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Contents

1	002e3a58-0				
	1.1	Contents	1		
	1.2	Introduction	3		
	1.3	Instructions	4		
	1.4	The Input Menus	4		
	1.5	The Input Windows	Q		

002e3a58-0 1 / 16

Chapter 1

002e3a58-0

1.1 Contents

Printer24

Version 1.0

by Richard Aretz

- 1. Introduction
- 1.1 Hardware Requirement
- 1.2 Installing on Hard Disk
- 2. Using the Programm
- 2.1 General Instructions for Use
- 3. The Input Menus
- 3.1 The 'Projekt' Menu

New

Load as

Save

Save as

Preferences

Output Window

Leave out Bitmaps

Page Size%

002e3a58-0 2 / 16

Full Page

Normal

Format

Print

Quit

3.2 The 'Object' Menu

Create

Bring to Front

Send to Back

Rotate

Flip Horizontal

Flip Vertical

Center Horizontal

Center Vertical

Delete

Sort

Insert Picture

Define Section

Text Attributes

3.3 The 'Catalog' Menu

Scan Directory

Import Picture

Distribute Object

Delete Mode

Default Font

Get from PicKat

- 4. The Input Windows
- 4.1 General Information
- 4.2 Select Screen Mode

002e3a58-0 3 / 16

- 4.3 Output Preferences
- 4.4 Screen Output Preferences
- 4.5 Output Window Preferences
- 4.6 Output Page Size
- 4.7 Select Print Parameters
- 4.8 Enter or Modify Text
- 4.9 Color Font Palette
- 4.10 Distribute Object
- 4.11 Scan Directory for Files

1.2 Introduction

1. Introduction

Printer 24 is a sophisticated program to print 24-bit pictures. By using powerful dithering mechanisms, it supports WYSIWYG on all Amigas running OS 2.0 and above. All Workbench printer drivers are supported, eliminating the need for special printer software (such as TurboPrint). Apart from the standard Amiga graphics formats (IFF ILBM and IFF DEPP ILBM) the program can load several picture formats from the PC (GIF, PCX, BMP, TIFF, etc.) if version 3.0 or above of the Amiga operating system is used. These formats are supported via the appropriate datatypes. To overcome the limited quality of the normal Amiga printer driver system, Printer 24 provides a versatile colour correction system, resulting in perfect colour output on all supported printer models.

1.1 Hardware Requirements

Printer 24 will run on any Amiga equipped with 2 megabytes of RAM and Amiga OS 2.04 or higher. Although a hard disk is not required to run the program, it is strongly recommended for speed reasons. To use the PC graphics formats, OS 3.0 or higher is required.

1.2. Installing on a Hard Disk

Insert the program disk in a disk drive. After the 'Printer 24'- disk icon has appeared, open its main window by double clicking on it with the left mouse button. Now open the desired directory on your hard disk, and drag the 'Printer 24'-drawer into the hard disk window. This will cause the program to be copied onto the hard disk. Now start the tool 'Install Datatypes' by double-clicking on its icon to copy the DataTypes for the PC-graphics formats onto the hard drive.

002e3a58-0 4 / 16

1.3 Instructions

2. How to use Printer 24

2.1. General Instructions for Use

After starting the program by double-clicking on its icon, the main window appears. Printer 24 is an object-oriented program and currently supports two types of objects:

Every object is surrounded by a box frame and can therefore be freely positioned on the page. The 8 handles allow for easy changing of the box size. Before creating an object, it is required to generate an empty box by choosing the menu option "Objects/New Object". Please note: Vector objects alternatively may also be placed on the page directly.

The white space within the window marks the printable area, the dithered space shows the non-printable border.

There are 2 tools which allow for easy positioning of elements:

- 1) The Grid: This is an evenly spaced grid which can be toggled on/off by chosing the "Project/Output Window/Grid" menu option.
- 2) Subsidiary lines: These can be freely positioned on the page. A new line can be created by placing the mouse pointer over the window border area and pressing the left mouse button. Holding the mouse button down, the line can be positionied on the page. It is possible to create both horizontal and vertical lines, as required.

1.4 The Input Menus

3. The Input Menus

3.1. The 'Project' Menu

New

Deletes all objects on the current page.

Load as ...

Loads a saved page. The ASL file requester is used for all load and save operations.

