

PCX2SIX
SIXEL Graphics Utility
Guide 1.00

PCX2SIX
conversion program
SIXEL Graphics Utility
Guide

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1.0 Introduction

. Introduction

The ability to display pictures on the VAX systems both inside of specifications and as stand alone reference documents can aid in the daily job performance. This utility provides the ability to put any PC picture into native VAX/VMS SIXEL format.

Major Components

VAX/VMS

PCX2SIX.EXE

Graphics capable terminal or emulator

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SIXEL - Digital Equipment Corporation

Windows - Microsoft Corporation

PAINT, PBRUSH, PCX - ZSoft Corporation

Kermit - Columbia University

2. Scope

. Scope

This document will cover the use of the PCX2SIX utility to create pictures in SIXEL format for specifications and stand alone pictures. The features provided will be described as will the few limitations of the conversion utility.

Intended Audience

This user guide is written assuming that the reader has at least a basic familiarity with DOS, and has a need to display SIXEL graphics perhaps on a VAX/VMS system.

What is not covered

This document does not cover information related to PCX or SIXEL or the internal program code.

This document will not cover the details of creating the graphic that is to be displayed, other than how to get it into the correct file format.

Limited coverage of how to get the file from PC platforms to the VAX/VMS system will be done.

No coverage of Windows or DOS is attempted.

General Information

The author has no association with ZSoft Corporation.

The conversion utility is supplied as is. FREE of charge.

The utility is for unlimited, unrestricted use except as follows. The utility may not be bundled with other "FOR SALE" software without prior written permission from John G. Zvonar, otherwise the utility may be given away for FREE with all documentation.

There is no warranty, period!

The SIXEL output has been tested on TRUE VT340 terminals and various terminal emulators.

3.0 References

. References

Additional Documents Required

No additional documents are needed for using the PCX2SIX utility to create pictures for use in a SIXEL graphics environment.

4.0 Conventions

. Conventions

Items of special interest are in **bold** characters.

User typed input is in underlined *italics*.

Single stroke key presses are identified as press <key>. The keys <enter> and <ret> or <return> are used interchangeably.

5.0 Overview

. Overview

Graphics provided as reference documents or as part of the operating specification provide significant benefit over just having words for descriptions, or using character based pictures. This utility allows the viewing of PC based pictures on the VAX/VMS system using the capability of terminals supporting SIXEL graphics protocol.

SIXEL Graphics

The DEC Terminals which support SIXEL graphics information can display pictures with VGA to Super VGA (PC based measure) quality levels. The SIXEL protocol is a bitmap based graphics capability supplied by DEC integral to several terminals in VT terminal product line. Many VT terminal emulators also provide full, or partial, SIXEL graphics support, most in at least 16 colors.

PCX Format

The ZSoft PCX format was chosen to be the 'common format' for the utility. This was chosen due to the wide variety of applications **on many different platforms** that support and generate PCX files. PCX files are bitmap files.

Any application that can create PCX files can generate a file suitable for the PCX2SIX utility. Color is supported for up to 256 colors. Note though that most terminals only support the first 16 colors.

Almost all PC Windows applications can output to this format at least through the WINDOWS clipboard capture.

PAINT supplied with Windows can put any clipboard image into the PCX format.

The final SIXEL files can still be used to create hard copy output by printing them to an appropriate network SIXEL printer once they are on the VAX/VMS system.

The PCX2SIX utility will not add or delete pixels. If the number of X direction pixels was 640 then the number of X direction SIXELS

5.0 Overview
will also be 640. See section 8.2 for more information.

5.0 Overview

General procedure outline

Select an application package for graphics generation on your platform of choice running your operating system of choice.

Create the drawing.

If needed capture the picture to the clipboard and paste it into PAINT. Save the image as a PCX file.

Convert the file using the PCX2SIX utility.

Upload/Transfer the SIXEL file to the VAX/VMS system.

Use the type command to display the picture and determine if the appearance is what was desired. With MS Kermit the REPLAY command can also be used to display the SIXEL graphic without transferring the graphic to a VMS host system.

Use the PCX2SIX command line switches as needed to change the picture appearance.

6.0 Using PCX2SIX

. Using PCX2SIX

This section describes basic operation of the PCX2SIX conversion utility. This is a DOS PC based tool. No special PC requirements are needed.

Hardware: IBM Compatible PC

The utility will create the SIXEL file on the hard disk. There must be enough free disk space for the output files.

There must be at least three free file spaces available from the FILES & BUFFERS settings. This is usually not a problem.

The utility should run in as little as 64K of ram.

Software: PCX2SIX.EXE

The only software required for the conversion is the PCX2SIX utility itself.

Create a directory for the utility then use a copy command to copy the executable from the distribution disk onto the hard disk.

. Running PCX2SIX

The conversion utility is started by typing `pcx2six` followed by the full filename and optional extension. For example:

```
C:>pcx2six test.pcx <ret>
```

Note that unless otherwise indicated the file must reside in the current directory. Optionally a disk drive and path may precede the full filename and optional extension. For example:

```
C:>pcx2six D:\files\test.pcx <ret>
```

In this case the output file `test.six` will also reside in the directory `D:\files`.

The file is now transferred to the VAX using any number of utilities, or displayed in Kermit v 3.14 using the `REPLAY` command at the prompt. The file is an ASCII file, do not use a

6.0 Using PCX2SIX

binary file transfer protocol. The file may be viewed on the VAX by a simple TYPE command.

Optional Command line inputs

There are numerous optional command line switches to allow minor customizing and correction of the bitmap images.

