Children's Art Palace

Programming

u8glib

Graphical library updates 2021-10-22

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begin

C++/Arduino: `uint8_t U8GLIB::begin(void)`

Description: Reset display and put it into default state.

Arguments:
u8g : Pointer to the u8g structure (C interface only).

Returns: 0, if the init procedure fails.
Use: Outside picture loop.
Note: Available with v1.11.
Example:
See also: U8GLIB

disableCursor

C++/Arduino: `void U8GLIB::disableCursor(void)`

Description: Disable the cursor. The cursor will not be visible.

Arguments:
u8g : Pointer to the u8g structure (C interface only).

Returns:
Use: Outside picture loop.
Note:
Example:
See also: enableCursor, setCursorColor, setCursorFont, setCursorPos, setCursorStyle

enableCursor

C++/Arduino: `void U8GLIB::enableCursor(void)`

Description: Enable the cursor at the specified position.

Arguments:
u8g : Pointer to the u8g structure (C interface only).

Returns:
Use: Outside picture loop.
Note:
Example:
See also: disableCursor, setCursorColor, setCursorFont, setCursorPos, setCursorStyle

firstPage

C++/Arduino: `void U8GLIB::firstPage(void)`

Description: A call to this procedure, marks the beginning of the picture loop.

Arguments:
Returns:
Use: This procedure call starts the picture loop; it cannot be used inside the picture loop.
Picture loops cannot be nested.
Note:
Example:
See also: nextPage

drawBitmap
drawBitmapP

C++/Arduino:

```
void U8GLIB::drawBitmap(u8g_uint_t x, u8g_uint_t y, u8g_uint_t cnt, u8g_uint_t h, const uint8_t *bitmap)
```

```
void U8GLIB::drawBitmapP(u8g_uint_t x, u8g_uint_t y, u8g_uint_t cnt, u8g_uint_t h, const u8g_pgm_uint8_t *bitmap)
```

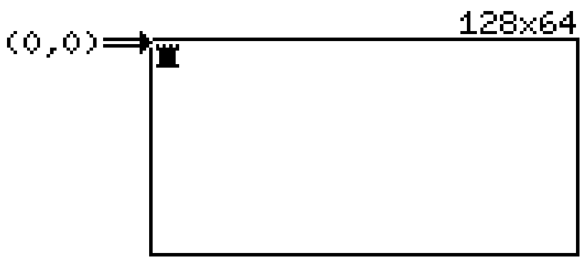
Description: Draw a bitmap at the specified x/y position (upper left corner of the bitmap). Parts of the bitmap may be outside the display boundaries.The bitmap is specified by the array bitmap. A cleared bit means: Do not draw a pixel. A set bit inside the array means: Write pixel with the current color index.For a monochrome display, the color index 0 will usually clear a pixel and the color index 1 will set a pixel.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x: X-position (left position of the bitmap).
y: Y-position (upper position of the bitmap).
cnt: Number of bytes of the bitmap in horizontal direction. The width of the bitmap is cnt*8.
h: Height of the bitmap.
Returns:

Use: Inside picture loop.
Note:

Example:

```
U8GLIB_PCD8544 u8g(13, 11, 10, 9, 8);  // SPI SCK = 13, MOSI = 11, CS = 10, A0 = 9, Reset = 8

const uint8_t rook_bitmap[] U8G_PROGMEM = {
  0x00,         // 00000000
  0x55,         // 01010101
  0x7f,         // 01111111
  0x3e,         // 00111110
  0x3e,         // 00111110
  0x3e,         // 00111110
  0x3e,         // 00111110
  0x7f          // 01111111
};

void draw(void) {
  // graphic commands to redraw the complete screen should be placed here
  u8g.drawBitmapP( 0, 0, 1, 8, rook_bitmap);
}

void setup(void) {
}

void loop(void) {
  // picture loop
  u8g.firstPage();
  do {
    draw();
  } while( u8g.nextPage() );

  // rebuild the picture after some delay
  delay(1000);
}
```

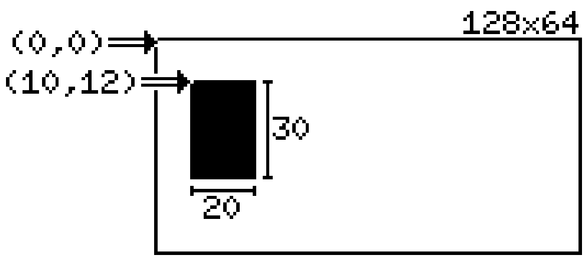


drawBox

C++/Arduino: `void U8GLIB::drawBox(u8g_uint_t x, u8g_uint_t y, u8g_uint_t w, u8g_uint_t h)`

Description: Draw a box (filled frame), starting at x/y position (upper left edge). The box has width w and height h. Parts of the box can be outside of the display boundaries.This procedure uses the current color index to draw the box. For a monochrome display, the color index 0 will usually clear a pixel and the color index 1 will set a pixel.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x: X-position of upper left edge.
y: Y-position of upper left edge.
w: Width of the box.
h: Height of the box.
Returns:
Use: Inside picture loop.
Note:



Example:

```
U8GLIB u8g(...)
...
u8g.drawBox(10,12,20,30);
```

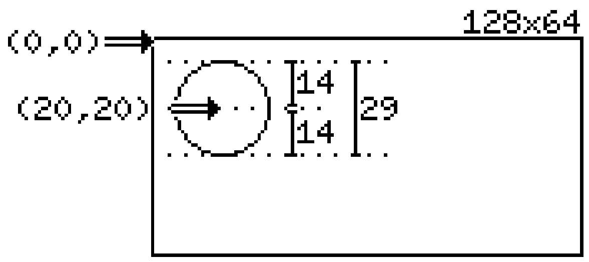
drawCircle

C++/Arduino:

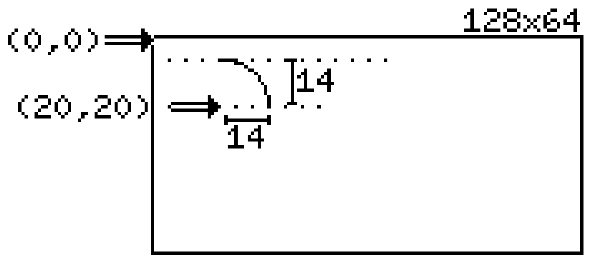
```
void U8GLIB::drawCircle(u8g_uint_t x0, u8g_uint_t y0, u8g_uint_t rad, uint8_t opt =
U8G_DRAW_ALL)
```

