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u8g\_dev\_uc1608\_240x128.c

Universal 8bit Graphics Library

Copyright (c) 2013, olikraus@gmail.com (original 240x64 library)

Modified by thieringpeti@gmail.com for Raystar rx240128 family displays

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Display: http://www.tme.eu/en/details/rx240128a-ghw/lcd-graphic-displays/raystar-optronics/

Connection: HW / SW SPI.

To get this display working, You need some extra capacitors:

connect 4.7uF caps between:

PIN1 & PIN2 VB1 +-

PIN3 & PIN4 VB0 -+

connect 0.1uF caps between:

VLCD and VSS

VBIAS and VSS

You can find some schematics with a 10M resistor parallellized with the VLCD capacitor.

Select 4-bit SPI mode.

Connect D7 (PIN9) To VDD (+3.3V)

Connect D1, D2, D4, D5, D6 to GND (PINS 10,11,12,14,15)

Connect WR0, WR1, BM0, BM1 to GND (PINS 17,18,22,23)

D0: (PIN16) AVR's SCK pin (HW SPI)

D3: (PIN13) AVR's MOSI pin (HW SPI)

CD: (PIN19) used as A0 in the library

CS: (PIN21) Connect to the defined CS pin, and You can re-use the HW SPI in different routines.

RST: (PIN20) optional reset, can be defined in the function, resets on initialization.

Adjust contrast if necessary. Default: 0x072.

\*/

#include "u8g.h"

#define WIDTH 240

#define HEIGHT 128

#define PAGE\_HEIGHT 8

/\* see also ERC24064-1 for init sequence example \*/

static const uint8\_t u8g\_dev\_uc1608\_240x128\_init\_seq[] PROGMEM = {

U8G\_ESC\_CS(1), /\* disable chip (UC1608 has positive logic for CS) \*/

U8G\_ESC\_ADR(0), /\* instruction mode \*/

U8G\_ESC\_RST(1), /\* do reset low pulse with (15\*16)+2 milliseconds \*/

U8G\_ESC\_CS(0), /\* enable chip \*/

0x0e2, /\* soft reset \*/

U8G\_ESC\_DLY(100), /\* delay 100 ms \*/

U8G\_ESC\_DLY(100), /\* delay 100 ms \*/

0x026, /\* MUX rate and temperature compensation \*/

0x0c8, /\* Map control, Bit 3: MY=1, Bit 2: MX=0, Bit 0: MSF =0 \*/

0x0eb, /\* LCD bias Bits 0/1: 00=10.7 01=10.3, 10=12.0, 11=12.7\*/

/\* default 0x0ea for 240x128 \*/

0x081, /\* set contrast (bits 0..5) and gain (bits 6/7) \*/

0x072, /\* default for 240x128 displays: 0x072\*/

0x02f, /\* power on, Bit 2 PC2=1 (internal charge pump), Bits 0/1: cap of panel \*/

U8G\_ESC\_DLY(50), /\* delay 50 ms \*/

0x040, /\* set display start line to 0 \*/

0x090, /\* no fixed lines \*/

0x089, /\* RAM access control \*/

0x0af, /\* disable sleep mode \*/

0x0a4, /\* normal display \*/

0x0a5, /\* display all points, ST7565, UC1610 \*/

// 0x0a7, /\* inverse display \*/

0x0a6, /\* normal display \*/

U8G\_ESC\_DLY(100), /\* delay 100 ms \*/

0x0a4, /\* normal display \*/

U8G\_ESC\_CS(1), /\* disable chip \*/

U8G\_ESC\_END /\* end of sequence \*/

};

static const uint8\_t u8g\_dev\_uc1608\_240x128\_data\_start[] PROGMEM = {

U8G\_ESC\_ADR(0), /\* instruction mode \*/

U8G\_ESC\_CS(0), /\* enable chip \*/

0x010, /\* set upper 4 bit of the col adr to 0 (UC1608) \*/

0x000, /\* set lower 4 bit of the col adr to 0 \*/

U8G\_ESC\_END /\* end of sequence \*/

};

uint8\_t u8g\_dev\_uc1608\_240x128\_fn(u8g\_t \*u8g, u8g\_dev\_t \*dev, uint8\_t msg, void \*arg)

{

switch(msg)

{

case U8G\_DEV\_MSG\_INIT:

u8g\_InitCom(u8g, dev, U8G\_SPI\_CLK\_CYCLE\_300NS);

u8g\_WriteEscSeqP(u8g, dev, u8g\_dev\_uc1608\_240x128\_init\_seq);

break;

case U8G\_DEV\_MSG\_STOP:

break;

case U8G\_DEV\_MSG\_PAGE\_NEXT:

{

u8g\_pb\_t \*pb = (u8g\_pb\_t \*)(dev->dev\_mem);

u8g\_WriteEscSeqP(u8g, dev, u8g\_dev\_uc1608\_240x128\_data\_start);

u8g\_WriteByte(u8g, dev, 0x0b0 | pb->p.page); /\* select current page (UC1608) \*/

u8g\_SetAddress(u8g, dev, 1); /\* data mode \*/

if ( u8g\_pb\_WriteBuffer(pb, u8g, dev) == 0 )

return 0;

u8g\_SetChipSelect(u8g, dev, 1);

}

break;

case U8G\_DEV\_MSG\_CONTRAST:

u8g\_SetChipSelect(u8g, dev, 0);

u8g\_SetAddress(u8g, dev, 0); /\* instruction mode \*/

u8g\_WriteByte(u8g, dev, 0x081);

u8g\_WriteByte(u8g, dev, (\*(uint8\_t \*)arg) >> 2); /\* set contrast from, keep gain at 0 \*/

u8g\_SetChipSelect(u8g, dev, 1);

return 1;

}

return u8g\_dev\_pb8v1\_base\_fn(u8g, dev, msg, arg);

}

uint8\_t u8g\_dev\_uc1608\_240x128\_2x\_fn(u8g\_t \*u8g, u8g\_dev\_t \*dev, uint8\_t msg, void \*arg)

{

switch(msg)

{

case U8G\_DEV\_MSG\_INIT:

u8g\_InitCom(u8g, dev, U8G\_SPI\_CLK\_CYCLE\_300NS);

u8g\_WriteEscSeqP(u8g, dev, u8g\_dev\_uc1608\_240x128\_init\_seq);

break;

case U8G\_DEV\_MSG\_STOP:

break;

case U8G\_DEV\_MSG\_PAGE\_NEXT:

{

u8g\_pb\_t \*pb = (u8g\_pb\_t \*)(dev->dev\_mem);

u8g\_WriteEscSeqP(u8g, dev, u8g\_dev\_uc1608\_240x128\_data\_start);

u8g\_WriteByte(u8g, dev, 0x0b0 | (2\*pb->p.page)); /\* select current page (ST7565R) \*/

u8g\_SetAddress(u8g, dev, 1); /\* data mode \*/

u8g\_WriteSequence(u8g, dev, pb->width, pb->buf);

u8g\_SetChipSelect(u8g, dev, 0);

u8g\_WriteEscSeqP(u8g, dev, u8g\_dev\_uc1608\_240x128\_data\_start);

u8g\_WriteByte(u8g, dev, 0x0b0 | (2\*pb->p.page+1)); /\* select current page (ST7565R) \*/

u8g\_SetAddress(u8g, dev, 1); /\* data mode \*/

u8g\_WriteSequence(u8g, dev, pb->width, (uint8\_t \*)(pb->buf)+pb->width);

u8g\_SetChipSelect(u8g, dev, 0);

}

break;

case U8G\_DEV\_MSG\_CONTRAST:

u8g\_SetChipSelect(u8g, dev, 1);

u8g\_SetAddress(u8g, dev, 0); /\* instruction mode \*/

u8g\_WriteByte(u8g, dev, 0x081);

u8g\_WriteByte(u8g, dev, (\*(uint8\_t \*)arg) >> 2);

u8g\_SetChipSelect(u8g, dev, 0);

return 1;

}

return u8g\_dev\_pb16v1\_base\_fn(u8g, dev, msg, arg);

}

U8G\_PB\_DEV(u8g\_dev\_uc1608\_240x128\_sw\_spi , WIDTH, HEIGHT, PAGE\_HEIGHT, u8g\_dev\_uc1608\_240x128\_fn, U8G\_COM\_SW\_SPI);

U8G\_PB\_DEV(u8g\_dev\_uc1608\_240x128\_hw\_spi , WIDTH, HEIGHT, PAGE\_HEIGHT, u8g\_dev\_uc1608\_240x128\_fn, U8G\_COM\_HW\_SPI);

uint8\_t u8g\_dev\_uc1608\_240x128\_2x\_buf[WIDTH\*2] U8G\_NOCOMMON ;

u8g\_pb\_t u8g\_dev\_uc1608\_240x128\_2x\_pb = { {16, HEIGHT, 0, 0, 0}, WIDTH, u8g\_dev\_uc1608\_240x128\_2x\_buf};

u8g\_dev\_t u8g\_dev\_uc1608\_240x128\_2x\_sw\_spi = { u8g\_dev\_uc1608\_240x128\_2x\_fn, &u8g\_dev\_uc1608\_240x128\_2x\_pb, U8G\_COM\_SW\_SPI };

u8g\_dev\_t u8g\_dev\_uc1608\_240x128\_2x\_hw\_spi = { u8g\_dev\_uc1608\_240x128\_2x\_fn, &u8g\_dev\_uc1608\_240x128\_2x\_pb, U8G\_COM\_HW\_SPI };