Documentation for SIRDS_GEN V2.6

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COLLABORATORS

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	Documentation for SIRDS_GEN V2.6		
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REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

Contents

Chapter 1

Documentation for SIRDS_GEN V2.6

1.1   Documentation for SIRDS_GEN V2.6

```
SIRDS
_GEN V2.6

 Copyright 1994 by Michael Mutschler
```

                              History

1.2 Disclaimer

                              DISCLAIMER

This program was first made, for testing the code for generating
                  SIRDS
                  . After
a while, so much variables and other things came in, that I made the
Preferences-Window, and made everything ready to release it.

This Program is distributed without any warrenty.

1.3 Distribution

                      Distribution

This Program is Picture-Ware. You may use the program, as long as you send me
a good picture (preferrable the source picture, for generating others...).
Snailmail, or email (amiga2@info2.rus.uni-stuttgart.de uuencoded) or upload it
to ftp.rus.uni-stuttgart.de in pub/systems/amiga/incoming. Copying & Spreading
this program is allowed, as long as no money is taken for it, and as long the
following files stay together:

    cave.pic
    cave.pic.sirds
    cave.pic.sis
    SIRDS_GEN
    SIRDS_GEN.info
    SIRDS_GEN000
    SIRDS_GEN000.info
    SIRDS_GEN.guide
    SIRDS_GEN.guide.info
  testpattern.iff

Any Picture generated with SIRDS_GEN may not be used in any commercial manner
without the permission of the author.

The newest Versions will be available
 - via anonymous FTP: all aminet sites in the directory gfx/3d
   Take a look at ftp.rus.uni-stuttgart.de in pub/systems/amiga/gfx/sirds
   I am collecting some pics there too, so send them!!!

 - Mailbox: The Abyss: +49-711-617291 & +49-711-6159399
            Type "u1;16" at the main prompt to get in the right subboard.

1.4 Purpose

                                          Purpose

This program calculates of given picture a
                  SIRDS
                   or
                  SIS
                  .

1.5 Features

                                          Features

- free choice of screen-mode
- scaling of the picture
- should run on Gfx-cards too (not much tested, but Picasso II is working)
- automatic correction of the eyewidth to the displaymode
- uses datatypes for reading the picture
  - you can load everything you got a datatype for :-)
- 32-bit color-funktions are used.
- uses a symmetric algorithm
- generation of
                  SIS
                   possible
- flimmering
- various Settings possible
- 3 different pattern-modes
    ...

1.6 Requirements

                        Requirements
      Requires only Kickstart 3.0+ & Workbench V3.0

Note: I will not make a Kick2.0 runnable version, due to massive usage of 3.0
functions (e.g. datatypes, 32-Bit colors, doublebuffering, ...)

An accelerator with FPU is nice, but not recommended

1.7 Usage

                How to use the program:

Choose the right version: If you own a computer with at least a 68020 AND a
68881 then you can use the normal version. Otherwise you have to use the
68000-version.

After starting you are asked via an ASL-Request for a file to load. Now the

Picture will be loaded into a Screen (the PIC-Screen). Another Screen (the
SIRDS-Screen) will be opened, and the
                        SIRDS
                         will be calculated.

Due to the fact, that a shared Userport is used for both screens (if the
Pic-Screen is open), you have the same menues, and keyboard funtions.

1.8 Menu

                                    Menu Functions
Menu

"Load Pic"
      Loading of a new picture

"Save Pic"
     "ILBM"
       saving of the current screen as ILBM
     "GIF"
       saving of the current screen as GIF

"Quit"
      exiting the program

"ReCalc"
      Perform a new calculation

"Switch Screen"
      switch to the other screen

"Preferences"
      Brings up the
                    preferences window
                    . All funtions there correspond to the
      ToolTypes.

