

## Using Windows to Create DHGR Files

by Bill Buckels – November 15, 2012

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You have a royalty-free right to use, modify, reproduce and distribute BMPA2FC and A2FCBMP, related source code and companion files in any way you find useful, provided that you agree that Bill Buckels has **no warranty obligations or liability** resulting from said distribution or use in any way whatsoever. If you don't agree, don't bother reading further and remove BMPA2FC and A2FCBMP, related source code, companion files and every other artifact of said distribution from your computer now.

### Intended Audience

I am assuming that you already know what an Apple II DHGR file is and you have utilities to place these on Apple II disks or disk images. I assume too that you have some knowledge of IBM PC graphics files including Windows BMP files. I am also assuming that you know how to use the Windows clipboard and how to use Windows Paint. I am hoping as well that you also know about color palettes and screen resolutions and such. If you don't have this preliminary knowledge this document may not be for you.

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## **Introduction**

Back in 2009 I wrote an MS-DOS utility called BMPA2FC which also runs in an XP cmd window or under DOSBox and converts IBM PC graphics files to Apple II DHGR files as part of a larger collection of programming for the Apple II.

## **What's New**

Over the last few days I revisited BMPA2FC and added additional features including support for what I am calling a “Canvas” file which is a 24 bit BMP template for anyone who wants to use Windows Paint to color-match to the Apple II DHGR colors used by BMPA2FC’s conversion process (with some restrictions for best results noted further in this document). I also added direct support for 280 x 192 x 24 bit BMP files that use BMPA2FC’s colors (with some restrictions for best results noted further in this document).

I am working on a newer computer these days which no longer offers support for the 8 x 8 romfont that was present on older machines, so before I made any other changes to BMPA2FC I was “forced” to include an equivalent ramfont feature so I could read BMPA2FC ‘s screens. This new feature may be important to you as well as we move further past the days of MS-DOS because you too may not have romfont support available on your newer computer.

I have also created a new utility called A2FCBMP.exe which converts Apple II DHGR files (BIN and AUX files or 2FC files) to Windows BMP files. Used in conjunction with BMPA2FC and Windows Paint you can convert from BMP to DHGR and then back to BMP effectively performing “round trip” editing of Apple II DHGR graphics files on your Windows computer.

## **About BMPA2FC**

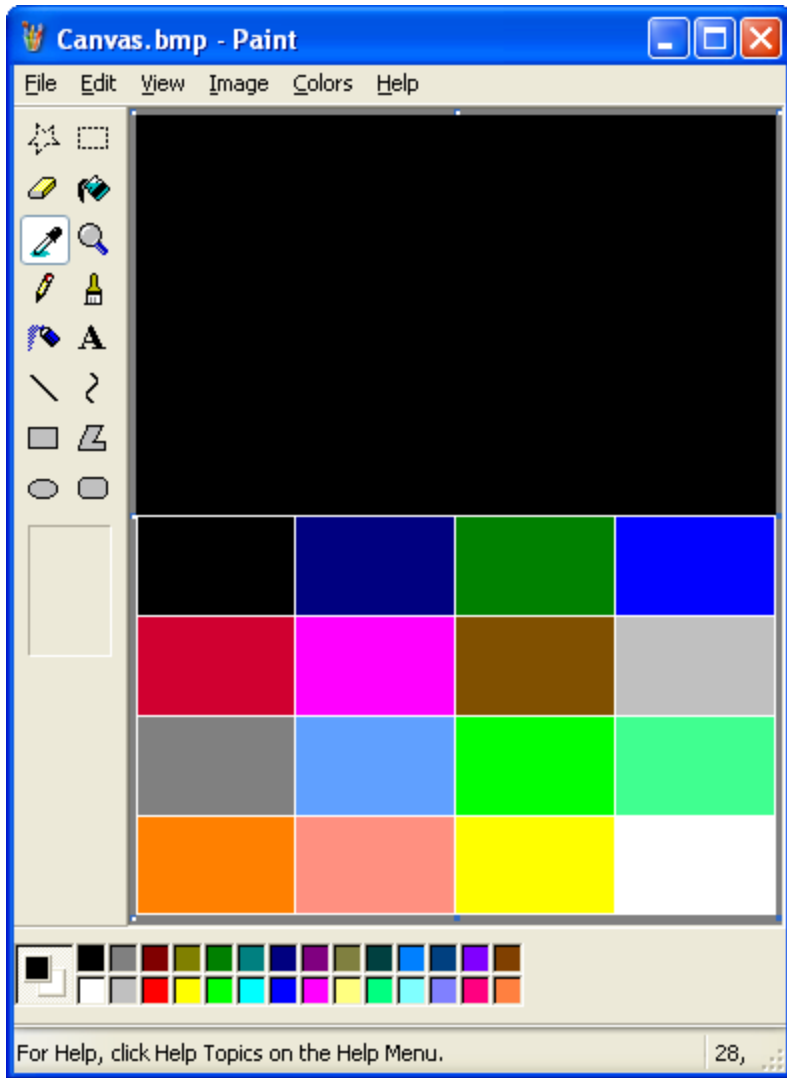
The BMPA2FC utility will allow you to convert to Apple II Double Hi-Res (DHGR) 140 x 192 x 16 color images from IBM-PC graphics files in the following formats:

- CGA 320 x 200 x 4 color BASIC BSAVED IMAGE (.BAS) Files
- CGA 320 x 200 x 4 color ZSOFT .PCX Files
- EGA 320 x 200 x 16 color Windows .BMP Files
- RGB 320 x 400 x 24 Bit Windows .BMP “Canvas” Files
- RGB 280 x 384 x 24 Bit Windows .BMP “Canvas” Files
- RGB 280 x 192 x 24 Bit Windows .BMP “A2FCBMP” Files

BMPA2FC is distributed with reasonably well-commented source code. For detailed information about what it is actually doing and how it does what it does read the source code and run the program.

In a nutshell, all BMPA2FC does is remap the colors from a PC to an Apple II and let you save the results.

### **About and Using Canvas Files**



A BMPA2FC Canvas File can come in 2 sizes: 320 x 400 or 280 x 192. These are Windows “true color” 24 bit BMP files. The top half is a “drawing surface” where you can paste an image that you wish to convert to DHGR and recolor your image in the 16 available colors of a DHGR file which are displayed on the bottom half of the canvas.

When you are ready to convert your canvas to DHGR using BMPA2FC only the top half of the canvas is displayed, and the bottom half (the required palette) is not.

Read the Windows Paint Help Topic “Work With Color” for more information.

#### **The basic steps are as follows:**

- Select the required color from the 16 available colors using the eyedropper tool.
- Recolor the parts of your 320 x 200 image at the top of the canvas.

The reason for the two different canvas sizes is to accommodate either the common PC legacy graphic size of 320 x 200 or the Apple II graphic size (adjusted for aspect) of 280 x 192.

## **Some Tips**

### **Horizontal Screen Resolution Tip**

Keep in mind for the purposes of these instructions that the Apple II DHGR horizontal screen resolution is less than half the 320 x 200 screen resolution that we enjoyed even on our early IBM-PC's. This means that vertical lines and color dots must be drawn 2 pixels wide on your canvas for best results. You may "get lucky" and create a satisfactory DHGR file from your canvas the first time through but be prepared to edit your canvas more than once and to sacrifice detail to achieve optimum conversion results with vertical elements on your canvas. This consideration is inclusive of patterns and so-forth.

### **Color Limit Tip**

The Apple II DHGR colors are limited to the colors that I have provided in the canvas. There is no "workaround" possible. Attempts to be "creative" and add additional colors may work with varying degrees of success if you get-lucky but those additional colors will still end-up mapping to the 16 canvas colors. A more likely scenario is that any additional color will map to an undesired color. Limit your colors to the canvas palette only for best results.

### **Work on a Copy Tip**

Keep the original canvases that I have provided ("Can280.bmp" and Can320.bmp) in a safe place and work on a separate copy for each of your "creations".

### **Naming Limit Tip**

BMPA2FC (and A2FCBMP) use MS-DOS 8 character "base names". Limit your canvas and other BMP file names name to 8 characters with the file extension of .BMP.

