```
****************************************************************
*                                                              *
*                 MANUAL FOR "SPECTERM V.07"                   *
*                                                              *
*        (c) 1992 - Jack Raats, Kees Versluis, Ed Weijgers     *
*      Release .07 (faster scroll, version 9 added) – 211023   *
****************************************************************
```

SPECTERM is an ASCII terminal program, using RS232. It was
developed in the early 1990s for communication between a modem
and a BBS (Bulletin Board System) database. Moreover the program
is suitable for serial connection between two computers, using a
terminal program on both sides. SPECTERM offers 64 chars/line.
Parameters are: 8 data bits, no parity and 1 stop bit (8N1).

SPECTERM's machine code is extremely fast. All SPECTERM versions
can operate at 2400 baud without any problem. Compact BASIC
leaves 35000 bytes buffer space for data. Function keys activate
useful options, such as file transfer using the XMODEM protocol.

—

There are SPECTERM versions for 9 different RS232 interfaces:

        SPECTERM - FOR   SPECTERM - FOR

        1.07 - ZX-IF1 & SGG-IF1   6.07 – VTX5000 OR -IF
        2.07 - ZX SPECTRUM 128K   7.07 – VTX711 OR MS-IF
        3.07 - SGG-INTERFACE 3   7.07 – MODIFIED VTX711
        4.07 - OPUS DISCOVERY   9.07 – DATASPECTRUM IF
        5.07 - DISCIPLE OR +D

Appendix II gives a brief description of the RS232 interfaces
mentioned above.
As interfaces 6 to 9 contain a special chip (USART or ACIA) for
the serialization, there are slight differences between the
versions 6 to 9 and the remaining versions 1 to 5. In these
latter versions the serialization is carried out by software.

After loading SPECTERM the following commands are available.

—

MAIN MENU

```
┌─────────────────────────────────────────┐
│ SPECTERM 2.07 – ZX SPECTRUM 128K          │
├─────────────────────────────────────────┤
│                                          │
│ 0 TERMINAL          2393/2393 BAUD        │
│                                          │
├─────────────────────────────────────────┤
│ BUFFER:             0 BYTES               │
│                                          │
│ 1 CLEAR                                   │
│ 2 LIST              3 LLIST               │
├─────────────────────────────────────────┤
│ DRIVE:              1                     │
│                                          │
│ 4 NUMBER            5 CAT                 │
│ 6 LOAD CODE         7 SAVE CODE           │
├─────────────────────────────────────────┤
│ 8 GO SUB            9 SAVE SPECTERM       │
├─────────────────────────────────────────┤
│                                          │
│ ▓                                         │
└─────────────────────────────────────────┘
```

```
   0 TERMINAL      TERMINAL MODE is entered by pressing key 0.
```

The set baud rates (IN/OUT) are displayed. This does not apply
to the USART/ACIA versions, as this is controlled by a switch on
the interface.

—

BUFFER OPTIONS

BUFFER displays the amount of bytes present in the buffer - up
to 35000 bytes (more than 34 kB).

```
   1 CLEAR          clears the buffer
   2 LIST           shows contents of buffer on screen
   3 LLIST          prints contents of buffer on printer
```

Options 2 and 3 operate via streams #2 and #3 respectively.
Option 2 displays text on screen. Scroll with ENTER. Use BREAK
key to abort display. Press 0 key to return to the MAIN MENU.

—

DRIVE OPTIONS

DRIVE shows number of active disc drive.

```
   4 NUMBER         allows change of active drive
   5 CAT            shows catalogue of active drive
   6 LOAD CODE      allows loading a code file into the buffer
   7 SAVE CODE      saves code file from buffer to storage medium
```

Options 6 and 7 require input of a file name. After entering a
file name in option 6, the buffer is automatically cleared. This
can, however, be circumvented by entering EDIT STOP instead of a
file name.

```
   8 GO SUB         jumps to the SUBMENU
   9 SAVE SPECTERM back up copy of BASIC and CODE of SPECTERM
```

Option 8 is used for adapting the program to your individual re-
quirements. Option 9 allows you to save the customised program.

** Note that after having selected either option 1 or option 9,
you are offered an escape to the MAIN MENU by selecting key 0.

** SPECTERM can handle many different storage media. For this,
the BASIC lines 40, 50, 60, 70, 90 and 256 must be adjusted.
Adaptations for the next listed media are included and described
in Appendix I.

