

Questions And Answers

What can the Chromacad programs do?

The MODEL BUILDER program constructs sculptured 3-D models of extreme size and intricacy -- 9000 -10,000 facet models are not unusual. It is sophisticated enough to construct models with complicated surface designs and lettering.

The program provides a complete free-form drawing universe. Users build models by drawing the 2-D contour-lines of models (working from the bottom up). Users can use as many contour lines as desired, and can set each contour line at any desired elevation (No "extrude" or "sweep" tool limitations.) Any fantasy model that you can imagine can be built with the MODEL BUILDER program. The 136-page tutorial manual has over 60 illustrations to make it easy. It was written for (and tested with) 14-year olds.

The SURFACE SHADER program can display up to ten models, in surface-shaded format, on the same screen at the same time. Each model can be individually orientated, sized and positioned in 3-D space. (Sky, terrain, house, garage, car etc. all combined to produce one scene.)

The SURFACE SHADER program provides a huge number of model lighting and rendering options, such as: instant color shifting, negative imaging, stereo 3-D viewing of individual models (with included 3-D glasses), mirror imaging, inside viewing of models, multiple light sources, multi-directional lighting, automatic clipping, stepped-tone imaging etc. (For a more complete description of both programs, see the "program features" sections at the end of this question and answer sheet.)

Why are the programs being marketed on an 8-bit system?

It's true that the screen resolution of most 8-bit computers is low by 3-D modeling standards. A computer screen, however, even of the highest resolution, can only be considered a "rough" or "proof" of the final output when

doing 3-D modeling. The final output is always a printed graphic. Our utility disk contains a dot-matrix printer driver which supports all of the Chromacad graphic modes (High-resolution black and white, Color and Stereo 3-D imaging.). The stereo 3-D imaging print mode produces two images side by side which can be viewed in stereo with the aid of a mirror.

Chromacad 130XE picture files contain up to eight 7680-byte images of a model scene, each plotted with a different bit pattern. When these images are printed over each other (using a well-used printer ribbon that produces a shade of grey rather than black), a very high-quality printed image is produced. The printer driver mentioned above supports this capability.

There's no reason why 8-bit owners can't enjoy 3-D modeling. It may take a little longer to get a desired result but the end result will be just as good. People are going to be surprised at what 8-bit computers can do.

What are the objectives of Palette Imaging?

The programs contain their own DOS and their own user-friendly interface. We intend to port the programs, as they are, to other computers, including other 8-bit machines that can support a 64K picture file.

In this way, our users will be able to use the programs on any desired computer without re-learning the programs. The MODEL BUILDER manual, for example, will be virtually the same for every computer the programs are installed on.

What market are you aiming for?

We will be directing our programs more toward graphic artists than engineers. For this reason, we provide abstract model renderings - features that artists can use for creative effect, such as "unnatural" color-specific lighting, stepped-tone shading, highlight enhancement, disappearing model colors etc.. (See SURFACE SHADER program features at the end of this question and answer sheet.)

What are the main features of the MODEL BUILDER program?

- Memory-efficient DOS that was designed for the special needs of model storage. Chromacad DOS, for example, can store a 10,000-facet model in less than 60K of disk storage. In addition, all data is stored on contiguous sectors. This makes it easier on the disk drive.
- Each model facet "Painted" individually with any of 127 different color numbers and 50 different shading tones.
- Each contour line stored separately on disk - models can be larger than computer ram.
- 65536 x 65536 x 65536 drawing universe.
- Integer disk storage of surface point coordinates with most model surface points serving as apexes of six triangles. (The most memory-efficient way of storing sculptured-surface models.)
- Scrolling graph window for plotting huge contour-lines on 65535 x 65535 graph.
- Computer-assisted drawing of straight lines, circles, arcs, ellipses.
- Choice of any perspective viewing angle while drawing contour lines.
- Choice of controlling plotting cursor by joystick or typed-in numerical coordinate input.
- Also builds memory-efficient 2-D "paint" models (Useful as terrain "backdrops" for 3-D models, shadow models, lettering foreground models etc.)
- Displays up to ten 2-D and 3-D models, in contour-line form, on the same screen - each model individually orientated and individually placed in space (Useful for quickly "fitting" a combination of models together to form a multi-model scene that can later be displayed by the SURFACE SHADER program.)

What are the main features of the SURFACE SHADER program?

