/\*

u8g\_rot.c

Universal 8bit Graphics Library

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\*/

#include "u8g.h"

uint8\_t u8g\_dev\_rot90\_fn(u8g\_t \*u8g, u8g\_dev\_t \*dev, uint8\_t msg, void \*arg);

uint8\_t u8g\_dev\_rot180\_fn(u8g\_t \*u8g, u8g\_dev\_t \*dev, uint8\_t msg, void \*arg);

uint8\_t u8g\_dev\_rot270\_fn(u8g\_t \*u8g, u8g\_dev\_t \*dev, uint8\_t msg, void \*arg);

uint8\_t u8g\_dev\_rot\_dummy\_fn(void \*u8g, void \*dev, uint8\_t msg, void \*arg)

{

return 0;

}

u8g\_dev\_t u8g\_dev\_rot = { u8g\_dev\_rot\_dummy\_fn, NULL, NULL };

void u8g\_UndoRotation(u8g\_t \*u8g)

{

if ( u8g->dev != &u8g\_dev\_rot )

return;

u8g->dev = u8g\_dev\_rot.dev\_mem;

u8g\_UpdateDimension(u8g);

}

void u8g\_SetRot90(u8g\_t \*u8g)

{

if ( u8g->dev != &u8g\_dev\_rot )

{

u8g\_dev\_rot.dev\_mem = u8g->dev;

u8g->dev = &u8g\_dev\_rot;

}

u8g\_dev\_rot.dev\_fn = u8g\_dev\_rot90\_fn;

u8g\_UpdateDimension(u8g);

}

void u8g\_SetRot180(u8g\_t \*u8g)

{

if ( u8g->dev != &u8g\_dev\_rot )

{

u8g\_dev\_rot.dev\_mem = u8g->dev;

u8g->dev = &u8g\_dev\_rot;

}

u8g\_dev\_rot.dev\_fn = u8g\_dev\_rot180\_fn;

u8g\_UpdateDimension(u8g);

}

void u8g\_SetRot270(u8g\_t \*u8g)

{

if ( u8g->dev != &u8g\_dev\_rot )

{

u8g\_dev\_rot.dev\_mem = u8g->dev;

u8g->dev = &u8g\_dev\_rot;

}

u8g\_dev\_rot.dev\_fn = u8g\_dev\_rot270\_fn;

u8g\_UpdateDimension(u8g);

}

uint8\_t u8g\_dev\_rot90\_fn(u8g\_t \*u8g, u8g\_dev\_t \*dev, uint8\_t msg, void \*arg)

{

u8g\_dev\_t \*rotation\_chain = (u8g\_dev\_t \*)(dev->dev\_mem);

switch(msg)

{

default:

/\*

case U8G\_DEV\_MSG\_INIT:

case U8G\_DEV\_MSG\_STOP:

case U8G\_DEV\_MSG\_PAGE\_FIRST:

case U8G\_DEV\_MSG\_PAGE\_NEXT:

case U8G\_DEV\_MSG\_SET\_COLOR\_ENTRY:

case U8G\_DEV\_MSG\_SET\_XY\_CB:

\*/

return u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

#ifdef U8G\_DEV\_MSG\_IS\_BBX\_INTERSECTION

case U8G\_DEV\_MSG\_IS\_BBX\_INTERSECTION:

{

u8g\_dev\_arg\_bbx\_t \*bbx = (u8g\_dev\_arg\_bbx\_t \*)arg;

u8g\_uint\_t x, y, tmp;

/\* transform the reference point \*/

y = bbx->x;

x = u8g->height;

/\* x = u8g\_GetWidthLL(u8g, rotation\_chain); \*/

x -= bbx->y;

x--;

/\* adjust point to be the uppler left corner again \*/

x -= bbx->h;

x++;

/\* swap box dimensions \*/

tmp = bbx->w;

bbx->w = bbx->h;

bbx->h = tmp;

/\* store x,y \*/

bbx->x = x;

bbx->y = y;

}

return u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

#endif /\* U8G\_DEV\_MSG\_IS\_BBX\_INTERSECTION \*/

case U8G\_DEV\_MSG\_GET\_PAGE\_BOX:

/\* get page size from next device in the chain \*/

u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

//printf("pre x: %3d..%3d y: %3d..%3d ", ((u8g\_box\_t \*)arg)->x0, ((u8g\_box\_t \*)arg)->x1, ((u8g\_box\_t \*)arg)->y0, ((u8g\_box\_t \*)arg)->y1);