- cr - cassette recorder
- md - Microdrive
- od - Opus Discovery
- dd - Disciple or +D
- bd - Beta Disc
- +3 – ZX Spectrum +3

—

SPECTERM when in this mode uses 64-character lines on the
screen. There is no 'key repeat'. Thus each character is trans-
mittted just after your finger is lifted from the relevant key.

    ARROWS   transmit CHR$ 8 - CHR$ 11
    GRAPH   ESCAPE key: transmits CHR$ 27
    DELETE   transmits CHR$ 127
    [ ] ~ | \ { }   enter these characters with SYMBOL SHIFT
                      and relevant key. Do NOT use EXTEND MODE!

Keys that don't transmit characters but have a special function:

    BREAK   leave TERMINAL MODE and return to MAIN MENU
    EXTEND MODE   CONTROL key: to enter CONTROL MODE;
                      any following key quits this mode
    EDIT   HELP key: shows the actions of the function
                      keys in the CONTROL MODE (e.g. macro contents)
    TRUE VIDEO   CLS key: clears the screen

The CONTROL MODE is identified by a flashing square at top left
side of the screen. In this mode, the letter keys A - Z transmit
the control codes. The number keys 1 - 0 act as function keys.

    A - Z   transmit CHR$ 1 - CHR$ 26 respectively
                      (irrespectively of CAPS SHIFT or CAPS LOCK)
    1 - 6   transmit macro's of up to 25 characters each,
                      e.g. your name, password and modem commands
                      (Hayes commands)
    7 / 8   XMODEM uploading / XMODEM downloading
                      (XMODEM-CRC and XMODEM-1K supported; use
                      SYMBOL SHIFT 7 to start XMODEM-1K uploading.)
                      The full buffer contents is transmitted on
                      uploading. Prior to downloading the buffer
                      is cleared. Transmitting is shown on screen
                      by signs ">" and "<".
    9 / 0   ASCII uploading / ASCII downloading
                      (there is no check on faults)
                      U-files are mostly used when uploading
                      (with CHR$ 13 at the end of each line)
                      Downloading is indicated by a flashing
                      square at the top right corner of the screen,
                      whilst all received characters are entered
                      into the buffer. The 0 key is used as a
                      toggle switch to start and stop downloading,
                      but ONLY in the CONTROL MODE!

All characters send by you are echoed by the BBS. The echo will
not appear instantly on your screen when you are typing fast,
but when you hear the keyboard click (BEEP) you can be sure that
the character get transmitted.

All received characters appear on the screen. Now what will
happen when the screen is full?
Versions 1 - 5 temporarily retain the received characters in a
separate screen buffer of 1024 bytes length. When the BBS stops
transmitting, the buffer contents are emptied on the scrolling
screen.
Versions 6 - 9 show a continuously scrolling screen, thus
displaying each character directly after receipt thereof.

In options 1 - 5 the border flashes on transmitting or receiving characters. A smooth flashing indicates an undisturbed transmission. If not then adjust the baud rate slightly to remedy this.

—

SUBMENU

Numbers 2 - 7 of the following ten options show either "1" or "0" indicating "on" and "off" respectively.
The options 1 and 8 are not applicable in the versions 6-9.

```
  1 BORDER FLASH  colour number for border flashing on
                  transmitting or receiving characters
  2 KEY BEEP      on: there is a short BEEP (click) when
                  pressing a key
  3 ECHO          on: if BBS does not echo,
                  SPECTERM shows pressed keys on screen
  4 CR OUT +LF    on: when ENTER key should transmit a
                  CHR$ 13 followed by a CHR$ 10
  5 CR IN +LF     on: when a receipt of CHR$ 13 is not
                  followed by CHR$ 10 (due to overprinting)
  6 CLS           on: receipt of CHR$ 12 clears screen
                  off: a single line only is skipped
  7 BELL          on: receipt of CHR$ 7 gives a short
                  sequence of BEEPs
  8 BAUDRATE      for selecting the desired rates of the
                  in- and outgoing signals (RX and TX)
  9 DEF FN KEYS   enters menu for defining function keys 1-6
                  with macro's of your own design
  0 RETURN        return to MAIN MENU after having set
                  options
```

The baud rates for IN and OUT - see option 8 - should match your modem. In versions 1 - 5 they are controlled by "timers" in the software. This gives you the opportunity to adjust (by experimenting) the baud rates should communication be bad. The baud rates shown are mostly not the round numbers entered by you as the timer range is rather coarse. Several baud rates when calculated and rounded render identical timer values but when recalculated the best value is shown. The formulas used for such calculation take the Spectrum type (128 or not 128) into account. However it is advised to check whether the values used in the present software are compatible with your Spectrum type. If not then key them in yourself. You will appreciate that the versions 6-9 require baud rate setting on the interface.