- Colors can be reassigned while models are displayed. (Artists can shift color schemes instantly.)
- 10 to 90 degree angle-of view rendering of single or multi-model scenes. (Produces the effects of wide-angle and telephoto lenses.)
- Zero to 360 degree pitch, yaw and roll model orientations.
- Renders models in medium resolution in six surface colors, high resolution in one color or high resolution in one color in stereo 3-D (with included 3-D glasses).
- Three light sources per model. (Up to 30 lights per ten-model scene.) Lights can be used singly or in combination to produce desired effect.
- Lights can be individually set to illuminate models from any direction desired (Zero to 360 degree pitch and yaw).
- Lights individually set for any of 10 intensities.
- Automatic screen clipping on close-ups
- Highlight placement for "flash" to produce shiny model surface.
- Selection of number of shading tones (produces stepped-tone model displays).
- Choice of inside or outside view of models.
- Choice of any value ambient light (undirected diffused light).
- Choice of photographic positive or negative (reverse image) rendering.
- Choice of regular or high-contrast rendering.
- Choice of regular or mirror-image rendering.

SHADED PRINTER DRIVER

The Chromacad Utility 92 disk contains a 9-pin Epson/IBM printer driver which can be used to print fully shaded Chromacad scenes or tiles in all modes, including 3D stereo MODE 4. (In MODE 4, a mirror is required to visually fuse the two printed images while viewing.) The printer driver is simple enough to use without requiring a separate manual. A few tips on its use, however, are included here which you may find helpful.

1. When you want to print a shaded tile or scene, you will probably want to load up the extra memory of the computer with the maximum 8 screens by loading either "18", "28", "38" or "48" in the MODE/SCREENS register prior to plotting the tile or scene with the SURFACE SHADER XE program. If you do not have a color printer, load "38" or "48" in the MODE/SCREENS register, (modes 1 and 2 are color modes. Modes 3 and 4 are high resolution black and white.)

The driver requires many screens to produce a good shaded printed picture. Each screen contains the same image but each screen is plotted with a different bit pattern. The screens are printed in register (exactly on top of each other) to produce the shaded effect. The actual number of screens you use will depend on your printer ribbon. The more the ribbon has been used, the more screens can be printed in register before the print becomes too dark.

2. After the tile or scene is plotted, go out to the main menu of the SURFACE SHADER XE program and select the BOOT MODULE PROGRAM option. Using this option, boot the CHROMACAD 3D UTILITIES disk. (Be sure to hold down the OPTION key a few seconds while booting.)

(By using the BOOT MODULE PROGRAM option, the utilities program can be booted without disturbing the screens that are now stored in the extra memory of the computer.)

3. Once the utilities program is booted, select PRINT SHADED SCENE from the main menu. The cursor will position itself at the printer command line. At the cursor position, first type the number of screens (print passes) that you want to print in register and then, if you have a MODE 1 or MODE 2 scene plotted and a color printer, type the command letters for the colors desired. (Never specify more

screens than you have plotted. Don't worry about specifying a mode -- the program automatically prints in the mode that was plotted.)

For example, in MODE 1 or 2, "8B" would print 8 screens in register, in blue, of model surfaces that were painted with paint number "2". (When printing a MODE 1 or MODE 2 tile or scene, model surfaces painted "1" are printed in red, model surfaces painted "2" are printed in blue and model surfaces painted "3" are printed in yellow. Model surfaces painted "4", "5" or "6" are printed as a combinations of red, blue and yellow - see SURFACE SHADER XE manual.)

Normally, of course, in MODES 1 or 2, you would type "8PRBY" to print 8 screens of black and 8 screens of each color. In MODES 3 and 4, simply type "8P" for 8 screens of black. (If you have a new ribbon you may want to print only 4 or 6 screens in register. Well-worn ribbons that permit 8 screens to be printed in register are really the best for model printing.)

For black and white MODE 3 prints, an effective technique is to first plot a reversed (negative) image with the SURFACE SHADER XE program (see SURFACE SHADER XE manual) and then reverse the image back again at printing time.

This technique eliminates the usually undesirable black background. Use ^M"8NP" rather than "8P" in the printer command line when printing negative images.

An effective technique for creating full color prints is to first plot and print a MODE 3 black and white print (8P or 8NP) and then print over it with a MODE 2 color wash. To create the color wash, first load "100" in the AMBIENT LIGHT register and then re-plot the tile or scene again in MODE 2. Print the color wash directly over the black and white print. Use no more than 2 to 4 screens (2RBY or 4RBY) for the color wash. This technique produces a high-resolution MODE 3 print in color.

Either of the "U" or "T" commands (printer specific) can usually be used to scroll the paper back -to starting position if the paper has not been disturbed after making the last print. (Example: "U2RBY" will first scroll the paper back and then re-print the scene or tile.)- Some printers, however do not support either of the "U" or "T" commands.

CHECK OUT OUR PRINTER-DRIVER I

The pictures on this page are reproductions of model print-outs produced by our Epson-compatible dot matrix printer-driver. The model printed is the bust model, contained on ChromaCAD™ MODEL DISK #1, (supplied with the Chromacad SURFACE SHADER XE 91 program). The SURFACE SHADER XE 91 program was used to set up the viewing and lighting angles prior to making the prints.

