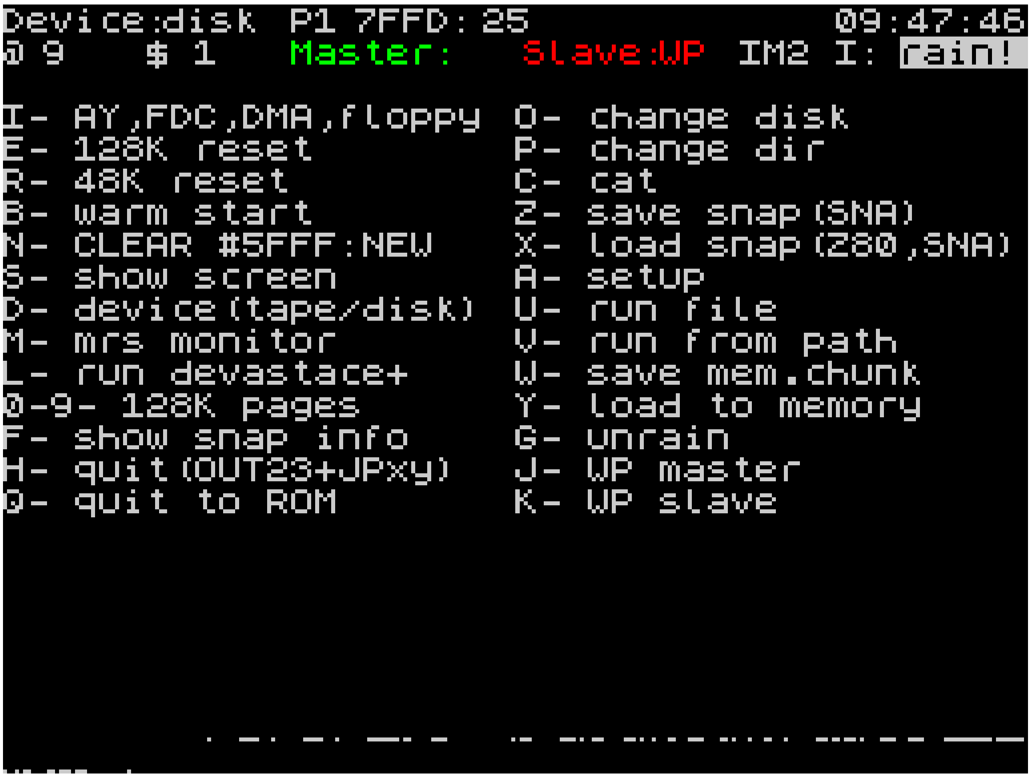
NEW NMI MENU FOR MB02+ SYSTEM



```
Device:disk  P1 7FFD:25          09:47:46
@ 9    $ 1    Master:    Slave:WP  IM2 I: rain!

I- AY,FDC,DMA,floppy  O- change disk
E- 128K reset         P- change dir
R- 48K reset          C- cat
B- warm start         Z- save snap(SNA)
N- CLEAR #5FFF:NEW    X- load snap(Z80,SNA)
S- show screen        A- setup
D- device(tape/disk)  U- run file
M- mrs monitor        V- run from path
L- run devastace+     W- save mem.chunk
0-9- 128K pages       Y- load to memory
F- show snap info     G- unrain
H- quit(OUT23+JPxy)   J- WP master
Q- quit to ROM        K- WP slave
```

Last version:	1.35 or nmi menu is entering 21st century:)
Date of release:	August, 21st, 2008.
What's new:	many novelties, see History
Author:	Hood, email: hood@znojman.cz http://hood.speccy.cz Tel: +420-777-192-191

CONTENTS

FOREWORD

Dear followers and users of MB02+ disk system. In your hands I am humbly giving my creation- nmi menu for this system. God and fate wanted it and I get back to work on my piece, which was disrupted 5 years ago. First of all, I must say I am very proud for that creation, mainly because I am not considering myself as a programmer and mathematical way of thinking is something I am not familiar with. I created the program, and hopefully continue working on it, from my love, if I may call it so, towards ZX Spectrum. Programming in the machine code is immensely creative activity and in this sense also fills up masculine creative needs.