Note that CLS (option 6) takes some time. Mostly the BBS will not hold its transmission until your screen is cleared and this might result in losing characters and even create some mess on the screen. The same applies for BELL. The faster versions 6-9 are less susceptible to this problem.

—

DEFINING FUNCTION KEYS

This menu shows what can be transmitted by each of the function keys 1 - 6. You are requested to enter a message (up to 25 characters) after pressing one of the keys 1 - 6. Return to MAIN MENU by pressing key 0.

—

MISCELLANEOUS

RESTART

The program can be stopped at any time by applying the BREAK key
or by entering EDIT STOP on an INPUT. Restart with RUN.

MODIFICATION OF BASIC

In the SPECTERM program BASIC is closely matched to the machine
code. In fact there is only one single line that you can freely
modify. This is auto start line 255. In this line the screen
colours may be changed. The INK-, PAPER-, and BORDER-colours are
adopted by the machine code.

Line 255 will also accept printer commands such as OPEN #3;"t".
On top of address 65368 (USR "A") there is room for LOADing a
printer driver.

SPECTERM initially used the MicroDrive syntax (drive number
stored in BASIC variable D). As of release .07 it is also
offered as tzx file, with cassette recorder for storage.
When using another storage system, then please adapt BASIC lines
40, 50, 60, 70, 90, and 256. Be sure to keep BASIC as compact as
possible. Adaptions for CassetteRecorder, MicroDrive, Opus
Discovery, BetaDisk, Disciple/+D and Spectrum +3 are described
in Appendix I.

MODIFICATION OF THE MACHINE CODE

A useful POKE may be entered in any one of the versions 1 - 5.
When you log on a BBS having more than one telephone line it may
happen that texts are transmitted with a stutter which will
raise problems when the screen is full and the incoming text is
temporarily stored in the separate screen buffer. The buffer
contents are dispatched to the screen when the BBS has finished
transmitting and the transmission stutter may make SPECTERM
believe that BBS is no longer sending. By changing the standard
value 16 in address 61203, the problem might be solved. Try POKE
61203,40 or another value up to 255.

CABLE

SPECTERM does not use handshake lines. Basically a cable with
three wires will do: TxD, RxD, GND. Handshake wires may exist,
but are ignored by the program.
In some cases the 'other side' requires a high signal on one or
more pins. Use the +5/+9/+12V pin of the ZX Spectrum for this.

USER TIPS

Remember that this manual is not a course for BBS handling.
Practising regularly (use cheap time periods that exist in
various telephone areas) will give the best results. However,
you may welcome some tips when you are a maverick in this field:

- enter your name in function key 1. When BBS requests your
  name, then simply press EXTEND MODE + 1.
- Each BBS stores the user settings such as screen width, number
  of screen lines and "More? (Y/n)". Always set width to 64 and
  "More? (Y/n)" ON.
  Try various numbers of screen lines: in versions 1 - 5 start
  with 16 lines, 22 lines will do in the versions 6-9.
- Don't type too fast when entering a message, especially when
  using versions 1 - 5.
- Go "offline" when a long message is to be transmitted and
  use a word processor with line width 58. SGG (Sinclair
  Gebruikers Groep) can supply you with a conversion program
  to transfer such a message into a so called U-file (Upload).
  U-files can be LOADed into the buffer and then transmitted
  on line by pressing EXTEND MODE and 9 (ASCII UP).

———

SPECTERM is a Public Domain program and may be distributed
without costs but only TOGETHER WITH this manual. The authors,
however, would appreciate to receive your comments and
experiences in using this program and therefore strongly invite
you to send them a word.

Please note that the authors can adapt SPECTERM to other types
of RS232 interfaces. Don't hesitate to contact us when your
interface is not among the present versions.

APPENDIX I

```
*************************** 310892 ***************************
*                                                           *
*      ADAPTIONS ON "SPECTERM" FOR CR, MD, OD, DD, BD AND +3  *
*                                                           *
*************************************************************
```

Each SPECTERM version can be MERGEd with any of the next MERGE
programs in order to work with the appropriate storage system.
Ready-made 'MERGE files' are included. After merging, take
options 4 & 9 from the main menu to save the customized program.

The original versions use the MD-syntax, thus also suitable for
OD and DD. However, the MD last-drive-address is not used,
causing errors on other systems. Instead, we choose the OD last-
drive-address (other systems take drive 1 automatically).

