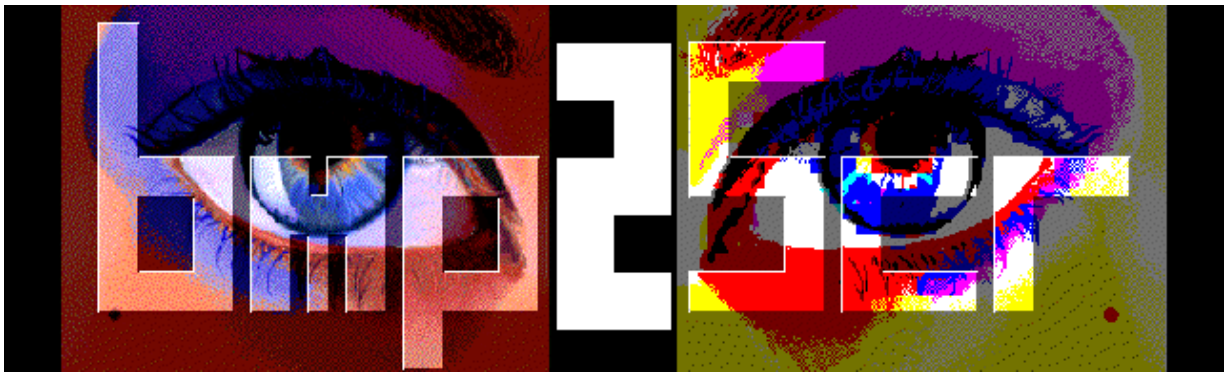


BMP2SCR Pro v.2.00c

Because this is a very new development, please read the instruction below, or you will encounter problems to learn how to use this tool. B2SP below refers to BMP2SCR PRO, and B2S refers to BMP2SCR 1.751.

License:

This program and almost all routines used in it, is copyrighted by Leszek Chmielewski (2000-2003), I offer you, the user, only the license to use this program as is. The deal is: I allow you to use B2SP for free, but you will note a credit to B2SP and me in your program if it contains anything converted with B2SP. For commercial projects please contact me. I do not charge much, in most cases I just want the finished product for free.
The author did not give you any guarantee that B2SP will run on your computer, and no responsibility for looses of data or crashes, and finally, this program is checked for errors, but I can not find all alone, so if you find a bug, please contact me:

lcd.one@[nospambot]chello.at (remove [nospambot])

Before send me any bug reports, check the minimal system requirements.

What is BMP2SCR Professional?

If you have a ZX Spectrum and want to convert PC bitmap images, you will encounter a problem: there is nearly no software to help you with your needs. Okay, B/W is not the Problem with BMP2SPEC or my IFF Converter, but color images are a problem, there are not many programs that can do the task, and even less that can do it in suitable quality. BMP2SCR PRO is the solution. It can convert BMP/JPG/PNG images to black/white images, but also colors are no problem. B2SP offers you also the possibility to convert 24 bit uncompressed AVI files to TAP streamed animations or Delta compressed files. Unlike you though, there are more screen formats on ZX Spectrum than SCREEN$, so B2SP supports a wide range of various formats. Please refer to the appendix with supported file formats for more details about them.
There is included a delta encoder (© 1999 by Leszek Chmielewski), which can encode a AVI animation to the format of delta player, capable to play animations at up to 50 frames per second on a real Spectrum without using the second video ram, but a option to make interleaved delta for use of 2 video RAM pages is available too.
Delta Compression was originally developed by Aegis Software for Amiga computers and used first known time in Videoscape 3D. I never analyzed the code, how it works, but I knew how it probably can work. The Delta compressor saves only the changes between the animation frames. So if a sprite walks on screen, Delta will recognize that some bytes of the screen was erased, and new one was painted. All other unchanged screen area is then ignored, and only changed bytes saved. Because the player code does not need to redraw all the screen, and skip the bytes that are already in right place, he features a excellent speed which also leaves much CPU time for other tasks. In B2SP the delta compression is optimized for less memory use. All Delta encoded pictures can be streamed in a TAP file, or saved in up to 40 definable memory banks sized up to 42000 bytes, they are predefined

for use with a Spectrum +3e, but you can easily change them for your own needs. To switch a bank off, just set the size to 0.
B2SP is the sum of multiple subprograms, these are:

1. The picture converter: To load a PC picture and output it in a Spectrum format
2. The animation converter: Can convert a animation into series of ZX Pictures
3. The viewer: Allows you to view the converted pictures from B2SP or other sources, and re-save them.
4. The editor: You can use this part to edit and retouch your pictures, there are some more additional parts:
    - The sprite editor: For editing/creation masked monochrome Sprites
    - The tile editor: For editing/creation of colored background tiles
    - The font editor: Font editing/creation

All of them are not just simple copy of the B2S routines, they are rewritten, improved and optimized for speed. Some of these sub-programs are completely new developed, and some just re-developed, but almost anything is improved over B2S.

How to use BMP2SCR.

First after start, you must load a file. Depending on the file type you choose, B2SP recognizes what you want to do, eg. if you load a SCR file, B2SP automatically jumps to viewer section and displays it, if you load a AVI, B2SP checks if the values are correct and offers extra animation options. This also works with Drag & drop in Windows (This does not mean dragging your PC over to the trash bin and drop it here). You can drop a file over B2SP icon, and it has the same effect as if you start B2SP and then select this file. The output directory will be the same as input, except if you use drag&drop, in this case, the output will be saved in c:/
At this time B2SP supports the following file types:

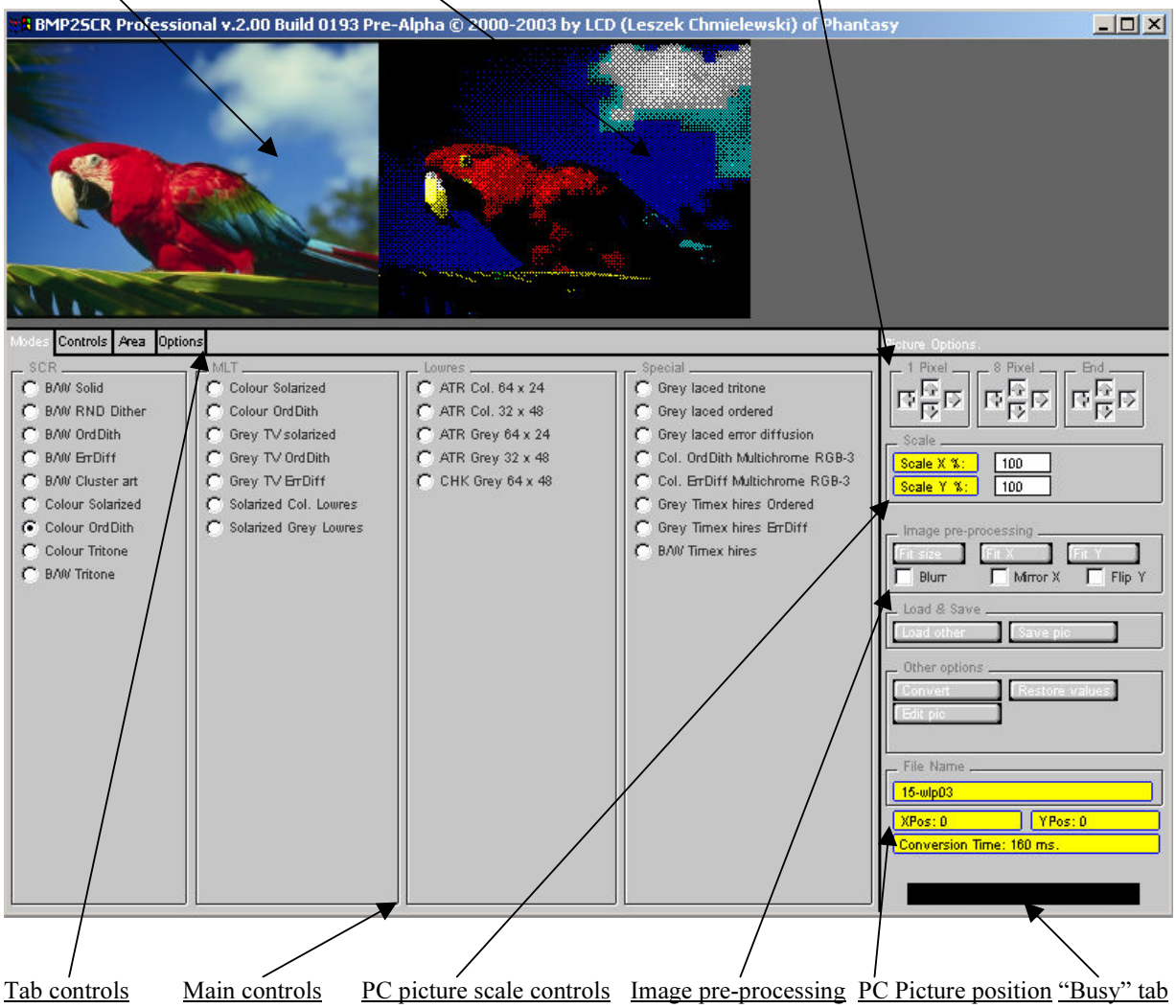
1. BMP, JPG (JPEG), PNG. This are single-image file formats (Can even be smaller than 256x192 and have any colour depth). I refer to them all as BMP later.
2. AVI. This is a animation format (must be uncompressed 256x192 and 24 bit colour depth, no sound).
3. SCR, MLT, MTL, ATR, CHK, LCE, LCM, AFL, IFL. This are the raw Spectrum formats
4. TAP. This is the tape ZX Spectrum format used only for output, contains additional information stored in a header. I suggest, you should use this format if you do not have a disc drive in your Spectrum, that can read MS-DOS discs. The TAP files can be transferred to a normal Spectrum via audio cable using Taper, Hypra-Loader or Real Spectrum Emulator.
5. RAW. This is raw ZX Spectrum format used only for output, but without any additional information. Use this format only if you can read the MS-DOS data directly from PC-discs into your Spectrum. In Animation mode RAW stores continuous picture stream that can be readed by some hard disc or CD ROM interfaces on Spectrum.
6. SP0, TL0, FNS. Sprite, Tile and Font editor formats of B2SP.

After selecting AVI or BMP you are forwarded to the Image conversion section, where you can see the following options:

1. MODE: Here you can select the available conversion modes. They are divided into SCR modes for the normal standard Spectrum screen. MLT Modes for advanced graphic displaying code or mods, this includes ColorDraw and Timex/Pentagon Hardware Multicolor as well as the DMA Multitech ™ from 8BitCompany, please note that I do not support the scrambled Multitech Glory 2, because I cannot see any advantages over the old format. LOWRES modes for Attributes or chunks. SPECIAL Modes contains all other modes: Laced or HiRes. After selecting the mode, you can press the left mouse button for instant conversion.
2. CONTROLS: This is the section where you can adjust the conversion parameters. The sliders are moved unlike in BMP, by clicking on them and moving your mouse around without releasing mouse button, and the moving direction has been changed since B2S too, now to brighten a conversion up, you can push the slider to the right. The available control elements here are varying dependent from the conversion mode you have selected. If it is only a B/W mode, it is not clever to present RGB controls, so you will get only Bright control. If you have selected error diffusion conversion, you can select here the different styles. To check out the conversion faster, you don’t need to Press the convert button. You can push the right button of the mouse for instant conversion.

3. AREA: Here you can select the area of screen that will be converted, very useful for animation conversion so save 1 or 2 milliseconds or sort out grainy or destroyed area. Do not forget to click on “Enable” to make sure, this selection will be used.
4. OPTIONS: Here you can select the save options like the name, save type (as RAW-SCR, TAP, BMP or as JPG), the attribute encoding for Multitech/Hardware multicolour, the JPG quality and other.
5. COMPRESSION: They appear only if you have selected a AVI animation. Here you can adjust compression-dependent options like Delta encoding, attribute optimisation.
6. ANIM OPTIONS: Animation options where you can select the file cutting.
7. The always Visible special tab: In BMP mode you can adjust here the picture position, fit modes, mirroring and other pre-processing tasks (That slows down the processing speed). On the arrows you can use left or right mouse buttons to perform differently, so for example, left mouse button on right arrow of “End” will scroll the picture instantly to the last available rightmost position of picture, while right mouse button scrolls only by maximum 256 pixels. There are also other buttons like SAVE for saving picture using the preferences from OPTIONS, and EDIT to start the screen editor, where you can retouch the images.