Origination to the new nmi menu gave one Omega's diskette forgotten on the table at Shucon party. There was a .SNA and .Z80 runner downloaded from somewhere on the internet. But the program did not work and it was on that time I put myself a question why MB02+ cannot work with snaps, despite being such an outstanding disk interface. I also remembered a standard nmi menu which was great but because of a lack of space in BSROM could not be extended anymore. And so I thought for myself I wanted to be able to work with snaps, in order to finish my favourite one Where Time Stood Still 128:).

Need to point out, that as for functionally, I started with Busy's standard nmi menu which you may find in BSROM118, mainly because users were already used to it and I also used his existing routines from BSROM118. Everything is coloured In chapter "Functions-basic overview". In black are basically Busy's work, even descriptions of functions are taken from Busy's manual for BSROM118. My nmi menu is self-contained system, it does not need ROM for the work. At the moment, it occupies two SRAM pages, but I may need other ones in the future.

The beginning of 2008 was paramount, I was to return to ZX Spectrum for the second time. Or better to say, I never abandoned it, so I rather set myself from passive to active mode:). I knew the last version I created (ver. 1.31n released in April 2003) was good but I still owed it several new functions, improvements and fixes. By the end of 2007 I set heart upon restoring to work on my programme. The source code was written in Prometheus assembler and I stored it on my hdd (attached to MB02+). By the end 2007 I returned to the scene and wanted to continue working on it. I found out, though, the hdd did not respond. After unavailing attempts to resuscitate the dead hdd (hdd electronic exchange, professional companies would save the data which would however cost me thousands of crowns) I decided to restore the source code based on my last saved source code (ver. 1.31a), thus I had to overcome 13 saves from 1.31a to final and restored 1.31n. Fortunately, the changes took place only in load/save snaps routines, thus the difference between 1.31a and 1.31n was not vast. Finally, everything went well and after couple of days of discontinuous work, fully restored 1.31n version was here (of course, it was restoration without commentaries). And because I have not forgotten what I wanted to improve on nmi menu, I started with RTC support. Many thanks go to Velesoft for help by the 1.31n restoration.

WHAT'S IN PACKAGE, INSTALATION, SETUP

In the package you will find:

- this pdf file in Czech and English
- MBD image for Real Spectrum emulator for PC
- TAP file for direct usage on ZXS (contains "NMI_v1.35" installation file itself, "rtc_patP2" rtc patch modified for work in SRAM page number 2 and "nmi135inst" configurator of nmi menu.
- .Z80 snap with source code for Prometheus assembler. IN CASE YOU ARE GOING TO CHANGE SOMETHING IN MY NMI MENU, LET ME KNOW, PLEASE!!!

Installation:

- directory 0 on .MBD image. Install using NEW command for file "NMI_v1.35".
- you will find "NMI_v1.35" also as a .TAP file for direct use on real ZXS. Install in the same way.
- configurator, see related chapter

FUNCTIONS- BASIC OVERVIEW

Keys:

I	reset AY, FDC, DMA, floppy
E	128k reset
R	48k reset
Q	quit nmi menu
B	warm BASIC start. Initialisation of all BASIC variables except for PROG, VARS, ELINE (i.e. Basic program as well as Basic variables remain preserved)
N	executes CLEAR #5fff: NEW. I.e. the memory above #6000 remains intact
M	jump to MRS debugger (must be present in the memory). All registers are set like they were in the moment when nmi button was pressed. (PC and SP are correctly set only when SP was not changed to #5800).
0-9	switch among 128k banks (8, 9= displays the second VRAM)
S	displays VRAM, pressing ENTER will save the screen to disk (extension 3, i.e. the saved file can be loaded directly from Basic).
D	tape/disc device selection
L	runs debugger devastace+ (VRAM version) with all registers, SP and PC set as they were in the moment of pressing the nmi button. SS+Q to return back to nmi menu.
F	displays information about loaded snap (.Z80 or .SNA)
G	manual unrainer
H	quit form nmi menu into arbitrary SRAM page, or original ROM
O	disc change
P	directory change
C	disc catalogue
Z	.SNA snap save
X	.Z80 or .SNA snap load
A	setup
U	run file (enter file number, runs from a current path)
V	run file (enter file number, runs from a default path set in setup- established for frequently used and run files)
W,Y	load/save of memory chunk
ss	displays date, clock is running in right upper corner
J,K	EasyHdd write protect master/slave