{

u8g\_box\_t new\_box;

//new\_box.x0 = u8g\_GetHeightLL(u8g,rotation\_chain) - ((u8g\_box\_t \*)arg)->y1 - 1;

//new\_box.x1 = u8g\_GetHeightLL(u8g,rotation\_chain) - ((u8g\_box\_t \*)arg)->y0 - 1;

new\_box.x0 = ((u8g\_box\_t \*)arg)->y0;

new\_box.x1 = ((u8g\_box\_t \*)arg)->y1;

new\_box.y0 = ((u8g\_box\_t \*)arg)->x0;

new\_box.y1 = ((u8g\_box\_t \*)arg)->x1;

\*((u8g\_box\_t \*)arg) = new\_box;

//printf("post x: %3d..%3d y: %3d..%3d\n", ((u8g\_box\_t \*)arg)->x0, ((u8g\_box\_t \*)arg)->x1, ((u8g\_box\_t \*)arg)->y0, ((u8g\_box\_t \*)arg)->y1);

}

break;

case U8G\_DEV\_MSG\_GET\_WIDTH:

\*((u8g\_uint\_t \*)arg) = u8g\_GetHeightLL(u8g,rotation\_chain);

break;

case U8G\_DEV\_MSG\_GET\_HEIGHT:

\*((u8g\_uint\_t \*)arg) = u8g\_GetWidthLL(u8g, rotation\_chain);

break;

case U8G\_DEV\_MSG\_SET\_PIXEL:

case U8G\_DEV\_MSG\_SET\_TPIXEL:

{

u8g\_uint\_t x, y;

y = ((u8g\_dev\_arg\_pixel\_t \*)arg)->x;

x = u8g\_GetWidthLL(u8g, rotation\_chain);

x -= ((u8g\_dev\_arg\_pixel\_t \*)arg)->y;

x--;

((u8g\_dev\_arg\_pixel\_t \*)arg)->x = x;

((u8g\_dev\_arg\_pixel\_t \*)arg)->y = y;

}

u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

break;

case U8G\_DEV\_MSG\_SET\_8PIXEL:

case U8G\_DEV\_MSG\_SET\_4TPIXEL:

{

u8g\_uint\_t x, y;

//uint16\_t x,y;

y = ((u8g\_dev\_arg\_pixel\_t \*)arg)->x;

x = u8g\_GetWidthLL(u8g, rotation\_chain);

x -= ((u8g\_dev\_arg\_pixel\_t \*)arg)->y;

x--;

((u8g\_dev\_arg\_pixel\_t \*)arg)->x = x;

((u8g\_dev\_arg\_pixel\_t \*)arg)->y = y;

((u8g\_dev\_arg\_pixel\_t \*)arg)->dir+=1;

((u8g\_dev\_arg\_pixel\_t \*)arg)->dir &= 3;

}

u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

break;

}

return 1;

}

uint8\_t u8g\_dev\_rot180\_fn(u8g\_t \*u8g, u8g\_dev\_t \*dev, uint8\_t msg, void \*arg)

{

u8g\_dev\_t \*rotation\_chain = (u8g\_dev\_t \*)(dev->dev\_mem);

switch(msg)

{

default:

/\*

case U8G\_DEV\_MSG\_INIT:

case U8G\_DEV\_MSG\_STOP:

case U8G\_DEV\_MSG\_PAGE\_FIRST:

case U8G\_DEV\_MSG\_PAGE\_NEXT:

case U8G\_DEV\_MSG\_SET\_COLOR\_ENTRY:

case U8G\_DEV\_MSG\_SET\_XY\_CB:

\*/

return u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

#ifdef U8G\_DEV\_MSG\_IS\_BBX\_INTERSECTION

case U8G\_DEV\_MSG\_IS\_BBX\_INTERSECTION:

{

u8g\_dev\_arg\_bbx\_t \*bbx = (u8g\_dev\_arg\_bbx\_t \*)arg;

u8g\_uint\_t x, y;

/\* transform the reference point \*/

//y = u8g\_GetHeightLL(u8g, rotation\_chain);

y = u8g->height;

y -= bbx->y;

y--;

//x = u8g\_GetWidthLL(u8g, rotation\_chain);

x = u8g->width;

x -= bbx->x;

x--;

/\* adjust point to be the uppler left corner again \*/

y -= bbx->h;

y++;

x -= bbx->w;

x++;

/\* store x,y \*/

bbx->x = x;

bbx->y = y;