Description: Draw a circle with radus rad at position (x0, y0). The diameter of the circle is 2*rad+1Depending on opt, it is possible to draw only some sections of the circle. Possible values for opt are:U8G_DRAW_UPPER_RIGHT, U8G_DRAW_UPPER_LEFT, U8G_DRAW_LOWER_LEFT, U8G_DRAW_LOWER_RIGHT, U8G_DRAW_ALL.These values can be combined with the | operator.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x0, y0: Position of the center of the circle.
rad: Defines the size of the circle: Radus = rad.
opt: Selects some or all sections of the circle.
U8G_DRAW_UPPER_RIGHT
U8G_DRAW_UPPER_LEFT
U8G_DRAW_LOWER_LEFT
U8G_DRAW_LOWER_RIGHT
U8G_DRAW_ALL



Returns:
Use: Inside picture loop.
Note: Available with v1.02



Example:

```
u8g.drawCircle(20, 20, 14);
```

Example:

```
u8g.drawCircle(20, 20, 14, U8G_DRAW_UPPER_RIGHT);
```

drawDisc

C++/Arduino:

```
void U8GLIB::drawDisc(u8g_uint_t x0, u8g_uint_t y0, u8g_uint_t rad, uint8_t opt = U8G_DRAW_ALL)
```

Description: Draw a filled circle with radus rad at position (x0, y0). The diameter of the circle is 2*rad+1Depending on opt, it is possible to draw only some sections of the disc. Possible values for opt are:U8G_DRAW_UPPER_RIGHT, U8G_DRAW_UPPER_LEFT, U8G_DRAW_LOWER_LEFT, U8G_DRAW_LOWER_RIGHT, U8G_DRAW_ALL.These values can be combined with the | operator.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x0, y0: Position of the center of the filled circle.
rad: Defines the size of the disc: Radus = rad.
opt: Selects some or all sections of the circle.
U8G_DRAW_UPPER_RIGHT
U8G_DRAW_UPPER_LEFT
U8G_DRAW_LOWER_LEFT
U8G_DRAW_LOWER_RIGHT
U8G_DRAW_ALL

Returns:
Use: Inside picture loop.
Note: Available with v1.02

Example: See drawCircle
See also: drawCircle

drawEllipse

C++/Arduino:

```
void U8GLIB::drawEllipse(u8g_t *u8g, u8g_uint_t x0, u8g_uint_t y0, u8g_uint_t rx, u8g_uint_t ry, uint8_t opt)
```

Description: Draw ellipse with radus rx and 'ry' at position (x0, y0). rx*ry must be lower than 1024 in 8 Bit mode of u8glib.Depending on opt, it is possible to draw only some sections of the disc. Possible values for opt are:U8G_DRAW_UPPER_RIGHT, U8G_DRAW_UPPER_LEFT, U8G_DRAW_LOWER_LEFT, U8G_DRAW_LOWER_RIGHT, U8G_DRAW_ALL.These values can be combined with the | operator.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x0, y0: Position of the center of the filled circle.
rx, rx: Defines the size of the ellipse.
opt: Selects some or all sections of the ellipse.
U8G_DRAW_UPPER_RIGHT
U8G_DRAW_UPPER_LEFT
U8G_DRAW_LOWER_LEFT
U8G_DRAW_LOWER_RIGHT
U8G_DRAW_ALL

Returns:
Use: Inside picture loop.
Note: Available with v1.14
See also: drawCircle

drawFilledEllipse

C++/Arduino:

```
void U8GLIB::drawFilledEllipse(u8g_t *u8g, u8g_uint_t x0, u8g_uint_t y0, u8g_uint_t rx,
u8g_uint_t ry, uint8_t opt)
```

Description: Draw a filled ellipse with radus rx and 'ry' at position (x0, y0). rx*ry must be lower than 1024 in 8 Bit mode of u8glib.Depending on opt, it is possible to draw only some sections of the disc. Possible values for opt are:U8G_DRAW_UPPER_RIGHT, U8G_DRAW_UPPER_LEFT, U8G_DRAW_LOWER_LEFT, U8G_DRAW_LOWER_RIGHT, U8G_DRAW_ALL.These values can be combined with the | operator.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x0, y0: Position of the center of the filled circle.
rx, rx: Defines the size of the ellipse.
opt: Selects some or all sections of the ellipse.
U8G_DRAW_UPPER_RIGHT
U8G_DRAW_UPPER_LEFT
U8G_DRAW_LOWER_LEFT
U8G_DRAW_LOWER_RIGHT
U8G_DRAW_ALL

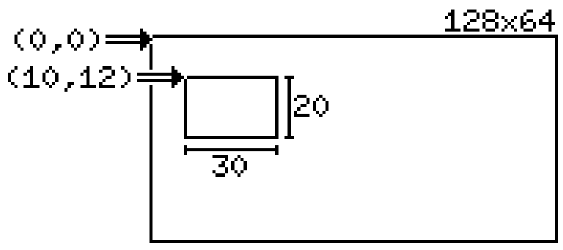
Returns:
Use: Inside picture loop.
Note: Available with v1.14
See also: drawCircle

drawFrame

C++/Arduino:
```
void U8GLIB::drawFrame(u8g_uint_t x, u8g_uint_t y, u8g_uint_t w, u8g_uint_t h)
```

Description: Draw a frame, starting at x/y position (upper left edge). The frame has width w and height h. Parts of the frame can be outside of the display boundaries. This procedure uses the current color index to draw the lines of the frame. For a monochrome display, the color index 0 will usually clear a pixel and the color index 1 will set a pixel.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x: X-position of upper left edge.
y: Y-position of upper left edge.
w: Width of the frame.
h: Height of the frame.
Returns:
Use: Inside picture loop.
Note:



Example:
```
U8GLIB u8g(...)
...
u8g.drawFrame(10,12,30,20);
```

drawHLine

C++/Arduino: `void U8GLIB::drawHLine(u8g_uint_t x, u8g_uint_t y, u8g_uint_t w)`

Description: Draw a horizontal line, starting at x/y position (left edge). The width of the line is w pixels. Parts of the line can be outside of the display boundaries.This procedure uses the current color index to draw the line. For a monochrome display, the color index 0 will usually clear a pixel and the color index 1 will set a pixel.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x: X-position.
y: Y-position.
w: Width of the horizontal line.