If you select a ZX type RAW image (SCR, MLT,…), you will be taken into viewer section, from which you can access the screen editor or save the images in PC format. Description of the VIEWER will follow later.
This is the screenshot of the main Window: (Note: This is taken from the Pre-Alpha version, later versions may look slightly different and have more options).
Description:



Detailed description:

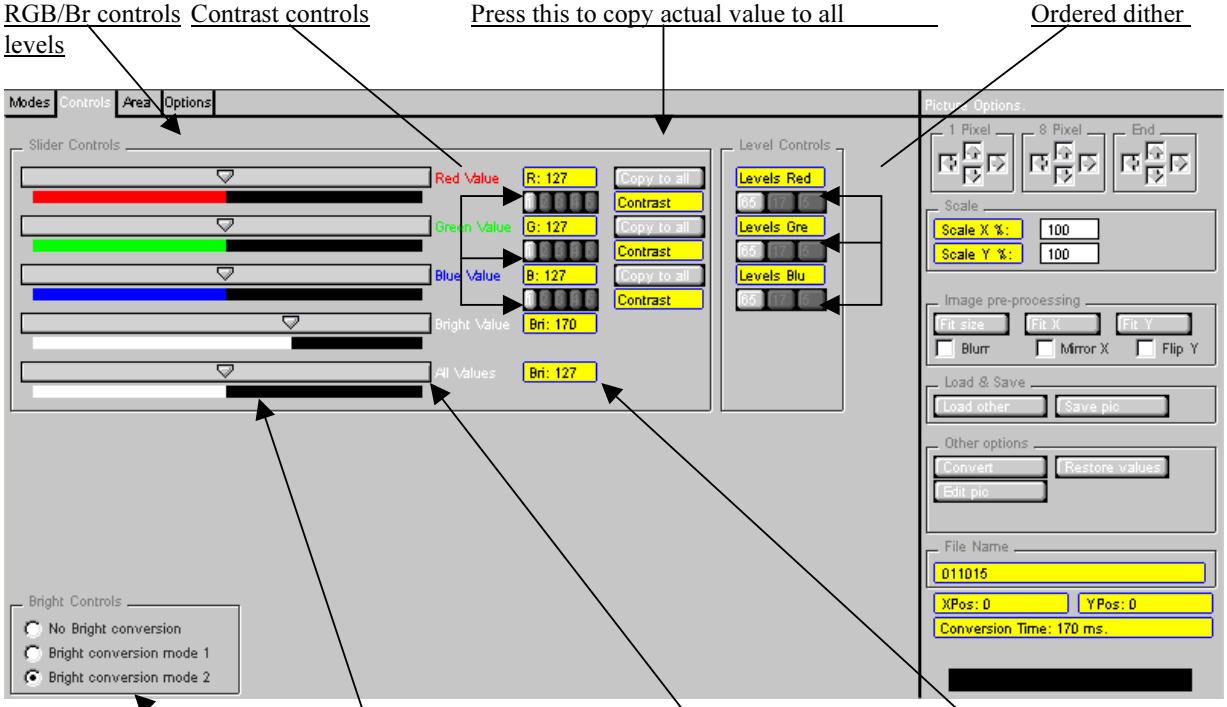
Original PC Picture: This is the convertible area of the PC picture that you have loaded currently. It stays here for easy comparison of the original picture and the converted picture, for better adjustment.
Converted ZX picture view: The final result of conversion from different modes, at WYSIWYG quality level. Please note that Hires Screens are displayed broader than on real Spectrum, due to the lack of free space in the window.
Tab Controls: This is the main control area where you can recall many other options, described earlier, and later.
PC picture scroll controls: These arrow allows you the precise position of conversion area. Please note that the left/right mouse buttons have different functions here. If you press left mouse button over "1 pix" arrow to the right, the picture scrolls, if possible, one pixel to the right, until you release and press the left button again, while right mouse button does not wait until the button is released, so it produces continuous scrolling. The "End" arrows scroll to the last available pixels of a picture, or alternatively 256 right/left or 192 pixels up/down. This has been maintained in Hires mode too.
PC Picture position: Shows you the actual scroll position of the PC picture and the picture size. This Info is suitable for converting bigger pictures (e.g. Panorama) for scrolled areas.
Conversion Time: Used while development time to optimise some routines, but now a nice info for you, the user, how long does your PC need to read out a PC picture from memory, convert, and display it. Note: Later versions of BMP2SCR Pro will be maybe faster due to optimised compiler.
Image pre-processing: Here you can apply auto resize on PC images, flipping, mirroring, and blurring. Just for fun! Fit size: forces the complete PC picture to be resized to 256x192 (512x384 for Hires), picture deformation included, so a picture of 512x512 will be deformed. Fit X: Shrinks X to 256 (512 if Hires) and keeps the right aspect ratio. Fit Y: Shrinks Y to 192 (384 if Hires) and keeps aspect ratio. To deactivate the resizing again, just push the yellow info-frame in front of each scaling parameter input tab. Note: Scrolling is much slower if fit or other image pre-processing is switched on, and it uses the original image coordinates.
Load & Save: Allows you to load other picture or save the current with save options taken from the "OPTIONS" tab.
Other Options: "Convert" converts the picture to ZX Spectrum format using all the set options and controls (Note: In the control section there is no Auto convert anymore, but you can press the right mouse button for instant conversion). "Restore values" sets all controls back. "Edit pic" starts the new and more powerful screen editor that allow you to correct all the attribute overflows and retouch the ZX pictures using PC picture in light table transparency mode.
File Name: Displays the name of currently loaded PC bitmap.
"Busy" tab: The earlier versions has it, so why not the new version too? This little area shows you when the computer is currently busy by computing something.

The modes:

SCR modes:
B/W Solid: The so called line art picture, only solid white or black are generated. Good for sprites.
B/W RND dither: Randomly dithered image, no good image quality, but prevents later compression.
B/W Ord. Dither: Ordered dither mode, ideal for compression.
B/W Err. Diff: Error diffusion with 7 different formulas for choose. Best B/W results, bad compression.
B/W Cluster art: Inspired from magazine pictures, looks a bit strange because not much details.
Colour Solarized: Picture is reduced to Spectrum colours (maximum contrast), no shading is done.
Colour OrdDith: Ordered Dither is performed. At actual time, some of the best results.
Colour Tritone: 3-Level ordered dither for colours. Excellent results for cartoons possible.
B/W tritone: same as Colour Tritone, but no colours, anyway excellent results and good compression.
MLT modes:
Colour solarized: Like SCR mode, but looks better due to higher attribute resolution.
Col. OrdDith: Like SCR mode, but looks better due to higher attribute resolution.
Grey TV Solarized: The RGB values are threaten like for greyscale conversion, looks great on B/W TV.
Grey TV OrdDith: Like TV Solarized, but ordered dither is performed to increase the greyscale range.
Grey TV ErrDiff: Same as Ordered dither, but with error diffusion.
Solarized Col. Lowres: Picture is rendered at 64x192 pixel. Background stays same.
Solarized Grey Lowres: Same as colour lowres, but in greyscale.
Lowres Modes:
Atr Col 64x24: Picture is rendered to this resolution and takes 768 bytes, background stays same.
Atr Col 32x48: Same as above.

Atr Grey 64x24: Same as above, greyscale.
Atr Grey 32x48: Same as above.
Chunks grey 64x48: 1536 Bytes with new encoding controls, to make it compatible with any player.
IFLI Colour 64x96: 3072 Bytes of attribute data
IFLI grey 64x96: Same as above, greyscale
Special Modes:
Grey laced tritone: Two pictures for Interlace mode or Pentagon Gigascreen, flicker reduction.
Grey laced ordered: Same as above but more shades of grey can be simulated.
Grey Laced error diffusion: Same as above, but better quality.
Col. OrdDith Multichrome RGB3: 3 Screens, each of them contains red, green or blue components.
Col. ErrDiff Multichrome RGB3: Same as above, but with error diffusion.
Grey Timex Hires ordered: Ordered Dither, 512x192 SCR.
Grey Timex error diffusion: Error diffusion, 512x192 SCR.
Grey Timex Hires: B/W Hires 512x192 SCR image
Hires IFLI Modes: Like Multitech, but viewable on any Spectrum 128. 8x2 Attribute cells, 9216 Bytes.

Controls:
This panel depends on the selected conversion mode, it can show greyscale controls or colour controls for RGB values, contrast, dithering modes, Bright conversion controls and anything other related to conversion itself.



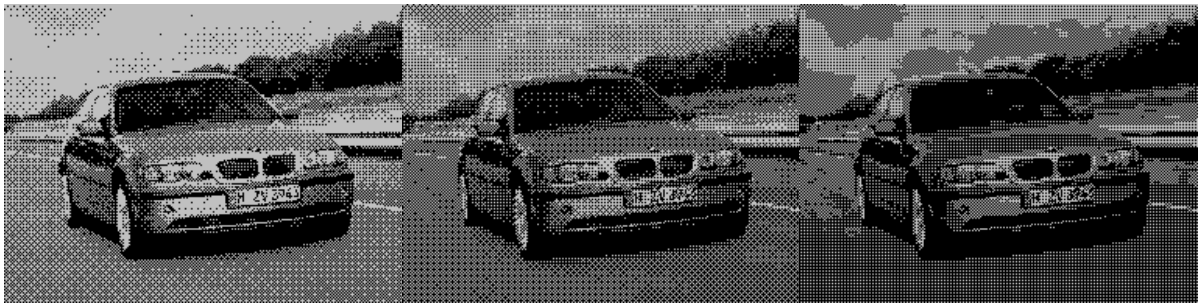
RGB/Br Controls (Or Brightness control): These controllers are unlike the old ones that can be found in previous B2S versions. The direction has changed, now bigger values means brighter picture, and lower values darker picture. The way of controlling them has also changed a bit. You can use it in the old way, or holding the left mouse button pressed, drag to the new position, then you can release the mouse button. The conversion does not start now, except if you press right mouse button after this. Use this controls to adjust the balance of colours in the picture. You can use the “All values” control to pull all RGB values together. Sometimes you can see dual sliders for each RGB or Brightness values, they are used to define the minimum/maximum conversion range, or two different state of pictures.
Contrast Controls: This can be used to reduce the range of converted colours. Some settings improves the picture quality, especially with ordered dither conversion. Only 5 levels available. If you want to see the differences of contrast settings, look below.

B/W ordered dither Contrast levels from 1 to 5

Colour ordered dither contrast levels from 1 to 5

Ordered Dither Levels: Ordered Dither can be set to use a 2x2 (5 levels), 4x4 (17 levels) or 8x8 (65 levels) conversion matrix. By default it is set to 8x8.

B/W ordered dither levels: 65/17/5



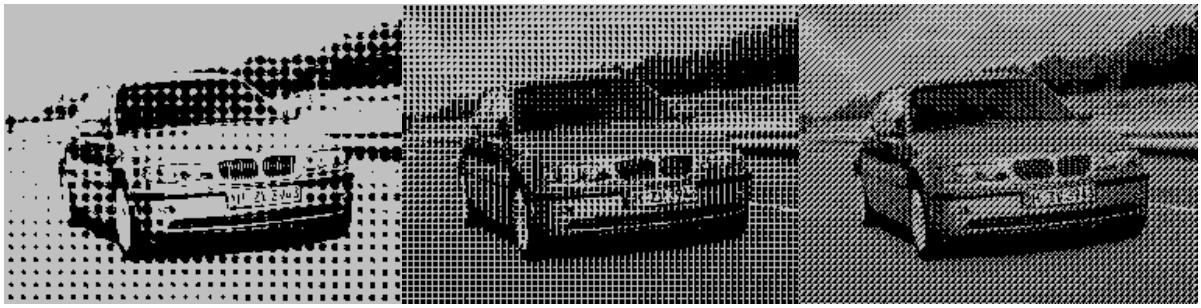
Bright mode selection: There are three modes: No bright, the old bright mode 1 (8x8/8x2/8x1 sampling) and the new bright mode 2 (Intelligent 8x8/8x2/8x1 sampling). I recommend you to use no bright or Bright mode 2. For Greyscale Multitech solarized modes or Attribute greyscale mode you can select here if you want to use the Bright bit, which can improve picture quality.

Colour solarized mode with bright selection 0/1/2

Contrast mode: In Multitech greyscale mode this is used to define the values of ink. Some methods are better than other. Max Contrast is recommended.

