

MPRender

COLLABORATORS

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Contents

1	MPRender	1
1.1	MPRender.guide	1
1.2	MPRender.guide/Par-MPRender	1
1.3	MPRender.guide/P-FILES	3
1.4	MPRender.guide/P-DX	3
1.5	MPRender.guide/P-DY	3
1.6	MPRender.guide/P-ANTIALIAS	4
1.7	MPRender.guide/P-INTEGGER	4
1.8	MPRender.guide/P-MODE	4
1.9	MPRender.guide/P-DEPTH	5
1.10	MPRender.guide/P-SAVEFORMAT	5
1.11	MPRender.guide/P-MODENAME	6
1.12	MPRender.guide/P-COLOURS	6
1.13	MPRender.guide/P-PALETTE	6
1.14	MPRender.guide/P-12BIT	7
1.15	MPRender.guide/P-QUICKGREY	7
1.16	MPRender.guide/P-FORCEGREY	7
1.17	MPRender.guide/P-PUBSCREEN	8
1.18	MPRender.guide/P-LOADSCRIPT	8
1.19	MPRender.guide/P-PRESCRIPT	8
1.20	MPRender.guide/P-POSTSCRIPT	9
1.21	MPRender.guide/P-CREATEICONS	9
1.22	MPRender.guide/P-EGS	9
1.23	MPRender.guide/P-PORTNAME	9
1.24	MPRender.guide/P-TOOLPRI	10
1.25	MPRender.guide/P-NOPROGRESS	10
1.26	MPRender.guide/P-PROGRESSHOOK	10
1.27	MPRender.guide/Req-MPRender	10
1.28	MPRender.guide/Req-Progress	11
1.29	MPRender.guide/Req-Really_quit	11

1.30	MPRender.guide/Err-MPRender	11
1.31	MPRender.guide/Err-LibraryR	12
1.32	MPRender.guide/Err-AllocVec	12
1.33	MPRender.guide/Err-OpenPoints	12
1.34	MPRender.guide/Err-Progress	13
1.35	MPRender.guide/Err-FileFormat	13
1.36	MPRender.guide/Err-Range	13
1.37	MPRender.guide/Err-MemPointsR	14
1.38	MPRender.guide/Err-CloseFile	14
1.39	MPRender.guide/Err-3Points	14
1.40	MPRender.guide/Err-OpenFile	14
1.41	MPRender.guide/Err-ARexx	15
1.42	MPRender.guide/Err-OldFormat	15
1.43	MPRender.guide/Err-RLoadImage	15
1.44	MPRender.guide/Err-RSaveImage	15
1.45	MPRender.guide/Err-RScaleImage	16
1.46	MPRender.guide/ARexx	16
1.47	MPRender.guide/AR-Loadscript	16
1.48	MPRender.guide/AR-Prescript	17
1.49	MPRender.guide/AR-Postscript	18
1.50	MPRender.guide/Algorithms	19
1.51	MPRender.guide/Index	20

Chapter 1

MPRender

1.1 MPRender.guide

MPRender 4.4 Contents

Parameters	Parameters to MPRender
Requesters	MPRender Requesters
Errors	Errors from MPRender
ARexx	ARexx interface
Algorithms	Morphing Algorithms
Index	Index to this guide

1.2 MPRender.guide/Par-MPRender

Parameters to MPRender

The following parameters can be supplied.

See MPMorph.guide on how to supply them.

FILES	File to render
DX	Skip X
DY	Skip Y
ANTIALIAS	AntiAlias?
INTEGER	Math mode
MODE	Render Mode
DEPTH	Depth to check
SAVEFORMAT	Output file format
MODENAME	ILBM screen mode
COLOURS	ILBM Colours
PALETTE	ILBM Palette
12BIT	Quick ILBM palette
QUICKGREY	Quick greyscale render
FORCEGREY	Even quick greyscale render
PUBSCREEN	Pubscreen to open on
LOADSCRIPT	ARexx script to run when loading
PRESCRIPT	ARexx script before rendering
POSTSCRIPT	ARexx script after rendering
CREATEICONS	Create Icons for images

```
EGS
    Display EGS preview

PORTNAME
    ARexx Portname

TOOLPRI
    Priority to render at

NOPROGRESS
    Only display stop gadget

PROGRESSHOOK
    A progress hook for messages
```

1.3 MPRender.guide/P-FILES

```
FILES=filename
=====
```

This is only relevant to the Shell, only one name can be supplied - default is to show an ASL file requester for the file to run.

