

## **akPNG\_Documentation**

<b>COLLABORATORS</b>
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	<i>TITLE :</i> akPNG_Documentation		
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WRITTEN BY		July 31, 2024	

<b>REVISION HISTORY</b>
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NUMBER	DATE	DESCRIPTION	NAME

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## Chapter 1

# akPNG\_Documentation

### 1.1 akPNG : Documentation

akPNG.datatype V44.123

- SHAREWARE -

© 1996-2001 by Andreas Ralph Kleinert. All rights reserved.

A PerSuaSiVe SoftWorX PRODUCT.

Needs Kickstart V3.x

Release Date : 01.09.2001

Please consider registration - usually less than 1% of the  
users of a program do register. That's not much.

<Commercial> BTW: What is SViewIV ? </Commercial>

Copyright  
Disclaimer  
Distribution  
Payment  
Usage and Notes  
Datatype FAQ  
Prefs  
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Hall of Fame  
Version-History

\_ //  
Only \X/ Amiga makes it possible!

Please visit:

WWW Support Site  
<http://www.ar-kleinert.de> (AWeb-II)

The CHAOS theory:

"Like finding that bloody butterfly whose flapping wings cause all these storms we've been having lately and getting it to stop." (see "Witches Abroad" by Terry Pratchett)

Ahm...well:

...and thanks for all the fish.

## 1.2 copyright

The akPNG.datatype in this version and its documentation files are (C)copyright 1996-2001 by Andreas R. Kleinert. All rights reserved.

The right of using this program is granted to you by paying the SHAREWARE-fee of 15 DEM (10 US\$) or equivalent (e.g. in Euro) to the author.

This software is based in part on the png reference library (including libpng and zlib), which allows being used e.g. for freely distributable and commercial programs.

libpng 1.0.12  
Copyright (c) 1995, 1996 Guy Eric Schalnat, Group 42, Inc.  
Copyright (c) 1996, 1997 Andreas Dilger  
Copyright (c) 1998, 1999, 2000, 2001 Glenn Randers-Pehrson

zlib:

zlib 1.1.3  
(C) 1995-1998 Jean-loup Gailly and Mark Adler

akDT\_Installer by Robert C. Reiswig ©1996-2001.

If you wish to use any part of this installer you must ask. May not be integrated/placed into any other package! Changes, suggestions or problems: [akDatatype@vgr.com](mailto:akDatatype@vgr.com)

Prefs GUI design improved by Georg Rottlaender <[Georg.Rottlaender@bonn.netsurf.de](mailto:Georg.Rottlaender@bonn.netsurf.de)> under use of a 'NewIcon' graphics by Philip Vedovatti <[vedovatt@u.washington.edu](mailto:vedovatt@u.washington.edu)> - included with kind permission by the 'Team NewIcons'

The patch files were created using the scompare SAS Binary File Compare Program V6.50 which is copyright © 1992-1993 SAS Institute, Inc. The spatch SAS Binary File Patcher V6.50 is copyright © 1992 SAS Institute, Inc.

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## 1.3 disclaimer

The author takes no responsibility for any results of the use of this program.

This software is provided "AS IS" and there is no warranty of any kind, so that you use this software at your own risk.

The author reserves the right to discontinue development of the program.

## 1.4 distribution

The akPNG.datatype in this version is freely distributable (SHAREWARE). You may copy it, if the copyright notice is left intact and all of its parts are included in the distribution.

This program may only be included in commercial packages or commercial program collections with my written permission – ask for it.

This program may be put on public domain disks or included in public domain disk libraries – when being distributed that way, it is allowed to take a nominal fee including the costs for copying, without considering that as "commercial" in the above mentioned sense.

This program may also be distributed via electronic mail and may be put into mailboxes as long as the redistribution conditions are respected in all points.

By using or distributing this program you automatically agree to all of the above conditions and terms.

## 1.5 payment

You may send cash money in an envelope, euro-cheques, or just transfer the 15 DEM (10 U\$) shareware fee to the following account (mention your name): Deutsche Bank Siegen, BLZ 46070024 Kto. 0298174

SWIFT code for Deutsche Bank Siegen, BLZ 46070024 is DEUTDEDK460.

No foreign cheques, please (euro-cheques or DM-cheques are ok).

