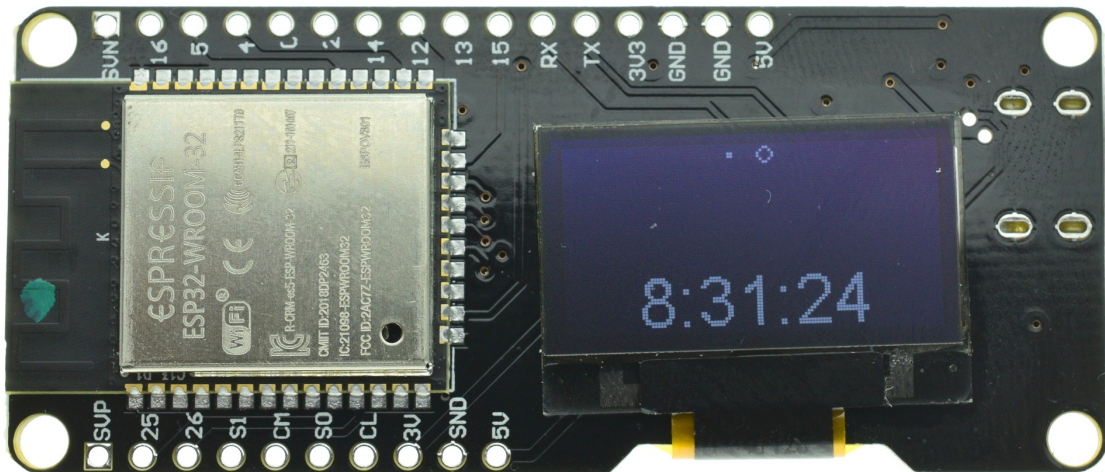
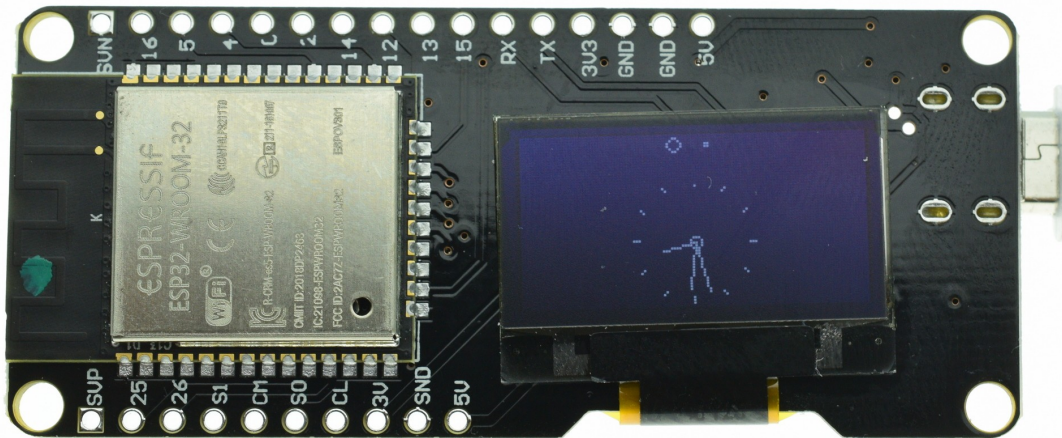


# ESP32 Wemos OLED Clock Demo



see <https://github.com/ThingPulse/esp8266-oled-ssd1306/tree/master/examples>

Screen definition

```
SSD1306Wire display(0x3c, 5, 4);
```



Require Arduino "Time" library

Code with port changed to work with my board

**SSD1306ClockDemo.ino**

```
/**
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```

```

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*/

#include <TimeLib.h>

#include <Wire.h> // Only needed for Arduino 1.6.5 and earlier
#include "SSD1306Wire.h" // legacy include: `#include "SSD1306.h"`

// Include the UI lib
#include "OLEDDisplayUi.h"

// Include custom images
#include "images.h"

// Use the corresponding display class:

// Initialize the OLED display using Wire library
SSD1306Wire display(0x3c, 5, 4);

OLEDDisplayUi ui ( &display );

int screenW = 128;
int screenH = 64;
int clockCenterX = screenW/2;
int clockCenterY = ((screenH-16)/2)+16; // top yellow part is 16 px height
int clockRadius = 23;

// utility function for digital clock display: prints leading 0
String twoDigits(int digits){
  if(digits < 10) {
    String i = '0'+String(digits);
    return i;
  }
  else {
    return String(digits);
  }
}

void clockOverlay(OLEDDisplay *display, OLEDDisplayUiState* state) {
}

void analogClockFrame(OLEDDisplay *display, OLEDDisplayUiState* state, int16_t x, int16_t y) {
  // ui.disableIndicator();

