AGIDL

The Adaptive Graphics Image Display Library

AGIDL Function Reference Manual 0.1b

AGIDL_GetR

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

u8 AGIDL_GetR(COLOR clr, AGIDL_CLR_FMT fmt)

Arguments

clr – A color in the RGB color space with each individual color component packed into a 32-bit integer.

fmt – The formatting of the color in the RGB or reverse BGR color space with 32-bit deep color, 24-bit true color, or 16-bit high color bit depth.

Purpose

This function extracts and returns the red component of an integer packed color.

AGIDL_GetG

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

u8 AGIDL_GetG(COLOR clr, AGIDL_CLR_FMT fmt)

Arguments

clr – A color in the RGB color space with each individual color component packed into a 32-bit integer.

fmt – The formatting of the color in the RGB or reverse BGR color space with 32-bit deep color, 24-bit true color, or 16-bit high color bit depth.

Purpose

This function extracts and returns the green component of an integer packed color.

AGIDL_GetB

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

u8 AGIDL_GetB(COLOR clr, AGIDL_CLR_FMT fmt)

Arguments

clr – A color in the RGB color space with each individual color component packed into a 32-bit integer.

fmt – The formatting of the color in the RGB or reverse BGR color space with 32-bit deep color, 24-bit true color, or 16-bit high color bit depth.

Purpose

This function extracts and returns the blue component of an integer packed color.

AGIDL_GetA

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

u8 AGIDL_GetA(COLOR clr, AGIDL_CLR_FMT fmt)

Arguments

clr – A color in the RGB color space with each individual color component packed into a 32-bit integer.

fmt – The formatting of the color in the 32-bit RGBA or ARGB color space.

Purpose

This function extracts and returns the alpha component of an integer packed color.

AGIDL_SetR

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

COLOR AGIDL_SetR(COLOR clr, u8 newR, AGIDL_CLR_FMT fmt)

Arguments

clr – A color in the RGB color space with each individual color component packed into a 32-bit integer.

newR – The new red component to replace the current red component in the color.

fmt – The formatting of the color in the RGB or reverse BGR color space with 32-bit deep color, 24-bit true color, or 16-bit high color bit depth.

Purpose

This function replaces the previous red component of a color with a new red component clamping the new red component depending on the bit depth of the color and packing it back into an integer.

AGIDL_SetG

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

COLOR AGIDL_SetG(COLOR clr, u8 newG, AGIDL_CLR_FMT fmt)

Arguments

clr – A color in the RGB color space with each individual color component packed into a 32-bit integer.

newG – The new green component to replace the current green component in the color.

fmt – The formatting of the color in the RGB or reverse BGR color space with 32-bit deep color, 24-bit true color, or 16-bit high color bit depth.

Purpose

This function replaces the previous green component of a color with a new green component clamping the new green component depending on the bit depth of the color and packing it back into an integer.

AGIDL_SetB

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

COLOR AGIDL_SetB(COLOR clr, u8 newB, AGIDL_CLR_FMT fmt)

Arguments

clr – A color in the RGB color space with each individual color component packed into a 32-bit integer.

newB – The new blue component to replace the current blue component in the color.

fmt – The formatting of the color in the RGB or reverse BGR color space with 32-bit deep color, 24-bit true color, or 16-bit high color bit depth.

Purpose

This function replaces the previous blue component of a color with a new blue component clamping the new blue component depending on the bit depth of the color and packing it back into an integer.

AGIDL_SetA

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

COLOR AGIDL_SetA(COLOR clr, u8 newA, AGIDL_CLR_FMT fmt)

Arguments

clr – A color in the RGB color space with each individual color component packed into a 32-bit integer.

newA – The new alpha component to replace the current alpha component in the color.

fmt – The formatting of the color in the 32-bit RGBA or ARGB color space.

Purpose

This function replaces the previous alpha component of a color with a new alpha component clamping the alpha component and packing it back into an integer.

AGIDL_RGB

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

COLOR AGIDL_RGB(u8 r, u8 g, u8 b, AGIDL_CLR_FMT fmt)

Arguments

r – The red component of the color.

g – The green component of the color.

b – The blue component of the color.

fmt – The formatting of the color in the RGB or reverse BGR color space with 32-bit deep color, 24-bit true color, or 16-bit high color bit depth.

Purpose

This function combines the individual r, g, and b components into a singular, 32-bit color and will order the components and position them depending on the color formatting.

AGIDL_RGB16

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

COLOR16 AGIDL_RGB16(u8 r, u8 g, u8 b, AGIDL_CLR_FMT fmt)

Arguments

r – The red component of the color.

g – The green component of the color.

b – The blue component of the color.

fmt – The formatting of the color in the RGB or reverse BGR color space with 16-bit high color bit depth.