Save

Saves the current page to disk using the file name displayed in the title bar.

002e3a58-0 5 / 16

Save as ...

Opens a file requester to save the current page under a different name.

Preferences/Display

Opens a requester to select the desired Screen Mode (see: 'The Screen Mode requester'). This makes it possible to use any third-party graphics adapter supporting Amiga-compatible screen modes.

"-"/Printer

Opens a requester to select a variety of print parameters. See 'The Print Requester' for more information.

"-"/Screen

This requester enables the user to select from a variety of dithering patterns for screen output. See 'The Screen Display Requester' for more information.

"-"/Output Window

This requester contains several functions related to PSP's main window.

"-"/Toolbar

The toolbar contains the most frequently used functions and may be toggled On/Off with the 'Project/Output Window/Toolbar' option. Note, however, that it requires a vertical resolution of at least 400 pixels for a correct display, as supported by screen modes like DoublePAL, DoubleNTSC, MultiScan Productivity or similar modes supported by third-party graphics cards.

"-"/Help Files

The 'DOCS' drawer contains the two on-line help files: One in AmigaGuide-format (displayable with either 'AmigaGuide' or 'MultiView'), and the other one in plain ASCII-format, which can be loaded into any program supporting this format (e.g. 'More' or 'WatchIt'.

This option allows you to select the help system of your choice. Simply enter the name of the tool to be used into the gadget, and insert the variable \F at the position you want the file name to be appended.

The 'File Type' gadget lets you toggle between the AmigaGuide- and the ReadMe-file.

Output Window

This requester contains some options related to the appearance of the main window.

"-"/Ruler

Toggles the ruler on/off.

"-"/Mouse Coord.

Toggles the display of the mouse coordinates on/off.

"-"/Mouse Click

If this option is active, objects may be 'stamped down' by clicking the left mouse button instead of dragging them with the button

002e3a58-0 6 / 16

pressed.

"-"/Grid

Toggles the grid display On/Off.

"-"/Save BMP

With the default settings active, only the file names of the pictures on the current page are saved (i.e. not the page itself), saving valuable disk space. On the other hand, PSP must be able to access all pictures when the page is loaded, which may cause problems if the graphics are located on different volumes (such as floppy disks). To avoid these problems, you may activate this option to save the bitmaps within the page file.

"-"/Show Memory

Toggles the memory display in the title bar On/Off.

"-"/Save Settings

All settings related to the output window are saved to a preferences file which is automatically loaded at startup time.

Leave out Bitmaps

Because certain types of pictures (especially those with millions of colours) may require more RAM than available in your system, PSP allows you to temporarily store them on the hard disk, loading them automatically when it comes to printing. This function has three different options:

- a) Always leave out bitmaps
- b) Never leave out bitmaps
- c) Leave out bitmaps by size. This option allows you to enter a certain limit. Bitmaps with a size exceeding this limit will automatically left out.

Page Size %

Determines the maginification for the display.

Full Page

Magnification is set to a value which allows exactly one full page to be displayed.

Normal

Switches to a magnification of 100 %.

Format

Opens the 'Enter Label Size'-requester, where you can define the size of the labels used (see also: The 'Enter Label Size'-Requester).

Print

See: The 'Print'-Requester.

Ouit

Shuts down Printer 24.

The other 5 menu options contain the names of the 5 most current page. Select one of these to load the respective file without opening

002e3a58-0 7 / 16

a file requester first.

3.2 The 'Object'-Menu

This menu contains all functions which are related to either single objects or object groups.

Create (Single/Multiple)

Use this function to create one or more 'empty' objects.

After selecting this menu option, the mouse pointer turns into a crosshair. To create an object box, move the cursor to the position where you want the rectangle to start. Then click and hold down the left mouse button and drag the crosshair away from the starting point. Release the mouse button when your rectangle is the size and shape you require. You may now place either a picture or a text in the box. If you selected the 'multiple'-option, you can now draw as many boxes as you require, until you press the right mouse button.

Bring to front

The current object is placed in front of all other objects. Please note that the 'current object' is always the one currently activated with the mouse. All of the following functions are always related to this object.

Send to Back

Places the object behind all other objects.

Rotate

Rotates the object 90\textdegree{} clockwise.