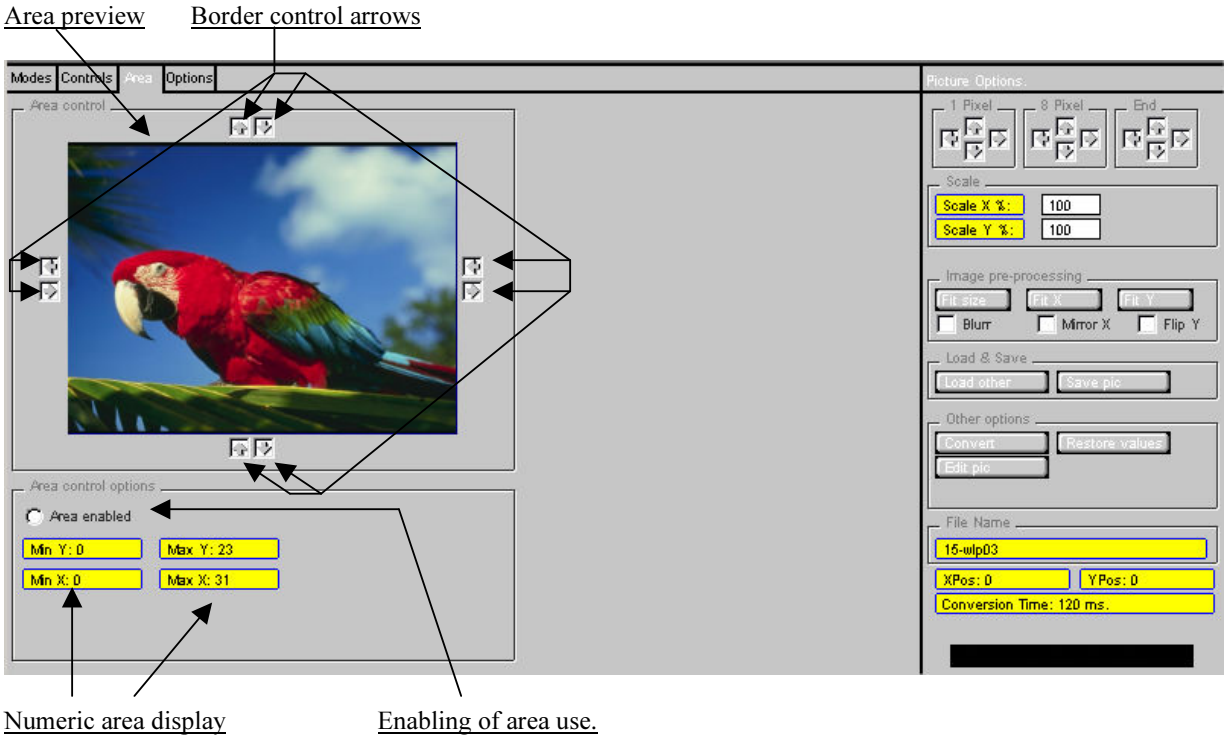
Dithering method: You can set here the error diffusion method. 7 Methods are available, all of them results a slightly different picture and conversion time, which depends on the complexity of used formula, which is improved since B2S.
Dithering mode: Normal means, it is like in Photoshop, and Boost Brightness tries mo make brighter image with more contrast.
Clustering Method: selection of different matrixes for clustering images.

Cluster Big Dot/small dot/tilted

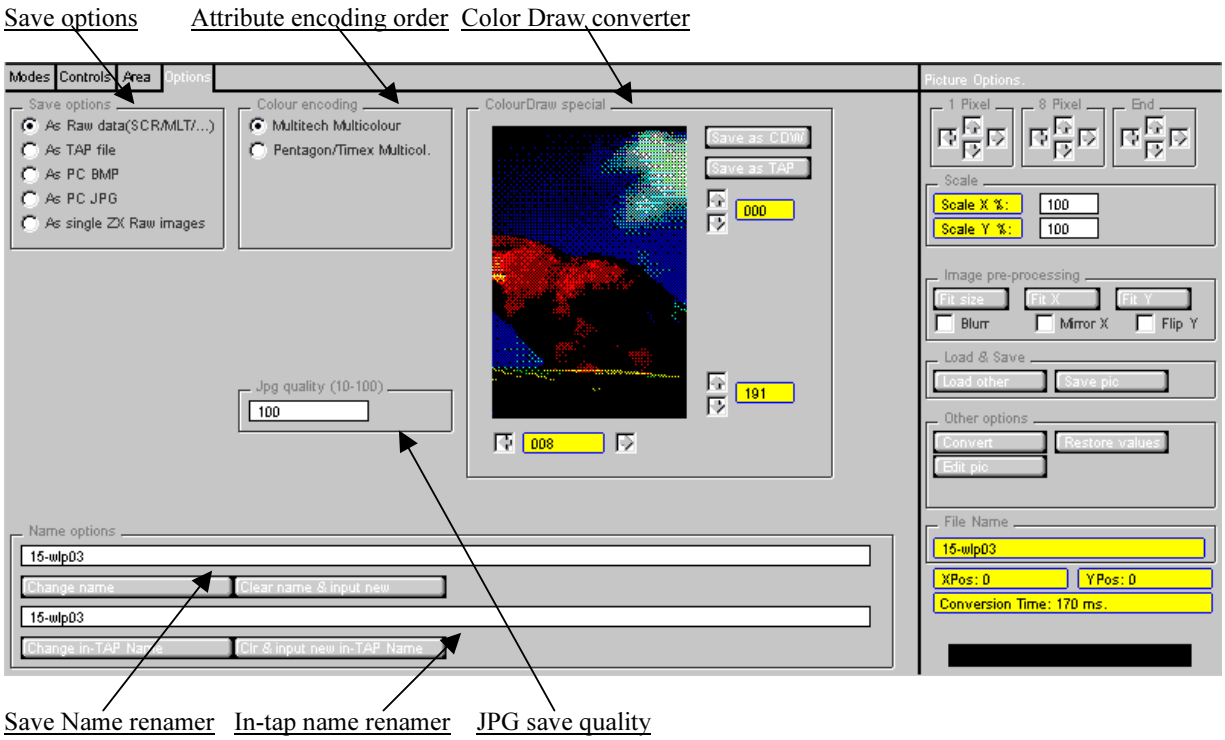


Grey Components: Lets you select which RGB components will be used for RGB to greyscale conversion, any combination can be freely selected. The selected components will then be boosted to improve the quality. The preference is that all RGB components are selected by default.

Area Options:
This menu is for selecting a picture area that will be converted. You must click on AREA ENABLED to activate it, or no effect will occur. The size of area can be changed only in 8 pixel boundaries, the size info is displayed in Characters (8x8 pixel).



Options Tab:



Options are depending on selected conversion mode. If you select MLT hires, you can see the ColorDraw special exporter and colour encoding. With Chunks you will get chunk encoding parameters. Jpg quality is the quality setup for saving Spectrum images as Jpg, 10 is the worst, 100 the best quality.

Compression:

In AVI conversion mode, compression determines the delta compression options. Delta compression is a compression method used especially for animations. My version saves the changes from previous image in this format: 2 Byte (determines how much bytes to skip because they are equal to previous image), 2 Byte (determines how many changed bytes will follow), x Byte (the changed bytes), and again from the beginning…

Delta options:

- No delta compression: TAP or Raw stream will not be compressed with delta
- Progressive frames: This is the standard option for Spectrum 48 with one video RAM or frames without Attributes. It is the same as in B2S. If you use this Option with colour images, the attribute squares willl flicker.
- Interleaved frames: For Spectrum with 128K, two video RAM´s and colour attributes. Each frame is encoded not from the last reference frame, but from one frame earlier. So you can decompress each frame to alternating video RAM´s, and there will be no more flickering attributes.

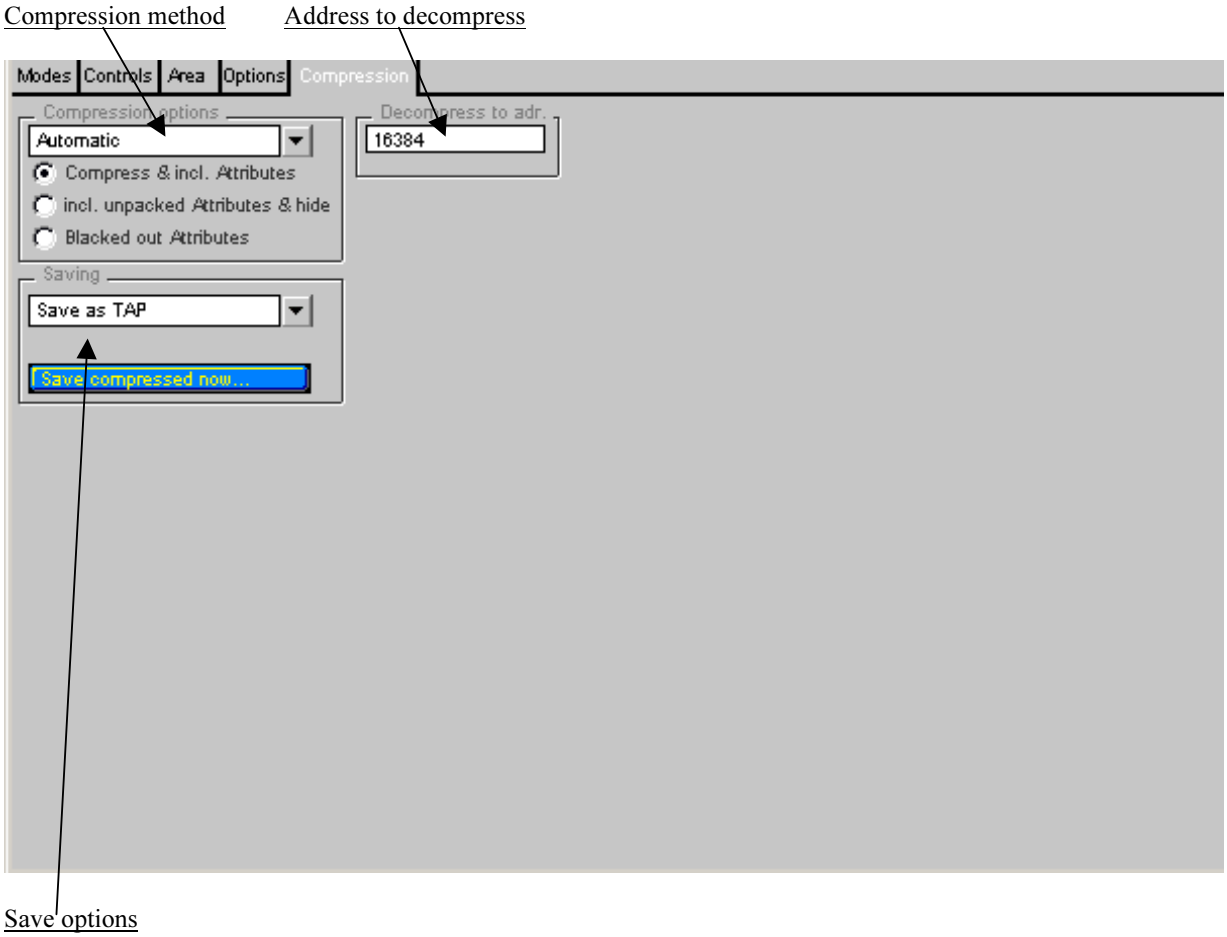
Delta Parent Prim./Second.:

- The reference images for Delta compression, you don´t need to use them, but then the first image is compressed to more bytes. You can select one (SCR/MLT/…), primary (for progressive compression) or primary and secondary (for interleaved compression).
- Use delta parent: Select this if you really want to use the selected delta reference.

Optimise Options (For images with attributes):

- No optimisation does absolutely notching
- Single pass: reduces the size of delta stream
- Dual pass: reduces size and attribute flickering for progressive frames

In single conversion mode for SCR conversion, you will find here the following options:



Compression method: There are the following options:

1. *Automatic*: Compress with all available methods, and select the one that uses the smallest amount of RAM.
2. *Columns*: Every of 32 columns is scanned from top to last pixel.
3. *Char*: Every of the 768 cells are scanned in attribute order.
4. *Progressive*: From line 0 to 191 in progressive order.
5. *SCR-order*: Like progressive scan, but it follows the rules of Spectrum screen order, like most compressors.

The other options are:

- *Compress & incl. Attributes*: This is the standard option. The decompressed image will be displayed with attributes
- *Incl. unpacked Attributes & hide*: The screen will be displayed as black, but the attributes are still present after picture data (last 768 bytes), and can be used for a attribute fade in effect.
- *Blacked out attributes*: Only black (0) Attributes are stored, maybe useful for B/W pictures with fade in effect.

Address to decompress: You can set up a different address than 16384, if you want to use the second screen of Spectrum 128, you can write here 49152, but other values are okay too if you want to copy the picture later to screen using LDIR assembler command.