1.4 MPRender.guide/P-DX

```
DX=number
=====
```

This parameter can be used to speed up the rendering process. The default value is 0.

If set to a number then only some Horizontal pixels will be generated. e.g. if set to 3 then only every 4th pixel will be generated. The others will be copied from the previous pixel. This can be overridden by using

```
ARexx
. Also see
DY
.
```

1.5 MPRender.guide/P-DY

```
DY=number
=====
```

This parameter can be used to speed up the rendering process. The default value is 0.

If set to a number then only some Vertical pixels will be generated. e.g. if set to 1 then only every other line will be generated. The others will be copied from the previous line. This can be overridden by using

```
ARexx
. Also see
DX
.
```

1.6 MPRender.guide/P-ANTIALIAS

```
ANTIALIAS=NO/YES
```

```
=====
```

This parameter and menu item select if the output files should be Anti-Aliased. Setting to YES can improve the quality of the images but will slow down the rendering process.

This parameter is ignored if
 INTEGER
 is set to YES.

Default value is NO.

1.7 MPRender.guide/P-INTEGGER

```
INTEGGER=NO/YES
```

```
=====
```

This parameter and menu item select if the render process should use integer or floating point arithmetic. The process will be faster if integer arithmetic is used (especially on machines without an FPU). However the output quality will not be so good.

If this parameter is set to YES then the
 ANTIALIAS
 parameter is ignored.

Default value is NO for CPUs without an FPU, YES for CPUs with an FPU.

1.8 MPRender.guide/P-MODE

MODE=0-15

=====

This parameter and menu item indicate how the Morphing algorithm should search to find the points to use for morphing.

The values are additive:

- 1 : Leaves un-triangled point stationary
- 2 : Precalculate close points
- 4 : Searches all the closest points
- 8 : Uses a Delaunay algorithm to find triangles

Default value is 0.

1.9 MPRender.guide/P-DEPTH

DEPTH=number

=====

This parameter indicates how deep the Morphing algorithm should search to find the points to use for morphing. The maximum value is 20 (higher values are accepted but will be taken as 20).

1.10 MPRender.guide/P-SAVEFORMAT

SAVEFORMAT=xxx

=====

This parameter and menu item specify the format MPRender should use to save the output images.

The following formats are available:

- BW16 : 16 colour grey scale ILBM
- BW256 : 256 colour grey scale ILBM
- HAM6 : HAM6 ILBM with fixed (internal) palette
- HAM6P : HAM6 ILBM with computed or supplied palette
- HAM8 : HAM8 ILBM with fixed (internal) palette
- HAM8P : HAM8 ILBM with computed or supplied palette
- EHB : EHB ILBM with computed or supplied palette
- COLOUR : 2 to 256 colour ILBM with computed or supplied palette
- ILBM24 : 24 bit ILBM
- PPM : P5 (if grey input) or P6 PBM format

```

JPEG   : JPEG format (using cjpeg)
PNG    : PNG format (using pnmtopng)
DCTV3  : 3 plane DCTV ILBM with dctv.library version 3
DCTV4  : 4 plane DCTV ILBM with dctv.library version 3

```

If the output format is not a 24 bit format then the image is dithered using the Floyd-Steinberg method.

PPM format is basically uncompressed 24 bit. The files are therefore very large and it is suggested that a compressing file handler (such as XFH or EPU) is used. This format is provided mainly to allow the easy production of MPEG movies.

1.11 MPRender.guide/P-MODENAME

```
MODENAME=xxx
```

```
=====
```

If the

```
SAVEFORMAT
```

parameter specifies an ILBM then this parameter can be used to specify the screen mode (CAMG chunk) of the output file.

If not specified then a reasonable one is generated.