1.9 Keyboard

                                         Keyboard

                    PIC/SIRDS-Screen

                    Prefs-Window

1.10 PIC/SIRDS-Screen Keys

```
                                     PIC/SIRDS-Screen Keys



    l    :   Loading of a new picture


    s    :   saving of the current screen as ILBM
    g    :   saving of the current screen as GIF
    q    :   exiting the program
    ESC  :   exiting the program


    r    :   Perform a new calculation
    t    :   switch to the other screen
    p    :   brings up the
               preferences window
                 . All funtions there correspond to the
             ToolTypes.


    f    :   start/stop
               flimmering
                 (you have to enable it first)
```

1.11 Preferences-Keys

```
                    Preferences-Keys


The Keys usable in the Prefs-Window are all the underscored ones, plus a few
more:

    q    :   CANCEL
    ESC  :   CANCEL
    h    :   hidden
    e    :   Auto Eye-Width
    E    :   activate the Eye-Width Gadget when possible
    u    :   USE
    U    :   Save
    RET  :   USE
    s    :   Get Source Screenmode
    d    :   Get Destination Screenmode
    b    :   beep
    a    :   Auto Source Screenmode
    y    :   cycle EyePos
    c    :   switch Colors
    m    :   switch camg-mask
    i    :   switch Invers
    f    :   flimmer enable
    w    :   activates the width-gadget
    p    :   switch pattern-mode
```

1.12 Prefs-Window

                              Prefs-Window

All the settings here reflect the
                  options
                   via Toolstypes or CLI. See the
descriptions there for their meaning.

A few things about the Prefs-Window. When klicking on the gadgets right next
to the Screen-mode text-Gadgets, you get a screen-mode requester.
The Gadget on the left of the Source-Screen-Mode is for the (not) visibility
of the Picture-Screen.

When clicking on the Gadget labeled "Preview" next to the Pattern-dimension
area, a window will open, and you get to see the pattern. The viewing is done
(how could it be else?) via datatype. This way, it can be (and is) done
asynchronously. So if you load e.g. a GIF or even a JPEG, it can take a while
before it is visible. You can do everything else what you want.

1.13   options

                 Here are the Options for configuring the Program.
- you can use them as ToolTypes (e.g. HIDDEN=TRUE)
- use them as CLI-Argument
  (e.g. SIRDS_GEN "DST_SCREEN=PAL:HighRes Interlace" EYEPOS=BOTTOM)
- or click on the corresponding Gadget in the Prefs window

              SRC_SCREEN

              DST_SCREEN

              DST_WIDTH

              DST_HEIGHT

              EYEPOS

              EYEWIDTH

              HIDDEN

              PIC_DEPTH

              BEEP

              CAMG_MASK

              INVERSE

              COLORS

              FLIMMER

```
            FILE
(Startup only)

            PATTERN

            PAT_MODE
(Startup only)

            SHOW_SRC

            WBPREFS
(Startup only)

            PREFS_FIRST
(Startup only)

            SEED
(Startup only)

            DARKNESS
(Startup only)

            SAVEFILE
(Startup only)
```

1.14 DARKNESS

```
            DARKNESS
```

Set the percentage of dark pixels, when drawing a SIRDS. 0 means all white
100 means all dark. Note: when using 50, the program is slightly faster.
DEFAULT: 50

1.15 SEED

```
            SEED
```

Set the initial seed for a SIRDS. If you pass 0, then the timer will be
used for the seed -> every time another SIRDS.
DEFAULT: 0

1.16 SAVEFILE

```
            SAVEFILE
```

When using this option, you have to pass a filename, which the SI(RD)S will
be saved to. You can only save IFF-files this way. The picture is saved
immediately after drawing, and the program then terminates. Useful for
making a bunch of pictures, e.g. for an animation.
DEFAULT: <none>

1.17 SRC_SCREEN

                         SRC_SCREEN

  Screenmode for the Pic-Screen. If no valid Screenmode is found,
  BestModeID() is used for getting the right mode.
  DEFAULT: PAL:LowRes