IMPORTANT: Never MERGE an already adapted SPECTERM!

THE MERGE PROGRAM "sterm>cr" FOR CASSETTE RECORDER

```
 40 RETURN
 50 RETURN
 60 INPUT " LOAD NAME",N$;USR (C+PI):
    LOAD N$CODE VAL "26E3",VAL "35E3": RETURN
 70 INPUT " SAVE NAME",N$: SAVE N$CODE VAL "26E3",B: RETURN
 90 INPUT "9 SAVE OR 0 RETURN ";K: IF K THEN
     LET N$="CSPECTERM"+CHR$ PEEK (A-PI):
     SAVE N$(SQR PI TO ) LINE PEEK PI:
     SAVE N$CODE C-PI,VAL "3336"
256 LOAD N$CODE : CLEAR VAL "25997": RUN USR VAL "61006"
                        ——
```

The options 4 NUMBER and 5 CAT are suspended. The displayed
drive number in the main menu has no function.

THE MERGE PROGRAM "sterm>md" FOR MICRODRIVE

```
  40 INPUT +K,D: POKE A,D: RETURN
  50 CLS : CAT D: PAUSE NOT PI: RUN
  60 INPUT " LOAD NAME",N$;USR (C+PI):
     LOAD *"M";D;N$CODE VAL "26E3",VAL "35E3": RETURN
  70 INPUT " SAVE NAME",N$:
     SAVE *"M";D;N$CODE VAL "26E3",B: RETURN
  90 INPUT "9 SAVE OR 0 RETURN ";K: IF K THEN
      LET N$="CSPECTERM"+CHR$ PEEK (A-PI):
      SAVE *"M";D;N$(SQR PI TO ) LINE PEEK PI:
      SAVE *"M";D;N$CODE C-PI,VAL "3336"
 256 LET D=PEEK VAL "23766": LOAD *"M";D;N$CODE :
     CLEAR VAL "25997": RUN USR VAL "61006"
                        ——
```

When LOADing the program the CODE is LOADed from the same
cartridge. The drive numbers 1 - 8 are usable.

```
THE MERGE PROGRAM "sterm>od" FOR OPUS DISCOVERY

  40 INPUT +K,D: POKE A,D: RETURN
  50 CLS : CAT D: PAUSE NOT PI: RUN
  60 INPUT " LOAD NAME",N$;USR (C+PI):
     LOAD *"M";D;N$CODE VAL "26E3",VAL "35E3": RETURN
  70 INPUT " SAVE NAME",N$:
     SAVE *"M";D;N$CODE VAL "26E3",B: RETURN
  90 INPUT "9 SAVE OR 0 RETURN ";K: IF K THEN
        LET N$="CSPECTERM"+CHR$ PEEK (A-PI):
        SAVE *"M";D;N$(SQR PI TO ) LINE PEEK PI:
        SAVE *"M";D;N$CODE C-PI,VAL "3336"
 256 LET D=PEEK VAL "23728": LOAD *"M";D OR NOT D;N$CODE :
     CLEAR VAL "25997": RUN USR VAL "61006"
                            ——

When LOADing the program the CODE is LOADed from the same
cartridge. The drive numbers 1 - 4 are usable.
```

```
THE MERGE PROGRAM "sterm>dd" FOR DISCiPLE or +D

  40 INPUT +K,D: POKE A,D: RETURN
  50 CLS : CAT D: PAUSE NOT PI: RUN
  60 INPUT " LOAD NAME",N$;USR (C+PI):
     LOAD *"M";D;N$CODE VAL "26E3",VAL "35E3": RETURN
  70 INPUT " SAVE NAME",N$:
     SAVE *"M";D;N$CODE VAL "26E3",B: RETURN
  90 INPUT "9 SAVE OR 0 RETURN ";K: IF K THEN
        LET N$="CSPECTERM"+CHR$ PEEK (A-PI):
        SAVE *"M";D;N$(SQR PI TO ) LINE PEEK PI:
        SAVE *"M";D;N$CODE C-PI,VAL "3336"
 256 LOAD d*;N$CODE : CLEAR VAL "25997": RUN USR VAL "61006"
                            ——

When LOADing the program the CODE is LOADed from the same
disc. The drive numbers 1 - 2 are usable.
```

```
THE MERGE PROGRAM "sterm>bd" FOR BETADISK

 40 INPUT +K,D: POKE A,D
 42 RANDOMIZE USR VAL "15363": REM :*CHR$ (D+64)+":"
 43 RETURN
 50 CLS : RANDOMIZE USR VAL "15363": REM : CAT
 51 PAUSE NOT PI: RUN
 60 INPUT " LOAD NAME",N$;USR (C+PI):
    RANDOMIZE USR VAL "15363": REM : LOAD N$CODE 26E3,35E3
 61 GO TO CODE "*"
 70 INPUT " SAVE NAME",N$:
    RANDOMIZE USR VAL "15363": REM : SAVE N$CODE 26E3,B
 71 GO TO CODE "*"
 90 INPUT "9 SAVE OR 0 RETURN ";K: IF NOT K THEN RETURN
 91 LET N$="SPTERM"+CHR$ PEEK (A-PI):
    RANDOMIZE USR VAL "15363": REM : SAVE N$ LINE PEEK PI
 92 RANDOMIZE USR VAL "15363": REM : SAVE N$CODE C-PI,3336
256 RANDOMIZE USR VAL "15363": REM : LOAD N$CODE
257 CLEAR VAL "25997": LET D=PEEK VAL "61015":
    GO SUB CODE "*": RUN USR VAL "61006"
```