## 1.6 Usage and so on

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## Installation and Usage

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Just install the datatype files to their appropriate directories, and copy the akPNGPrefs command to SYS:Prefs/Datatypes (optionally).

While the datatype itself can be placed elsewhere within a valid search path, the .ppc module HAS TO be placed to SYS:Classes/Datatypes/ - not a problem, if you use the installer script, otherwise please remember...

Please make sure, that there is a directory available, where temporary data can be stored. There must be an assignment called "VMEM:" to this directory (just like with SuperViewLibrary and akJFIF-dt).

If there's enough RAM available, VMEM: won't be used.

Do not assign it to "T:" if it is somewhere on a Ram-Disk (that's why T: is not used by default) - just create a safe place for it.

## Program information

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akPNG.datatype is a PNG datatype, which is based on the latest PNG sources (zlib V1.1.3, libpng 1.0.2).

So it does support 8 Bit color mapped files (colorspace expanded to 8 bit per component always) and True color files (24/48 Bit, alpha channel ignored, 48 Bit 16:16:16 cut down to 24 Bit 8:8:8).

So the following types of PNG images (all valid ones) should be imported in the described way:

Bit depths	Interpretation
1,2,4,8,16	pixels are grayscale samples
8,16	pixels are R,G,B triple samples
1,2,4,8	pixels are palette indices

(plus variations with - here ignored - alpha channel)

With V39-V42 picture.datatype it either produces (upto) 256 color palette-based or HAM6/8 output (256 colors exported unmodified, 24 Bit data either dithered or converted to HAM6/HAM8) with picture.datatype V43-45 as well 24 Bit may be exported unmodified.

akJFIF makes use of memory pools where applicable and also automatically utilizes asyncio.library (V39+) when available.

You must use the included preferences program for best configuration - of course you can also use one of the alternative prefs programs from Aminet, which should deliver the same functionality (but please remember not to send any corresponding bug reports to my address).

akPNG.datatype is SHAREWARE, the future depends on YOU.

---

## 1.7 Datatype FAQ

### OS 3.5/3.9 problems

-----

Programs, that let picture.datatype V44 do on-screen dithering, will face the "problem", that 24 bit images even will be dithered when being displayed on 15/16 bit screens. According to the OS 3.5 developer team, this should result in "better image quality".

However, when analyzing this statement, one will discover, that most graphic cards based on PC-chips only allow for 6 bit color lookup tables (LUTs) (that is, 6 bit for each out of red, green and blue - thus only a range of 0..63 instead of 0..255) which in fact isn't much better than the 5:5:5 or 5:6:5 ratio of 15/16 bit high color modes. However, 16 bit high color allows for 65536 distinct colors on screen, while a 6 bit LUT only will allow for 256 out of 262144 colors.

However, these new V44 dithering options can be changed via the datatypes preferences - global default settings then locally will be overridden.

There's a keyfile system used for this datatype - note, that the keyfile actually does not enable any "extra functionality".  
The unregistered version only will export every 3rd line of a graphics - resulting in stripes.)

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### Keyfile system

-----

There's a keyfile system used for this datatype - note, that the keyfile actually does not enable any "extra functionality".

The unregistered version calls DisplayBeep() 3 times and delays 1/5s each time.

I won't send any keyfiles via snail mail. If you want to receive the key, please mention your email address (clearly written) with your registration !

NOTE: keyfile can be placed to either S: or where KEYPATH (env-variable) does point to.

### PPC module (ELF)

-----

Yes, this datatype is prepared for a great speed up with phase5's powerUP (TM) boards.

For this, the ELF PNG decoder module has to be placed at location SYS:Classes/Datatypes/akPNG.ppc - the installer script will manage this for you on demand.

Make sure that you've the 68040/060 versions of the datatype installed, since the 68000/030 versions don't contain the necessary

---



extra code (there are no powerUP boards with 68000/030s CPU available or planned as far as I know). Also, don't install the ELF module and/or ppc.library if you don't have a PPC board plugged in.

Raw loading speed up should be very impressive with this PPC module, although it of course can't increase rendering or dithering (remapping) speed of other system modules or the calling program.