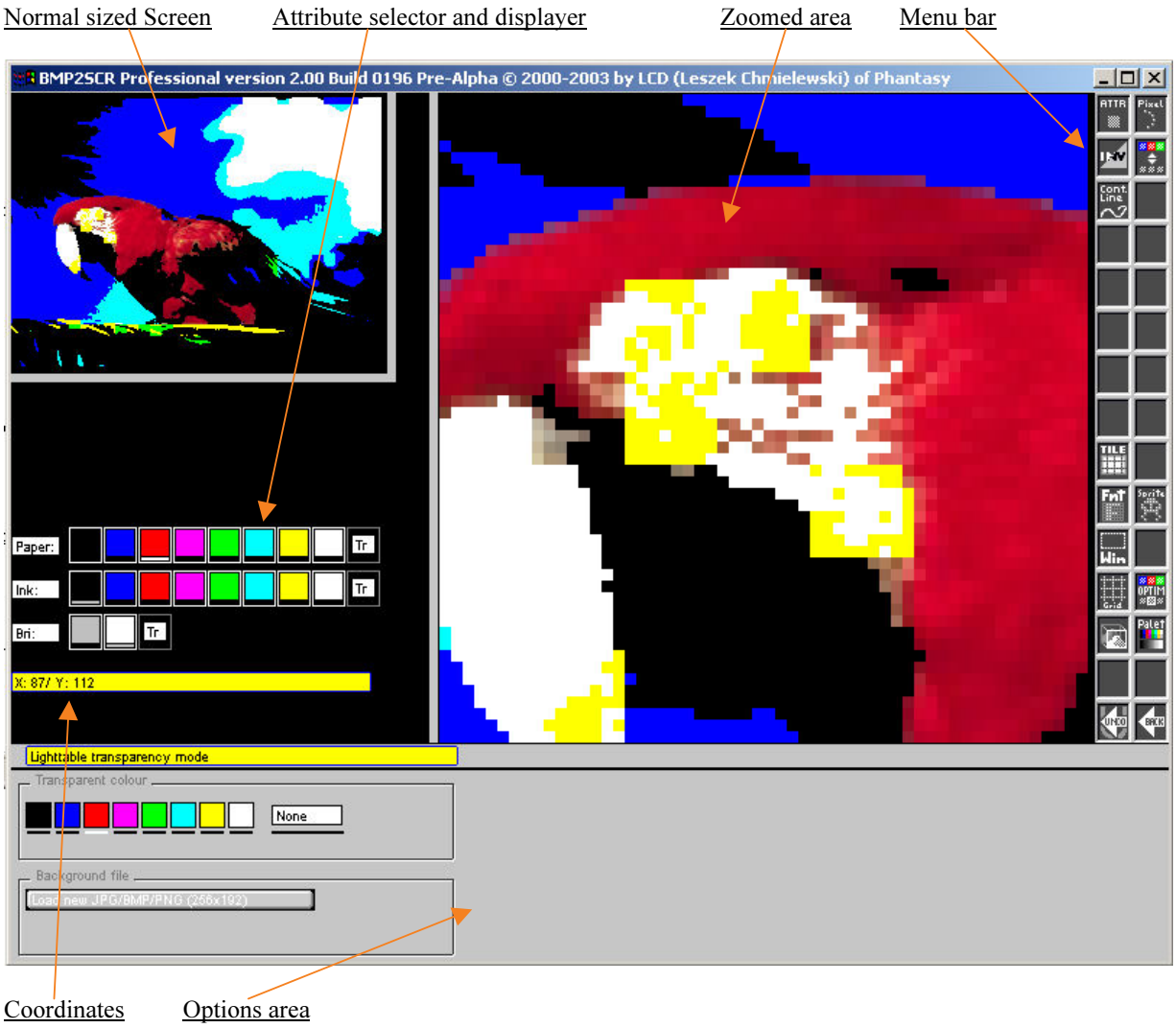
Save options: The compressed screens are saved with decompressor, all you need to do, is to save your compressed picture, load it at any address (LOAD “” CODE xxxxx) and call it from loaded address (RANDOMIZE USR xxxxx). You can save as raw CDE or TAP. To save, press the “save compressed now.” button. If you use the “Save Pic” button, the picture will be saved as uncompressed.

Anim Options:

Cut continuous file:
This option cuts raw or delta streams into smaller files.
Bank sizes:
The bank size definitions for file cutting. You may have up to 40 banks with a minimum size of 8192 bytes.

Edit screen:

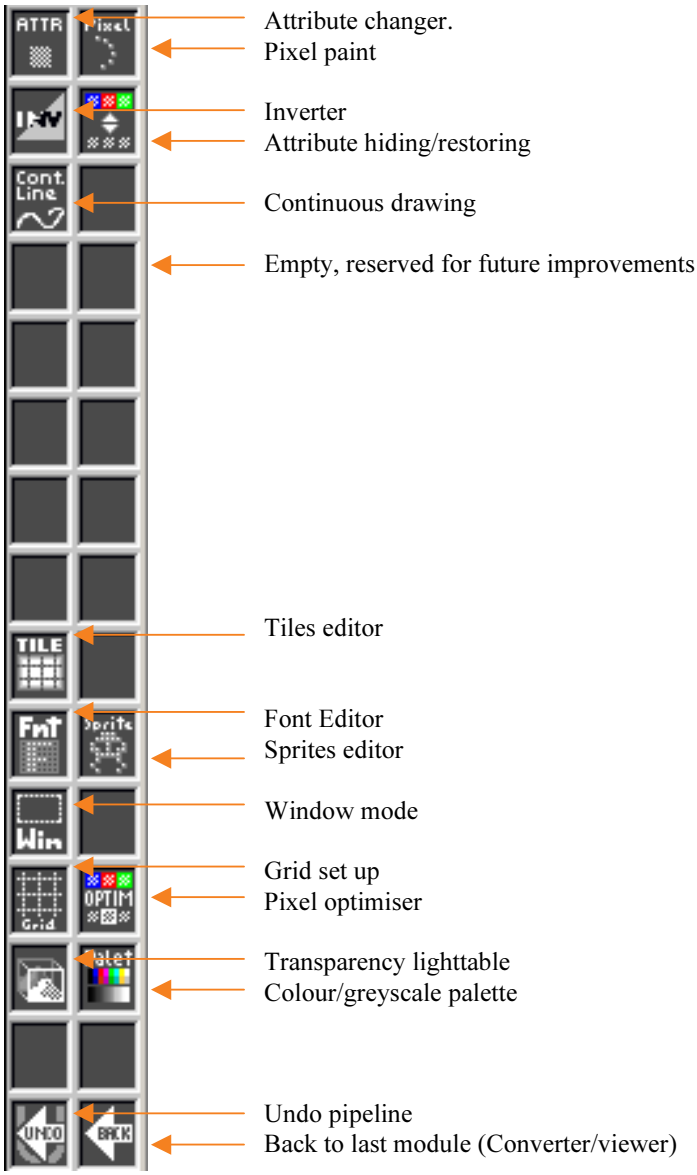
Painter:



Painter is a module which allows the user to retouch and edit the ZX Spectrum pictures. The layout description:

Normal sized screen view: This displays the 1:1 scaled ZX Spectrum screen image, where you can judge the changes on whole screen at once.
Attribute selector and displayer: Allows you to select the current attributes. The selected attribute components are then surrounded by a bright white box. “Tr” means transparent. Transparent attribute components did not affects the previous attributes, and allows to use change pixel data without affecting the attributes. The Current attribute components are displayed as a small box under the corresponding components, and determines also the pixel status. If a bright box is visible under the Ink component, this means, under the cursor is a Ink pixel (means pixel present), if the bright box is visible under the paper component, there is a Paper pixel (means no pixel present) under the cursor. Under the Bright component you can only get the feedback of the attribute bright status.
Zoomed area: This is a extremely fast 8x8 magnifier that allows you to work precise on the pixels. All drawing operations are executed only in this area. The size is 7x7 character (B2S had 5x7 character), this means 56 x 56 pixel. The zoomed area can be moved with cursor keys or by clicking on “Normal sized screen view”.
Menu Bar: The selector for drawing modes/options. Description later.
Coordinates: Show you the coordinates of the pixel under the cursor.
Options area: Depending on the drawing mode, you can change options here.

The Painter menu bar:



Attribute changer: This will affect attributes only, pixels are unchanged. You can paint with attributes. No other options available.
Pixel paint: This option changes pixels. Options: You can apply a paint mode to both mouse buttons: set pixel, reset pixel or toggle pixel.
Inverter: inverts attribute-size blocks. The options are: Invert Pixels, invert attribute (change ink/paper components), invert both (pixels and attributes, the change will be visible only if you hide the attributes), and negative attributes (looks like colour negative).
Attribute hiding and restoring: Hides virtually or restores all attribute data, so you can see the "naked" b/w picture. Because the attributes are hidden virtually, the attributes can still be affected by paint operation, but these effects are invisible until you restore the attributes. The hidden attributes are still displayed in the attribute selector and displayer.
Continuous drawing: Just like pixel paint, but draws a line between the last and current coordinates. Options: Map set or reset to left mouse button.
Tiles editor: Switches to tiles editor mode (Game creation tool).
Font editor: Switches to font editor mode.
Sprite editor: Switches to sprites editor mode (Game creation tool).
Window mode: This is the most advanced tool, which allows you to do advanced operations. Note that some of them did not work in all conversion modes.

- *Clear anything but window*: Clears the whole screen leaving only the data intact, that was selected in the window. Note that the screen clearing affects also the attribute, so if the attributes are set to transparent, it leaves a attribute-mess.
- *Paste window*: Replaces current window by the data that was acquired earlier by "Grab window content", please note that the destination window should have the same size as the source window [Available if window content was grabbed earlier].
- *Paste window & clear original*: Same as "paste window" but the source image data will be cleared from screen [Available if window content was grabbed earlier].
- *Clear window*: Erases anything in the window. Note that the screen clearing affects also the attribute, so if the attributes are set to transparent, it leaves a attribute-mess.
- *Invert pixels*: Inverts all pixels inside the window.
- *Invert attribute*: Swaps Ink with paper.
- *Apply attributes*: all attributes inside window are changed to the attribute components selected with "attribute selector and displayer".
- *Invert colour*: applies negative filter on attributes inside window, looks like negative photo image.
- *Rotate clockw.*: Rotate window content clockwise by 90˚ (Only for b/w or colour SCR images with 8x8 attribute size) [Available if window x-size is equal to y-size].
- *Store window in ZX file*: The window area (any size) is stored in a file.
- *Store window in category*: Gets window content and stores it as sprite, tile or font [Available in SCR mode only, if x-size and y-size are not greater than 64 pixels].
- *Autoget to category*: Splits up the screen and stores all blocks as sprite, tile or font [Available in SCR mode only, if x-size and y-size are not greater than 64 pixels, and the start coordinates of window must be 0,0].
- *Grab window content*: Stores window content in a cache area.
- *Full Screen*: This option extends the window size (normally controlled by the arrow buttons) to whole screen.
- *ZX file options*:
    1. *Store width+heigth*: this stores the size information in the first bytes of the file.
    2. *Include attribute*: Determines if attributes are saved or not.
    3. *Save raw/make tap/export ASM*: Determines the save format. More options about the size information format or Target cross-assembler are displayed after you pressed "Store window in ZX file".
- *Category:* This is the place where you can choose to which category do you want to put in your window content:
    1. *Sprites:* Size: maximum 64x64 pixel, Masking possible, no attribute
    2. *Tiles:* maximum 64x64 pixel, Attribute possible, usage as unmasked sprites is passible too.

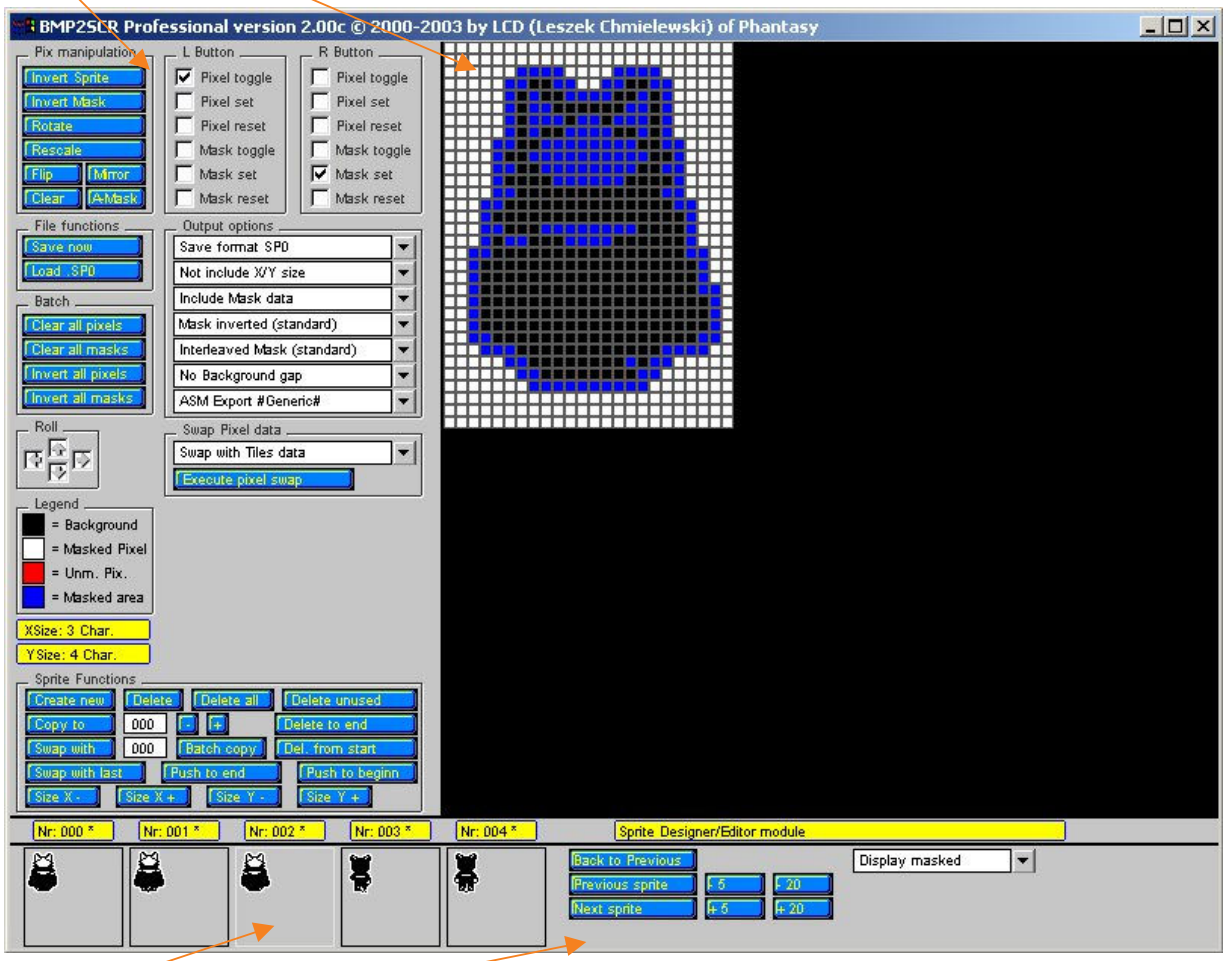
3. *Font :* Maximum 64x64 pixel, no mask and no attribute data.