1.18 DST_SCREEN

                         DST_SCREEN

  Screenmode for the SIRDS-Screen.
  DEFAULT: NTSC:HighRes Interlace

1.19 DST_WIDTH

                         DST_WIDTH

  Width of the SIRDS-Screen. If zero, the STANDARD Overscan width of the
  screenmode will be used. Try bigger value than StdOscan. The Autoscrolling
  looks really nice.
  DEFAULT: 0

1.20 DST_HEIGHT

                         DST_HEIGHT

  Height of the SIRDS-Screen. If zero, the STANDARD Overscan height of the
  screenmode will be used.
  DEFAULT: 0

1.21 EYEPOS

                         EYEPOS

  Position of the Eyes:
  "TOP"   = At the Top (default)
  "MID"   = in the Mid of the Screen (if you like it...)
  "BOTTOM" = at the bottom
  "NONE"   = No Eyes (for those you dont like it at all)

1.22 EYEWIDTH

```
                                EYEWIDTH
```

The space between the eyes. If you specify "0", the space will be adjusted
to the screenmode: EYEWIDTH = OSCAN_STANDARD / 10.
Actually EYEWIDTH is the number of pixels per inch. You can use this option
if you want to calculate a
              SIRDS
               for another Media, e.g. for printing.
DEFAULT: 0

1.23 HIDDEN

```
                   HIDDEN
```

If set, an algorithm for removing hidden layers is used.
DEFAULT: OFF

1.24 PIC_DEPTH

```
                                 PIC_DEPTH
```

The virtual depth of the
              SIRDS
               . It is calculation is the following:
visible_depth = 20 / PIC_DEPTH * max_visible_depth. Due to this formula
PIC_DEPTH has to be >=20.
DEFAULT: 55

1.25 BEEP

```
                   BEEP
```

If TRUE, a DisplayBeep(0) is generated after each calculation, to indicate
a picture is finished. Some people find this nerving, right Jens?
DEFAULT: TRUE

1.26 CAMG_MASK

```
                     CAMG_MASK
```

When saving as ILBM, some (in fact one) want to mask the screenmode in the
CAMG-chunk to apply a default-monitor. If this flag is true, the
screen-mode will be masked with (INTERLACE | HIRES_KEY)
DEFAULT: FALSE

1.27 INVERSE

```
                              INVERSE
```

If set, the vitual depth of the
              SIRDS
               will be reversed: The Highest area
will be the lowest, and vice versa. Useful for peole who cross their view
before the picture for viewing
              SIRDS
              .
DEFAULT: FALSE

1.28 COLORS

```
                              COLORS
```

If set, the colors are sorted. So the highest color will be the front-most
position in the
              SIRDS
              . The colors are sorted in the followin way:
r-Val + g-Val + b-Val, and the sorted.
DEFAULT: FALSE

1.29 FLIMMER

```
                              FLIMMER
```

If set, a second plane will be drawn additionally, and you can use the
flimmering-key, to start
              flimmering
              . If you dont like it, tun it off,
to get more speed & mem for the one picture.
DEFAULT: OFF

1.30 FILE

```
                    FILE
```

Here you can specify a file for loading. If none specified, you will
be asked for one.
DEFAULT: <none>

1.31 PATTERN

                                      PATTERN

    requires a File, which will be used as pattern for
                SIS
                s. The loading is
    done via datatypes, so you can use any format you like. The
                SIS
                -mode is
    automatically activated, when this options is specified.
    DEFAULT: <none>

1.32 PAT_MODE

                                      PAT_MODE

    3 different Pattern-modes are possible:
    1 - The Pattern will be displayed normally on the left, and adjusted to the
        right
    2 - The Pattern will be displayed normally in the mid, and adjusted to both
        sides
    3 - The Pattern will be displayed normally on the right, and adjusted to the
        left
    This setting is only possible at the start of the program. It was thought
    for my personal use only, but everybody should be able to test it.
    If you pass a wrong value, a
                SIRDS
                 will be generated.
    DEFAULT: 2