  // Draw the clock face
  // display->drawCircle(clockCenterX + x, clockCenterY + y, clockRadius);
  display->drawCircle(clockCenterX + x, clockCenterY + y, 2);
  //
  //hour ticks
  for( int z=0; z < 360;z= z + 30 ){
    //Begin at 0° and stop at 360°
    float angle = z ;
    angle = ( angle / 57.29577951 ) ; //Convert degrees to radians
    int x2 = ( clockCenterX + ( sin(angle) * clockRadius ) );
    int y2 = ( clockCenterY - ( cos(angle) * clockRadius ) );

```

```

    int x3 = ( clockCenterX + ( sin(angle) * ( clockRadius - ( clockRadius / 8 ) ) ) );
    int y3 = ( clockCenterY - ( cos(angle) * ( clockRadius - ( clockRadius / 8 ) ) ) );
    display->drawLine( x2 + x , y2 + y , x3 + x , y3 + y);
}

// display second hand
float angle = second() * 6 ;
angle = ( angle / 57.29577951 ) ; //Convert degrees to radians
int x3 = ( clockCenterX + ( sin(angle) * ( clockRadius - ( clockRadius / 5 ) ) ) );
int y3 = ( clockCenterY - ( cos(angle) * ( clockRadius - ( clockRadius / 5 ) ) ) );
display->drawLine( clockCenterX + x , clockCenterY + y , x3 + x , y3 + y);
//
// display minute hand
angle = minute() * 6 ;
angle = ( angle / 57.29577951 ) ; //Convert degrees to radians
x3 = ( clockCenterX + ( sin(angle) * ( clockRadius - ( clockRadius / 4 ) ) ) );
y3 = ( clockCenterY - ( cos(angle) * ( clockRadius - ( clockRadius / 4 ) ) ) );
display->drawLine( clockCenterX + x , clockCenterY + y , x3 + x , y3 + y);
//
// display hour hand
angle = hour() * 30 + int( ( minute() / 12 ) * 6 ) ;
angle = ( angle / 57.29577951 ) ; //Convert degrees to radians
x3 = ( clockCenterX + ( sin(angle) * ( clockRadius - ( clockRadius / 2 ) ) ) );
y3 = ( clockCenterY - ( cos(angle) * ( clockRadius - ( clockRadius / 2 ) ) ) );
display->drawLine( clockCenterX + x , clockCenterY + y , x3 + x , y3 + y);
}

void digitalClockFrame(OLEDDisplay *display, OLEDDisplayUiState* state, int16_t x, int16_t y) {
    String timenow = String(hour())+": "+twoDigits(minute())+": "+twoDigits(second());
    display->setTextAlignment(TEXT_ALIGN_CENTER);
    display->setFont(ArialMT_Plain_24);
    display->drawString(clockCenterX + x , clockCenterY + y, timenow );
}

// This array keeps function pointers to all frames
// frames are the single views that slide in
FrameCallback frames[] = { analogClockFrame, digitalClockFrame };

// how many frames are there?
int frameCount = 2;

// Overlays are statically drawn on top of a frame eg. a clock
OverlayCallback overlays[] = { clockOverlay };
int overlaysCount = 1;

void setup() {
    Serial.begin(9600);
    Serial.println();

    // The ESP is capable of rendering 60fps in 80Mhz mode
    // but that won't give you much time for anything else
    // run it in 160Mhz mode or just set it to 30 fps
    ui.setTargetFPS(60);

    // Customize the active and inactive symbol
    ui.setActiveSymbol(activeSymbol);
    ui.setInactiveSymbol(inactiveSymbol);

    // You can change this to
    // TOP, LEFT, BOTTOM, RIGHT
    ui.setIndicatorPosition(TOP);

    // Defines where the first frame is located in the bar.
    ui.setIndicatorDirection(LEFT_RIGHT);

    // You can change the transition that is used
    // SLIDE_LEFT, SLIDE_RIGHT, SLIDE_UP, SLIDE_DOWN
    ui.setFrameAnimation(SLIDE_LEFT);

    // Add frames
    ui.setFrames(frames, frameCount);
}

```

```

// Add overlays
ui.setOverlays(overlays, overlaysCount);

// Initialising the UI will init the display too.
ui.init();

display.flipScreenVertically();

unsigned long secsSinceStart = millis();
// Unix time starts on Jan 1 1970. In seconds, that's 2208988800:
const unsigned long seventyYears = 2208988800UL;
// subtract seventy years:
unsigned long epoch = secsSinceStart - seventyYears * SECS_PER_HOUR;
setTime(epoch);
}

void loop() {
  int remainingTimeBudget = ui.update();

  if (remainingTimeBudget > 0) {
    // You can do some work here
    // Don't do stuff if you are below your
    // time budget.
    delay(remainingTimeBudget);
  }
}
}

```

## images.h

```

const unsigned char activeSymbol[] PROGMEM = {
  B00000000,
  B00000000,
  B00011000,
  B00100100,
  B01000010,
  B01000010,
  B00100100,
  B00011000
};

const unsigned char inactiveSymbol[] PROGMEM = {
  B00000000,
  B00000000,
  B00000000,
  B00000000,
  B00011000,
  B00011000,
  B00000000,
  B00000000
};

```