Purpose

This function combines the individual r, g, and b components into a singular, 16-bit color and will order the components and position them depending on the color formatting.

AGIDL_RGBA

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

COLOR AGIDL_RGB(u8 r, u8 g, u8 b, u8 a, AGIDL_CLR_FMT fmt)

Arguments

r – The red component of the color.

g – The green component of the color.

b – The blue component of the color.

a – The alpha component of the color.

fmt – The formatting of the color in the RGB or reverse BGR color space with 32-bit deep color bit depth.

Purpose

This function combines the individual r, g, b, and a components into a singular, 32-bit color with an alpha channel and will order the components and position them depending on the color formatting.

AGIDL_GetColor

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

COLOR AGIDL_GetColor(AGIDL_CLR clr, AGIDL_CLR_FMT fmt)

Arguments

clr – An enumeration that represents the fundamental colors that humans have identified such as red, pink, purple, gray, or orange.

fmt – The formatting of the color in the RGB or reverse BGR color space with 32-bit deep color, 24-bit true color, or 16-bit high color bit depth.

Purpose

This function converts the provided color enumeration into a format that can be represented in a computer’s memory layout as a 32-bit packed integer.

AGIDL_GetColor16

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

COLOR16 AGIDL_GetColor16(AGIDL_CLR clr, AGIDL_CLR_FMT fmt)

Arguments

clr – An enumeration that represents the fundamental colors that humans have identified such as red, pink, purple, gray, or orange.

fmt – The formatting of the color in the RGB or reverse BGR color space with 16-bit high color bit depth.

Purpose

This function converts the provided color enumeration into a format that can be represented in a computer’s memory layout as a 16-bit packed integer.

AGIDL_InitICP

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

void AGIDL_InitICP(AGIDL_ICP* palette, int mode)

Arguments

palette – A pointer to an ICP union, Indexed Color Palette.

mode – The palette mode to place values in either an 8bpp or 4bpp palette.

- AGIDL_ICP_256 – 32-bit 8bpp
- AGIDL_ICP_16 – 32-bit 4bpp
- AGIDL_ICP_16b_256 – 16-bit 8bpp
- AGIDL_ICP_16b_16 – 16-bit 4bpp

Purpose

This function initializes the correct color palette by clearing it entirely with black.

AGIDL_AddColorICP

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

void AGIDL_AddColorICP (AGIDL_ICP* palette, u8 index, COLOR clr, AGIDL_CLR_FMT fmt, int max_diff, int* pass)

Arguments

palette – A pointer to an ICP union, Indexed Color Palette.

index – The index entry of the palette to place a color.

clr – The color wished to be placed in the palette.

fmt - The formatting of the color in the RGB or reverse BGR color space with 32-bit deep color, 24-bit true color, or 16-bit high color bit depth.

max_diff – The maximum threshold to determine if a color should be placed into the palette to deter similarly related colors from taking up too much space in the palette.

pass – A pointer that will be dereferenced to tell whether or not the color was added to the specified index of the palette.

Purpose

This function will attempt to place a color at the specified index of the palette with respect to the maximum threshold set to determine how similar colors can be to ones already placed inside of the palette.

AGIDL_AddColorICP16

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

void AGIDL_AddColorICP16 (AGIDL_ICP* palette, u8 index, COLOR16 clr, AGIDL_CLR_FMT fmt, int max_diff, int* pass)

Arguments

palette – A pointer to an ICP union, Indexed Color Palette.

index – The index entry of the palette to place a color.

clr – The color wished to be placed in the palette.

fmt - The formatting of the color in the RGB or reverse BGR color space with 16-bit high color bit depth.

max_diff – The maximum threshold to determine if a color should be placed into the palette to deter similarly related colors from taking up too much space in the palette.

pass – A pointer that will be dereferenced to tell whether or not the color was added to the specified index of the palette.

Purpose

This function will attempt to place a color at the specified index of the palette with respect to the maximum threshold set to determine how similar colors can be to ones already placed inside of the palette.

AGIDL_FindClosestColor

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

u8 AGIDL_FindClosestColor (AGIDL_ICP palette, COLOR clr, AGIDL_CLR_FMT fmt, int max_difference)

Arguments

palette – A pointer to an ICP union, Indexed Color Palette.

clr – The color wished to be placed in the palette.

fmt - The formatting of the color in the RGB or reverse BGR color space with 16-bit high color bit depth.

max_difference – The maximum threshold to determine if a color should be placed into the palette to deter similarly related colors from taking up too much space in the palette.

Purpose

This function returns the index of the most similar color to the one provided inside of the palette.

AGIDL_SetY

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

void AGIDL_SetY(AGIDL_YCbCr* ycbcr, u8 y)

Arguments

ycbcr – A pointer to a color in the YCbCr color space represented as a standard C struct.

y – The y component of the color.