---

black)	author Busy soft- original nmi menu (sparkling red border)
blue)	contained in Busy's menu, but modified by Hood
red)	utterly new functions- author Hood

COMMENTARY TO SOME FUNCTIONS

I reset AY, FDC, DMA, floppy

Resets the following peripherals: AY, FDC, DMA and a diskette drive

B warm BASIC start

Initialisation of all BASIC variables except for PROG, VARS, ELINE (i.e. Basic program as well as Basic variables remain preserved)

N CLEAR #5fff: NEW

executes CLEAR #5fff: NEW. I.e. the memory above #6000 remains intact

M jump to MRS debugger

(must be present in the memory). All registers are set like they were in the moment when nmi button was pressed. (PC and SP are correctly set only when SP was not changed to #5800).

0-9 switch among 128k banks

(8, 9= displays the second VRAM), after nmi button is pressed, the program detects currently attached 128k bank and displays its number (0-7).

S displays and saves VRAM

pressing ENTER will save the screen to disk (extension 3, i.e. the saved file can be loaded directly from Basic).

L devastace+ debugger (VRAM version)

jumps into devastace+ debugger with all registers, SP and PC set as they were in the moment of pressing the nmi button. SS+Q returns you back to nmi menu. Does not corrupt a single byte form RAM, a user can trace programs, browse in RAM, etc.

Z save .SNA snap 48k/128k

saves .SNA snap. In setup you can set 48k or 128k type.

X load .Z80 snap (128k version only)

after snap is loaded, information about snap is displayed (can be switched off in setup)

A setup

setup- for the purpose of several functions I introduced a small setup, where the user can set several parameters:

- key Z- .SNA snap type for save (version 128k or 48k)
- key G- switches on/off automatic unrainer
- key O- default drive and directory for running files function.
- key F- switches on/off info about snap after being loaded

- key H- settings of parameters for quit into SRAM or original ROM
- key Q- back to main menu.

U run file from a current path

runs the file from a current path (thanks to Shrek and Sweet)

V run file from a default path

same as key U, but the files are run from the default path set by user in setup. It means, that the user can save his most favourite and run programs on the preferred disc and directory and run them easily using this function.

ss displays the date

displays RTC date and time. Clock is running in the upper right corner. Pressing SS will display date- works same exactly as in MB-Commander. If you are still not using MBC, start now:)

J,K EasyHdd write protect master/slave

EasyHdd write protect for master and slave IDE devices together with simple IDE detection. Nmi menu gives you information about currently connected IDE devices and if it is HDD/CF card. If it is another IDE device, information is not displayed. If you have CD/HDD connected, on the screen you will see MASTER, SLAVE texts in white colour. Furthermore, if you have EasyHdd by LMN (most probably 99,9% of all users operating IDE on their MB02+ machines, visit www.8bc,com/download), the texts are either in green (write protect disabled) or in red with "WP" (write protect enabled). However, also there can be green Master and white Slave meaning you have installed EasyHdd for master and that Slave was only connected after EasyHdd installation. Thus you may operate EasyHdd on master and anything else on slave (supposed that someone has written other operating system).