HAM conversion or ordered dithering (for 24 bit images, i.e. if not in V43 mode) are NOT yet PPC optimized - get a graphics card !

Please note, that this optional ELF decoder only will become fully functional for registered users of this datatype, who have a keyfile installed.

If you don't have a keyfile installed, you have two choices:

1. remove the PPC module and make use of the plain 68k decoder
2. make use of the PPC module but get only every 3rd line of the image (the whole image will be loaded and decoded, but only every 3rd line will be passed to the caller)

Speed: to test the speed of the decoder, you should go online with AWeb and load a WWW page with several large PNG graphics. Then go offline again, and load the same page from the cache: this will show you the raw decoding speed, without any influence of download time or other tasks.

Best is, to do the speed tests in V40 mode when using the demo version, since in V43 mode, the demo restrictions themselves (= not exporting every line of the image) will have some (undetermined) influence on speed - those lines explicitly have to be \*cleared\*, which needs some time on a 24 bit image. Sorry - this was introduced after V44.2 with a bugfix.

NOTE: decoding will need about twice as much memory as with the 68k decoder, plus approximately another 145K for the loaded ELF module, 16K for stack and 16K for I/O buffers (you know, RISC is 'reduced instruction set' and not 'reduced memory usage' - but now you are able to actually make use of all that expensive RAM ;-)

No write support ?

-----

Sorry, there won't be write support (DTM\_WRITE method), since I think, that datatypes are mainly a system for data exchange and not to do the job of existing conversion utilities.

To explain it even further:

The datatype mechanism certainly is a system to HIDE implementation and data format details. If one does offer too much choices for destination file formats, this would - in my opinion - completely be against this concept. The ideal way of keeping the datatypes' concept cleanly OOP would be to internally handle everything in an amiga-unique IFF format

---

- which BTW is quite essential for clipboard data exchange as well. Unfortunately IFF-ILBM isn't very suitable for color depths greater than 8 bit. Maybe IFF-RGFX could be a good choice, here.

Why are "interlaced" image files not displayed progressively ?

-----  
Because picture.datatype's API (upto V45) relies on complete bitmaps to be returned by a datatype of subclass "picture". Unfortunately the datatype cannot:

- supply many small bitmaps, one for each line
- give control back to picture.datatype during reading a file
- write into an existing, given bitmap

(to just supply some possible considerations how to solve this problem), so there currently is no way of displaying images progressively.

When running in PPC mode, progressive display BTW would be a bad idea, anyway.

Ramlib Crashes

-----  
If you get "ramlib" gurus with this or any other program, then try installing Aminet:util/sys/StackAid.lha

Unknown datatypes (V43-45)

-----  
If your datatypes stop working (unknown file format), please don't blame me, but at first check, whether you've still installed an already expired beta version of picture.datatype V43...

And make sure, that you don't use picdtpatch (v39.2) from the Hypertext.datatype archive by Stefan Ruppert.

## 1.8 correspondence

\*\* General PerSuaSiVe SoftWorX WWW Support Site is <http://www.ar-kleinert.de> \*\*

<p>You may reach me the following way. Send bug-reports, money or whatever to:</p> <p>-----</p> <p>* SuperView Development &amp; Registration *</p> <p>* DRAFU Development &amp; Registration *</p> <p>* Image Engineer Registration Site Europe *</p> <p>PerSuaSiVe SoftWorX</p> <p>Andreas R. Kleinert Rabenflugstrasse 1 D-57074 Siegen Germany, Europe</p> <p>+49-271-22869 (also FAX + AM)</p> <p>Weekdays after 18.00h.</p>
---

```
|
|      When calling via phone you may leave a message, |
|      if I'm not available - but don't expect me      |
|      calling back to USA, Australia, ... since      |
|      german phone rates are HIGHLY expensive.       |
|_____|
```

EMail:

Please ask before sending binaries!  
And please think twice before asking - my postbox  
is not unlimited in size.

```
- Usenet
  >>>  info@ar-kleinert.de
        Andreas_Kleinert@gmx.de
        Andreas_Kleinert@t-online.de
```

## 1.9 thanks

Thanks go to (in order of appearance ;-)