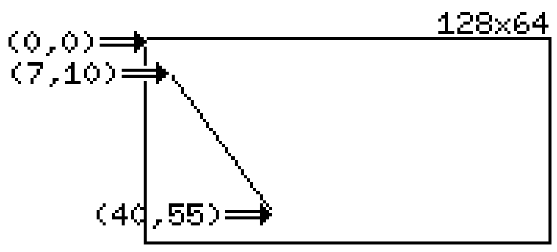
Returns:
Use: Inside picture loop.
Note:
Example:
See also: setColorIndex, drawVLine

drawLine

C++/Arduino: `void U8GLIB::drawLine(u8g_uint_t x1, u8g_uint_t y1, u8g_uint_t x2, u8g_uint_t y2)`

Description: Draw a line from (x1, y1) to (x2, y2). There are no restrictions on the start end end position.This procedure uses the current color index to draw the line. For a monochrome display, the color index 0 will usually clear a pixel and the color index 1 will set a pixel.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x1, y1: Start position.
x2, y2: End position.



Returns:
Use: Inside picture loop.
Note: Available in v1.03.

Example:
```
u8g.drawLine(7, 10, 40, 55);
```

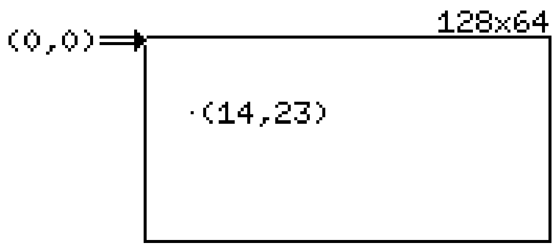
See also: setColorIndex, drawVLine drawHLine

drawPixel

C++/Arduino: `void U8GLIB::drawPixel(uint8_t x, uint8_t y)`

Description: Draw a pixel at the specified x/y position. Position (0,0) is at the upper left corner of the display. The position may be outside the display boundaries.This procedure uses the current color index to draw the pixel. For a monochrome display, the color index 0 will usually clear a pixel and the color index 1 will set a pixel.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x: X-position.
y: Y-position.



Returns:
Use: Inside picture loop.

Example:
```
U8GLIB u8g(...)
...
u8g.drawPixel(14,23);
```

See also: setColorIndex

drawRBox
drawRFrame

C++/Arduino:

```
void U8GLIB::drawRBox(u8g_uint_t x, u8g_uint_t y, u8g_uint_t w, u8g_uint_t h, u8g_uint_t r)
void U8GLIB::drawRFrame(u8g_uint_t x, u8g_uint_t y, u8g_uint_t w, u8g_uint_t h, u8g_uint_t r)
```

Description: Draw a box/frame with round edges, starting at x/y position (upper left edge). The box/frame has width w and height h. Parts of the box can be outside of the display boundaries.Edges have radius r. It is required that w >= 2*(r+1) and h >= 2*(r+1). This condition is not checked. Behavior is undefined if w or h is smaller than 2*(r+1).This procedure uses the current color index to draw the box. For a monochrome display, the color index 0 will usually clear a pixel and the color index 1 will set a pixel.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x: X-position of upper left edge.
y: Y-position of upper left edge.
w: Width of the box.
h: Height of the box.
r: Radius for the four edges.

Returns:
Use: Inside picture loop.
Note: Available with v1.09

See also: setColorIndex, drawFrame drawBox

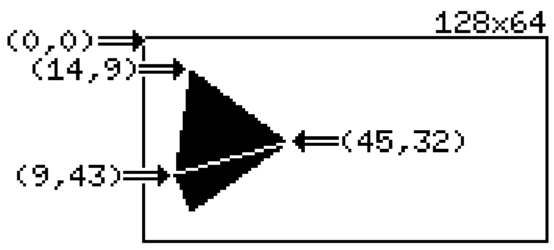
drawTriangle

C++/Arduino:

```
void U8GLIB::drawTriangle(uint16_t x0, uint16_t y0, uint16_t x1, uint16_t y1, uint16_t x2,
uint16_t y2)
```

Description: Draw a triangle (filled polygon). Arguments are 16 bit and the polygon is clipped to the size of the display. Multiple polygons are drawn so that they exactly match without overlap:The left side of a polygon is drawn, the right side is not draw. The upper side is only draw if it is flat. In theexample picture below, the pixel at (9,43) is drawn by the polygon procedures, but pixels (14,9) and (45,32) are not drawn.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x0: X-position point 0.
y0: Y-position point 0.
x1: X-position point 1.
y1: Y-position point 1.
x2: X-position point 2.
y2: Y-position point 2.



Returns:
Use: Inside picture loop.
Note: Available with v1.15

Example:

```
U8GLIB u8g(...)
...
u8g.drawTriangle(14,9, 45,32, 9,42);
u8g.drawTriangle(14,55, 45,33, 9,43);
```

See also: setColorIndex

drawStr
drawStr90
drawStr180
drawStr270
drawStrP
drawStr90P
drawStr180P
drawStr270P

C++/Arduino:

```
u8g_uint_t U8GLIB::drawStr(u8g_uint_t x, u8g_uint_t y, const char *s)
u8g_uint_t U8GLIB::drawStr90(u8g_uint_t x, u8g_uint_t y, const char *s)
u8g_uint_t U8GLIB::drawStr180(u8g_uint_t x, u8g_uint_t y, const char *s)
u8g_uint_t U8GLIB::drawStr270(u8g_uint_t x, u8g_uint_t y, const char *s)
u8g_uint_t U8GLIB::drawStrP(u8g_uint_t x, u8g_uint_t y, const u8g_pgm_uint8_t *s)
u8g_uint_t U8GLIB::drawStr90P(u8g_uint_t x, u8g_uint_t y, const u8g_pgm_uint8_t *s)
u8g_uint_t U8GLIB::drawStr180P(u8g_uint_t x, u8g_uint_t y, const u8g_pgm_uint8_t *s)
u8g_uint_t U8GLIB::drawStr270P(u8g_uint_t x, u8g_uint_t y, const u8g_pgm_uint8_t *s)
```

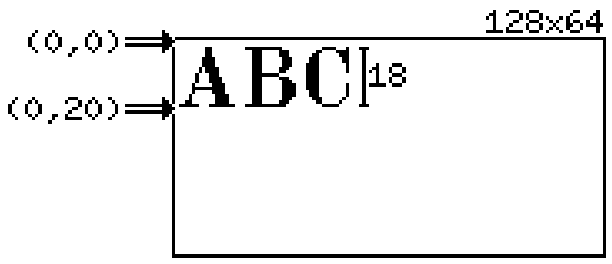
Description: Draws a string at the specified x/y position. The x/y position is the lower left corner of the first character of the string.It is required to assign a font with the setFont procedure before the first call to this procedure.This procedure also uses the current color index to draw the characters. For a monochrome display, the color index 0 will usually clear a pixel and the color index 1 will set a pixel.The (x,y) arguments are influenced by the reference point calculation mode (setFontPosBaseline).'P' variant: s is assumed to point to a string in PROGMEM area.'90', '180', '270' variants: Rotate string output by 90, 180 or 270 degree.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x: X-position.
y: Y-position.
s: A pointer to a C-string (terminated with \0).