1.33 SHOW_SRC

                        SHOW_SRC

    If OFF, no screen for the source-picture will be opened. Just to save a
    little Chip-Mem for bigger SI(RD)Ss.
    DEFAULT: ON

1.34 WBPREFS

                        WBPREFS

    If set, the Prefs-Window will open on the default PubScreen.. Otherwise
    it will open on the current screen.
    DEFAULT. TRUE

1.35 PREFS_FIRST

                        PREFS_FIRST

  When set to on, The Prefs-Window will show before the SI(RD)S will be
  drawn. This way, you can select a new screenmode first, if you like.
  DEFAULT. OFF

1.36 flimmering

                    One word about the flimmering:
The flimmering constists of drawing 2x the same
                    SIRDS
                    , and then swap them.
This way, you get a more accurate sight of the contour of the original
picture. This was just for experimental use, but try it. It isnt that good,
but I left it in the program, for others to see it. It takes more time when
you enable it, due to 2x usage of WritePixel(). The second pic has to be drawn
somehow. Therefore, you have the possibility to turn the thing off, to get
more speed & mem.

1.37 future things

I am planning the following things:
currently everything i want is implemented

1.38 Address

                    The Author there reachable:

Bugs/Suggestions/donations :-) to the following address:

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FIDO: 2:246/1115.1

1.39 Thanks

Greetings: Markus Wolf for the nice Test-Picture(s).
          Hans-Jörg Malthaner for the GIF-Save routine

    "The Graphics Interchange Format(c) is the Copyright property of
    CompuServe Incorporated. GIF(sm) is a Service Mark property of
    CompuServe Incorporated."

1.40 Glossary

             Glossary

SIRDS means Single Image Random Dot Stereogram
  A picture of random dots is calculated

SIS   means Single Image Stereogram
  Instead of random dots, a pattern is used for rendering.

1.41 What are SIRDS?

                        What are SIRDS?

SIRDS means Single Image Random Dot Stereogram

The trick of SIRDS is, that you have to know how to view them. When just
looking at them, like you lok at normal picture, then you will just see some
random placed pixels, which seem to not make any sense at all.

So how do you look at them?
There are basically two ways of viewing SIRDS: Wide-Eye view (WE) and
Cross-Eye view (CE). WE ist the easier way, though I have a friend, which can
only see them with CE.

WE:
You have to try to look behind the picture, actually the same distance, as you
are away from it. To help doing this, you can put a glass over it, and look at
your own mirrored face, an the try to get the SIRDS sharp. Then you should see
the picture with a real 3D effect.
For better help the "Eyes" in the picture can be used: When you got it, you
see 3 of them. And the middle one must be sharp. The sharp middle one, is on
the farest plane.

CE:
Instead of looking behind, you must cross your eyes in front of the picture.
A pencil is useful to hold between the eyes and the picture, concentrate on
the pencil, and make the SIRDS sharp.

The difference of viewing CE and WE is, that CE swaps the depth of the
picture: the farest plane ist the nearest, and vice versa.

How does it work?

When looking normally, you look with both eyes on ONE point. When looking on
SIRDS, you have to look on TWO points. Each eye is looking at a different
point. This way, the brain thinks it is one point with a virtual depth.
Now, you can vary the depth with inserting/leaving out pixels. Inserting means
the point more far away.

This is not limited to graphics. You can make them out of plain ASCII too, but
they don't look that good.

                          Example SIRTS

1.42 Example SIRTS

Small example
Here is how to make SIRTS (Single Image Random Text Stereogram)

```
**************************************
#include <stdlib.h>
#include <stdio.h>

main()
{
char m[100], s[80];
int j,i,e;

srand(time(0));
for(e=0; e<6; printf("X%13s",""),e++);
for(puts(""),scanf("%d\n",&j);gets(m),j>=0;puts(s),j--)
for(e=s[79]=i=0;i<79;s[i++]=(e||i<14)?'!'+rand()%92:s[i-14])
for(e=0;m[i-14]=='#'&&i<79&&i>13;e=1,s[i++]=s[i-13]);
}
**************************************
```