Purpose

This function sets the y component of a color in the YCbCr color space.

AGIDL_SetCb

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

void AGIDL_SetCb(AGIDL_YCbCr* ycbcr, u8 cb)

Arguments

ycbcr – A pointer to a color in the YCbCr color space represented as a standard C struct.

cb – The cb component of the color.

Purpose

This function sets the cb component of a color in the YCbCr color space.

AGIDL_SetCr

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

void AGIDL_SetCr(AGIDL_YCbCr* ycbcr, u8 cr)

Arguments

ycbcr – A pointer to a color in the YCbCr color space represented as a standard C struct.

cr – The cr component of the color.

Purpose

This function sets the cr component of a color in the YCbCr color space.

AGIDL_SetCbCr

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_manager.h	agidl_cc_manager.c	0.1b	Ryandracus Chapman

Syntax

void AGIDL_SetYCbCr(AGIDL_YCbCr* ycbcr, u8 y, u8 cb, u8 cr)

Arguments

ycbcr – A pointer to a color in the YCbCr color space represented as a standard C struct.

y – The y component of the color.

cb – The cb component of the color.

cr – The cr component of the color.

Purpose

This function sets the y, cb, and cr components of a color in the YCbCr color space.

AGIDL_CLR16_TO_CLR

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_converter.h	agidl_cc_converter.c	0.1b	Ryandracus Chapman

Syntax

COLOR AGIDL_CLR16_TO_CLR(COLOR16 clr, AGIDL_CLR_FMT srcfmt, AGIDL_CLR_FMT destfmt)

Arguments

clr – A color in the RGB color space with each individual color component packed into a 16-bit integer.

srcfmt – The color format of the provided 16-bit color.

fmt – The non 16-bit color format of the destination color.

Purpose

This function converts a 16-bit color into a 32-bit color.

AGIDL_CLR_TO_CLR16

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_converter.h	agidl_cc_converter.c	0.1b	Ryandracus Chapman

Syntax

COLOR16 AGIDL_CLR_TO_CLR(COLOR clr, AGIDL_CLR_FMT srcfmt, AGIDL_CLR_FMT destfmt)

Arguments

clr – A color in the RGB color space with each individual color component packed into a 32-bit integer.

srcfmt – The color format of the provided color.

fmt – The 16-bit color format of the destination color.

Purpose

This function converts a 32-bit color into a 16-bit color.

AGIDL_RGB_TO_BGR

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_converter.h	agidl_cc_converter.c	0.1b	Ryandracus Chapman

Syntax

COLOR AGIDL_RGB_TO_BGR(COLOR rgb, AGIDL_CLR_FMT fmt)

Arguments

rgb – A color that has its individual RGB components ordered in r, g, then b.

fmt – The formatting of the color in the RGB color space with 32-bit deep color, 24-bit true color, or 16-bit high color bit depth.

Purpose

This function inverts the ordering of the individual RGB components of the incoming color from r->g->b to b->g->r.

AGIDL_BGR_TO_RGB

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_converter.h	agidl_cc_converter.c	0.1b	Ryandracus Chapman

Syntax

COLOR AGIDL_RGB_TO_BGR(COLOR bgr, AGIDL_CLR_FMT fmt)

Arguments

bgr – A color that has its individual RGB components ordered in b, g, then r.

fmt – The formatting of the color in the RGB color space with 32-bit deep color, 24-bit true color, or 16-bit high color bit depth.

Purpose

This function inverts the ordering of the individual RGB components of the incoming color from b->g->r to r->g->b.

AGIDL_555_TO_565

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_converter.h	agidl_cc_converter.c	0.1b	Ryandracus Chapman

Syntax

COLOR16 AGIDL_555_TO_565(COLOR16 clr, AGIDL_CLR_FMT fmt)

Arguments

clr – A color in the 15-bit RGB555 color space.

fmt – The formatting of the color in the RGB color 16-bit high color bit depth.

Purpose

This function converts a 15-bit color into a 16-bit color in the RGB565 color space meaning that the green component has 6-bits to represent itself instead of 5 bits.

AGIDL_565_TO_555

Library	Header File	Source File	Version	Author
libagidl.a	agidl_cc_converter.h	agidl_cc_converter.c	0.1b	Ryandracus Chapman

Syntax

COLOR16 AGIDL_565_TO_555(COLOR16 clr, AGIDL_CLR_FMT fmt)

Arguments

clr – A color in the 16-bit RGB565 color space.

fmt – The formatting of the color in the RGB color 16-bit high color bit depth.

Purpose

This function converts a 16-bit color into a 15-bit color in the RGB555 color space meaning that the green component has 5-bits to represent itself instead of 6 bits.