Grid set up: For zoomed display: allow to choose “No grid”, “Simple grid” (1x1 pixel black outline), “Grid 1x1 pixel” (1x1 pixel grey outlined), and “Grid 8x8 pixel” (1x1 pixel outlined black, 8x8 pixel outlined grey).
Optimise Pixel: This matches the neighbour attribute data and can invert pixels. This will help you if you want better looking pictures if attributes are missing.
Transparency lighttable: This allows you to replace any ZX colour by the original PC picture, and improve the conversion accuracy a bit by boosting some details by hand. You can even load a different background picture.
Colour/greyscale palette: Here you can choose full colour display or the simulation of a greyscale TV.
Undo pipeline: this allows you to select one of the last six operations and undo them. Inversion, hide attributes and similar operations are not stored in the pipeline.
Back to previous operation: You must return in order to save the changes, remember that the undo pipeline is cleared after you return.

Sprite Editor:

Sprite editor is… a tool to create sprites (Player-Missile graphic/Bobs), graphics elements that can be used in games as figures. If you are a coder, you know what sprites are, but if this text was something new for you, forget this, you will never be able to code any game, my dear Takeshi64… ;-)

Controls 1 Zoom area



Sprite normal size Controls 2

Controls 1:

Pix manipulation:

- *Invert sprite :* This function inverts all pixels of the current sprite.
- *Invert mask:* same as Invert sprite, but operates on mask data.
- *Rotate:* Pixels and mask will be rotated by any angle.
- *Rescale:* Pixels and mask are rescaled (Scaling in %, so size 100 means original, 50 is half, 200 is double)
- *Flip:* The complete sprite is flipped upside down.
- *Mirror:* The complete sprite is mirrored.
- *Clear:* All pixel and mask data ate erased.
- *A-Mask:* Automatic mask data generator with three generator options defining the border of mask.

File Functions:

- *Save now:* Saves the sprites using options from "File Options"
- *Load SP0:* Loads SP0 Sprite file. SP0 is the native B2SP Sprite format. Use only this format to save your Work in progress or you won´t be able to load them anymore into B2SP.

ASM Export: *Generic, Tasm, the E-Z80 way, Tni-ASM:* Selects in which way the export to ASM will be done. This is done for Cross-Assembler users who want to include all the data directly in source.

Roll: Rolls the pixel and mask data in the arrow´s direction by one pixel per click (left mouse button), or fast continuous (right mouse button).

Legend: Colour-coded chart to help you to determine the Foreground/Background and correct mask.

L-Button/R-Button: Maps functions to the mouse keys.

File options:

- *Save format:* SP0, TAP, raw CDE, ASM: Determines in which format the sprites are saved. SP0 is the native B2SP sprite format, so you can reload the sprites later, TAP is the Format that allows you to transfer the data with TAPER over sound card, raw CDE is the same data as TAP, but without header and parity data, so you can use it only if you can read PC discs with your Spectrum (Opus or +D and DosCop can do it), ASM is the pure data exported to use with a Cross-Assembler.
- *X/Y Size:* Three options: No data (saves two bytes), included X/Y (both in char units, means pixel size * 8), X as char, Y as pixel (Y this time not * 8).
- *Mask data:* Determines if Mask data is saved or not.

Mask options:

- *Mask data:* Inverted or not, normally Inverted must be selected because most Sprites uses Bit 1 to determine not masked pixel, and 0 for masked.
- *Mask Format:* Interleaved is: [Sprite data line 0] [Mask data line 0] [Sprite data line 1] [Mask data line 1] [Sprite data line 2]… Progressive is: [Sprite data lines 0-63] [Mask data lines 0-63].
- *Background gap:* Maybe you want a data gap to save the background under the sprite. Options: No gap, Interleaved (after mask data) and progressive (after mask data).

Sprite Functions:

- *Create new:* The index will be forced to see the current sprite as existent.
- *Delete:* Deletes a sprite from index. The sprite data remains intact, so if you want to recover it, just select "Create new" option.
- *Delete all:* All index entries will be deleted.
- *Copy to:* Copies current sprite to the selected position (click on the field behind this option to determine position of destination)
- *Swap with:* like copy, but both sprites will change their positions.
- *Delete to end:* All sprites from current to the end will be deleted.
- *Delete from start:* All sprites from start to current will be deleted.
- *Swap with last:* Current sprite will be swapped with the last one.
- *Push to end:* Current sprite will be pushed to the position of last sprite. Example: Sprite 7 is current, sprite 10 is last. Sprite 7 will be pushed to position 10, the sprite 10 is changed to 9, 9 is changed to 8 and 8 is changed to 7.
- *Push to begin:* Current Sprite is pushed to position 0. Example: Current sprite is nr 3: Nr 3 is pushed to 0, 0 is changed to 1, 1 is changed to 2 and 2 is changed to 3.
- *Size X minus, Size X plus, Size Y minus, Size X plus:* Changes the size of current sprite (Char units only).

Sprite normal sized:

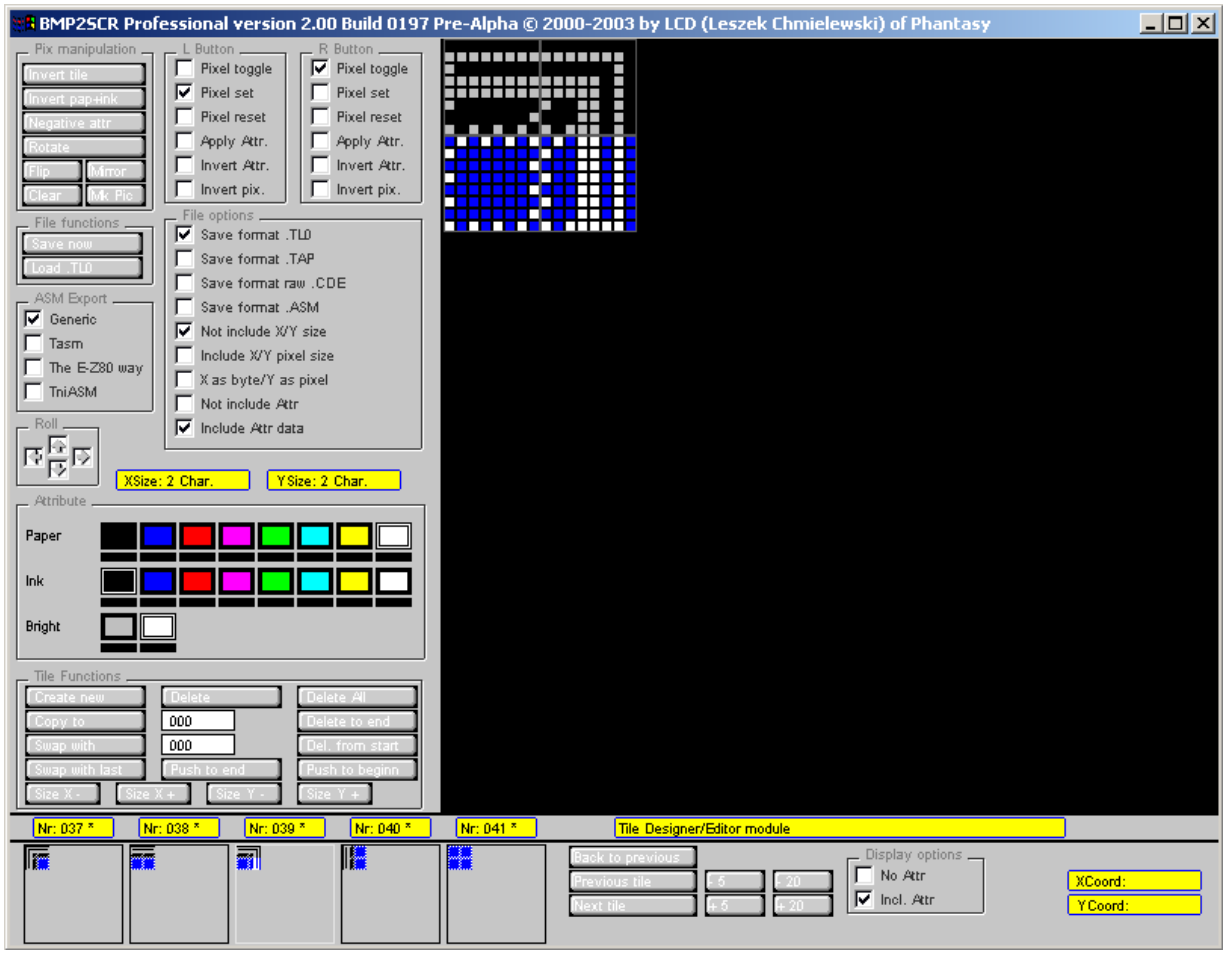
This displays the Sprites in size 1:1, 5 Sprites are visible at same time, the sprite in the middle is the current one, where you can paint on, and apply all operations, you can click on any of the other visible sprites to make them current sprite.

Controls 2:

These controls allow you to go one sprite, five sprites or 20 sprites forward or backward (use right mouse button for speed up). You can go back to previous module (Painter or file loader, if you loaded it the SP0 file directly). In the Display options you can also select what is displayed, sprite, mask or combined.

Tiles editor:

Game backgrounds and maps are made out of tiles, so B2SP offers you a tile editor to create these graphic elements. It works in a similar way like Sprite editor, but attributes are available too. There are some different options or different working of option than in Sprite editor.

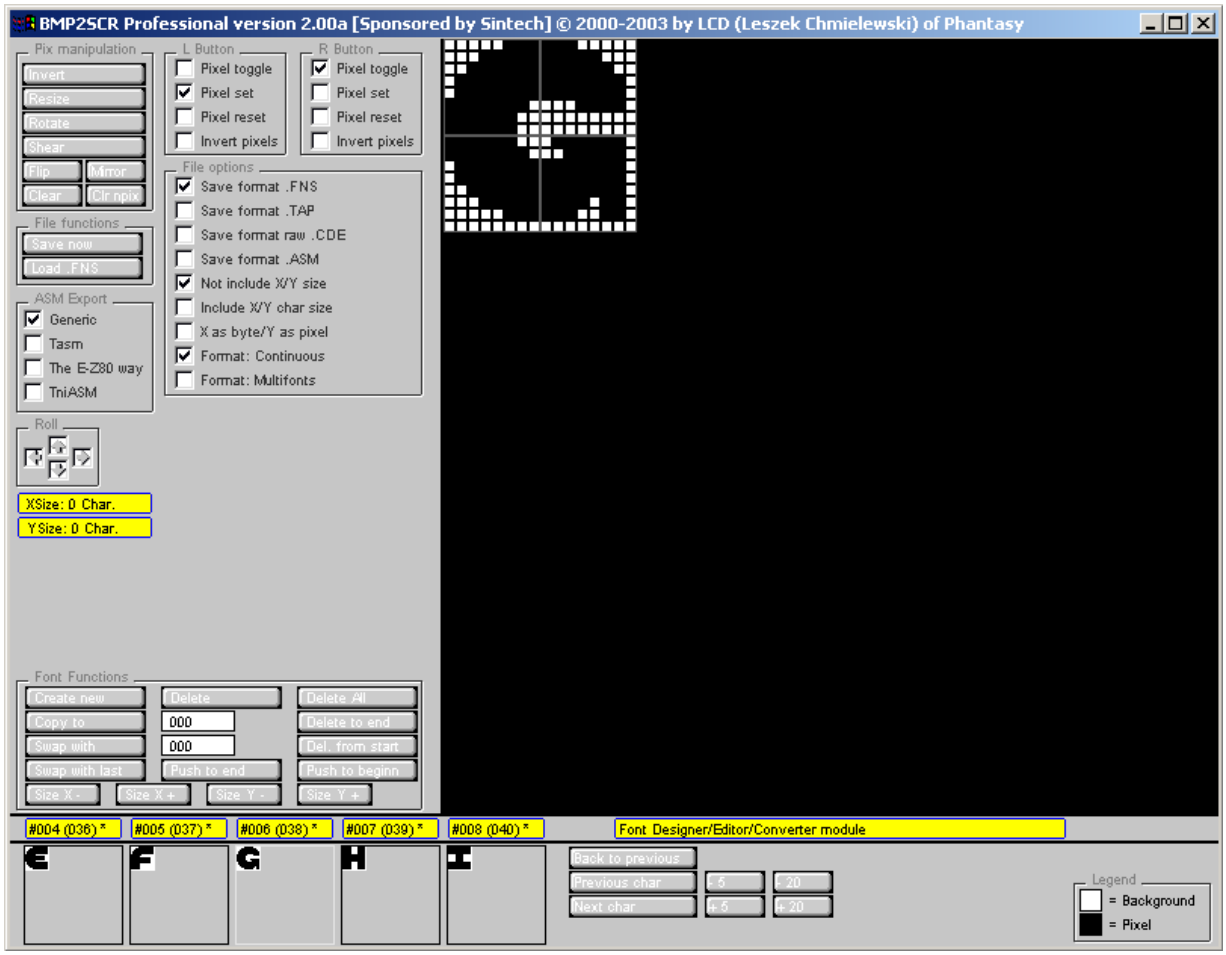


Different Options from Sprite editor:

- Invert Pap+ink: Swaps Paper and Ink
- Negative attr: Makes Attribute negative.
- Rotate (Only possible if x-size is equal to ysize): 90 degr. Rotation
- MkPic: saves a bitmap full of tiles if you want to export the tiles to Mappy
- Roll: Rolls only by 8 pixel
- Attribute: Attribute displayer and selector for sprites. There is no option for transparency because you can only change pixels OR attributes.