### **Ciderpress Viewing Tip**

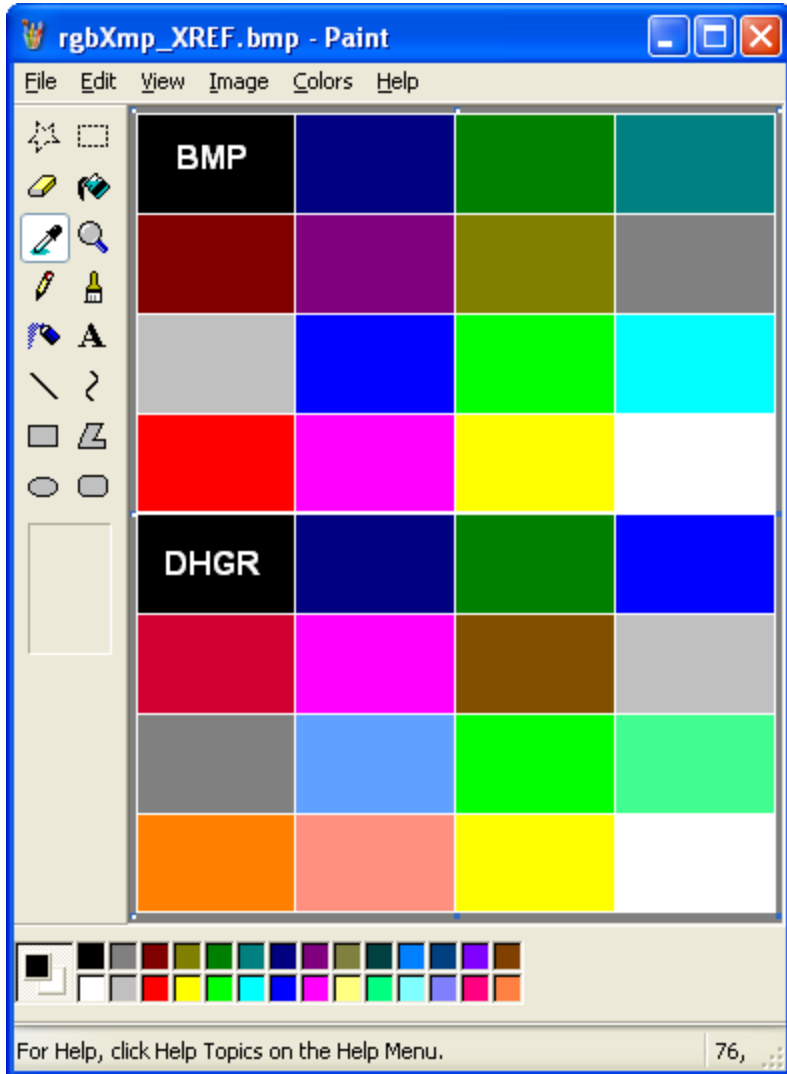
This is general tip for the .2FC DHGR files that BMPA2FC creates. If you use Ciderpress you can view these on a DOS33 disk image by clicking on the file. I am assuming that you have placed these on your disk image as type BIN with a \$2000 load address. If you doubt me, see the DLOAD33.DSK that I provided with the original distribution to easily try this.

### **Ciderpress DHGR Screen Capture Note**

While you can use the Windows Clipboard to capture a Ciderpress view of a .2FC DHGR file and paste it into Windows Paint and reduce the size by 50% to 280 x 192, don't bother. The palette used by Ciderpress is different than the Apple II colors that BMPA2FC uses.

Converting such an image back to DHGR using BMPA2FC after editing will likely produce undesired results whether you save as a canvas or as a 16 color BMP unless you have recolored the edited paste. I have no plans to provide “round trip” editing for Ciderpress screen captures of DHGR files, (which is also unnecessary), since I now provide support for “round trip” editing of DHGR files through a second utility called A2FCBMP which uses colors that are compatible with BMPA2FC.

### **About Not Using 16 Color Windows BMP Files**



Now that I have added support for 24 bit BMP canvas files to BMPA2FC I am not sure how useful 16 color BMP's will be to you.

But anyways I have now provided a BMP file called “rgbXmp\_XREF.bmp” which may help avoid unexpected results when converting a 16 Color Windows BMP file to a DHGR file.

This file is simply a visual aid showing how BMPA2FC maps colors from the default 16 color BMP from Windows Paint under Windows XP.

The DHGR colors are my own and the same ones I provide in my canvas file and in my new utility A2FCBMP.

### **About Using A2FCBMP**

A2FCBMP.exe is a utility will allow you to convert Apple II Double Hi-Res 140 x 192 x 16 color images (BIN and AUX files or 2FC files) to 280 x 192 x 24 Bit Windows .BMP Files suitable for framing or for pasting into a canvas file for editing in Windows Paint.

Used in conjunction with BMPA2FC and Windows Paint you can convert from BMP to DHGR and then back to BMP effectively performing “round trip” editing of Apple II DHGR graphics files on your Windows computer. But be careful not to use colors that are not in A2FCBMP’s 16 color palette if editing these BMP’s for later conversion back to DHGR (with BMPA2FC).

A2FCBMP.exe is a command line utility. When you run it without a filename argument it displays usage (just like BMPA2FC.exe).

### **Unsupported Software**

None of this software is supported by me in any way whatsoever. I have better things to do.

When I left my career as a Software Developer in 2009 to pursue Commercial Fishing fulltime it was for both health and economic reasons. These small changes to BMPA2FC alone have taken over a day of my life to complete and represent a significant sacrifice to my real responsibilities as well as being the greatest amount of programming that I have done since that time. You have the source code as well as my work to enjoy and if further changes are desired please feel free to carry those forward without me. I’ll be fishing.