Returns: The width of the string s in pixel.
Use: Inside picture loop.
Note: The C++ Arduino environment also offers the more powerful print procedure.

Example:

```
U8GLIB u8g(...)
...
u8g.setFont(u8g_font_osb18);
u8g.drawStr(0, 20, "ABC");
```



The reference point (0,20) for the origin of the text string usually is one pixel below the lower left edge of the first character. The height of the uppercase letters is shown in the font overview bitmap (in this example 18, see here). In some cases the size of the uppercase letters is also part of the font name.

See also: setColorIndex, setFont, setFontPosBaseline, print

drawVLine

C++/Arduino: `void U8GLIB::drawVLine(u8g_uint_t x, u8g_uint_t y, u8g_uint_t h)`

Description: Draw a vertical line, starting at x/y position (upper edge). The height of the line is h pixels. Parts of the line can be outside of the display boundaries.This procedure uses the current color index to draw the line. For a monochrome display, the color index 0 will usually clear a pixel and the color index 1 will set a pixel.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x: X-position.
y: Y-position.
h: Height of the horizontal line.

Returns:
Use: Inside picture loop.
See also: setColorIndex, drawHLine

drawXBM

drawXBMP

C++/Arduino:

```
void U8GLIB::drawXBM(u8g_uint_t x, u8g_uint_t y, u8g_uint_t w, u8g_uint_t h, const uint8_t *bitmap)
```

```
void U8GLIB::drawXBMP(u8g_uint_t x, u8g_uint_t y, u8g_uint_t w, u8g_uint_t h, const u8g_pgm_uint8_t *bitmap)
```

Description: Draw a XBM Bitmap. Position (x,y) is the upper left corner of the bitmap. XBM contains monochrome, 1-bit bitmaps. This procedure only draws pixel values 1. The current color index is used for drawing (see setColorIndex). Pixel with value 0 are not drawn (transparent). Many tools can save a bitmap as XBM.

The result will look like this Example:

```
#define u8g_logo_width 38
#define u8g_logo_height 24
static unsigned char u8g_logo_bits[] = {
   0xff, 0xff, 0xff, 0xff, 0x3f, 0xff, 0xff, 0xff, 0xff, 0x3f, 0xe0, 0xe0,
...
   0xff, 0x3f, 0xff, 0xff, 0xff, 0xff, 0x3f, 0xff, 0xff, 0xff, 0xff, 0x3f };
```

This could can be copied directly into your code. Use drawXBM to draw this bitmap at (0,0):

```
u8g.drawXBM( 0, 0, u8g_logo_width, u8g_logo_height, u8g_logo_bits);
```

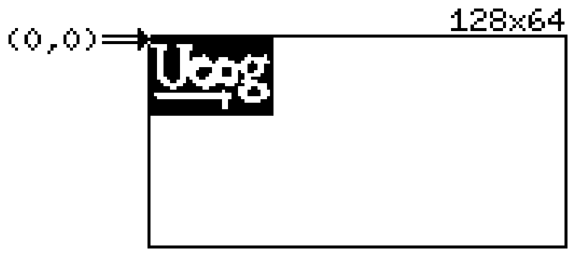
In most cases it is better to place the bitmap into AVR PROGMEM area. Add the U8G_PROGMEM after the array definition before the init sequence:

```
static unsigned char u8g_logo_bits[] U8G_PROGMEM = {
```

With this modification call the drawXBMP variant:

```
u8g.drawXBMP( 0, 0, u8g_logo_width, u8g_logo_height, u8g_logo_bits);
```

Arguments:
u8g : Pointer to the u8g structure (C interface only).
x: X-position.
y: Y-position.
w: Width of the bitmap.
h: Height of the bitmap.
bitmap: Pointer to the start of the bitmap.



Returns:
Use: Inside picture loop.

See also: setColorIndex, drawBitmap

getColorIndex

C++/Arduino: `uint8_t U8GLIB::getColorIndex(void)`

Description: The current "color index" is used by all "draw" procedures to set a pixel value on the display. This procedure returns the current value, which has been set as current color index.

Arguments:
u8g : Pointer to the u8g structure (C interface only).

Returns: Value, which is used by the "draw" procedures as a pixel value.

Use: Inside and outside picture loop.
Note:
Example:
See also: drawPixel setColorIndex

getFontAscent

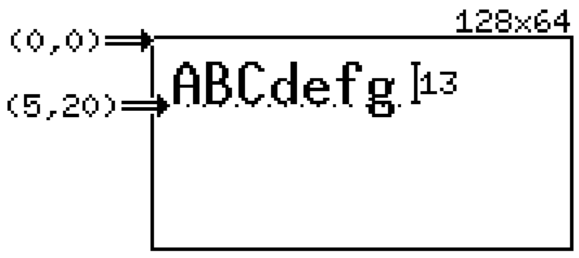
C++/Arduino: `u8g_int_t U8GLIB::getFontAscent(void)`

Description: Returns the reference height of the glyphs above the baseline (ascent). This value depends on the current reference height (see setFontRefHeightAll).

Arguments:
u8g : Pointer to the u8g structure (C interface only).

Returns: The ascent of the current font.
Use: Inside and outside picture loop.
Note:
Example: For u8g_font_10x20 the ascent is 13.

```
u8g_SetFont(u8g, u8g_font_10x20);
u8g_DrawStr(u8g, 5, 20, "ABCdefg");
a = u8g_GetFontAscent(u8g);
```



The dotted line shows the baseline of the string. The string itself is above the baseline. The reference point for the string (5, 20) is exactly on the baseline. The ascent is the number of pixels of the highest glyph above baseline. To calculate the y position which is above the largest glyph, use baseline_y_pos-u8g_GetFontAscent(u8g)-1.