1.12 MPRender.guide/P-COLOURS

```
COLOURS=number
```

```
=====
```

if

```
SAVEFORMAT
```

is set to COLOUR then this gadget can be used to specify the number of colours in the output image (from 2 to 256). If not specified then the default is the number of colours in the

```
PALETTE
```

```
file
```

or 16 if no palette is supplied.

1.13 MPRender.guide/P-PALETTE

```
PALETTE=filename
```

```
=====
```

If

SAVEFORMAT

is set to HAM6P, HAM8P, EHB or COLOUR then this parameter can be used to specify the palette to use for the output file.

The file specified should be an ILBM file.

1.14 MPRender.guide/P-12BIT

12BIT=YES/NO

=====

If

SAVEFORMAT

is set to COLOUR then this gadget can be used to specify that colour remapping should use a 12 bit palette. The default is to generate an 18 bit palette.

You should specify this parameter if you are viewing the image on a pre AGA machine as the image conversion is much quicker.

1.15 MPRender.guide/P-QUICKGREY

QUICKGREY=YES/NO

=====

If the input files are greyscale and this is set to YES then the rendering will be quicker. Set to NO if the

ARexx

scripts alter the

colours.

1.16 MPRender.guide/P-FORCEGREY

FORCEGREY=YES/NO

=====

This forces the render to be done in greyscale, speeding up the rendering.

1.17 MPRender.guide/P-PUBSCREEN

```
PUBSCREEN=pubscreenname  
=====
```

This gives the name of the Public Screen on which to open MPRender windows - default is the default public screen.

1.18 MPRender.guide/P-LOADSCRIPT

```
LOADSCRIPT=Scriptname/OFF  
=====
```

This specifies the name of an
ARExx
script to run before each image 24
bit image is loaded. This can be used to e.g. hold the images on disc
in JPEG format to save space and convert each image back to 24 bit ILBM
when required. Note however that MPRender now has the ability to load a
large variety of image formats.

The default script is:

Loadscript.MPM.

The version supplied does nothing.

Set to OFF to run no script.

1.19 MPRender.guide/P-PRESCRIPT

```
PRESCRIPT=Scriptname/OFF  
=====
```

This specifies the name of an
ARExx
script to run before each image is
rendered. This can be used to produce only some of the frames and
control the movement and colour of the images.

The default script is:

Prescript.MPM.

The version supplied does nothing.

Set to OFF to run no script.

1.20 MPRender.guide/P-POSTSCRIPT

```
POSTSCRIPT=Scriptname/OFF
```

```
=====
```

This specifies the name of an
ARexx
script to run after each image is
rendered. This can be used to build an animation or change the image
format from 24 bit.

The default script is:

```
Postscript.MPM.
```

The version supplied does nothing.

Set to OFF to run no script.

1.21 MPRender.guide/P-CREATEICONS

```
CREATEICONS=NO/YES
```

```
=====
```

This paramete selects if Icons are to be saved with image files. If it
is YES then an Icon will be saved.

The following Icon is used (selected in order):

```
ENV:MPMorph/def_pic.info  
ENV:SYS/def_pic.info  
Default Project Icon
```

Default value is NO.

1.22 MPRender.guide/P-EGS

```
EGS=YES/NO
```

```
=====
```

If this is set to YES then an EGS preview is shown when rendering.

1.23 MPRender.guide/P-PORTNAME

PORTNAME=name
=====

This gives the name of the ARexx port to open.

The default is MPRENDER.

See MPRender-rexx.

1.24 MPRender.guide/P-TOOLPRI

TOOLPRI=number
=====

This can only be supplied as a Tool Icon tool type. It sets the priority of the rendering process.

Setting to -1 is a good idea if you wish to run the program in the background. The default value is 0. Setting to positive values is generally not a good idea.

1.25 MPRender.guide/P-NOPROGRESS

NOPROGRESS=YES/NO
=====

If this is set to YES then the progress window just shows the Stop gadget.

1.26 MPRender.guide/P-PROGRESSHOOK

PROGRESSHOOK=number
=====

This specifies the address of a progress hook to call to display messages and progress. See MPMorph Rexx GetAttr Hook. This should always remain valid when MPRender is running.