compile the program and start it with "a.out <sirt.inp"

for an input (e.g. sird.inp) you can use the following:
```
**************************************
17
-------------------------------------------------------------------
-------------------------------------------------------------------
-------------------------------------------------------------------
-----####-------####----####-------------###############--------
-----####-------####----####-----------###################------
-----####-------####----------------------####--------------####-----
-----####-------####-----------------####---##----##---####----
-----####-------####----####-----------####---##----##---####----
-----###############----####-----------####--------------####----
-----###############----####-----------####--------------####----
-----####-------####----####-----------####--####----####--####----
-----####-------####----####-----------####---##########---####----
-----####-------####----####-----------####--------------####-----
-----####-------####----####-----------###################------
-----####-------####----####-------------###############--------
```

```
------------------------------------------------------------------
------------------------------------------------------------------
------------------------------------------------------------------
***********************************
```

The first line ist the number of lines that follow. a "#" means a plane above
the other.
An example output can be:

```
X           X           X           X           X           X
%Dc>qx[B]|+"i%Dc>qx[B]|+"i%Dc>qx[B]|+"i%Dc>qx[B]|+"i%Dc>qx[B]|+"i%Dc>qx[B]|+"i%
xcnM@?N%8/j%DxcnM@?N%8/j%DxcnM@?N%8/j%DxcnM@?N%8/j%DxcnM@?N%8/j%DxcnM@?N%8/j%Dx
srE@K^M|CB1LKsrE@K^M|CB1LKsrE@K^M|CB1LKsrE@K^M|CB1LKsrE@K^M|CB1LKsrE@K^M|CB1LKs
B)PCj=$/J5*3BB)PCj=/J5*53BB)PC=/J50*53B)PCo=/J50*53B)PCo/J50*53B)PCo/J50J*53B)P
)(S6E@k.AtCfQ)(S6E@.AtCPfQ)(S6@.At_CPf)(S6n@.At_CPf)(Sn@.At_CPf)(Sn@.At_CP-f)(S
P;:107Ne,C^5*P;:107e,C^'5*P;:17e,CN^'5*P;:17e,CN^'5*P:17e],CN^'5*P:17e]CN^'t5*P
{:-<7N=t+:m'c{:-<7Nt+:m.'c{:-<Nt+:ym.'c{:-<Nt+:ym.'c:-<N0t+ym.{'c:<N0Jt+m.{')c:
x{r9p+>%,w6y'x{r9p+%,w6oy'x{r9+%,wj6oyx{r9Y+%,wj6oyxr9Y+0%,j6o{yxrY+0v%,6o{y9xr
l/FY';^mD[J1ll/FY';mD[J1ll/FY';mD[7J1l/FY'r;mD[7J1l/Y'r;]mD[7J1l/Y'r;]mD7J1lT/Y
/6!p/rqpoVEHw/6!p/rpoVEHw/6!p/rpoV2EHw6!p/MrpoV2EHw6p/MrtpoV2EHw6p/Mrtpo2EHwS6p
ZE@sr5DK.ed{*ZE@sr5K.edI{*ZE@s5K.ehdI{ZE@s;5K.ehdI{Z@s;5rKehdIE{Z@;5rKPedIE{CZ@
ri0/F5xoZ=h7zri0/F5oZ=hU7zri0/5oZ='hU7ri0/O5oZ='hU7r0/O5&oZ'hU7r0/O5&aoZhU7rd0/
W6]t/65|3J-87W6]t/6|3J-r87W6]t6|3Jq-r8W6]tD6|3Jq-r8W6tD6|{3Jq-r8W6tD6|{Jq-rf8W6
y|K^%L_NEL/v5y|K^%LNEL/|v5y|K^LNEL3/|vy|K^FLNEL3/|vy|KFLNEL3/|vy|KFLNEL3/|yvy|K
4{V9T'zaPC"9X4{V9T'aPC"s9X4{V9'aPCF"s94{V9Q'aPCF"s94{V9QaPCF"s94{V9QaPCFh"s94{V
#RA(gBIxKr54O#RA(gBIxKr54O#RA(gBIxKr54O#RA(gBIxKr54O#RA(gBIxKr54O#RA(gBIxKr54O#
j-hwRAH+&=DCNj-hwRAH+&=DCNj-hwRAH+&=DCNj-hwRAH+&=DCNj-hwRAH+&=DCNj-hwRAH+&=DCNj
=D'zm@kv9HWf-=D'zm@kv9HWf-=D'zm@kv9HWf-=D'zm@kv9HWf-=D'zm@kv9HWf-=D'zm@kv9HWf-=
```

