
The ORbit16TM PCD8544 LCD Library has 2 useful functions used to draw bitmaps.

One is used for icons:

```
void nlcd_icon(const unsigned char *icon);
```

and another for bitmaps:

```
void nlcd_bitmap(const unsigned char *bitmap, unsigned char x,  
unsigned char y);
```

The differences between *icons* and *bitmaps* are:

- An icon is 8 pixel high and is printed in line with text
- A bitmap height is a multiple of 8 (allowed values: 8,16,24,32,40,48) and can be located at an arbitrary position (with x between 0 and 83 and y between 0 and 5).

Please remember that Y value represents a row index: each row made by 8 pixel in height.

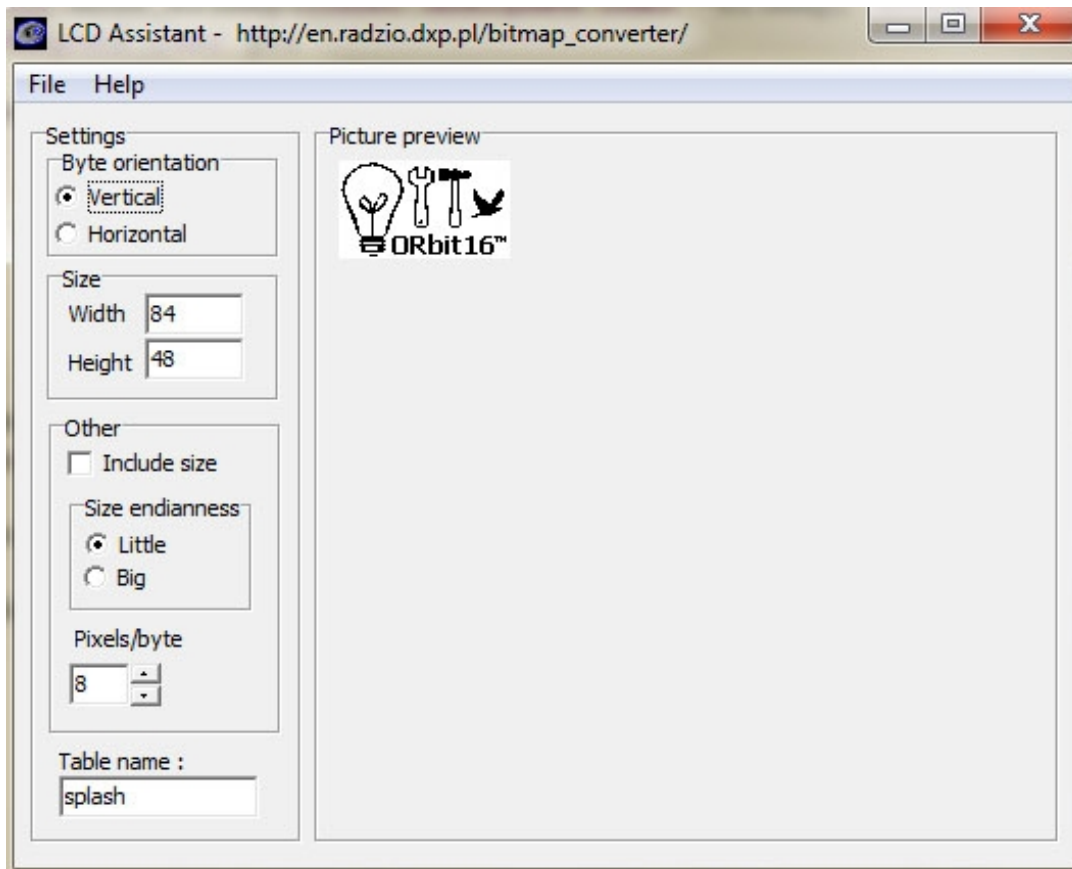
You must draw, using an imaging program, a bitmap with 1 bit color depth.

The bitmap must be 8 pixel high for an icon or multiple of 8 for a bitmap (up to 48).

Download LCD assistant from http://en.radzio.dxp.pl/bitmap_converter/

Select **File->Load image** and select the image you want to convert.

Leave the default options as in the following image:



Please remember: width value can be a maximum of 84 and height must be a multiple of 8, or 8 for an icon. Deselect “Include size” check box and use a “Table name” with only letters and underscore (no space, no commas, no dots). The table name will be the name used for the array containing byte values for the image.

Select **File -> Save Output**

Give the file a name ending with H extension (ex.: splash.h) and then press **Save**. Now open the file with a text editor, you can see a thing like this:

```
//-----
// File generated by LCD Assistant
// http://en.radzio.dxp.pl/bitmap_converter/
//-----

const unsigned char splash [] = {
0x00, 0x00, 0x00, 0x00, 0x80, 0xC0, 0x20, 0x30,
0x02, 0x06, 0x06, 0x04, 0x04, 0x0C, 0x08, 0x18,
0x00, 0x00, 0xE0, 0x20, 0x10, 0x18, 0xF8, 0x00,
0x00, 0xF0, 0xF0, 0xF0, 0xF0, 0xF0, 0xE0, 0xE0,
```

LCD assistant creates an *array*. You must add some values to this array in order to be used with ORbit16™ PCD8544 LCD Library:

If your image is an icon (height is 8 pixel):

The first value of the array must be the icon width in pixel, so if your icon is 24 pixel wide, you must add 24 as the first element of the array (don't forget the comma after the value!) :

```
//-----  
// File generated by LCD Assistant  
// http://en.radzio.dxp.pl/bitmap_converter/  
//-----  
const unsigned char splash [] = {24,  
0x00, 0x00, 0x00, 0x00, 0x80, 0xC0, 0x20, 0x30,  
0x02, 0x06, 0x06, 0x04, 0x04, 0x0C, 0x08, 0x18,  
0x00, 0x00, 0xE0, 0x20, 0x10, 0x18, 0xF8, 0x00,  
0x00, 0xF0, 0xF0, 0xF0, 0xF0, 0xF0, 0xE0, 0xE0,
```

If your image is a bitmap (height is 8, 16, 32, 40, 48):

The first two values of the array must be the bitmap width and height in pixel, so if your bitmap is 84 pixel wide and 48 pixel high, you must add 84,48 as the first two elements of the array:

```
//-----  
// File generated by LCD Assistant  
// http://en.radzio.dxp.pl/bitmap_converter/  
//-----  
const unsigned char splash [] = {84,48,  
0x00, 0x00, 0x00, 0x00, 0x80, 0xC0, 0x20, 0x30,  
0x02, 0x06, 0x06, 0x04, 0x04, 0x0C, 0x08, 0x18,  
0x00, 0x00, 0xE0, 0x20, 0x10, 0x18, 0xF8, 0x00,  
0x00, 0xF0, 0xF0, 0xF0, 0xF0, 0xF0, 0xE0, 0xE0,
```

Note:

LCD assistant leaves a comma after the last value, first then closing bracket, you can leave it or you can delete it. I prefer to delete it since is not so very nice!