Flip Horizontal

Chose this option to flip the object in the horizontal direction.

Flip Vertical

Chose this option to flip the object in the vertical direction.

Center Horizontal

Chose this option to center the object along the horizontal axis.

Center Vertical

Centers the object along the vertical axis.

Delete

Removes the object from the page. The user may select one of two available options: 'Delete Contents' will only remove the box' contents, whereas 'Delete All' also deletes the box frame.

Sort

In some cases smaller objects may be 'blocked' by larger ones, making it impossible for the user to activate them with the mouse. This function will sort all objects by size from back (larger objects) to front (small objects).

002e3a58-0 8 / 16

Insert Picture

Opens a file requester, where the user can select a picture to load into the currently active box frame. If it already contains a picture, it will be replaced by the new one.

Define Section

After selecting this function, the mouse pointer turns into a crosshair. To define the desired section, first mark its upper left corner by pressing the left mouse button. Then, hold down the left mouse button and drag the crosshair away from the starting point. Release the button when your rectangle surrounds the desired shape.

Text Palette

This function can only be activated in connection with ColorTextFonts. It opens a window which contains a number of gadgets to modify the colour palette of the current ColorFont.

Text Attributes

Opens a requester with a variety of functions related to the input and design of text. Simply enter the required text string into the text gadget at the top of the window, and select the desired options. For more information, see 'Insert Text'-Requester'.

2.4 The Catalog Menu

This menu contains a number of functions which allow the user to work on various objects at the same time.

Scan Directory

Will search the selected directory for picture files. Please also refer to the section with information about the 'Chose a file' requester.

Import Picture

Opens an ASL file requester which allows you to select a picture. By holding the SHIFT-key pressed, several pictures can be selected without closing the requester. It has to be ensured, however, that enough empty objects have already been created on the page for the pictures to import.

Distribute Object

The currently selected empty object can be distributed according to a certain pattern previously defined. Please refer to the section on the 'Distribution Matrix Requester'.

Delete Mode

Switches the program to Delete Mode. Depending on the option selected (either 'Delete Contents' or 'Delete All'), either the contents of the selected objects or the objects themselves are deleted. You may leave this mode at any time by pressing the right mouse button.

Default Font

This function is only related to text objects. The font selected here is used for all newly created text objects.

002e3a58-0 9 / 16

Get from PicKat

This is a special interface to the 'PicKat' program. Several pictures which have been selected and copied in PicKat, can be pasted directly onto the current page, provided there is a sufficient number of emtpy objects. Note: The use of this function is limited to pictures, meaning that it will not work with other object types. A corresponding PicKat-file in the RAM-Disk is also required to make this function work correctly.

1.5 The Input Windows

4. The Input Windows

4.1. General Information

Printer 24 has a number of functions which will automatically open a requester, i.e. a window to enter some information. These requesters contain many of the gadgets which are well-known from other Amiga software packages, like scroll gadgets, buttons, text gadgets, etc.

The size of the input windows is automatically determined depending on the selected screen size. How to change the window size manually, is explained in a separate chapter.

4.2. Select Screen Mode

Purpose: Screen Mode selection

Menu: "Project/Preferences/Display".

Use this requester to select the screen mode you want to use for your work with Printer 24. The available modes strongly depend on your hardware. 'The DoubleScan'-Modes are especially recommended, but unfortunately these require the AA-graphics chip set currently only available in Amiga 1200s and 4000s. Please note that these modes also require a special 'MultiSync'-type monitor.

Third-party graphics cards which support Amiga-compatible screen structures (such as the Picasso or the CyberVision 64) are also supported.

Since Printer 24 uses special dithering techniques to display pictures, a screen mode supporting at least 16 colours is required to run the program. Although a 256-colour display will generate the best results, 128 colours will normally be preferred as the best compromise between display quality and speed.

Note that the Amiga's 'HAM' mode might be superiour to a 16 colour display in many cases. Furthermore, it may also be much quicker than the normal 128 colour screen, because it only requires 6 bit (=64

002e3a58-0 10/16

colours). Unfortunately, this speed increase leads to a loss of display clarity, as only every third pixel can be assigned the correct colour in HAM mode.

The 'Y-Aspect' function opens a test window which helps you to maintain the correct aspect on-screen, avoiding the distorted display of circles \leftrightarrow etc.