=====

- Ingo Jürgensmann	- Thomas Boerkel	- Andreas Mixich
- Robert Wahnsiedler	- André Laemmer	- Edwin H. Bielowski
- Matteo Tenca	- Jan Skypala	- Adrian Demarais
- Ludwig Berndt	- Roger Hâgensen	- Dipl.Phys.Carl-Rudolph Naefe
- Dr. Rainer M. Herold	- Thomas Steinbichler	- Jörn Krüger
- Bodo Thevissen	- Helge Thorsten Kautz	- Thomas Nolte
- Harry W. Turner II	- A. P. Suggitt	- Mat Bettinson
- Vulture	- Dr. Greg Perry	- Stephen Bridges
- Philippe Duchenne	- Jure Dolanec	- Tom Lively
- Alexander Fichtner	- Magnus Holmgren	- Max Headroom
- Ian Barclay	- Marc-Tell Volkmann	- Christian Beck
- Torbjörn Aronsson	- Jürgen Haage	- Michael C. Battilana
- Milco Veljanoski	- Robert S. Puffer	- Jérôme Lovy
- Dirk Busse	- Armin H. Pöhlmann	- Karl-Heinz Ostertag
- Joel Alvim	- Per Jonsson	- Les Morgan
- Roland Mainz	- Robert C. Reiswig	- Dave Sparks
- Andreas Kramer	- Guillaume DuFour	- A J Price
- Michael Schulz	- B & D Kubler	- Christer Oldhoff
- Arndt Bußmann	- Torsten Moll	- Georg Rottländer
- Phil Vedovatti	- Burkhard Breuer	- Ulrich Falke
- Martin Pape	- Sanjo Schiffmann	- Slobodan Todorovic
- Walter Gierholz	- Petra Struck	- Michael Steinke
- Bernd Mingers	- Wendell Watanabe	- Dr.-Ing. Heiko Pollmeier
- Ramiro Garcia	- Heiko Kröhnert	- Edward J. Barcik
- Alvaro Thompson	- Achim Stegemann	- Bert Bosma
- Ignazzi Carmelo	- Eike Biel	- Heinz Rohner
- Frank Dietrich	- Kirk Strauser	- Dirk Hallen
- Tilo Hanich	- Roman Patzner	- Klaus B. Küsche
- Jörg Handweg	- Stefan Michel	- Jochen Rhein
- David Newman	- Bradley Rogers	- Simo Koivukoski
- Michael Jaccoud	- Jan Uerpmann	- Achim Akkermann
- David Gill	- Willi Demuth	- Sander Assenbroek Machielsen

- 
- |                       |                       |                           |
|-----------------------|-----------------------|---------------------------|
| - John Millington     | - Jörg Bierwagen      | - S.W. de Vries           |
| - Hans Eiblmeier      | - Yann Muller         | - Gerrit-kjeld Dusselje   |
| - Gernod Schomberg    | - Gerald Lorang       | - Sebastian Becker        |
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| - Malcolm Harnden     | - Christoph Kirsch    | - Jukka Anttila-Vatjus    |
| - Thorsten Marquardt  | - Rudy van Merkom     | - Tristan R. Young        |
| - Niko Tomatsidis     | - Hans Flüss          | - Pierre Radestock        |
| - Michael Thompson    | - Dave Fieldman       | - Rolf Schuster           |
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| - Neil Bothwick       | - Javier Marcet       | - Michael Merkel          |
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| - Clifford Mould      | - Jon Steinar Kvaale  | - Jon B. Peterson         |
| - Oliver Molz         | - Klaus Müller        | - John Aadnoy             |
| - Sven Bornkessel     | - Arvid Schlesinger   | - Armin Klippel           |
| - Wolfgang Krause     | - F. Ruthe            | - Alexander Niven-Jenkins |
| - Gary Goldberg       | - Thomas Birk         | - Vincenzo Morra          |
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| - Klaus-Peter Simon   | - Whitford Bates      | - Laurent Moussy          |
| - Paul Kieffer        | - Yves Liebercier     | - S. Lichtendahl          |
| - Alan Guillevic      | - Thomas Lorenz       | - Chris Barrow            |
| - Ed Eden             | - Keith Schyler       | - Trond K. Tveit          |
| - Janko Köhler        | - Andrew Mills        | - Howard Toliver          |
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| - Denis Zwornarz      | - Gert Hubers         | - Robert Little           |
| - Christopher Handley | - Stefano Guidetti    | - Jürgen Seubert          |
| - Paul Korhonen       | - Frank Müller        | - Peter Kaltstein         |
| - Peter Theuring      | - Gunter Kusserow     | - Telemar Rosenberger     |
| - Phillip Degnan      | - John Melville       | - Alexandre Kairouannais  |
-