See also: setFont getFontDescent setFontRefHeightAll

getFontDescent

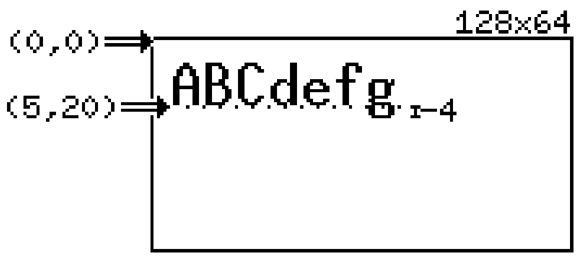
C++/Arduino: `u8g_int_t U8GLIB::getFontDescent(void)`

Description: Returns the reference height of the glyphs below the baseline (descent).

Arguments:
u8g : Pointer to the u8g structure (C interface only).

Returns: The descent of the current font.
Use: Inside and outside picture loop.
Note:
Example: For u8g_font_10x20 the descent is -4.

```
u8g_SetFont(u8g, u8g_font_10x20);
u8g_DrawStr(u8g, 5, 20, "ABCdefg");
d = u8g_GetFontDescent(u8g);
```



The dotted line shows the baseline of the string. The string itself is above the baseline. The reference point for the string (5, 20) is exactly on the baseline. The ascent is the number of pixels of the highest glyph above baseline. To calculate the y position which is below the glyph with the highest descent, use baseline_y_pos-u8g_GetFontDescent(u8g). *See also:* setFont getFontAscent

getFontLineSpacing

C++/Arduino: `u8g_int_t U8GLIB::getFontLineSpacing(void)`

Description: Returns the vertical distance of two lines of text, written with the current font. This value is derived from the ascent and descent value and multiplied with the current LineSpacingFactor. The returned value is influenced by the current font, the "Reference Height" and the LineSpacingFactor.

Arguments:
u8g : Pointer to the u8g structure (C interface only).

Returns: The distance of two lines (pixel).
Use: Inside and outside picture loop.
Note:
See also: setFont getFontAscent getFontDescent setFontRefHeightAll setLineSpacingFactor

getHeight

C++/Arduino: `u8g_uint_t U8GLIB::getHeight(void)`

Description: Returns the height of the display.

Arguments:
u8g : Pointer to the u8g structure (C interface only).

Returns: The height of the display.
Use: Inside and outside picture loop.
Note:
Example:
See also: getWidth

getMode

C++/Arduino: `uint8_t U8GLIB::getMode(void)`

Description: Returns information about the display (display mode).The result of this procedure can be used to extract the number of bits per pixel: U8G_MODE_GET_BITS_PER_PIXEL(mode).

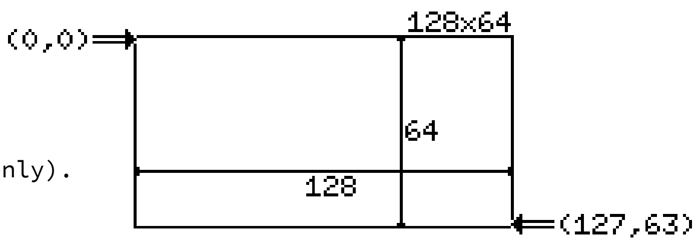
Predefined modes are:
U8G_MODE_BW: black/white monochrome mode with 1 bit per pixel
U8G_MODE_GRAY2BIT: Graylevel mode with 2 bit per pixel

Arguments:
u8g : Pointer to the u8g structure (C interface only).

Returns: The current display mode.
Use: Inside and outside picture loop.
Note:
Example:
See also:

getWidth

C++/Arduino: `u8g_uint_t U8GLIB::getWidth(void)`



Description: Returns the width of the display.

Arguments:
u8g : Pointer to the u8g structure (C interface only).

Returns: The width of the display.
Use: Inside and outside picture loop.
Note:
Example: This procedure will return 128 for an attached display with the dimensions 128x64.

See also: getHeight

getStrWidth

C++/Arduino:
`u8g_uint_t U8GLIB::getStrWidth(const char *s)`
`u8g_uint_t U8GLIB::getStrWidthP(const u8g_pgm_uint8_t *s)`

Arguments:
u8g : Pointer to the u8g structure (C interface only).
s : Pointer to a string.

Returns: The width of the string.

Use: Inside the picture loop.
Note:
Example: See Tutorial Font and String Handling
See also: setFont

nextPage

C++/Arduino: `uint8_t U8GLIB::nextPage(void)`

Description: A call to this procedure, marks the end of the body of the picture loop.

Arguments:
Returns: 0, if the picture loop has been finished, 1 if another redraw of the picture is required.
Use: This procedure call marks the body of the picture loop, it can not be used inside the picture loop (Picture loops can not be nested).

Note: This procedure will not reset or modify any internal values (like the draw color or the current font). The font settings and draw properties at the end of the body of the picture loop are still the same when the body of the picture loop is started again. Usually it is a good idea to set such properties at the beginning of the body of the picture loop.

Example:
See also: firstPage Picture Loop

print

C++/Arduino: `U8GLIB::print(...)`

Description: A call to the print procedure of the Print base class. See the documentation on the Arduino web page: http://arduino.cc/en/Serial/Print.`print()` behaves similar to drawStr. All font settings also apply to this procedure. All strings and values passed to the print procedureare written to the "print position". The "print position" can be set via setPrintPos.

Arguments: See http://arduino.cc/en/Serial/Print
Returns: See http://arduino.cc/en/Serial/Print
Use: Inside the picture loop.
Note:
Example:
See also: setPrintPos drawStr

setPrintPos

C++/Arduino: `void U8GLIB::setPrintPos(u8g_uint_t x, u8g_uint_t y)`

Description: Assignes the (x,y) position for the next call of the print procedure.

Arguments:
x: X-position.
y: Y-position.

Returns:
Use: Inside picture loop.