G software unrainer (for +2/128K machines)

all thought out and directed by Velesoft. You take advantage of it only in case you have the original chip in your +2/128k machine (i.e. with the "raining" error) and serves mostly for removing "raining" in snaps, but also in .TAPs, or any other software. Nmi menu recognises according to I register whether a software will be raining and levers out the mistake by placing the IM2 vector into ROM. In setup you can switch on automatic unrainer function (i.e. after snap load repair of reg. I will be done automatically) or can be switched off, in that case you can still "unrain" manually (key G). If the automat is on and reg. I is wrong, you will notice it by the text "I: fixed" in the right upper corner. If the automat is off and reg I is wrong, you will notice a flashing text "I: rain!". If reg. I is correct, in both cases the text will be "I: OK". I recommend to leave automat on.

H quit to arbitrary SRAM page or original ROM

again Velesoft gave this advice. It is a very handy function which can be multi-purpose used. The principle is, that on the stack pointer a short routine is transferred which sends a value

0-255 to SRAM paging port 23. The user can set this value in the setup. Together with this also jump is executed, either to a place where nmi button was pressed or to an address that user can also set in setup. For better understanding you must realise, that the only thing that is taking place here is, out (23),a + JP. What can you use this function for?

1) return to arbitrary SRAM page, as we have already Residos, the second operating system for MB02+ that can coexist with BSDOS at the same time, and you can switch between both systems in nmi menu. Simply, in setup use key H and set value 74 for port 23 (Residos starts in SRAM page 74) and set JP to 0. Thus a complete restart of computer begins and you find yourself in Residos. If you set JP on default (enter empty line in setup), SRAM page will be set on 74 on quit but JP will jump to address where nmi menu was in the moment of pressing the nmi button.
2) levering out SRAM and jump to original ROM. SRAM page is levered out if you write 0 on port 23! Immediately, on address 0 will be paged the ROM that was written on port #7FFD as last (no meaning at 48k machines). Practically, you will use it at snaps loading but only very few snaps need to have 128K ROM paged in (I know only about one). Go on, and try to download .Z80 snap The Famous Five, the ingenious text game, from www.worldofspectrum.org and after it loads, quit to the game using key Q (quit via BSROM), the game will not run. Whereas, in setup set value for port 23 to 0 and leave JP default. Hereby, you switched off SRAM and from address 0 a page form snap that was last written to port #7FFD is paged.

F snap info display

after snap is loaded, information about it is displayed (again, can be switched on/off in setup or any time in menu can be displayed with key F). This function is handy mainly at .Z80 snaps which carry more information in themselves than .SNA. Also, at .Z80 snaps you will obtain info about how many pages were loaded, in what succession and if they were compressed. Page numbers are not 0-7 but 3-10, it keeps up with .Z80 documentation.

configurator of nmi menu form basic

another useful tool and novelty of ver. 1.35 for a user. This BASIC programme creates nmi menu installation file according to your needs. With the programme you can set SRAM pages to which you desire to install nmi menu (3-32). Nmi menu still occupies two SRAM pages. And also you can set items in setup according to your needs. After modification, you will save the new nmi menu to disk under a new name and now, on every installation you will have required parameters in your nmi menu which you set using configurator.

For now pages 0,1 and 2 cannot be used for nmi menu as they comprise BSROM, BSDOS and HDDPATCH. If a memory manager exists, which will command and overview SRAM content, also these pages will be opened for nmi menu installation.

A note: rtc-patch, written by Shrek, was originally written to work in page 5. But it is shame to loose the whole SRAM page 5 because of only 400 bytes. Therefore, in the package you will also find rtc-patch version that is installed in SRAM page 2, the same page as hdd patch. So page 5 is now freed for user’s needs.