- Display options: You can select displaying pixels or pixels and attributes.

Font editor:



The font editor is slightly different too, it offers batch conversion for following options:

- Invert
- Resize
- Rotate
- Shear (will tilt the font from 0 (0 degr.) to 64 (45 degr.), do not forget to increase the font size (Size X+ and Size Y+, use right mouse button to increase the size of all font cells at same time, or left button for single font cell)
- Flip
- Mirror

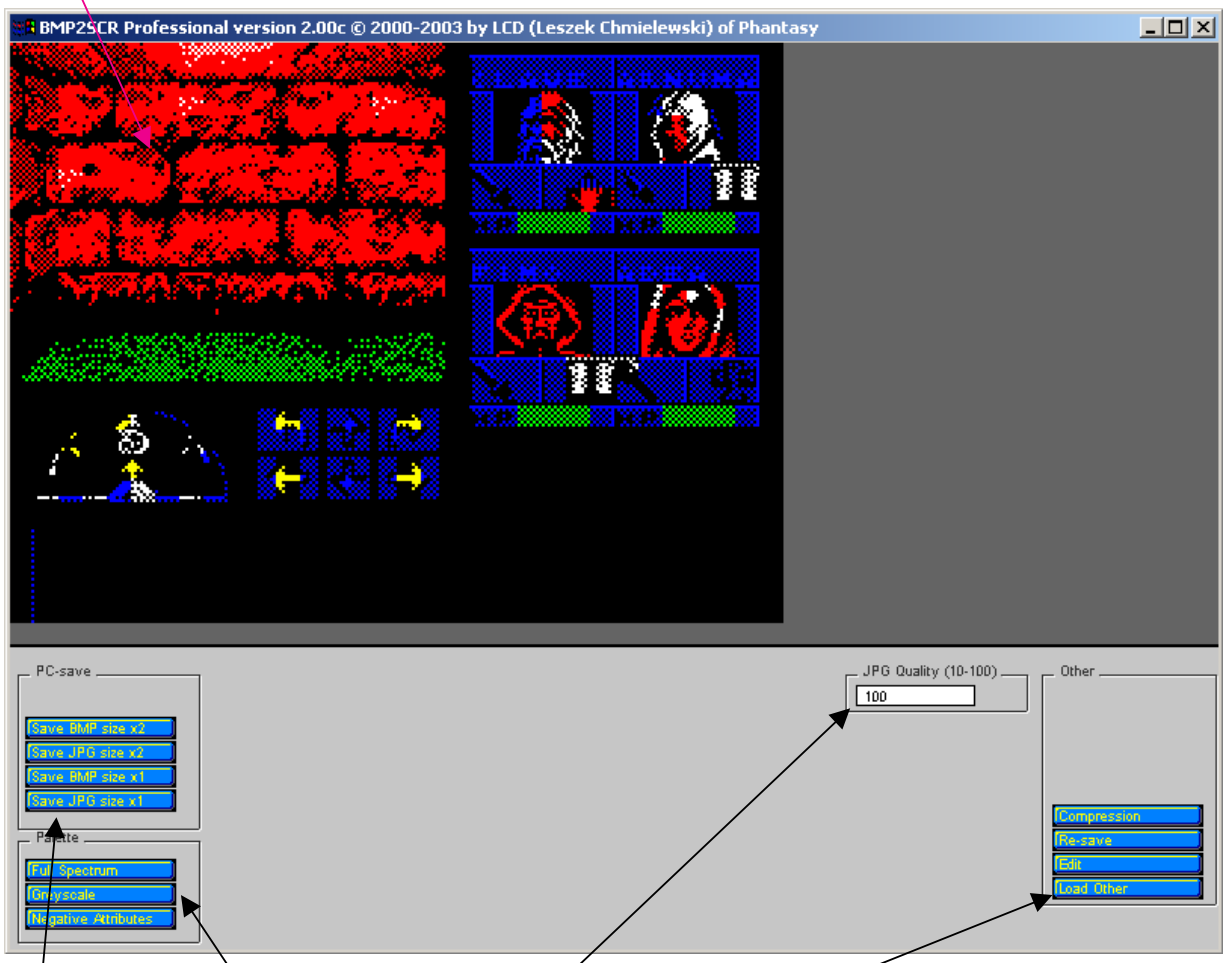
Other options:

Clr nopix: searches for empty font cells and deletes them.
Save format: Continuous. Font is saved like sprites or tiles, byte after byte
Save format: Multifonts. All font cells must have the same sizes. Font is saved in the following order : From each bitmap letter, the first 8x8 pixel are stored as a normal 8x8 font, then the next 8x8 pixel, and so on.

Viewer:

With viewer you can view converted pictures or resave them again in same format or as TAP, you can change the attribute order for Multitech, or edit some pictures.

Main view area



Main view area: Here you can see the loaded SCR image, or any other supported mode image. It is always double sized.
PC-save: This are the options to convert a ZX Spectrum image to a non-ZX Spectrum format like BMP or JPG. The image can be saved as normal or double size.
Decoding parameters: Only for Multicolour images (MLT/MTL/SCR 12288), this changes the decoding of attribute to Multitech (progressive) or Timex/Pentagon (SCR order).
Palette: Selects Greyscale or colour palette, Negative attributes inverts the image (you can use this if you want to convert SCR 6144 to 6912 if the Attributes are inverted).
JPG save quality: quality of saved JPG´s can be changed here.
Other:

- Compression (SCR): Uses the Screen Compressor plus to produce a auto-executable machine code. The options are equal to the usual compression options.
- Re-Save: Saves the changed picture again.
- Edit (SCR/MLT/IFL): This option brings you to the painter module, so you can re-edit you pictures.

- Load other: Load some other file, restarts the program

Minimum System Requirements to run BMP2SCR PRO:

B2SP was written in Dark Basic Pro (with a lot of patches applied to fix bugs, and we found much of them). For almost all high system requirements you can blame Dark Basic Pro.

- Windows 98 or later
- DirectX 8.1 or later
- Accelerated DirectX 8.1 compatible graphic card with at least 8 Mb memory (remember to install the latest drivers if B2SP refuses to work), Maybe you must switch back the resolution or colour depth*
- 128 Mb RAM
- At least 8 Mb free space on your drive
- P I 233 MMX or better (AMD K6 2)
- Resolution higher than 800x600

*) B2SP is designed to run in 32 bit desktop colour depth mode, but it will work with 16 bit too if you have a prehistoric graphic card like Voodoo 3 3000 AGP, which is not DirectX 8.1 compatible. I haven't tested it with 24 bit mode because my cards did not support 24 bit. Anyway, B2SP will work with some of these old cards, but because they are very limited, some of the B2SP functions will not work, or work incorrectly (Example: Voodoo supports only 256x256 pixel textures, so hires Timex mode will be not converted correctly).

Recommended System Requirements:

- Windows 2K, or even XP (hopefully)
- DirectX 8.1
- DirectX 8.1 compatible Accelerated 3D graphic card with 32 Mb memory, GeForce 2MX will work well.
- 512 Mb DDR-RAM
- 160 Gb hard disc (Uncompressed videos may take some memory)
- AMD Athlon ™ with 1200 Mhz
- Resolution 1024x768, TFT Monitor

Our Programming and testing system:

- AMD Athlon 1200 with 512 Mb SDR RAM, 10/100 Mbit Network card, Terratec PCI Soundcard, Abit KT7 RAID Mainboard.
- GeForce 2 MX Dual display video 32 Mb with active cooling
- Windows 2K
- DirectX 8.1
- HDD´s: 15+40+60+80 Gb
- 17" TFT Monitor (Samsung SyncMaster 171S), resolution 1280x1024

And testing:

- AMD Duron 600 overclocked to 800 (133 Mhz FSB). 256 Mb RAM, 10/100 Mbit Network card, Boeder sound card, MSI K7T Raid mainboard
- Riva TNT2 16 Mb graphic card
- Windows 98SE
- DirectX 8.1
- HDD: 20 Gb
- 19" CRT monitor, resolution 1024x768

Plus:

- AMD K6 2 500, 192 Mb RAM, 10/100 Mbit network card, ISA Soundblaster 16
- Voodoo 3 3000 AGP (Yes, non-compatible with DirectX 8.1)
- Windows 98SE
- DirectX 8.1
- HDD: 60 Gb
- 15” TFT Monitor, resolution 1024x768

Version 2.00c Professional

What´s new in version PRO 2.00c (final beta) since 2.00b (16th May 2003)

- Bugfix: Some operation will crash the program, if performed directly after loading a file. This looks like a DarkBasic Pro bug in GET IMAGE for me.
- Bugfix: RGB TAP saving produces always red attributes, AVI and Raw .RGB conversion not affected (Reported by Tommy Pereira, and later by Yerz). Shame on me, this was one of the famous "last minute changes" bug.
- Bugfix: "Delete Tile" button was not working in Tile editor.
- Improvement: Sprite editor controls rearranged in order to save memory and mess up the interface ;-). Some new options added: Clear/invert all pixels/mask, swap pixel data with tiles/fonts, Batch copy, Delete unused. Copy value can now be increased/decreased by one.
- Improvement: In sprite editor you can now switch background/foreground colors by clicking on the legend symbols. Makes easier to imagine the sprites if used Black paper and white ink, previous versions was planed only for white paper and black ink.
- Improvement: Modes renamed: Lace is replaced by Gigascreen or Gigscreen/Lace (Suggestion be Tommy Pereira)
- Improvement: Some small corrections in the code in order to save memory.
- Improvement: Contrast controls changed from the too small buttons to a dropbox, same for levels control.
- Improvement: Colour Tritone speed gain for all conversion modes (10 ms faster on my PC) due to a small improvement in the code (sorry, I should do this earlier, but forgot about this).
- Improvement: Conversion/display time for still images is now displayed in nanoseconds. The efficiency of clock is increased to 1/1,000,000th of a second.
- Improvement: "Copy to all" now copies contrast and levels values too.
- Improvement: Screen representation of RGB images now at full brightness (Suggestion by Yerz).
- Improvement: Added more levels settings for 65 Levels conversion: 1.) Soft, 2.) Softer additional to the normal mode (Suggestion by Yerz).
- Improvement: Small speedup for color ordered dither modes.
- Addition: Screen compressor now available from viewer. Compressor now smaller by one byte, deleted DI command from start, which was disturbing music played in interrupts. EI command still here.

Known Bugs and limitations:

- Older or not DirectX 8.1 compatible graphic cards like Voodoo 2/3 may cause incorrect behaviour. Make sure you have a Direct X 8.1 compatible card and the latest drivers installed if you encounter such problems.
- Jpg´s with 256 palette indexes (greyscale) are causing a crash.

What´s planed for future versions:

- Bugfixes, bugfixes, bugfixes

- Even more bugfixes
- More conversion modes
- Speedup and/or reduce exe size (Patch 4 applied for version 2.00a, saved 800 kb)
- Map editor (in progress)
- Delta compression in viewer mode (uncompressed parent image must be loaded previously)
- Painter for other modes than Multitech and Scr.
- Coloured Sprites and Multitech sprites (Timex/Pentagon Multicolour)
- Multicolour Tiles.

Version history:

What´s new in version PRO 2.00b (15th April 2003)

Overall improvements:

- Bugfix: If editor has been accessed from viewer, you can´t return from Sprite/Tile/Font editors.
- Bugfix: Saving Timex hires screen causes a error, fixed (Credit to Andrea Giannotti)
- Bugfix: ASM Export, missing Chr$(10) and spaces in labels (Credit to Metalbrain for telling me).
- Bugfix: Saving as CDE for Sprites/Tiles/Fonts was impossible due to a bug (Again credit to Metalbrain).
- Bugfix: Change of In-TAP name changed the filename and works incorrectly in other ways.
- Bugfix: Some upper-case characters (with left shift key) are printed too fast in text input, no idea what caused this.
- Improvement: Improved readability of the buttons (Suggested by Fuzzbucket & Derek Jolly).
- Improvement: Asks if you are sure after pressing “Load other” button (Credit to Yerzmyey).
- Improvement: Conversion starts directly after loading.
- Improvement: Text input got auto repeat.
- Addition: SCR Compressor, uses one of four methods to compress a SCR, and saves them together with decompression code that can run from any address. "Auto" option chooses the method which has the best compression result. Additional options to replace all attributes by zero, or replace by zero and include real attributes, but not compress them.