Example:
See also: print

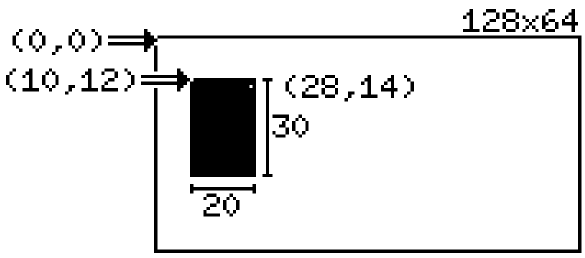
setColorIndex

C++/Arduino: `void U8GLIB::setColorIndex(uint8_t color_index)`

Description: The current "color index" is used by all "draw" procedures to set a pixel value on the display.For a monochrome display, the color index 0 will usually clear a pixel and the color index 1 will set a pixel.For a display which supports gray levels, this procedure sets the gray level for drawing.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
color_index: Value, which is used by the "draw" procedures as a pixel value.

Returns:
Use: Inside and outside picture loop. It is a good practice to use this procedure at the beginning of the body of the picture loop.
Note:



Example:
```
U8GLIB u8g(...)
...
u8g.setColorIndex(1);
u8g.drawBox(10, 12, 20, 30);
u8g.setColorIndex(0);
u8g.drawPixel(28, 14);  // clear pixel at (28, 14)
```

See also: drawPixel getColorIndex setDefaultBackgroundColor

setContrast

C++/Arduino: `uint8_t U8GLIB::setContrast(uint8_t contast)`

Description: Assigns a new contrast value (0..255) to the display. Not all displays or driver support the setting of the contrast value (see devices table).

Arguments:
u8g : Pointer to the u8g structure (C interface only).
contrast: New contrast value (0..255).

Returns: The value 1, if the contrast value has been assigned.
Use: Inside and outside picture loop. It is a good practice to use this procedure not inside the picture loop.
Note: Available with v1.02
Example:
See also: Device Table

setCursorColor

C++/Arduino: `void U8GLIB::setCursorColor(uint8_t fg, uint8_t bg)`

Description: Assign the foreground and background color index for the cursor.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
fg: Foreground color index.
bg: Background color index.
Returns:
Use: Outside picture loop.
Note:
Example:
See also: enableCursor

setCursorFont

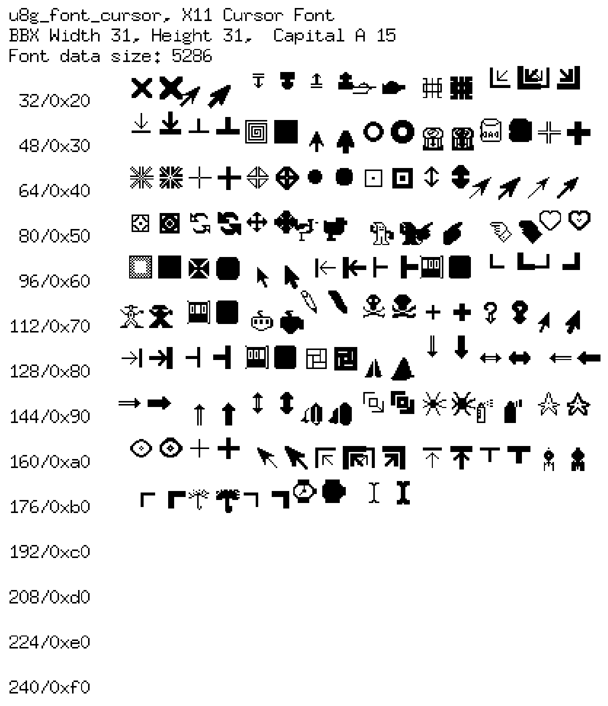
C++/Arduino: `void U8GLIB::setCursorFont(const u8g_pgm_uint8_t *font)`

Description: Set the cursor font (see note below). The cursor shape can be selected from this font.

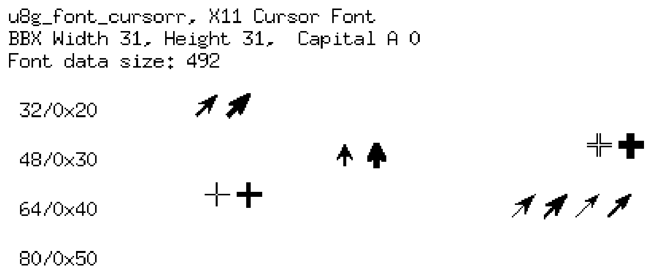
Arguments:
u8g : Pointer to the u8g structure (C interface only).
font: A pointer to the font data with cursor shapes.

Returns:
Use: Outside picture loop.
Note: The following cursor fonts are available:

u8g_font_cursor



reduced number of cursor shapes, uses less memory
u8g_font_cursorr


u8g_font_cursorr, X11 Cursor Font
BBX Width 31, Height 31, Capital A 0
Font data size: 492
32/0x20
48/0x30
64/0x40
80/0x50

See also: setCursorStyle, enableCursor

setCursorPos

C++/Arduino: `void U8GLIB::setCursorPos(uint8_t x, uint8_t y)`

Description: Draw the enabled cursor at the specified x/y position.

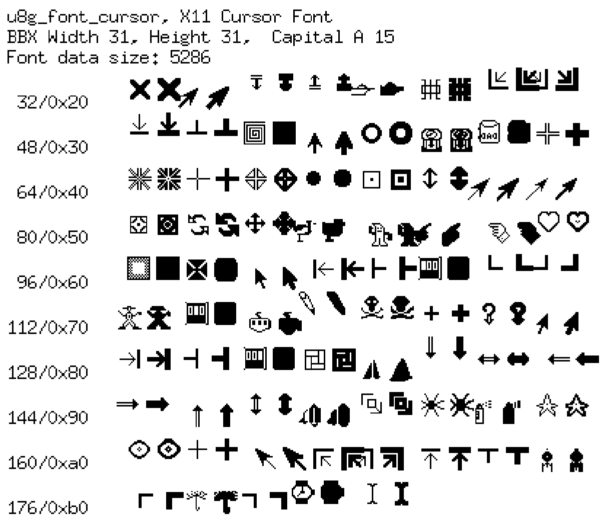
Arguments:
u8g : Pointer to the u8g structure (C interface only).
x: X-position.
y: Y-position.