- Chris Dallimore	- Paul Sadlik	- Matthew Sawyer
- Jeffrey Grzanich	- John Hart	- Ian Tyrell
- Walt Challender	- Martin Sprenger	- Pekka Sippola
- Brice Terzaghi	- Adrian Cope	- Frank Böhne
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- Arthur Moyer	- Thomas Schaefer	- James Miller
- Karl-Olav Gravdahl	- Janifer Lopez	- James George
- Eric Muller	- Ian Argæt	- Mats-Olov Rustad
- Ian Armstrong	- Philip Vedovatti	- Daniel Plant
- Klaus-Dieter Klang	- Dirk Pohlmann	- Kevin Hupp
- Dietbert Leusmann	- Markus Schmidt	- Frank Aisenbrey

Thanks also must go to:

- ...all buyers of the SView Productivity Suite from Schatztruhe
- ...the Cloanto team, namely Michael C. Battilana
- ...the people from phase5, namely Ralph Schmidt and Claus Herrmann
- ...the picture datatype V43 programmers, namely Frank Mariak and Olaf Barthel
- ...the other programmers of datatypes, for information exchange and useful comments
- ...dozens of people I forgot to mention here !

## 1.10 prefs

akPNGPrefs

-----

akPNGPrefs is the Preferences Program for akPNG.datatype.

GUI has been designed with StormWizard 2.0, so this program needs

"wizard.library" V37+ (you can find a copy on Aminet under "biz/haage/WizardLibrary.lha" or even newer versions under ftp.haage-partner.com).

Icon by Bert Bosma <lmb@wxs.nl> (based on NewIcons).

An alternative MUI prefs program replacement by Alvaro Thompson (originally) and Achim Stegemann (later) is now available as util/dtype/akMUIPrefs.lha - there also are various other replacements.

Task (process) specific settings also can be done - either using the preferences program (which allows to select the corresponding process from a list as long as it actually is running at the same time) or by hand, following the scheme below:

#### OPTIONAL

----- task specific settings files -----  
Settings specific to different caller programs may be created by copying the global settings from "Datatypes/akPNG.prefs" to an optional task-related prefs file called

"Datatypes/akPNG.prefs\_Tasks/TaSkNaMe"

where "TaSkNaMe" means the name of the program as e.g. shown by a system monitor (for obvious reasons, this does work best with workbench programs, which don't require name patterns as some CLI programs might do, like for example "CLI(3):Work:Browsers/XWebber"). So, with AWeb for example, you would just edit your global settings file and then do the following:

```
MakeDir ENV:Datatypes/akPNG.prefs_Tasks
Copy ENV:Datatypes/akPNG.prefs ENV:Datatypes/akPNG.prefs_Tasks/AWebIP"
```

[... and the same for ENVARC: ...]

After that, AWeb will ignore the global settings and fetch its own from the given file.

You can do the following settings:

```
V44_DITHER=(0..2)
V43_MODE=(NO_DITHERING|V40_DITHERING)
V40_24BIT_MODE=(DITHER_ORDERED|HAM_OUTPUT)
V40_DEPTH=(3..8)
HAM_MODE=(HAM6|HAM8)
INTERLEAVED_BM8
DISPLAYABLE_BM8
CUSTOM_MODES
PPC=(ON|OFF)
NOASPECT
DEBUG
```

That's mostly self-explaining, but as an example, here are the default settings and a short explanation:

```
V44_DITHER=1
V43_MODE=NO_DITHERING
V40_24BIT_MODE=DITHER_ORDERED
V40_DEPTH=8
HAM_MODE=HAM6
INTERLEAVED_BM8=ON
DISPLAYABLE_BM8=OFF
```

#### General Explanation of Options

=====

##### V43\_MODE

-----

NO\_DITHERING: does output 24 Bit data when running pic-dt V43

V40\_DITHERING: switches to V40 mode settings when running pic-dt V43

V40\_24BIT\_MODE (when running picture datatype V40 or V43 in V40 mode)

-----

DITHER\_ORDERED: does ordered dithering of 24 Bit data

HAM\_OUTPUT: does convert 24 Bit data to HAM6/8

##### V40\_DEPTH

-----

When dithering to a palette (so: when in V40 mode and ordered dithering being selected) the number of palette colors, which is 256 by default, may be reduced here (e.g. on ECS systems).