Improvement: Screens can be decompressed to any address.

What´s new in version PRO 2.00a (4th April 2003)

Still/Animation Conversion improvements:

- 100 % new code used, with better optimisations for speed, because some Dark Basic Pro commands are sometimes slower than in Dark Basic. New faster methods of colour replacement and sorting.
- More input media formats allowed: BMP (Compressed too), JPG, PNG, AVI (Still uncompressed 256x192x24 bit). No known size limits for pictures, any bit depth (1-24 bit).
- Picture pre-processing options: Fit size X/Y/X&Y, Mirror X/Y, Scroll.
- Timer that shows you the conversion time in milliseconds for every picture.
- Improved the quality of colour ordered dither conversion by adding new option to reduce conversion range.
- More error diffusion dithering methods, not only Floyd-Steinberg, but also Stucki, Burkes and some other. 7 dithering methods available, with improved controls code for luminance (Brightness), which was not perfect in earlier versions. New option for stretched or normal (Like in Photoshop) brightness range for B/W images.
- New SCR conversion modes: SCR Cluster Art, SCR B/W Tritone, SCR Color Tritone.

- New Low-res Modes: IFLI 64x96 colour/greyscale (You need a Spectrum 128 and a special viewer by Gasman to view these pictures).
- New Hires IFLI mode with 8x2 attribute size, Any multitech conversion mode was rewritten to suit IFLI too, anyway, you need a Spectrum 128 and the modified viewer from Gasman.
- New Special modes: RGB3 Error diffusion and RGB3 Ordered Dither. Available also for AVI conversion (This is the mode that shocked so many people).
- New Special modes: SCR (Timex HiRes) solid B/W, ordered dither and error diffusion.
- Multitech 16/72 modes now renders with 3 different ink/paper contrast algorithm and MLT solarized/Lowres solarized has now option for enable BRIGHT Bit, which nearly doubles the shades available for greyscale pictures. Viewer supports this feature now too.
- Pictures in MLT mode can be now directly saved with MLT Multitech or SCR Hardware/Timex Multicolor attribute encoding (MLT=Progressive, SCR=Same order as Spectrum screens). MTL Mode (MLT Lowres) now saves attributes only.
- Ability to change SAVE-Name added, you can also save the converted file now directly as RAW (SCR, MLT, ATR, CHK, …), TAP, BMP or JPG. The name inside a TAP can be changed too. Renaming of file is possible too if file exist already.
- RGB to greyscale components selection, allow you to choose which Channels (R,G,B) of a picture will be converted to greyscale, with automatic formula recomputing.
- ColorDraw export now available directly in MLT modes, now with real compression, as B2S had only faked compression that was expanding the size a bit. Saving in TAP is possible now.
- Two separate BRIGHT sliders in Laced Multicell mode, for better adjustment.

Screen Editor:

- Colour-key transparency. Allows you to take a PC picture under the converted picture and allows better repainting of PC bitmaps.
- Hide Attributes now work virtually, so the true attribute data can now be affected, and the colour displayer shows you the true attributes. Note: If you not want to affect attribute data, select Transparent colours.
- Definable mouse button in pixel painting mode, let you choose a operation defined for each mouse button: Set, Reset or Toggle pixel.
- Continuous Drawing mode added, that paints lines between pixels as long as you held the mouse button pressed. Operation selectable for left mouse button: set or reset pixels, right mouse button is equal to OVER 1, but not very good for painting.
- Match neighbour Bitmap/Attribute optimisation, which can save some bytes if you want to compress the picture later. Does not work perfectly but can save you a lot of work.
- 4 Inversion modes (pixel, attribute [ink/paper swap], attribute+pixel (Change visible in hidden attribute mode) and colour inversion [negative]). 3 Inversion modes in window option
- Window option to store Bitmap in file (with optional ASM export), as sprite/tile/font, Options to clear window or all but window, Rotation by 90˚ possible if Xsize is equal to Ysize, Autoget option to store anything on screen in the Sprite, tile or font category. Option to change attributes in window to current attributes.
- Palette switchable between greyscale and ZX colour.
- Sprite, Tile and Font Editors for SCR mode with following features:
  1. Sprite editor features Rescaling and rotation by any angle, pixel wise roll. Flip/Mirror, Automatic mask generation. Fast inversion of bitmap or mask. Progressive or interleaved Masking is possible, Sprite size is maximum 64x64 pixel, and up to 256 sprites can be held in memory. X/Y sizes of sprites can be included. X as char, y as char or pixel.
  2. Tile Editor features attributes. Rotation by 90˚. (If x size is equal to y size), Attribute inversion, negation, pixel inversion, flip/Mirror. Export of all tiles as Bitmap is possible if all tiles are same size.
  3. Font Editor features single or batch conversion, up to 256 characters. Fast batch inversion. Batch rotation, resizing, flip, mirror, shear.

  All these editors can export ASM data for TASM, E-Z80 way and Tni-ASM.
- Speed of Zooming improved dramatically, increased the size of zoomed area. Grids (1x1 pixel simple/1x1 pixel/8x8 pixel) added to the zoom code.
- Painter now works with IFLI Hires mode.

Viewer improvements:

- Highly improved loading/drawing algorithms for Spectrum screen modes, now a screen can be loaded and painted on screen in less than 1/25th second.
- MLT/Timex Multicolour Attribute order switchable.
- Chunks file format can now be customized for your own needs.
- LCE/LCM do not flicker anymore.

AVI conversion improvements:

- Dramatically improved speed, due to the trick of reading 4 bytes at once, applied Patch 3 of Dark Basic Pro, which adds even more speed, and avoiding to draw the frames with DOT command (Direct POKE into Image or bitmap is faster). On AMD 1200/512Mb SDRAM we have a ratio of 4:1 (4 minutes needed to convert 1 minute of movie).
- MLT/Multicolor and Monochrome Lace (Gigascreen) conversion possible now too.
- Smoother mouse control.
- More accurate calculation of remaining time.
- Percentage of completion is displayed in the taskbar
- Option to save Animation as continuous RAW data, for some Harddisk/CD-ROM systems.
- Delta compression is now much faster, optimiser is now fix set at 3 (Size optimisation to maximum).
- Delta compressor now with “interleaved” option for Spectrum 128 with two video RAMs, avoids attribute flickering.

Overall Improvements:

- File Requester is now called from Windows API, thanks to Dragonfly. This also eliminated the “DiscDriveSound” on startup.
- New control system which works only with mouse, the old jerky mouse bug should been gone.
- New much improved user Interface (Thanks for Paulo Silva for coding some elements, which I optimised a bit, Dragonfly for Filebox and to Chaotica for old layout idea and some code, sorry that I replaced some layouts by my own, and rewritten and optimised your code as it had some serious bugs).
- Drag & drop functionality for loading media files, Spectrum screens, and editor files.
- Main window can now be maximized to zoom in.

What´s new in version 1.751

- Screen windowed
- Some speed improvement
- Bugfix: a key was not responding.

What´s new in version 1.75

- Bugfix: LCE viewer was not able to show color screens correctly. Fixed!
- Bugfix: Because some graphic card cannot display 640x480x16 screens, the programm crashes, so check for
  available graphic modes is now added and automaticaly performed, this should fix the most crashes, I hope... Not tested because bmp2scr works on all my PCs.
- Added, lace LCE Gigascreen Multicell color mode. more flickering than the optimized greyscale version, but still great to watch. Check the "Gigascreen" demo pictures on "Real Spectrum" emulator, that are included in the Zip file.
- Added, the possibility to load 24 bit BMP´s up to a resolution of 1280x1024 (width must not be odd eg.: 555 or 257) and select a part of it for conversion, very useful for DTP systems on Spectrum (Yes, there are some).
- Added, if you load a picture with other dimensions than 256x192 pixels, you can change the save-name too, for the case, you want to join later some bigger screens, to avoid the constant overwriting.

- Added, if picture height is smaller than 192 pixel, it will not be anymore placed in lower part of screen, but in upper.
- Added, saving laced picture as BMP is now possible (as Gigascreen image, no flickering).
- Added, for TFT displays with bad picture blow-up, a resolution selector.

What´s new in version 1.74

- Bugfix, corrected MLT Colour mode, first line was painted not correctly.
- Added, Laced greyscale mode with ordered dither and F/S dither.
- Added, lace viewer for LCE files and transformer to .TAP file, featuring true flickering between screens LCE Format: two joined screens of 6912 bytes each. Copy the first 6912 bytes to address 16384, the second 6192 bytes should be copied to the start of 7th memory bank, then you can swap the screens or switch to Gigascreen mode if you own a tuned Pentagon to eliminate flickering.

What´s new in version 1.73

- Cancel option added to AVI conversion (Push it a bit longer).
- Improved F/S Error diffusion contrast mode.
- New mode: MLT Multitech greyscale dithering (ordered dither and error diffusion).
- In Viewer mode added option to save a part of Multitech picture as Color Draw image (you will need Color Draw to compile or watch it, BTW: Big thanks to Gasman for helping me with the Color Draw file format).
- Added Painter option in viewer mode (SCR and MLT only), which will allow some retouches on converted picture.
- Now Bmp2scr should be ME compatible because Chaotica (Viktor W.) compiled it with DarkBasic 1.08.

What´s new in version 1.72

- Added new mode: COD (Color Ordered Dither), excellent results, available also for AVI conversion, output as normal SCR files (256x192 pixel, 8x8 color resolution).
- COD Multitech mode added.. Added random diffusion to dithering mode.
- Added Floyd/Steinberg error diffusion to dithering mode (Special thanks to Lou Steinberg), both are available also for AVI conversion.
- MLT LoRes Color added for C64 like effects (64x192, 8 colors, bright, screen mask will stay same at all converted pictures in this mode, so the size of picture can be 6144 bytes).
- Few bug fixes, and memory leaks stopped (hope, all of them).

What´s new in version 1.71

- Improved screen painting routine, now much faster at conversion, AVI conversion and in the Viewer, this also fixes the "flashing pixel" bug.
- Added time counter for loading of a frame (in miliseconds) inclusive conversion, and expected conversion time for AVI conversion.
- New Mode: Multitech Lo Res (64x192, 8 scales of gray, screen mask will stay same at all pictures converted in this mode, only ATTR mask will be changed).

What´s new in version 1.70

- Purchased a faster Computer to make my routines faster ;-) (for testing!).
- 70% of code rewritten.

- Improved ordered dithering.
- New Multitech ™ grayscale formula (Thanks to Martin Blazek from 8BC ™ for the idea and description how it is done in his converter).
- Corrected bug it the color attribute mask conversion, which caused that some attributes disappear when bright is on.
- New User Interface with enhanced mouse control, allows you faster color selection.
- Changing of directory and drive added.
- Conversion to TAP circa 20 times faster.
- In the viewer mode you can now convert any SCR, MLT, CHK or ATR file into TAP or BMP, and the last viewed picture is selected as the parent picture of Delta encoding (will be not encoded).
- AVI routines improved, added AVI header length recognition and sound recognition (AVI with sound will be still not accepted).
- Added possibility to make a preview of your Spectrum movie as AVI (Wow! Doctor Who intro in attributes, I love it!) if rendering single frames.
- Tap streaming allows to load the animation into any emulator (Hint: R80 supports nearly unlimited Tap and loads the animation very fast).
- Cut Tap added.
- Added Delta compression and Delta optimizer.
- Memory bank management coded for Delta compressor.

What´s new in version 1.62

- Fixed AVI to color screen transfer bug.
- Multitech ™ Grayscale conversion now directly available without preview.
- Added viewer for the File formats SCR, MLT, CHK and ATR with options for grayscale (MLT and ATR) and double view size (all).
- Improved ordered dither halftone pixel ordering.
- Conversion routine speeded up a bit.

What´s new in version 1.61

- Fixed the terrible bug that did not allowed anything except few modes to be saved, also fixed the bug which did not allow to load any picture after you tried to load a picture with wrong format (I forgot to set a flag! Fucking PC, the Spectrum shows “variable not found” in such case).
- Fixed the bug with overwriting existing files.
- For slower systems there is now also a “BUSY” signal which shows you if active tasks are running like saving, loading or computing.
- There is now a direct conversion in color mode, so no preview waste your time anymore (except in grayscale Multitech ™ mode).
- Changed BRIGHT conversion a bit, added Grayscale attribute mask overlay mode for BMP and AVI conversion.
- Corrected RGB to gray conversion formula (Thanks to Paulo Silva).

What´s new in version 1.6 (80% of code rewritten)

- Corrected some spelling errors in the instruction, new mistakes ;) added, and updated my E-Mail address.
- Program improvements: File format checks build in, to allow only the loading of supported formats and sizes.
- not existent files are not allowed to load anymore.
- Asks for overwrite if the file exists.
- Removed the color modes 1 and 3 as they did not improve anything.