Returns:
Use: Outside picture loop.
Note:
Example:
See also: enableCursor

setCursorStyle

C++/Arduino: `void U8GLIB::setCursorStyle(uint8_t encoding)`

Description: Set the cursor shape. The cursor shape is defined by two bitmaps of a cursor font. The encoding 32 will select the bitmaps 32 and 33 of a cursor font. In the font u8g_font_cursor, this would select the x cursor in the upper left edge:


u8g_font_cursor, X11 Cursor Font
BBX Width 31, Height 31, Capital A 15
Font data size: 5286
32/0x20
48/0x30
64/0x40
80/0x50
96/0x60
112/0x70
128/0x80
144/0x90
160/0xa0
176/0xb0

Arguments:
u8g : Pointer to the u8g structure (C interface only).
encoding: A character position within the cursor font.

Returns:
Use: Outside picture loop.
Note:
Example:
See also: setCursorFont, enableCursor

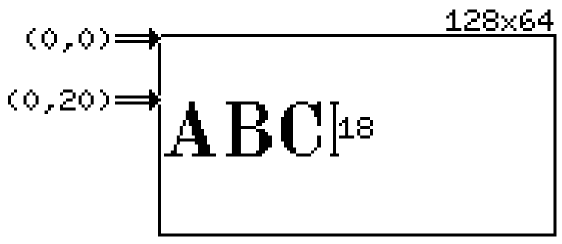
setFontPosBaseline
setFontPosBottom
setFontPosCenter
setFontPosTop

C++/Arduino:
```
void U8GLIB::setFontPosBaseline(void)
void U8GLIB::setFontPosBottom(void)
void U8GLIB::setFontPosCenter(void)
void U8GLIB::setFontPosTop(void)
```

Description: Set the reference position for the character and string draw procedure. In the command u8g_DrawStr(u8g, 5, 20, "ABCdefg"); the string is placed at (5,20), where (5,20) defines the left start of the baseline if setFontPosBaseline has been called (which also is the default).

setFontPosBottom: Reference position is getFontDescent() below baseline.
setFontPosTop: Reference position is getFontAscent()+1 above baseline (one pixel above the highest refrence character).
setFontPosCenter: Reference position centered with respect to getFontAscent() and getFontDescent().

Arguments:
u8g : Pointer to the u8g structure (C interface only).



Returns:
Use: Inside and outside picture loop.
Note:
Example:setFontPosTop will move the reference point (0,20) for the origin of the text string to the upper left corner of the string.

```
U8GLIB u8g(...)
...
u8g.setFont(u8g_font_osb18);
u8g.setFontPosTop();
u8g.drawStr(0, 20, "ABC");
```

See also: drawStr getFontAscent getFontDescent

setDefaultBackgroundColor setDefaultForegroundColor setDefaultMidColor

C++/Arduino:
`void U8GLIB::setDefaultBackgroundColor(void)`
`void U8GLIB::setDefaultForegroundColor(void)`
`void U8GLIB::setDefaultMidColor(void)`

Description: Assign one of the default colors as current color index. On a monochrom display, setDefaultBackgroundColor will assign 0 to the current color indexand setDefaultForegroundColor will assign 1 to the current color index. For all display types, it is ensured, that setDefaultBackgroundColor andsetDefaultForegroundColor will assign different values.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
Returns:

Use: Inside and outside picture loop.
Note:
Example:
See also: setColorIndex

setFont

C++/Arduino: `void U8GLIB::setFont(const u8g_fntpgm_uint8_t *font)`

Description: Set the current font and reset the font reference position to "Baseline" (setFontPosBaseline). This font will be used for any further font and draw procedures. U8glib has a lot of built-in fonts which can be used as argument. See here for an overview.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
font: A pointer to the font data.

Returns:
Use: Inside and outside picture loop. It is a good practice to use this procedure at the beginning of the body of the picture loop.
Note: The fonts are loaded into memory as needed. The more fonts you use, the larger your program will be.
Example:
See also: drawStr setFontPosBaseline

setFontLineSpacingFactor

C++/Arduino: `void U8GLIB::setFontLineSpacingFactor(uint8_t factor)`

Description: Assign the factor for the *LineSpacing* calclation.

Line stretch	0.5	0.8	1.0	1.2	1.5	2.0
factor	32	51	64	77	96	128

Arguments:
u8g : Pointer to the u8g structure (C interface only).
factor: See above.

Returns:
Use: Inside and outside picture loop.
Note:
See also: getFontLineSpacing

setHardwareBackup

C++/Arduino: `void U8GLIB::setHardwareBackup(u8g_state_cb backup_cb)`

Description: The display can be connected to I/O pins which are also shared with other external devices. Examples are SPI, TWI or UART interfaces. Example: SD card and SPI displayshare Clock and Data pins (but have different chip select lines). The SD Card software uses the SPI hardware of the microcontroller to access the SD card, but U8glibshould use a software SPI mode. In such a case, the hardware state of the microcontroller SPI subsystem must be modified before access to SD card and display.This modification is activated by this procedure. Usage is: (1) Init u8glib, (2) call this procedure and (3) init other libraries.Available backup procedures: u8g_backup_avr_spi: Backup SPI hardware state of an AVR microcontroller.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
backup_cb: Hardware state backup procedure (specific to controller and hardware subsystem).

Returns:
Use: Outside picture loop.
Note: Available in v1.05.
Example:U8glib uses software SPI and SD library hardware SPI:

```
U8GLIB_DOGM128 u8g(7, 5, 1, 2);  // SPI Com: SCK = 7, MOSI = 5, CS = 1, A0 = 2
...
void setup()  {
  ...
  // SPI backup: Avoid conflict between SW-SPI (u8glib) and HW-SPI (SD)
  u8g.setHardwareBackup(u8g_backup_avr_spi);
  ...
  // Setup Arduino SD library
  pinMode(SS, OUTPUT);
  if (SD.begin(23)) {
    mas_Init(mas_device_sd, NULL);
  }
  ...
}
```

setRGB

C++/Arduino: `void U8GLIB::setRGB(uint8_t r, uint8_t g, uint8_t b)`

Description: Assignes RGB color for one of the color devices.