Valid depth values are 3..8 (which results in 16..256 colors, easily calculated by  $2^{\text{depth}}$ ).

##### HAM\_MODE

-----

HAM6: generates HAM6 output for 24 Bit graphics, when running V39-42

HAM8: generates HAM8 output for 24 Bit graphics, when running V39-42

Note, that HAM8 is native to AGA machines and thus may cause difficulties with graphic boards and won't work with OCS/ECS Amigas. With HAM6 and graphic boards also problems may occur.

##### INTERLEAVED\_BM8

-----

ON: will output interleaved bitmaps upto 256 colors

OFF: will output normal bitmaps (BMF\_CLEAR and maybe BMF\_DISPLAYABLE only) - you may switch interleaved mode off for specific programs, which cannot handle it, or when AllocBitmap() has been patched for chunky modes by a graphics card software or e.g. EGSPPlus

##### DISPLAYABLE\_BM8

-----

ON: will output displayable bitmaps upto 256 colors

OFF: will output normal bitmaps (BMF\_CLEAR and maybe BMF\_INTERLEAVED) - you may turn displayable mode on for specific programs, which want to use datatype generated bitmaps directly as screen bitmap. If they are enabled to do this, this may save some memory (for another bitmap). This is recommended for systems without graphics card and only few chip memory.

## CUSTOM\_MODES (hidden option)

---

When the keyword CUSTOM\_MODES is set,  
only viewmodes out of the standard set  
will be generated:

- LowRes ( 320x200/256)
- HighRes ( 640x200/256)
- SuperHighRes (1280x200/256)
- LowRes Lace ( 320x400/512)
- HighRes Lace ( 640x400/512)
- SuperHighRes Lace (1280x400/512)

When CUSTOM\_MODES=0x##### (e.g. CUSTOM\_MODES=0x00000000)  
is set, the specified hexadecimal viewmode ID will be used always  
- alternatively, you can specify the viewmode name as plain text,  
for example "CUSTOM\_MODES=PAL:HighRes". Note, that spelling is  
very critical here.

For HAM output, this is only true, if the mode ID actually is  
capable of HAM (this usually is indicated by OR'ing it with HAM\_KEY),  
otherwise a different ID will be computed.

## PPC (hidden option)

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ON: If .ppc or .vos modules are installed, they'll be utilized.  
OFF: When the option PPC=OFF is set, the PPC encoder module won't  
be used, even with a PPC available. Instead the datatype will  
fall back to 68k mode. Useful e.g. for speed comparisons.

This is a RUNTIME switch. AUTO and PPCLIB\_EMU will be processed always.

## NOASPECT (hidden option)

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If x/y aspect generation produces buggy results,  
e.g. with PictIcon, this option may be used to  
always force 1:1 to be returned.

## DEBUG (hidden option)

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Not implemented yet. Will enable debugging output,  
i.e. info requesters.

## 1.11 history

Known Bugs: - some people reported problems with the installation  
scripts in the past. If you encounter any problems or  
bugs, please report these directly to the script author  
Robert C. Reiswig <akDatatype@vgr.com>

- please use at least V41.101 of wizard.library.  
You should find a copy coming with demo versions  
of various programs under ftp.haage-partner.com

- viewmode selection may not always be 'perfect'

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#### Keyfile problems:

People, who did not receive their keyfile within 2-4 weeks after sending their registration should also contact me. (During sommer, please note, that it not always does make sense to call after 2 weeks - some people tend to make holiday sometimes...)

#### History

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V44.123 (1.9.2001): - speedup

V44.122 (21.8.2001): - speedup (changed behaviour on unreg. version)

V44.121 (21.8.2001): - speedup

V44.120 (21.8.2001): - history cleaned up

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