HISTORY

ver. 1.35 (released 21.08.2008)

- 100% detection of interrupt mode (IM1, IM2)
- software unrainer
- loading of .Z80 completely finished. Nmi menu loads all versions of these snaps
- display info about a snap
- reg. I and R now correctly displayed in devastace+
- display of port #7FFD, if KMOUSE is connected, this port is read out from it, otherwise there is a software test, which, however, has no chance to find out 2nd VRAM
- 48K/128K ROM detection
- possibility to return to arbitrary SRAM page or original ROM
- at the nmi start previous version put 6 bytes on the stack. Now only 4 bytes are put to stack.
- configurator of nmi menu in BASIC
- display of 128K pages changed (now values 0-7)
- save of .SNA now, hopefully, 100% reliable
- quit from nmi menu improved (now JP, former versions was RETN)

A note to version 1.35: must tell you, it took lots of lots of work. I started with correct loading of .Z80 snaps and want to send a special thanks to Tritol, the author of Demfir, who sent me his loading routines, even though I did not use them all, his way inspired me a lot. Valuable ideas and routines were provided also by Busy. And as a golden thread throughout the long 5 months of intensive work was Velesoft and his ideas, routines- he invented software unrainer, interrupt mode detection, advised how to read out correctly port #7FFD from KMOUSE, invented return to SRAM via a routine placed onto the stack. It was long 5 months and in the beginning I thought the menu will be completed. But at the end, next handy things came to my mind which will make for the user to work easier and more comfortable with this outstanding disk drive. Will the god or fate want it, you will find all of these new things in next releases.

ver. 1.33h (released 31.03.2008)

- keys J,K- added EasyHdd write protect for master and slave together with simple IDE device detection
- CLS of the screen after .Z80 snap is loaded (previous versions had chaos on the screen after loading)

ver. 1.31x (released 23.03.2008)

- displays RTC date and time.
- written ldir routines for comfortable assembly of all nmi menu blocks together into one CODE file (not substantial for a user)

ver. 1.31n (released April 2003)

- 128k page detection
- "raining" effect removed- I register filled with 0 (for ZXS 128+ machines, thanks to POKE)
- user setup
- running the files from current path
- running the files from default path
- load/save of .SNA format- 128k version
- load .Z80 snaps 128k version
- because of better clarity some lines on the screen were inverted if a function is chosen.
- during character deleting some chaos was left on the line- corrected
- key routine- corrected wait key delay- the keyboard is working much better compared to ver.1.27.

ver. 1.27 (released 2002)

- save of a memory chunk to disc
- load of a file of any type into memory (i.e. any extension type)
- jump into MRS monitor works now 100%

ver. 1.14 - (released 17.4.2002- first release of the nmi menu)

The first release of nmi menu has the same functions as Busy's menu but has even some add-ons. For user it is the same, no keys were changed, only the key S is saving in a way, that only when S is pressed the screen will appear, and pressing the ENTER then saves the screen to disc (the extension is 3, i.e. you are then able to load the file normally from BASIC). Any other key will return you back to menu. On the screen accrued new info about device (TAPE/DISK), about 128k page and a current @ and $.

- disc catalogue
- disc and directory selection
- jump to devastace+ monitor

Known problems in ver. 1.14:

1) menu stability. This is a big problem. I explain why. The aim was to improve the menu, therefore I use my own stack which is placed in ROM (otherwise I had to corrupt VRAM or RAM). Thus I write-enabled ROM. On the original stack only return address and AF register is kept. So, after nmi button is pressed, the program still in ROM stores registers and SP and then jumps into menu itself (in this version it is page 99, in next versions the user can choose to which page nmi menu will be installed).

Also version 1.14 is stored only in one SRAM page. In next versions it will be two pages (VRAM, devastace+, CD player, work with snaps- it all cannot be hold in 16kB page).

Back to stability- to keep it short, the 99 page content is overwriting very often and so the menu must be installed fairly often

2) jump into MRS monitor- works only partially

3) boot screen- (a process right after turning on computer- a moving diskette on the boot screen). If you press nmi button to enter the menu and then leave the menu with Q, you are not back at the booting process, because entering the nmi menu the service GETCST touches the current @ and $ and resets the boot drive.

ACKNOWLEDGEMENTS

I would like to thank the people who helped me with works on nmi menu a lot with their advices, ideas or routines (in random order)- Tritol, Busy, Sweet, Shrek, Logout, Velesoft, Poke (hope, I did not miss anybody) – without them the program would not be so far as it is today.