4.3. Output Preferences

Menu:

Selection of printer preferences Purpose: "Project/Preferences/Printer"

This requester allows you to select a number of values which influence the printout of your labels (NOT the picture on your monitor). First of all, you have to select a pre-programmed dithering pattern.

Dithering: An Explanation

Since most of the colour printers available today only have three built-in base colours (cyan, magenta and yellow) plus black, the other colours inbetween have to be generated by distributing the dots of ink in 'patterns' of different densities. This trick is also called $^{\prime}$ dithering $^{\prime}$. It creates the impression of mixed colours by combining dots made up of base colours in certain patterns. Since the human eye cannot separate the dots if the density value exceeds about 180 dots per inch (dpi), we get the impression of 'mixed' colours. The number of colours, on principal, is almost unlimited, i.e. it is possible to produce more than 16.8 million colours at a colour depth of 24 bit. There are several methods to create those colours; the simplest is the so-called 'matrix'-method, which creates the desired colour through an ordered dithering pattern. It is possible to use several patterns, which, depending on the print resolution, generate certain printout structures. Printer 24 supports the following patterns:

- a) Bayer4 and Bayer16. These two high-contrast matrixes generate a very fine pattern, making them a good choice for low-resolution printouts with up to 180 dots per inch (dpi) and for on-screen display. They require great printing precision usually only to be achieved with laser printers. This type of printing is not suitable for dot-matrix or ink jet printers.
- b) For higher resolutions the so-called 'Halftone'-method, which is based on a special pattern, is recommended. This will produce best results on dot-matrix- and ink jet printers, Use 'Halbton6' for resolutions up to 180 dpi and 'Halbton8' for higher resolutions.
- c) Another dithering mechanism supported by Printer 24 is named after its inventors, Floyd and Steinberg. It works with error distribution and spreads the inevitable colour variations over 4 surrounding dots, leading to a substantial improvement in the display (especially of colour spreads).

002e3a58-0 11 / 16

The 'Test' gadget allows you to preview the results of your selection directly on screen. You can enter the name of the picture to view in the accompanying text gadget.

The Gamma Function

The Gamma slider allows you to adjust the brightness of the display so that it matches that on the printout. Normally, there is no relationship between the monitor— and the printout brightness values, being represented as a straight line in this requester (GF=1). As the monitor usually cannot display the brightness values in a linear way (meaning that colours look much brighter than on paper), you can use this slider to correct the on-screen appearance. Note: The higher the Gamma factor (GF), the brighter your printout will appear. This, however, will not result in a loss of contrast, as both the very dark and the very light colours are not as strongly modified as the intermediate ones. Disabling the +/- switch will reverse this effect, resulting in a darker printout. As a rule of thumb, remember the following: Higher resolutions require higher Gamma factors.

The 'Brightness' slider works exactly like the one on your TV-set. Since this function will modify both the lightest and the darkest colours, the contrast will be reduced.

Colour Correction

The Colour Correction sliders allow you to compensate for impurities which are very often produced by ink jet or dot-matrix printers. The 'Blue Correction' slider determines the amount of magenta in shades of blue; printers produce blue as a mixture of magenta and cyan. Unfortunately, on dot-matrix printers, the cyan-section of the ribbon is very often mixed with magenta, resulting in a rather violet-ish shade in the printout. As you drag the slider to the left, the magenta portion is more and more reduced. 100% reduction means that no magenta is printed at all.

The 'Yello - Red' slider is responsible for the correction of orange-coloured shades. Since some printers tend to print too much yellow or red \hookleftarrow , we have implemented this function as a means to correct this.

The third slider is used to control the colour saturation. The higher the percent value here, the more colour is used for printing. A higher value is especially recommended when using dot-matrix printers with an older ribbon or if you have an ink jet printer which produces rather 'flat' looking colours with the normal saturation values. You should then increase the saturation values in steps of 10 until you receive a satisfying printout.

Gamma correction is required when your printout does not output the three base colours correctly. The following rule applies:

```
Too much red -> 'Yellow' slider to the left
Too much blue -> 'Magenta' slider to the left
Too much green -> 'Cyan' slider to the left
```

...and vice versa. If one of the base colours is not printed

002e3a58-0 12 / 16

distinctly enough, move the corresponding slider to the right.