- Added keyboard controls for the whole program, because it did not work with mouse on Macintosh with Window$ emulator (Thanks to Andrew Owen).
- Movie conversion: first frame can be adjusted.
- Conversion without preview (faster) is now possible.
- Added modes for B/W, ordered dither, color chunks and chunks (have not tested the chunks due the lack of a good player, so please return feedback and send me a player for it), all available also for AVI conversion.
- TAP support rewritten, now you can convert any picture only to .SCR, and then use the option SCR2TAP to convert any selected SCR files into TAP format.
- Added BRIGHT support to some modes: color, color chunk, Multitech™ color, also available in AVI conversion (except Multitech™).

What´s new in version 1.5

- Again small improvements in Directory, it will now be shown much faster and you can return back to the file output selector.
- Also added something to the Movie conversion, you can now convert uncompressed AVI files (only size supported is 256x192x24 bit). I got no information about the AVI file format, but I hope that it will work well. I tested it on some Vue d´esprit™ 3.1 animations, and anything works well.

What´s new in version 1.41

- Only small improvement which was driving me mad: Multitech™ can now be saved for B/W displays in gray scales (if you got the MB02 and the 8BC Multitech™ show, you know how useful is it), I think that the 8BC Converter is much better because they use the Multitech™ 16/72 mode, and I only use the Multitech8. Never mind, test it!
- I have also improved the quality of colored Multitech8 a bit.

What´s new in version 1.4

- TAP support added, so if you don't have a disc drive or MS-DOS to Spectrum converter, you can use TAPER and a sound cable to load the picture directly into your Spectrum.
- Save and load speeded up a bit.
- Movie converter added to convert a whole directory (Only SCR) if you want to make animations for Delta compressor or Hard disk (Picture adjustment deactivated for more comfortable batch-conversion without flickering).
- MTL File Support for Multitech8 Pictures for MB02, but you can easy split the file and use it on Timex too.

What´s new in version 1.3

- File selector added.
- First public version.
- Improved adjustment section.

What´s new in version 1.2

- Adjustment section added for more control.

What´s new in version 1.1

- Conversion time reduced from 3 Hours on a AMD K6-2 350 to five seconds now by loading the bitmap directly without the standard loader to avoid the slow POINT() command - POINT() makes a sync before reading a dot in Dark Basic. Thanks to DB community for the tips how to make dot plotting much faster…

v. 1.0

- First experimental converter, damn slow, but works fine. Written 100% in Dark Basic. Should help me to add some better coloured graphic into my games…

Credits:

Thanks for particular code goes to:
Firefly (From the German Dark Basic community) for the File Box and some other help.
Paulo Silva for optimized greytone conversion algorithm, Windows style Elements (Groupbox, Button, Simplebutton), and lot of other help.
Viktor W. for helping me with the interface.
Gasman for helping me with description of "Color Draw" file format and creating the IFLI ("Rainbow processor") displaying routine, from which I made the Hires IFLI viewer.
Andrea Giannotti from Italy (Rome), for saving me some time by writing a new version of Gigascreen viewer.

F.A.Q.

Q: Why did none of the versions support the FLI Screen format?
A: FLI Format consist of 2 screens of 6912 Bytes switched quickly on Spectrum 128, giving a colour resolution of 8x4 Pixel, that is superior to the normal 8x8 resolution, but worse than Multicolor MLT with 8x1 resolution. 13824 Bytes with only a minimal visual difference to 6912 Bytes screen, that is the reason. I also had no display code for FLI encoded screens Anyway I included IFLI, which is much better.

Q: Any plans for other converters, for example C64, CPC, Atari XE?
A: I'm a ZX freak. If you want converters for C64 or CPC, get CONGO, it has no avi conversion at this time, but maybe in the future, if you ask the author nicely. About Atari converters notching is known at moment, probably there is notching available. I had plans to write BMP2SCR versions for SAM Coupe screen modes and Sprinter, but at moment these plans are frozen. Sprinter can load normal 256 colour BMP´s, and I saw a lot of converted Screens on SAM, so there is probably a converter already available.

Q: Why did you the new version in Dark Basic Pro, and not in Delphi or C++?
A: Because I do not want to learn Delphi or C++ and I also hate Object oriented programming. BMP2SCR v 1.0 to 1.751 was coded in Dark Basic 1.xx, and it was quite fast (Okay, after I applied some tricks with indirect BMP loading, use of offscreen to draw, Attribute over Pixel Priority), so I tried it in Dark Basic Pro, and it was slower, but with more tricks (Memblock usage, array tables) I managed to make it even faster, so it is now nearly at Delphi speed, but the file size is bigger than before. With later updates of Dark Basic Pro the file size will shrink and speed will be increased. Example: With Patch 1 it took 2.4 seconds to load a animation frame (Slow Read Byte command), this was slower than in Dark Basic 1, so I used a Trick (Read Float) to read 4 Bytes at once, this increased the speed to 700 ms per frame. With Patch 3 the same code was executed in 240 ms, that is 10 times faster than my first version. So I use Dark Basic Pro because I know this language very well and can apply some dirty tricks to cheat a bit.

Q: Why BMP2SCR PRO has such high minimum requirements? My PC hits the minimum requirements, but your program still crashes.

A: DirectX8.1 supporting 8 Mb Graphic card and DirectX 8.1 are the minimum requirements of Dark Basic Pro, so I can't do anything against it. It's pity, but it will not work on my Notebook anymore, which has only 1 Mb video RAM, and on my "Silent" Internet Leeching PC which is able to run through the nights, it won't work too, because I used a 4 Mb graphic card in it (As Voodoo 3 16 Mb was too hot!, and AGP cards did not fit anymore because of the big CPU cooler). But never mind, the new version is fast enough to complete even a large animation in less than 12 hours, (on 1200 Mhz: 4:1 ratio, this means: 4 minutes is needed to convert 1 minute of video, or so… If your computer did not hit the minimum requirements, you can still use BMP2SCR 1.xxx versions or upgrade your computer. If your Computer hit the minimum system requirements and BMP2SCR PRO won't run, please be patient as I will always use the latest Dark Basic Pro Patches (unless they have bugs that stop me doing so) to compile it, so the next version will probably work better. I do always my best to find bugs in the code.

Q: Can you be so nice and send me the source of BMP2SCR PRO? I have a idea how to improve.
A: Because it is open source (at my terms of licence), yes, just send me a E-Mail, and I will send you're the source and required media, but please mark your modifications in the Source with REM "This lines are modified/written by … and it does … (improves …)" and REM "End of Modification by …" and send it back to me. Please test your modifications and do not say that the code should be faster now because of some modifications, so Bte=0:inc bte,bit(0)*128:inc bte,bit(1)*64 is faster in DB Pro than bte=bit(0)*128+bit(1)*64. If you want to use some of my routines in your own programs, please ask me, and note this in the credits. Important: If you want to make a commercial program, the use of the routines is strictly prohibited.

Q: Can I use BMP2SCR PRO commercially?
A: For commercial use of BMP2SCR PRO: Contact me: lcd.one@chello.at for details.

Q: Who are your customers that use BMP2SCR?

A: Not only a lot of sceners like Hooy-prg, Anestis Koutsoundis (he of Sonic "never finished" fame), Daniel Bienvenu – the author of Coleco Paint, but also Future publishing used my converter. Some sceners prefer BMP2SPEC, this mainly because it has not such high hardware requirements. There is also BMP2SPEC colour version floating around, but I never saw the results. Amiga Users use mainly PDHFIC by Chris Young, which has similar colour results, thank to a short tip that I gave Chris (I still think, my BRIGHT conversion is better).

Q: I Found a different Program called "BMP2SCR"
A: This is from VMA Software, and it supports colour too. It can also compress the screens, but has no dithering. You also need to Register in order to download. Unfortunaly I did not knew about the existence of this program until I released BMP2SCR 1.4, so it was too late to change the name.

Q: Are there any alternatives to BMP2SCR?
A: Yes, there are some of them:

- Congo by Matthias Matting, clever coded, supports many different maschines: C64, CPC and ZX, and offer a lot of modes, but it has a buggy Spectrum mode, Painter is available (buggy at least in Spectrum mode) but still very good, and Matthias said that the Bugs are on ToDo list. I´m in contact with Matthias Matting to help with the Bugs.
- BMP2SCR by VMA Software which was mentioned earlier, Color conversion and compression available, but no other additional features.
- PDHFIC for Amiga only, by Chris Young. My Amiga500 is too old for this, so I can't say anything about the functions, I saw only the results of conversion.
- B256x192 by a Russian coder Hacker KAY which was written in Pascal (MS-DOS) and slower than my versions with worse results and no control over colour conversion. It accepts only Bitmaps sized 256x192 pixels and 8 bit colour depth. It has also no front-end and works only with drag&drop or parameters.
- YASPIC by Derek Jolly, Written in RapidQ, so a bit slow, and not so complex like B2SP, but a work in progress, so it will be better later, maybe.
- ZX Spectrum Screen Editor by Alexey V. Susekov is also a alternative. It is a Painter (With quite fast zoom mode), but it has also some options for importing PC BMP files. The conversion quality of the images is not comparable to BMP2SCR Pro because the lack of color and the random dithering, but the Painter supports Gigascreen and FLI modes.

- ZXSee by Alberto García González, this is a DOS viewer utility which converts PCX or GIF to colour screens.
- Mac2Spec by James Weatherley, written for OS X, can produce Timex Hi-colour images like BMP2SCR Pro, but it has also Colour error diffusion.
- DithvIDE by Zilog, written for Linux. It has the ability to transform BMP´s into high quality laced pictures, better than with my converter.

Any more?

Q: What is the main use of BMP2SCR?
A: Demomaking and gamemaking (guess for what did I include Sprite/Tile editor?), but also for any other use you can imagine. I primary want to see more new ZX games, so I give my hard work free away.

Q: How about export option to ASM or C?
A: ASM Export is possible for Sprites, tiles, fonts and screen blocks.

Problems you may encounter:

BMP2SCR Pro won´t run on my computer.

- Did your computer meet the minimum requirements?
- If On-Board graphic card, did you assigned enough memory?
- Did you tried both, 16 and 32 bit colour depth?
- Do you use the latest drivers for your graphic card?
- Does your graphic card support DirectX 8.1? (Just working with DirectX 8.1 like Voodoo cards, is not enough).

LCM monochrome laced pictures are not displayed correctly on my Spectrum or emulator.

- Is it a Spectrum 128?
- Have you a routine to switch rapidly between both video RAMs?
- Is the attribute area of Screen2 filled with 768 bytes containing 56?

Formats of ZX Spectrum graphics:

SCR (6144 Bytes):	Monochrome ZX Spectrum Image as non-Progressive bitmap data placed at memory address 16384 ($4000).
SCR (6912 Bytes):	Normal standard ZX Spectrum Screen with 6144 Bytes of non-progressive bitmap data placed at the memory address 16384 ($4000), and 768 Bytes attribute data that are stored in progressive form from 22528 ($5800).
SCR (12288 Bytes):	Hardware Multicolor screen for Timex 2068 or modified Pentagon (link not known) or Spectrum (link to the mod: http://www.zx.cz/mga.php). The first 6144 Bytes are as usual, the non-progressive bitmap data stored from 16384, and the other 6144 are non-progressive attribute data stored in the same way like the bitmap, but from 24576 ($8000), so if you load it on a real Spectrum, copy the first 6144 bytes to 16384, then the next 6144 bytes to 24576, and switch the multicolor extension on in order to display the picture. If you want to display a greyscale picture, just turn the colour down or use B/W TV set.
SCR (12289 Bytes):	Timex 2068 HiRes screen (512x192 pixels monochrome only) in interleaved non-progressive format stored in the same Addresses as SCR (12288 Bytes).
MLT (12288 Bytes):	Same as SCR(12288 Bytes), even the size is the same. The only difference is the attribute map, that is stored in progressive form in order to display it easier using DMA Chip of the MB02 disk/harddisk interface created by 8Bit Company (link: http://www.8bc.com/sinclair).

ATR (768 Bytes):	Only attribute colour or greyscale data, with a fixed bitmap mask that is not saved because it stays always the same, so it has to be painted before. The mask depends on the choosen resolution. I recommend to use ATR mode for Animations
CHK (1536 Bytes):	Not a native Spectrum format, contains greyscale data. It is used mostly in demos, and because there is no standard, I ended up with creating a format customizer to manipulate the parameters of data, to make it usable with almost all player routines.
CCK (2304 Bytes):	Colour Chunks: 1536 Bytes of chunk data (see CHK info), and 768 Bytes attribute data.
LCE (13824 Bytes):	Two standard Spectrum Screens that can be transparently overlayed on some Pentagon models, or on any other Spectrum with 2 video RAM they can be exchanged very fast creating a flickering effect that melts these two screens into one, offering more color shades. One screen is stored at 16384, the other in Bank 7 at 49152.
LCM (12288 Bytes)	Monochrome laced screens (effect of 3 shades of grey).
AFL (3072 Bytes)	Attribute data, progressive order
IFL (9216 Bytes)	Normal monochrome screen (6144 bytes) and 3072 Bytes of attribute data.
RAW	Headerless file for different usages.
TAP	Standard emulator tape file.

Instruction version 2.00.02