

akJFIF_Documentation

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WRITTEN BY		July 31, 2024	

REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

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Chapter 1

akJFIF_Documentation

1.1 akJFIF : Documentation

akJFIF.datatype V44.122

- SHAREWARE -

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A PerSuaSiVe SoftWorX PRODUCT.

Needs Kickstart V3.x

Release Date : 21.08.2001

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>

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Disclaimer
Distribution
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Usage and Notes
Datatype FAQ
Prefs
Correspondence
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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 akJFIF.datatype in this version and its documentation files are (C)opyright 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 U\$) or equivalent (e.g. in Euro) to the author.

This software is based in part on the work of the Independent JPEG Group.

akDT_Installer by Robert C. Reiswig ©1996-1998.

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

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

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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

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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 US\$) 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

Installation and Usage

Just install the datatype files to their appropriate directories, and copy the akJFIFPrefs 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 akPNG-dt).

The assignment originally would have been "JPEGTMP:" for the JFIF sources, but the memory manager has been strongly modified and enhanced - on a system with many RAM available you will perhaps never actually encounter usage of that directory.

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

akJFIF.datatype is a JPEG datatype, which is based on the latest IJG JFIF sources V6b.

So it does support progressive JPEG and all the other things introduced with V6a (note: it reads progressive JPEG, but DataTypes cannot display images progressively - instead only as a single chunk).

With V39-V42 picture.datatype it produces 256 color palette-based (with either none, floyd-steinsberg or ordered dithering) or HAM6/8 output, with picture.datatype V43-45 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).

akJFIF.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.

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 JFIF decoder module has to be placed at location SYS:Classes/Datatypes/akJFIF.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 (for 24 bit images, i.e. if not in V43 mode) is 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)

What's the relationship between JFIF and LJPG ?

The answer is simple: on file format level, there actually is none (*), thus neither one of the two datatypes does replace the other one and you would need to install both to get the functionality of both - but akJFIF perhaps is the more important one.

(*) well, there *is* a relationship, but it only does concern the file format construction and does not actually build

a base for real upward/sideward compatibility

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 "progressive" 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. Nevertheless the support of "progressive JPEG" is a noticeable feature, since (speaking of the JFIF file format) it is not backward-compatible with common JPEG and readers need to take special care for these files (JFIF V6a extensions).

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...

An other reason may be, that you did not delete all of the old (obsolete) "competing" JFIF descriptors from DEVS:Datatypes - in general, there should only remain JPEG/JFIF descriptor files that are shipped with the CURRENT release of this datatype.

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

Then, there are people who save images fromout a popular tool

called Ph*t*sh*p (V4/5) as TIFF, give these the extension .jpg and wonder why these are not recognized as JPEG (whether these can or cannot be loaded by akTIFF, is a different story ;)

1.8 correspondence

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

```
|
|   You may reach me the following way.
|   Send bug-reports, money or whatever to:
|-----|
|   * SuperView Development & Registration *
|   * DRAFU Development & Registration *
|   * Image Engineer Registration Site Europe *
|
|
|           PerSuaSiVe SoftWorX
|
|           Andreas R. Kleinert
|           Am Kornberg 48
|           D-57076 Siegen
|           Germany, Europe
|
|           +49-271-22869
|           (also FAX + AM)
|
|           Weekdays after 18.00h.
|
|   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 ;-)

=====