The 'Load As...' and 'Save As...' gadgets let you load and save different preferences files to achieve best results on a variety of printers and in many different situations (colour, b/w, greyscale, etc.).

4.4. Screen Output Preferences

Purpose: Selection of Screen Preferences
Menu: "Project/Preferences/Screen".

This requester contains some preferences related to the screen display. You can chose among several dithering patterns.

The following section contains the pros and cons of the available options.

Fixed Colours

Pros: low processing power requirements

Cons: high memory requirements, slow screen update.

Purpose: Uses a fixed palette to convert pictures for screen display.

HAM

Pros: low processing power requirements, fast screen update, low

memory requirements.

Cons : pictures lack clarity, HAM-screen required.

Purpose: Requires Amiga with AA-chipset, because older chipsets do

not support HAM in all resolutions.

Matrix 2Bit

Pros: low processing power requirements, fast screen update, low

memory requirements.

Cons: black/white only.

Matrix 4Bit

Pros: low processing power requirements, fast screen update, low

memory requirements.

Cons: low quality colour display

Purpose: This is mode of choice for Amigas which can only open screens with up to 16 colours (A500, A2000, A3000).

Matrix 6 Bit

Pros: higher quality colour display.

Cons: higher memory requirements, slower screen updates

Purpose: This mode is the best compromise between display quality

and speed. 128-colour screen required.

Matrix 8 Bit

Pros: best colour display.

Cons : high memory requirements, slow screen update.

Purpose: Use this mode for the best colour display. Requires a screen with 256 colours and an Amiga with at least an

68030-processor.

002e3a58-0 13 / 16

Floyd 2 Bit

Pros : see Matrix 2Bit Cons: see Matrix 4Bit

Purpose: By using error distribution, the FS-dithering usually produces a better colour display compared to the corresponding 'Matrix' method.

Floyd 4 Bit

Pros : see Matrix 4 Bit Cons: see Matrix 4 Bit

Floyd 6 Bit

Pros : see Matrix 6 Bit Cons: see Matrix 6 Bit

Floyd 8 Bit

Pros : see Matrix 8 Bit Cons: see Matrix 8 Bit

Grey Scale n

Pros: fast screen update, low memory requirements.

Cons : no colour display.

Purpose: In this mode all colours are converted into grey scales.

For on-screen display, only the two 'Bayer'-matrixes are suitable for matrix dithering.

The section in the lower part of the window contains three buttons to determine the buffer type for the bitmap graphics:

No Buffer

The bitmaps are recalculated every time the screen is updated. Although this requires additional time, precious CHIP-Ram is saved.

Buffer HD

Bitmaps are temporarily stored on your hard disk and can be loaded on demand, resulting in faster screen updates.

Buffer RAM

Bitmaps are temporarily stored in memory, allowing for fast access. This is the choice for users with lots of memory, but no hard disk.

Click on 'Test' to check the result of your selections, or click on the gadget to the left to open a file requester where you can select a picture of your choice.

4.5. Output Window Preferences

Purpose: Selection of preferences for the output window.

Menu: "Project/Preferences/Output Window".

Use the preferences in this window to modify the appearance of the main (output) window.

002e3a58-0 14 / 16

Colours:

Background - The colour of the printable area (the workspace).

Border - The border outside the printable area. You may select an individual pattern and colours of your choice for this area.

You can also select separate colours for the ruler, the grid and the subsidiary lines. Apart from that, a line pattern and a dimension for the grid can be specified.

For an explanation of the flags in this window, please refer to the description of the 'Project/Output Window' menu.

In the 'Window'-section you can select the position of the main window after startup:

Full Size: The window is opened with its maximum size.

Centered: The window is opened in the middle of the screen.

Coordinates: The window is opened according to the coordinates specified.

-

On quitting the program, position and size of the main window are saved. The next time the program is started, all settings will automatically be reloaded.

Note the two slider gadgets in the lower part of the window: These allow you to adjust the size of the handles (sizing gadgets) which are required to modify the size of frames for texts and pictures. All values here are entered in pixels.

4.6. Output Page Size

Purpose: Select a size for the output page

Menu: "Project/Output Page Size".