1.27 MPRender.guide/Req-MPRender

MPRender Requesters

The following requesters are displayed:

```
Progress
Progress Requester

Quit
Quit Requester
```

1.28 MPRender.guide/Req-Progress

Progress Requester

=====

This displays progress messages and a stop button.

1.29 MPRender.guide/Req-Really_quit

Quit Requester

=====

This is displays a confirmation when trying to quit MPRender.

1.30 MPRender.guide/Err-MPRender

Errors from MPRender

The following message can be displayed:

```
Open Library
AllocVec
Open Points
Progress
FileFormat
```

Range
Memory
Close File
3 Points
Open File
ARexx
Old Format
Load Image
Save Image
Scale Image

1.31 MPRender.guide/Err-LibraryR

Error - Unable to Open xxxx.library(n)
=====

The library xxxx version number n could not be opened. It could just be a lack of memory.

Resolution - Ensure you are running at least version 3.0 of the operating system, or free up some memory and retry.

1.32 MPRender.guide/Err-AllocVec

Error - Error AllocVec for output
=====

Insufficient memory is available.

Resolution - Free up some memory and retry.

1.33 MPRender.guide/Err-OpenPoints

Error - Error Opening points file
=====

The input file specified to MPRender does not exist or is in an invalid

format.

Resolution - Either specify a valid input file, or manually edit the points file.

1.34 MPRender.guide/Err-Progress

```
Error - Error opening progress window
```

```
=====
```

```
Some error occurred opening the
      Progress
      requester in MPRender.
Probably a lack of memory, or the
      PUBSCREEN
      parameter specifies a not
open public screen name.
```

Resolution - Free up some memory or correct the parameter and retry.

1.35 MPRender.guide/Err-FileFormat

```
Error - Invalid file format - Line 'xxxx'
```

```
=====
```

```
The points file being loaded is in an incorrect format or is not a
points file.
```

Resolution - Specify a correct points file or manually edit the file and retry.

1.36 MPRender.guide/Err-Range

```
Error - Point out of range - Line 'xxxx'
```

```
=====
```

```
The point coordinates specified in the input file is larger than the
image size.
```

Resolution - Manually edit the input file and retry.

1.37 MPRender.guide/Err-MemPointsR

Error - Out of memory for points
=====

Insufficient memory is available.

Resolution - Free up some memory and retry.

1.38 MPRender.guide/Err-CloseFile

Error - Error closing file 'xxxx'
=====

The file xxxx could not be successfully closed. The disc may be full.

Resolution - If saving then save the file to a different disk or free up some disk space and retry with another name. The original file may not be accessible until after a reboot.

1.39 MPRender.guide/Err-3Points

Error - Must have at least 3 points
=====

In order to correctly render an image at least 3 points must be defined.

Resolution - Use MPMorph to define at least 3 points - e.g. in 3 of the corners.

1.40 MPRender.guide/Err-OpenFile

Error - Error opening file 'xxxx'
=====

The file xxxx could not be opened. The file does not exist (when reading), the name is invalid, the file is already in use, or the disk is write protected.

Resolution - Use a different file name or allow the disk to be written to.

1.41 MPRender.guide/Err-ARexx

Error - Error sending ARexx message - 'xxxx'

MPRender has had a problem sending the ARexx message. ARexx may not be running, or the script may not exist or have errors.

Resolution - Ensure ARexx is running, check the scripts - See parameters

```

PRESCRIPT
,
POSTSCRIPT
and
LOADSCRIPT
exist and have MPM as a suffix.

```

If the above is OK then use TCO and TS to interactively trace the script.

1.42 MPRender.guide/Err-OldFormat

Error - Assuming version 1.0 file format

The current version of the File Format has a header record. This error is saying no header is present, it is assumed that the file is in an old format.

Resolution - Select OK to continue. Load and Save in MPMorph to save in the new format if required.

1.43 MPRender.guide/Err-RLoadImage

Error - Loading image

There has been a problem loading an image. The message should provide more information.

1.44 MPRender.guide/Err-RSaveImage

Error - Saving image

There has been a problem saving an image. The message should provide more information.