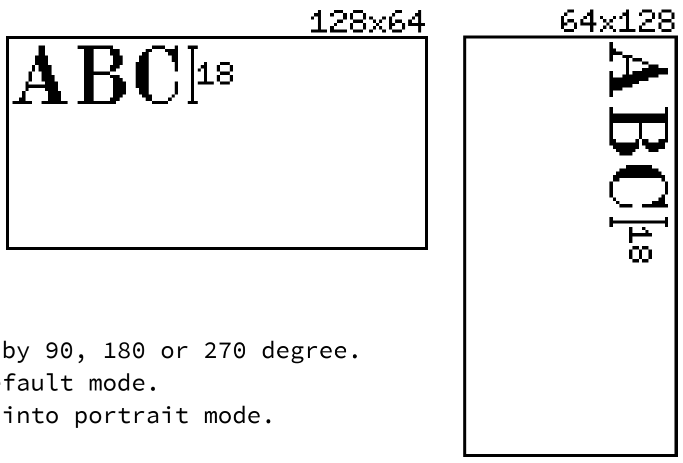
Arguments:
u8g : Pointer to the u8g structure (C interface only).
r: Red part of the color, range: 0..255.
g: Green part of the color, range: 0..255.
b: Blue part of the color, range: 0..255.

Returns:
Note: Available with v1.13
Use: Inside picture loop.
Example:
See also: setColorIndex

setRot90

setRot180

setRot270



C++/Arduino:
`void U8GLIB::setRot90()`
`void U8GLIB::setRot180()`
`void U8GLIB::setRot270()`

Description: Clockwise rotates the display screen by 90, 180 or 270 degree.
For most display devices, landscape view is the default mode.
Rotation by 90 or 270 degree will put the display into portrait mode.

Arguments:
u8g : Pointer to the u8g structure (C interface only).
Returns:

Use: Outside picture loop. Arduino environment: It is a good practice to use this procedure in the setup() procedure.
Example: Left: Default landscape mode. Right: Portrait mode with setRot90.

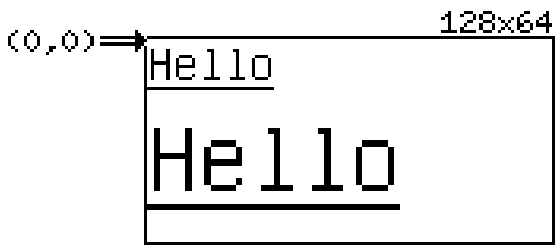
setScale2x2

C++/Arduino: `void U8GLIB::setScale2x2()`

Description: This command halfs x and y dimension of the display. After calling this command, graphics commands output blocks of size 2x2 pixel until a call to u8g:undoScale(). getHeight() and getWidth() only return half of the original display values. All graphic commands between "u8g::setScale2x2()" and "u8g:undoScale()" are scaled up (line draw, pixel set, font, bitmaps, ...).

Arguments:
u8g : Pointer to the u8g structure (C interface only).

Returns:
Note: Available with v1.09
Use: Outside or inside picture loop.
If used inside the picture loop,
also call u8g:undoScale() inside the picture loop.



Example:
```
void draw(void) {
  u8g.setFont(u8g_font_unifont);
  u8g.setFontPosTop();
  u8g.drawStr(0, 1, "Hello");
  u8g.drawHLine(0, 1+14, 40);
  u8g.setScale2x2();            // Scale up all draw procedures
  u8g.drawStr(0, 12, "Hello");  // actual display position is (0,24)
  u8g.drawHLine(0, 12+14, 40);  // All other procedures are also affected
  u8g.undoScale();              // IMPORTANT: Switch back to normal mode
}
```

See also: undoScale

sleepOn
sleepOff
C++/Arduino: ``
`void U8GLIB::sleepOn(void)`
`void U8GLIB::sleepOff(void)`

Description: Enable/disable sleep mode for the display (if possible).
Arguments:
u8g : Pointer to the u8g structure (C interface only).
Returns:
Use: Outside picture loop.
Note: Available with v1.11.Supported for ST7565 and SSD13xx controller.
Example:

undoRotation
C++/Arduino: `void U8GLIB::undoRotation()`

Description: Remove an applied rotation done by the "setRotXY" commands. After calling this command, the display will have its default orientation. Nothing happens if the display has default orientation.
Arguments:
u8g : Pointer to the u8g structure (C interface only).
Returns:
Use: Outside picture loop.
Example:
See also: setRot90

undoScale
C++/Arduino: `void U8GLIB::undoScale()`

Description: Remove an applied scaling. If the scaling has been applied within the body of the picture loop, then this command should be called within the body of the picture loop.
Arguments:
u8g : Pointer to the u8g structure (C interface only).
Returns:
Note: Available with v1.09
Example:
See also: setScale2x2

U8GLIB
C++/Arduino: ``
`void U8GLIB::U8GLIB(u8g_dev_t *dev)`
`void U8GLIB::U8GLIB(u8g_dev_t *dev, uint8_t sck, uint8_t mosi, uint8_t cs, uint8_t a0, uint8_t reset)`
`void U8GLIB::U8GLIB(u8g_dev_t *dev, uint8_t d0, uint8_t d1, uint8_t d2, uint8_t d3, uint8_t d4, uint8_t d5, uint8_t d6, uint8_t d7, uint8_t en, uint8_t cs1, uint8_t cs2, uint8_t di, uint8_t rw, uint8_t reset)`
Description: Create a new interface to a graphics display. The dev argument describes the type of the display. See here for a complete list of available devices.Usually this constructor is not called directly. Instead there are drived classes for each available device. See also the last column of the device listfor a complete list of available constructor calls.
Arguments:
dev: A pointer to a device structure.
Arduino pins: Required pins to connect the display depending on the communication interface.
reset: The reset pin is optional and can be U8G_PIN_NONE
Returns:
Use: Outside picture loop.
Note:
Example:
See also: List of supported devices

ST7920, 128x64

- Tested displays: Noname displays from various sources
- Arduino C++ Interface

Description	U8glib Constructor
SW SPI	U8GLIB_ST7920_128X64_1X(sck, mosi, cs [, reset])
HW SPI	U8GLIB_ST7920_128X64_1X(cs [, reset])
8 Bit	U8GLIB_ST7920_128X64_1X(d0, d1, d2, d3, d4, d5, d6, d7, en, di, rw [, reset])
SW SPI, quad RAM	U8GLIB_ST7920_128X64_4X(sck, mosi, cs [, reset])
HW SPI, quad RAM	U8GLIB_ST7920_128X64_4X(cs [, reset])
8 Bit, quad RAM	U8GLIB_ST7920_128X64_4X(d0, d1, d2, d3, d4, d5, d6, d7, en, di, rw [, reset])

Virtual Screen Device

- Tested displays: Not required
- Arduino C++ Interface

Description	U8glib Constructor
n.a.	U8GLIB_VS()

- C-Interface

Description	U8glib Device Name
n.a.	u8g_dev_vs