```
- Martin Sprenger      - Kristian Phillips      - Swen K. Stullich
- Brad Avery           - Erik Magnusson         - Matthias Kraft
```

-
- | | | |
|----------------------|------------------------|--------------------------------|
| - Allan Odgaard | - Francesco Doro | - Per Jonsson |
| - Ariel Magnum | - Jürgen Klein | - Gabriele Guardì |
| - Arno Richter | - Philippe Reux | - Matteo Tenca |
| - Odd H. Sandvik | - Ingo Jürgensmann | - John Millington |
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| - Edwin H. Bielański | - Matthias Schulze | - Dipl.Phys.Carl-Rudolph Naefe |
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| - Andreas Mixich | - Robert Wahnsiedler | - Jörn Krüger |
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| - Mat Bettinson | - Luca Nora Giorgio | - Dr. Greg Perry |
| - Stephen Bridges | - Philippe Duchenne | - Jure Dolanec |
| - Tom Lively | - Adam Atkinson | - Ben Vost |
| - Alexander Fichtner | - Dennis Lee Bieber | - Max Headroom |
| - Ian Barclay | - Marc-Tell Volkmann | - Christian Beck |
| - Torbjörn Aronsson | - Jürgen Haage | - Michael C. Battilana |
| - Jens Gössing | - Robert S. Puffer | - Dirk Busse |
| - Rolf Schuster | - Joel Alvim | - Christian Zimmermann |
| - Lothar Schülke | - Roland Gerecke | - Armin H. Pöhlmann |
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| - Torsten Moll | - Georg Rottländer | - Phil Vedovatti |
| - Burkhard Breuer | - Ulrich Falke | - Aubert Pascal |
| - Martin Pape | - Sanjo Schiffmann | - Slobodan Todorovic |
| - Walter Gierholz | - Petra Struck | - Michael Steinke |
| - Bernd Mingers | - Wendell Watanabe | - Dr.-Ing. Heiko Pollmeier |
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| - Christian Hattemer | - Ignazzi Carmelo | - Eike Biel |
| - Heinz Rohner | - Christian Hattemer | - Kirk Strauser |
| - Dirk Hallen | - Jürgen Ofner | - Jürgen Barthmann |
| - Tilo Hanich | - Roman Patzner | - Klaus B. Künsche |
| - Jörg Handwerg | - Stefan Michel | - Jochen Rhein |
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| - Simo Koivukoski | - Michael Jaccoud | - Jan Uerpmann |
| - David Gill | - Willi Demuth | - Sander Assenbroek Machielsen |
| - Achim Akkermann | - Steven Taylor | - Jörg Bierwagen |
| - Hans Eiblmeier | - Harry Miktarian | - Gerrit-kjeld Dusselje |
| - Yann Muller | - S.W. de Vries | - Gernod Schomberg |
| - Gerald Lorang | - Sebastian Becker | - Mario Kuchel |
| - Gabriele Greco | - Gérard Cornu | - Martin Mittelbach |
| - Hynek Schlawack | - Karl-Heinz Schulz | - Alexander Wissnet |
| - Anders Bolager | - Christian Hunyar | - Ralf Lillemäe |
| - Andreas C. Schmidt | - Daniel Kasmeroglu | - Frank Durban |
| - Gunnar Schuster | - Tim Pykett | - Thomas Körner |
| - Malcolm Harnden | - Christoph Kirsch | - Daniel Boerger |
| - Thorsten Marquardt | - Bjarke Vangsgaard | - Jukka Anttila-Vatjus |
| - Dave Fieldman | - Andrew Zalotocky | - Mark Carter |
-

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- Sven Ottemann	- Matthias Laskowski	- Sebastian Abel
- Ralph Ewers	- Thomas Wiedecke	- D S Jeyasingh
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- Ralf Mack	- Magnus Bouvin	- Dan Muldin
- Mahieux Pascal	- James Luscombe	- Peter Mattson
- Thomas Raukamp	- Steffen Häuser	- Kapryan Kennedy
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- Arnljot Arntsen	- Havard Lunde	- Geoff Tovey

- Herve Sonnevile	- Winek Zawada	- Sascha Ploss
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- Andreas Ohlsson	- Mark Vallins	- Paul Compton
- Craig Peterson	- Gontier Laurent	- Simon Jones
- Mathias Roslund	- John de Boni	- Maria Pelova
- Jennifer Symancyk	- David Hibbert	- Bruno Caruso
- Wolfgang Bauer	- Michael R. Wilson	- Arsi Koutaniemi
- Arthur Moyer	- Thomas Schaefer	- James Miller
- Karl-Olav Gravdahl	- Janifer Lopez	- James George
- Eric Muller	- Ian Argaet	- Mats-Olov Rustad
- Ian Armstrong	- Philip Vedovatti	- Daniel Plant
- Christian Kersting	- Klaus-Dieter Klang	- Alexander Schröder
- Dirk Pohlmann	- Josef Mayr	- Dietbert Leusmann
- Markus Schmidt	- Frank Aisenbrey	- Kevin Hupp

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

akJFIFPrefs

akJFIFPrefs is the Preferences Program for akJFIF.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/akJFIF.prefs" to an optional task-related prefs file called

"Datatypes/akJFIF.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/akJFIF.prefs_Tasks
Copy ENV:Datatypes/akJFIF.prefs ENV:Datatypes/akJFIF.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:

```
DECODE_METHOD=(FAST_INTEGER|SLOW_INTEGER|FLOATING_POINT)
DITHERMODE=(NO_DITHERING|DITHER_FLOYD-STEINBERG|DITHER_ORDERED|
             HAM_OUTPUT)
V44_DITHER=(0..2)
V43MODE=(256|24BIT)
V40_DEPTH=(3..8)
V40_COLORSPACE=(COLOR|GRAY)
HAM_MODE=(HAM6|HAM8)
COLOR_QUANTIZING=(SLOW|FAST)
UPSAMPLING=(ON|OFF)
SCALE_DENOM=(0..3)
INTERLEAVED_BM8=(ON|OFF)
DISPLAYABLE_BM8=(ON|OFF)
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
DECODE_METHOD=FAST_INTEGER
DITHERMODE=DITHER_ORDERED
V43_MODE=24BIT
V40_DEPTH=8
V40_COLORSPACE=COLOR
HAM_MODE=HAM6
COLOR_QUANTIZING=FAST
UPSAMPLING=OFF
SCALE_DENOM=0
INTERLEAVED_BM8=ON
DISPLAYABLE_BM8=OFF

```

General Explanation of Options

=====

DECODE_METHOD