The command line input will accept a second filename parameter. This filename parameter indicates to the utility that the output is to be directed into a file with a user specified file name. The parameter is the filename to create.

When invoked as **C:>pcx2six test.pcx capture.txt <ret>** the file capture.txt will be created and will contain all of the SIXEL commands needed to draw the picture.

After transfer the SIXEL file may be viewed by using the VAX/VMS type command, for example **\$type capture.txt <ret>**. Kermit 3.14 can also be used to view the file, at the prompt **>replay capture.txt**

This SIXEL file is also suitable for printing on any SIXEL compatible printer.

The Palette Features

A feature of the utility is the ability to adjust the palette. Most of the command line switches are related to palette manipulation. The SIXEL protocol supports up to 256 colors, however most emulators only support 16. Best results have been obtained by keeping to 16 or less colors.

The /I

The /I switch will instruct the utility to Ignore any palette information. This means that it will select the colors based on id number but will make no attempt to adjust the RGB value of the id number. In this case the terminal palette colors will be used for display, even if the colors have been changed by someone or

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something. Note that under normal condition the terminal colors map well to the standard PC colors.

The /P

The /P switch will instruct the utility to create and use a default Palette. The default palette will be identical to the factory default 16 color palette on a VT340.

The /R

The /R switch will instruct the utility to Read in and use a palette file. The palette file name must be the same as the PCX file being processed but with the extension of .PAL. This feature allows fine tuning of the individual palette values for the SIXEL output file. The palette file format is discussed later in this document.

The /W

The /W switch will instruct the utility to Write out the palette information. A file with the same name as the PCX input file but with the extension of .PAL will be created. If the file already exists it will be overwritten. This output file is in the same format that is needed for the /R switch.

The /S

The default output disables SIXEL scrolling. This is to insure that the image does not roll off of the top of the screen. Using the /S switch will ENABLE SIXEL scrolling if desired.

The /M

The /M switch must be followed by a number between 0 and 15. This number sets the color to be used for the Monochrome image conversion. The default if /M is not used is color 7 (white). The exact syntax would appear as /M5 to use color 5 for the monochrome image. Note that this does not change the background color which will remain at whatever the terminal has set into the palette for color 0.

The /B

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On occasion it may be desirable to scale up or down the palette values. The /B allows the scaling without having to modify a palette file. The exact syntax would be /B120 or /B90. The scaling is performed relative to 100, so /B120 will increase the palette numbers by approximately 120/100, whereas /B90 would decrease the palette values by about 90/100. The maximum palette value is 100. The default /B value is 100.

The /X and /Y

The two switches /X and /Y work together to set the pixel aspect ratio. The default values are 2 and 1 for X and Y respectively. These switches can be used to change somewhat the size of the image. The switches when used would look like /X2 /Y1.

Multiple command line switches may be used. The only restriction is to separate the switches requiring a numeric input by a space.

Good Example: C:>pcx2six input output /P/W/B110 /S

Bad Example: C:>pcx2six input output /P/B110/W/S

Summary: Switches /B, /M, /X, /Y must all be followed by a space.

7.0 Palette file format

. Palette file format

The palette file used by the utility is in ASCII.

There is one line per color, and there must be either 16 or 256 lines or the palette file will be considered invalid.

The color values are stored three to a line in Red Green Blue format.

Each RGB value is separated by a vertical bar character |.

The file may be edited with any ASCII editor like NOTEPAD, or DOS EDIT utility.

An example file:

```
|0|0|0|
|20|20|80|
|80|13|13|
|20|80|20|
|80|20|80|
|20|80|80|
|80|20|20|
|53|53|53|
|26|26|26|
|33|33|60|
|60|26|26|
|33|60|33|
|60|33|60|
|33|60|60|
|60|60|33|
|80|80|80|
```

Each palette value can be from 0 to 100.

9.0 Limitations

. Limitations

Colors - Most terminals in use today only support 16 colors. The utility supports 256 colors. If the pictures are to be viewed by a wide audience use a maximum of 16 colors.

Resolution -The VT340 supports 800 x 480 pixels, across and down respectively. The typical PC is 640 x 480. Aspect ratios will not be exact. Some emulators will show a reduced size version that is the 640 x 480 within an 800 x 480 emulated window, while others chose to show the 640 x 480 as the entire screen. A true VT340 shows the PC picture as 640 x 480 within the 800 x 480 window.

When creating the PCX file set the number of pixels desired, draw, then convert. Also try using the /X /Y options for aspect ratios.

VT330 - The VT330 is a monochrome terminal. The terminal will adjust the color information into 4 shades of white. Test color images on VT330 terminals.

VT240 - The VT240 has less vertical pixels than the newer graphics terminals, therefore part of the image will not be on the screen.

Speed - On a main frame system the drawing speed is limited by the speed of the terminal connection. The faster the connection the faster the picture shows up.

10. Troubleshooting

. Troubleshooting

This section contains some common problems.

Switch problems

All command line switches must be in UPPER CASE.

If the switch requires a number the number must be followed by a space.

Invisible Colors

Try converting into 16 colors using PAINT or PBRUSH from ZSoft Corporation.

Try setting the palette colors manually using a .PAL file.

File Transfer VAX/VMX Buffer overflow

Transfer the file to VAX using ASCII(text) protocol not Binary.

Blank Screen

The terminal does not support graphics. Switch to a VT330 or VT340.

If using an emulator check the documentation to verify that it supports SIXEL GRAPHICS. A VT320 for example will not support SIXEL or ReGis graphics.