This requester allows you to freely chose the size of the output page. You can either select one of the predefined DIN-formats, or define a size of your choice, completely independend from your printer's capabilities. If a page is larger than your printer supports, it is printed as several tiles which can be assembled to a large poster after printout. Note: Most printers cannot print a full DIN A4 page and therefore leave some unprintable borders of about 5-8 mm in size. The 'Printing Border' slider lets you enter the required values. To print in 'Landscape' format, simply click on the 'Swap' gadget to swap the 'Width' and 'Height' values.

4.7. Select Print Parameters

Purpose: Selection of print parameters.

Menu: "Project/Print".

002e3a58-0 15 / 16

This requester is automatically opened as soon as the user activates the printing function. One of the most important elements is the selection window for the print density values which are loaded from a special printer-specific data file with the name 'DensTab' in the 'win'-directory. If a 'can't read printer density' message appears on selecting the print function, please make sure to include your printer driver in the 'DensTab' file. To do this, simply double-click on the file 'win/DensTab' with the mouse, to load it into the editor c:ed, where you can edit it appropriately. To achieve a perfect printout with printer tools like e.g. TurboPrint, please follow these steps:

- 1) Select the 'Generic' printer driver in the Workbench Printer Preferences.
- 2) In the 'DensTab'-file, enter the print density values your printer tool supports for your printer under 'Generic'.
- 3) Adjust your printer tool so that it will use the Workbench Preferences.

The 'Tractor Width' gadget allows you to define the maximum print width of your printer which is usually either 210 mm (DIN A4) or 297 mm (DIN A3).

With the radio buttons on the left of the 'Tractor Width' function you may chose between using the current Workbench printer driver or copying the data directly to the port (currently only supported for Epson-compatible 24pin dot-matrix printers), which may in some cases result in a faster output.

4.8. Enter or Modify Text

Purpose: Edit text object

Menu: "Object/Text Attributes".

This is the requester where you edit your text objects. You may enter up to 100 characters in the text gadget in the upper part of the window.

Under the text gadget the colour sliders (RGB and HSV model) occupy the main part of the window. Depending on the selection in the 'Set Colour'-section, either the text colour or the background colour can be modified.

Clicking on 'Font' will bring up the ASL font requester where you can select a font for your text. Please note: Apart from the normal Amiga fonts, Printer 24 also supports 'ColorFonts' which can be obtained from various 'Public Domain' collections. Especially recommended is the 'Kara Collection' by Kara Blohm/Cloanto, which contain a number of remarkable ColorFonts and AnimFonts. Agfa's 'Compugraphic' font format ist also supported. The width of the 'Space'-character can be defined with the SPC-slider. Different font styles are available which can be selected by clicking on the appropriate radio buttons. Note that, apart from the usual styles underlined, bold, italic), a special 'outline mode' is also available. Alle styles may be used in combination to create a variety of different appearances.

002e3a58-0 16 / 16

4.9 ColorFont Palette

Purpose: Selection of a suitable ColorFont Palette

Menu: "Extras/Select Object Colour".

Beginning with Version 2.0 of the Amiga's operating system, so-called 'ColorFonts' are also supported. ColorFonts are multi-coloured fonts, which can be obtained from various Public Domain or commercial sources. Especially recommended is the 'The Kara Collection' by Kara Blohm/Cloanto Italia, containing lots of ColorFonts and AnimFonts of the highest quality possible.

This requester allows the user to freely select a colour palette for the current text object. Please note, however, that the adjustments made here have no effect on other text objects.

4.10. Distribute Object

Purpose: Distributes empty objects on the page.

Menu: "Catalog/Distribute Object".

Distribute Object

The currently selected empty object can be distributed depending on a certain pattern previously defined. This is especially useful to create a quick overview. Simply click on the corresponding fields in the distribution matrix to start the distribution process according to your preferences.

4.11. Scan Directory for Files

Purpose: Scans a directory for picture files

Menu: "Catalog/Scan Directory".

After selecting the 'Catalog/Scan Directory' menu option, this requester automatically opens, displaying the pictures found in the currently opened directory. By clicking onto a picture file with the mouse, it is automatically copied into the list of pictures to place on the current page. You may delete an entry at any time by double-clicking on it with the mouse. Please make sure, however, that the current page contains enough empty objects to store the pictures added to the list. If this is not the case, an error message will be displayed in the title bar.