1.45 MPRender.guide/Err-RScaleImage

Error - Scaling image
=====

There has been a problem loading an image. The message should provide more information.

1.46 MPRender.guide/ARexx

ARexx interface to MPRender

There is a full ARexx interface to MPRender.

See MPRender-rexx.

Also see the example scripts supplied.

ARexx scripts are run before and after each image is rendered, and before each 24 bit image is loaded. The script names can be supplied as parameters (

```
LOADSCRIPT
,
PRESCRIPT
and
POSTSCRIPT
) to MPRender.
```

The suffix to each ARexx script should be .MPM.

```
Loadscript          Run before loading 24 bit image
Prescript           Run before rendering
Postscript          Run after rendering
```

1.47 MPRender.guide/AR-Loadscript

ARexx script run before loading 24 bit image
 =====

This script is run before each 24 bit ILBM image is loaded.

It is passed the following parameters:

```

Frame      : The current frame number.
TotalFrames : The total number of frames being rendered.
Single     : Set to 1 if a Warp, 0 for a Morph, 2 for Anim Morph, 3 for Anim ←
             Warp.
Image      : Set to 0 for 1st image, 1 for second.
FileName   : Name of file just rendered.
  
```

This script can be used to change the format of the input file (by running it through a conversion program).

One example is included:

```

Loadsript.MPM - Do nothing example
  
```

1.48 MPRender.guide/AR-PreScript

ARexx script run before rendering
 =====

This script is run before each image is rendered.

It is also called for the first image (for warps and morphs) and for the last image (for morphs). By default the first and last frames are not rendered. Produce will need to be set to 1 to output these frames. This allows the first and last frames to be converted to the same format as the other output images.

It is passed one parameter - Base - the address of a structure which contains the following:

```

Frame      = 0 : The current frame number, starting at 1 (0 for 1st frame) ←
             - read only.
TotalFrames = 1 : The total number of frames being rendered - read only.
Single      = 2 : Set to 1 if a Warp, 0 = Morph, 2 = Anim Morph, 3 = Anim ←
             Warp - read only.
Movement    = 3 : 0 to 1024 - the proportion of movement from first to ←
             second image.
Red1        = 4 : 0 to 1024 - the proportion of Image 1 Red to use.
Green1      = 5 : As Red1 for Green.
Blue1       = 6 : As Red1 for Blue.
Red2        = 7 : 0 to 1024 - the proportion of Image 2 Red to use.
Green2      = 8 : As Red2 for Green.
Blue2       = 9 : As Red2 for Blue.
Produce     = 10 : Set to 0 to not render this frame, 1 otherwise.
RPlus      = 11 : 0 to 255 to add to Red in rendered image.
GPlus      = 12 : As RPlus for Green.
BPlus      = 13 : As RPlus for Blue.
  
```

```

RMinus      = 14 : 0 to 255 to subtract from Red in rendered image.
GMinus      = 15 : As RMinus for Green.
BMinus      = 16 : As RMinus for Blue.
DX          = 17 : 0 to ? - X amount to skip - See
              parameters
              .
DY          = 18 : 0 to ? - Y amount to skip - See
              parameters
              .
Start       = 19 : Starting frame number.

```

The values of these parameters may be set and read using the SetAttr and GetAttr functions.

```

Movement      : (1024 * Frame)/(TotalFrames + 1) Morphs
                (1024 * Frame)/TotalFrames           Warps

Red1,Green1,Blue1 : Movement                        Morphs
                  1024                             Warps

Red2,Green2,Blue2 : (1024 - Movement)                Morphs
                  0                                  Irrelevant for Warps

Produce        : 1                                  Rendered frames
                  0                                  Frames 0 and TotalFrames+1

RPlus,GPlus,BPlus : 0
RMinus,GMinus,BMinus: 0
DX,DY          : Initially set by
                  DX
                  and
                  DY
                  parameters

```

Changing these values allows acceleration of movement, colour fades etc. and the generation of only some images (to check a long animation).