can you see it?

1.43 History

                                History:

englisch history starting with V1.6.

                    Version 1.6

                    Version 1.7

                    Version 2.1

                    Version 2.2

                    Version 2.3

                    Version 2.4

                    Version 2.5

                    Version 2.6

1.44   History Version 1.6

```
                changes for Version 1.6:


The Background of the
                SIRDS
                 is now black

Patterns implemented

few small fixes

Flimmer &
                SIS
                 exclude each other. Even in the Prefs-Window

Key-Change in Prefs-Window. "p" now activates patterns. "y" now for Eye-pos
used.

Bug Fix: If a Picture is loaded, recalculation is startend immediately
```

1.45   History Version 1.7

```
                changes for Version 1.7:


Filelength now set to 100. Patterns  couldn't be loaded if the path was too
long.

Synchronos loading of the picture.

Usage of the Bitplane of the Datatype:
- ReadPixel() to the Picture is faster due to FAST-RAM access
- Pic-Screen not necessary anymore

fri_Dimension.Width does not return the right width of the picture. Caused the
black border of the Patterns. Fixed.

Bug Fix: The depth of the
                SIRDS
                 screen now adapts to the pattern, if
                SIS
                s are
rendered

New Flag: WBPREFS. Faster & better display of prefs & Filerequester.
```

1.46   History Version 2.1

```
changes for Version 2.1:
```

New Release, new version.

1.47   History Version 2.2

                changes for Version 2.2:

Bug Fix: When using the Prefs, it was possible to get a wrong Screen-Mode for
the SIRDS-Screen.

New: In the Prefs-Window, you can see the dimensions of the pattern.

New: It is possible to preview the Pattern in the Prefs-Window. This is done
asynchronously!

New:

                SEED
                -option. specify a seed value for SIRDS

New:

                SAVEFILE
                -option. when used, the SI(RD)S will be saved immediately, and
the program will terminate.

New:

                DARKNESS
                -option. specifies the percentage of dark pixels in a SIRDS.

1.48   History Version 2.3

changes for Version 2.3:

A few Enforcer-hits removed:
- When asked for the picture, before a screen was open, a hit occured.
- When the Picture-Screen ist turned off:
  a) opening the Prefs-Window caused 2 hits
  b) the menus in the SIRDS-Screen caused a guru

1.49   History Version 2.4

changes for Version 2.4:

Added Save option in the Prefs-Window. The Config is saved to the Icon of the
Program. Key "U" assigned to save config.

Better handling of initial screenmode. If the mode isn't available, then the
default will be used. If this fails too, DEFAULT_MONITOR_ID will be used.

New Progress indicator when saving a GIF.

SRC_DEPTH option removed. There isn't really any use for it.

Bug Fix: When selecting a new sirds-screenmode, the pattern-gadget became
checked.

Hidden-Mode accelerated. It is now 30% faster.

1.50   History Version 2.5

changes for Version 2.5:

Bug fix: When saving config, the Long-Options weren't saved correct

1.51   History Version 2.6

                        changes for Version 2.6:

Bug fix: when the picture screen couldn't be opened, the default ID will be
used instead.

New Tooltype:
              PREFS_FIRST
              . Is this what you want, Jens?