```

SLOW_INTEGER:    slow, but accurate integer algorithm
FAST_INTEGER:    faster, but less accurate integer algorithm
FLOATING_POINT:  floating point algorithm

```

DITHERMODE

```

NO_DITHERING:      no dithering, best pen selection
DITHER_FLOYD-STEINBERG: slow, high quality, floyd-steinberg dithering
DITHER_ORDERED:    ordered dithering to fixed palette
HAM_OUTPUT:        generate HAM output from 24 Bit data

```

The datatype will only output 24 Bit data, when
DITHERMODE=NO_DITHERING _and_ V43_MODE=24BIT are set.
Otherwise even with V43 picture.datatype the data will
be dithered, HAM-converted or best-pen colormapped.
Thus DITHERMODE=NO_DITHERING activates the V43_MODE switch
for picture.datatype V43+

V43_MODE (only with "NO_DITHERING" and picture.datatype V43+)

```

256:    disable 24 Bit output even for V43 picture.datatype
24BIT:  do raw 24 Bit output with V43 picture.datatype

```

The datatype will only output 24 Bit data, when
DITHERMODE=NO_DITHERING _and_ V43_MODE=24BIT are set.
Otherwise even with V43 picture.datatype the data will
be dithered, HAM-converted or best-pen colormapped.
Thus V43_MODE will only act as a switch, when DITHERMODE=NO_DITHERING
has been set and picture.datatype V43 is running.

V40_DEPTH

When dithering to a palette (so: when in V40 mode) 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^{depth}).

V40_COLORSPACE

Whether you want to get 16..256 colors or 16..256 grayscales when requesting V40_DEPTH.

HAM_MODE (only with "HAM_OUTPUT")

HAM6: generate HAM6 output (max. 4096 different colors on screen)

HAM8: generate HAM8 output (262144+ different colors on screen)

When in HAM8 mode, gray images will be exported as 256 color gray images nevertheless (they do look ugly in HAM8 and AGA machines CAN handle 256 colors).

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.

COLOR_QUANTIZING (with "DITHER_FLOYD-STEINBERG" only)

FAST: high speed color quantization

SLOW: high quality color quantization

UPSAMPLING

ON: do careful upsampling of chroma components

OFF: do faster, but sloppier upsampling of chroma components (often very small visual impact)

SCALE_DENOM

0..3: use a scale factor of either 1/1 (none), 1/2, 1/4 or 1/8 for graphics reading.

For reasons of better failure safety checks, this is specified as an exponent value between 0 and 3 ($2^0=1$, $2^1=2$, $2^2=4$, $2^3=8$).

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)

ON: If .ppc or .wos 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)

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)

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

Explanation of settings

Please note, that it does not suffice to simply specify the preferred
options. Some also do react as switches. Here are some examples how
to manage specific configurations:

HAM Output (V40/V43):	DECODE_METHOD=FAST_INTEGER	*1
	DITHERMODE=HAM_OUTPUT	
	V43_MODE=256	x1
	HAM_MODE=HAM8	*1
	UPSAMPLING=OFF	*1
Dithered Output (V40/V43):	DECODE_METHOD=FAST_INTEGER	*1
	DITHERMODE=DITHER_ORDERED	*2
	V43_MODE=256	x1
	COLOR_QUANTIZING=FAST	*1
	UPSAMPLING=OFF	*1

```

256 Colors (V40/V43):      DECODE_METHOD=FAST_INTEGER      *1
(Best Pen selection)      DITHERMODE=NO_DITHERING
                           V43_MODE=256                  x2
                           COLOR_QUANTIZING=FAST          *1
                           UPSAMPLING=OFF                *1

24 Bit (V43):              DECODE_METHOD=FAST_INTEGER      *1
                           DITHERMODE=NO_DITHERING
                           V43_MODE=24BIT                x2
                           UPSAMPLING=OFF                *1

x1 here: always ignored
   (because DECODE_METHOD not equal NO_DITHERING)
x2 here: acts as a switch between V40 and V43 mode,
   when running picture.datatype V43
   (because DECODE_METHOD=NO_DITHERING)
*1 may be changed as preferred
*2 may be changed to: DITHER_FLOYD-STEINBERG
   (side-effects described by "x1" and "x2")

```

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'

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

V44.121 (21.8.2001): - speedup

V44.120 (21.8.2001): - history cleaned up