Example scripts included are:

```

FadeToBlack.MPM - Warp fade to black
FadeToWhite.MPM - Warp fade to white
PixelMorph.MPM  - Morph by pixelating
PixelWarp.MPM   - Warp pixelating
PreAll.MPM      - Render all images
Prescript.MPM   - Do nothing example

```

1.49 MPRender.guide/AR-Postscript

ARexx script run after rendering

=====

This script is run after each image is rendered.

It is passed the following parameters:

```

Frame      : The current frame number.
TotalFrames : The total number of frames being rendered.
Single     : Set to 1 if a Warp, 0 for a Morph.
FileName   : Name of file just rendered.

```

This script can be used to change the format of the output file (by running it through a conversion program) or build an animation.

Three examples are included:

```

PostAnim.MPM - Convert to Anim
Postscript.MPM - Do nothing example
ToHam.MPM - Convert using PPM and Wasp

```

1.50 MPRender.guide/Algorithms

Morphing Algorithms

The morphing algorithm is defined using the parameters

```

MODE
and
DEPTH
to MPRender.

```

The basic algorithm is to find 3 points which make a triangle around the point and morph this triangle between the start and end images.

The

```
DEPTH
```

parameter controls how many points will be checked to form a triangle. 0 means just the closest 3 points are examined, 1 the closest 4, 2 the closest 5 etc.

The

```
MODE
```

parameter controls both which triangle is chosen and what to do if no surrounding triangle is found.

If MODE=0 2 4 ... 14 (i.e. bit 1 not set [do not add 1]) then if no triangle surrounding the point is found examining the closest points then the 3 closest points are used to decide how to morph. Otherwise the point is assumed to be stationary.

If MODE=2 3 4 ... 15 (i.e. bit 2 set [add 2]) then the closest triangles are only calculated once at the start (based on the average of start and end). This should only be used if the points do not move a lot between the start and end images. It can speed things up a lot for a lot of frames. It does not make sense to use this for Animated Warps/Morphs. This uses a lot of memory:

If MODE=2 3 6 7 ... 30 31 (i.e. bit 2 set [add 2]) then all the closest points (the exact number controlled by

```
DEPTH
) are examined to determine
```

the smallest triangle. Otherwise the first surrounding triangle found is used.

If MODE=8 9 10 ... (i.e. bit 4 set [add 8]) then a Delaunay triangle algorithm is used to find triangles. For these modes the

DEPTH
parameter

should normally be set to 0. Also floating point calculations are still done even if

INTEGER
is set to YES.

$(DEPTH + 4) * Image_Width * Image_Height * 4$

e.g. 640x512 image, DEPTH=2 uses 7.5 MB (contiguous) memory

The

DEPTH
parameter can have a major effect on the rendering speed.

1.51 MPRender.guide/Index

Index

12BIT parameter	P-12BIT
ANTIALIAS parameter	P-ANTIALIAS
ARexx interface	ARexx
COLOURS parameter	P-COLOURS
CREATEICONS parameter	P-CREATEICONS
DEPTH parameter	P-DEPTH
DX parameter	P-DX
DY parameter	P-DY
EGS parameter	P-EGS

Errors	Err-MPRender
FILES parameter	P-FILES
FORCEGREY parameter	P-FORCEGREY
INTEGER parameter	P-INTEGERS
Loadscript	AR-Loadscript
LOADSCRIPT parameter	P-LOADSCRIPT
MODE parameter	P-MODE
MODENAME parameter	P-MODENAME
Morphing Algorithms	Algorithms
NOPROGRESS parameter	P-NOPROGRESS
PALETTE parameter	P-PALETTE
Parameters	Par-MPRender
PORTNAME	P-PORTNAME
Postscript	AR-Postscript
POSTSCRIPT parameter	P-POSTSCRIPT
Prescript	AR-Prescript
PRESCRIPT parameter	P-PRESCRIPT
Progress Requester	Req-Progress
PROGRESSHOOK parameter	P-PROGRESSHOOK

PUBSCREEN parameter
P-PUBSCREEN

QUICKGREY parameter
P-QUICKGREY

Quit Requester
Req-Really_quit

Requesters
Req-MPRender

SAVEFORMAT parameter
P-SAVEFORMAT

TOOLPRI parameter
P-TOOLPRI