}

return u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

#endif /\* U8G\_DEV\_MSG\_IS\_BBX\_INTERSECTION \*/

case U8G\_DEV\_MSG\_GET\_PAGE\_BOX:

/\* get page size from next device in the chain \*/

u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

//printf("pre x: %3d..%3d y: %3d..%3d ", ((u8g\_box\_t \*)arg)->x0, ((u8g\_box\_t \*)arg)->x1, ((u8g\_box\_t \*)arg)->y0, ((u8g\_box\_t \*)arg)->y1);

{

u8g\_box\_t new\_box;

new\_box.x0 = u8g\_GetWidthLL(u8g,rotation\_chain) - ((u8g\_box\_t \*)arg)->x1 - 1;

new\_box.x1 = u8g\_GetWidthLL(u8g,rotation\_chain) - ((u8g\_box\_t \*)arg)->x0 - 1;

new\_box.y0 = u8g\_GetHeightLL(u8g,rotation\_chain) - ((u8g\_box\_t \*)arg)->y1 - 1;

new\_box.y1 = u8g\_GetHeightLL(u8g,rotation\_chain) - ((u8g\_box\_t \*)arg)->y0 - 1;

\*((u8g\_box\_t \*)arg) = new\_box;

//printf("post x: %3d..%3d y: %3d..%3d\n", ((u8g\_box\_t \*)arg)->x0, ((u8g\_box\_t \*)arg)->x1, ((u8g\_box\_t \*)arg)->y0, ((u8g\_box\_t \*)arg)->y1);

}

break;

case U8G\_DEV\_MSG\_GET\_WIDTH:

\*((u8g\_uint\_t \*)arg) = u8g\_GetWidthLL(u8g,rotation\_chain);

break;

case U8G\_DEV\_MSG\_GET\_HEIGHT:

\*((u8g\_uint\_t \*)arg) = u8g\_GetHeightLL(u8g, rotation\_chain);

break;

case U8G\_DEV\_MSG\_SET\_PIXEL:

case U8G\_DEV\_MSG\_SET\_TPIXEL:

{

u8g\_uint\_t x, y;

y = u8g\_GetHeightLL(u8g, rotation\_chain);

y -= ((u8g\_dev\_arg\_pixel\_t \*)arg)->y;

y--;

x = u8g\_GetWidthLL(u8g, rotation\_chain);

x -= ((u8g\_dev\_arg\_pixel\_t \*)arg)->x;

x--;

((u8g\_dev\_arg\_pixel\_t \*)arg)->x = x;

((u8g\_dev\_arg\_pixel\_t \*)arg)->y = y;

}

u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

break;

case U8G\_DEV\_MSG\_SET\_8PIXEL:

case U8G\_DEV\_MSG\_SET\_4TPIXEL:

{

u8g\_uint\_t x, y;

y = u8g\_GetHeightLL(u8g, rotation\_chain);

y -= ((u8g\_dev\_arg\_pixel\_t \*)arg)->y;

y--;

x = u8g\_GetWidthLL(u8g, rotation\_chain);

x -= ((u8g\_dev\_arg\_pixel\_t \*)arg)->x;

x--;

((u8g\_dev\_arg\_pixel\_t \*)arg)->x = x;

((u8g\_dev\_arg\_pixel\_t \*)arg)->y = y;

((u8g\_dev\_arg\_pixel\_t \*)arg)->dir+=2;

((u8g\_dev\_arg\_pixel\_t \*)arg)->dir &= 3;

}

u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

break;

}

return 1;

}

uint8\_t u8g\_dev\_rot270\_fn(u8g\_t \*u8g, u8g\_dev\_t \*dev, uint8\_t msg, void \*arg)

{

u8g\_dev\_t \*rotation\_chain = (u8g\_dev\_t \*)(dev->dev\_mem);

switch(msg)

{

default:

/\*

case U8G\_DEV\_MSG\_INIT:

case U8G\_DEV\_MSG\_STOP:

case U8G\_DEV\_MSG\_PAGE\_FIRST:

case U8G\_DEV\_MSG\_PAGE\_NEXT:

case U8G\_DEV\_MSG\_SET\_COLOR\_ENTRY:

case U8G\_DEV\_MSG\_SET\_XY\_CB:

\*/

return u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

#ifdef U8G\_DEV\_MSG\_IS\_BBX\_INTERSECTION

case U8G\_DEV\_MSG\_IS\_BBX\_INTERSECTION:

{

u8g\_dev\_arg\_bbx\_t \*bbx = (u8g\_dev\_arg\_bbx\_t \*)arg;

u8g\_uint\_t x, y, tmp;

/\* transform the reference point \*/

x = bbx->y;

y = u8g->width;

/\* y = u8g\_GetHeightLL(u8g, rotation\_chain); \*/

y -= bbx->x;

y--;

/\* adjust point to be the uppler left corner again \*/

y -= bbx->w;

y++;

/\* swap box dimensions \*/

tmp = bbx->w;

bbx->w = bbx->h;

bbx->h = tmp;

/\* store x,y \*/

bbx->x = x;

bbx->y = y;

}

return u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

#endif /\* U8G\_DEV\_MSG\_IS\_BBX\_INTERSECTION \*/

case U8G\_DEV\_MSG\_GET\_PAGE\_BOX:

/\* get page size from next device in the chain \*/

u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

//printf("pre x: %3d..%3d y: %3d..%3d ", ((u8g\_box\_t \*)arg)->x0, ((u8g\_box\_t \*)arg)->x1, ((u8g\_box\_t \*)arg)->y0, ((u8g\_box\_t \*)arg)->y1);

{

u8g\_box\_t new\_box;

new\_box.x0 = u8g\_GetHeightLL(u8g,rotation\_chain) - ((u8g\_box\_t \*)arg)->y1 - 1;

new\_box.x1 = u8g\_GetHeightLL(u8g,rotation\_chain) - ((u8g\_box\_t \*)arg)->y0 - 1;

new\_box.y0 = u8g\_GetWidthLL(u8g,rotation\_chain) - ((u8g\_box\_t \*)arg)->x1 - 1;

new\_box.y1 = u8g\_GetWidthLL(u8g,rotation\_chain) - ((u8g\_box\_t \*)arg)->x0 - 1;

\*((u8g\_box\_t \*)arg) = new\_box;

//printf("post x: %3d..%3d y: %3d..%3d\n", ((u8g\_box\_t \*)arg)->x0, ((u8g\_box\_t \*)arg)->x1, ((u8g\_box\_t \*)arg)->y0, ((u8g\_box\_t \*)arg)->y1);

}

break;

case U8G\_DEV\_MSG\_GET\_WIDTH:

\*((u8g\_uint\_t \*)arg) = u8g\_GetHeightLL(u8g,rotation\_chain);

break;

case U8G\_DEV\_MSG\_GET\_HEIGHT:

\*((u8g\_uint\_t \*)arg) = u8g\_GetWidthLL(u8g, rotation\_chain);

break;

case U8G\_DEV\_MSG\_SET\_PIXEL:

case U8G\_DEV\_MSG\_SET\_TPIXEL:

{

u8g\_uint\_t x, y;

x = ((u8g\_dev\_arg\_pixel\_t \*)arg)->y;

y = u8g\_GetHeightLL(u8g, rotation\_chain);

y -= ((u8g\_dev\_arg\_pixel\_t \*)arg)->x;

y--;

/\*

x = u8g\_GetWidthLL(u8g, rotation\_chain);

x -= ((u8g\_dev\_arg\_pixel\_t \*)arg)->y;

x--;

\*/

((u8g\_dev\_arg\_pixel\_t \*)arg)->x = x;

((u8g\_dev\_arg\_pixel\_t \*)arg)->y = y;

}

u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

break;

case U8G\_DEV\_MSG\_SET\_8PIXEL:

case U8G\_DEV\_MSG\_SET\_4TPIXEL:

{

u8g\_uint\_t x, y;

x = ((u8g\_dev\_arg\_pixel\_t \*)arg)->y;

y = u8g\_GetHeightLL(u8g, rotation\_chain);

y -= ((u8g\_dev\_arg\_pixel\_t \*)arg)->x;

y--;

/\*

x = u8g\_GetWidthLL(u8g, rotation\_chain);

x -= ((u8g\_dev\_arg\_pixel\_t \*)arg)->y;

x--;

\*/

((u8g\_dev\_arg\_pixel\_t \*)arg)->x = x;

((u8g\_dev\_arg\_pixel\_t \*)arg)->y = y;

((u8g\_dev\_arg\_pixel\_t \*)arg)->dir+=3;

((u8g\_dev\_arg\_pixel\_t \*)arg)->dir &= 3;

}

u8g\_call\_dev\_fn(u8g, rotation\_chain, msg, arg);

break;

}

return 1;

}