The ChromaCAD™ Epson-compatible printer driver supports all ChromaCAD 3-D viewing modes (High-resolution black and white, color and 3-D stereo imaging). In color mode, printers equipped with color ribbons can print model scenes (or multi-model scenes) in six surface colors plus black. In 3-D stereo mode two images are printed that can be viewed in 3-D stereo with the aid of a mirror.

The printer driver supports multi-pass printing. The SURFACE SHADER XE 91 program plots up to eight identical pictures of model scenes, each with a different bit pattern. On viewing, the pictures are "flipped" at 1/60 second each to produce the shading effect. On printing, the pictures are printed over each other, in multi-pass fashion, to produce a much deeper range of grey-level shading than could be produced with a single pass.

The printer driver will be one of the programs installed on our utility disk, scheduled for release October 30, 1991. This disk will permit users to load and store ChromaCAD picture files in Atari DOS format and to view and print picture files immediately on loading.

The utility disk will be available from our dealers and from public-domain distributors for a nominal fee or directly from us for six dollars.



3-D MODELER FOR 8-BIT ATARI!

All of the pictures appearing on this page (except the top right) are unretouched TV-screen photos of 3-D models rendered by a new commercial 3-D shaded-modeler for Atari 8-bit computers.

Two new programs!



Pitcher, rendered by MODEL BUILDER (TV Screen Photo) ...

ChromaCAD™ 3-D MODEL BUILDER 91 program

With the ChromaCAD™ MODEL BUILDER program, you can build any 3-D model you can dream of. You merely start at the bottom and draw the contour lines of the model as you work your way up. Add surface colors to the model as you draw the lines. You decide how many contour lines to use for each model (up to-158) and you decide the elevation of each line. Huge scrolling 32767 x 32767 graph allows you to construct contour lines as *detailed as you want*. Supports computer-assisted drawing of lines, circles, arcs, ellipses. Displays models in contour-line form.

With This program, you will be able to construct unbelievably sophisticated 3-D models. The MODEL BUILDER 91 program reflects a new breed of 3-D modelers - completely free-form, sculptured-surface — no "extrude" or "sweep" limitations. You will

be able to construct models of human heads so accurately-thai, when you display them with the ChromaCAD™ SURFACE SHADER XE 91 program (described below), *you will be able to recognize the subject from the model!* (See the photo of an actual bust and the 3-D renderings.)

ChromaCAD™ SURFACE SHADER XE 91 program

The ChromaCAD™ SURFACE SHADER XE 91 program can display any model constructed by the MODEL BUILDER program in surface-shaded format from any point of view, using up to three lights. Lights can be individually varied in intensity and individually set to strike the model from any direction. Models can be displayed in a variety of modes, including high resolution, color and 3-D stereo. Colors can be reassigned instantly without repotting the model. Up to 61K of computer RAM can be used for image display memory. (The screen photos appearing on this page are of models rendered in high-resolution 61K format.)

Up to ten models can be individually oriented in 3-D space and displayed together to produce one compound multi-model scene. (Terrain model, Airport model, airplanes, cars etc. combined to produce one scene.) The program also supports negative, mirror, and stepped-tone rendering, automatic clipping, highlighting, ambient lighting, and inside viewing of models. We know that all of this is hard to believe so, with purchase of the SURFACE SHADER XE, we *include the bust model (shown to the right) free of charge*. You, yourself, can view the model from any angle, in any mode, using any lighting or rendering option you want.

View any model in 3-D Stereo! (With included 3D stereo glasses.) Watch models virtually jump off the screen.

ChromaCAD™ MODEL BUILDER 91 program with 136 page illustrated, indexed manual
Order # 21 (requires 48K Atari)

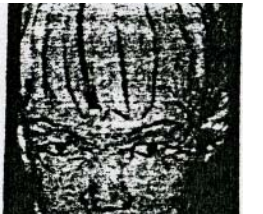
ChromaCAD™ SURFACE SHADER XE 91 program with 69 page manual, 2 pair Stereo 3-D Glasses and sample MODEL DISK #1 (contains 10 models)
Order #35 (Requires 130XE)



Photo of actual bust of human head



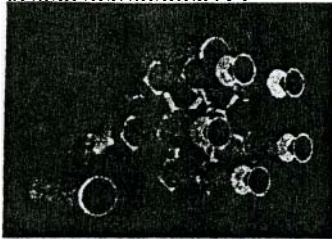
3-D model rendering (TV Screen Photo)



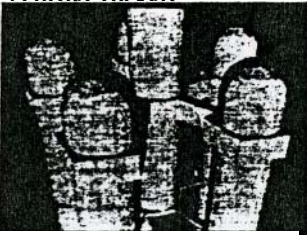
3-D Model Rendering (TV Screen Photo)



Same Pitcher, rendered by SURFACE SHADER (TV



Space ship, 5 cluster rockets



Close up of cluster rockets from the top. (TV Screen Photo)



3-D Model Rendering (TV Screen Photo)