——

The shown drive number 1, 2, 3, or 4 represents
successively drive A, B, C, or D as the selected active
drive. This is also true just after LOADing SPECTERM. The
active drive can only be changed by option 4. However, it is
possible to enter a LOAD- or SAVE-name starting with "A:",
"B:", "C:", or "D:". But the shown active drive is not
affected by this habit.
The names of BASIC and MC are shortened with these SPECTERMs.

```
THE MERGE PROGRAM "sterm>+3" FOR ZX SPECTRUM+3

 40 INPUT +K,D: POKE A,D
 42 LET N$="TABM"(SGN PI+D)+":": LOAD N$: SAVE N$: RETURN
 50 CLS : CAT : PAUSE NOT PI: RUN
 60 INPUT " LOAD NAME",N$;USR (C+PI):
    LOAD N$CODE VAL "26E3",VAL "35E3" : GO TO CODE "*"
 70 INPUT " SAVE NAME",N$:
    SAVE N$CODE VAL "26E3",B : GO TO CODE "*"
 90 INPUT "9 SAVE OR 0 RETURN ";K: IF K THEN
       LET N$="CSPTERM"+CHR$ PEEK (A-PI):
       SAVE N$(SQR PI TO ) LINE PEEK PI:
       SAVE N$CODE C-PI,VAL "3336"
256 LOAD N$CODE : CLEAR VAL "25997": LET D=PEEK VAL "61015":
    GO SUB CODE "*": RUN USR VAL "61006"
```

——

The shown drive number 0, 1, 2, or 3 represents successively
TAPE, DRIVE A, DRIVE B or MEMORY as the selected filing
system.
This is also true just after LOADing SPECTERM. The active
drive can only be changed by option 4. However, it is
possible to enter a LOAD- or SAVE-name starting with "A:",
"B:", "M:", or "T:". But the shown selected filing system is
not affected by this habit.
The names of BASIC and MC are shortened with these SPECTERMs.

PS: Option 4 in the main menu has no limits, so any drive number can be entered. Error messages due to invalid drive numbers can not be precluded. In occurrences a RUN restarts the program.

APPENDIX II

```
************************** 211023 **************************
*                                                          *
*      SHORT DESCRIPTION OF 9 SUPPORTED RS232 INTERFACES   *
*                                                          *
************************************************************
```

NR	Name	Serial conversion	Used ports in SPECTERM	More information
1	ZX Interface 1 or SGG-IF1	software	247	ZX-IF1 – Sinclair docs. SGG-IF1 – IMPULS 12-16
2	ZX Spectrum 128K	software	49149 65533	Sinclair docs.
3	SGG-IF3	software	63	3-in-1-interface IMPULS 72-58
4	Opus Discovery	software	Memory Mapped I/O	IMPULS 74-17
5	Disciple or +D	software	31 251	IMPULS 74-17
6	VTX5000 or -IF	8251A USART	127 255	Modification: IMPULS 72-09
7	VTX711 or Microsource IF	6850 ACIA	31/63/ 95/127	Modification: IMPULS 84-05
8	Modified VTX711	6850 ACIA	183 247	Modification: IMPULS 84-05
9	Dataspectrum IF	6850 ACIA	127 255	worldofspectrum.net

SGG = Sinclair Gebruikers Groep (Sinclair Users Group) - former Dutch computer group, organized meetings and published the magazine IMPULS.