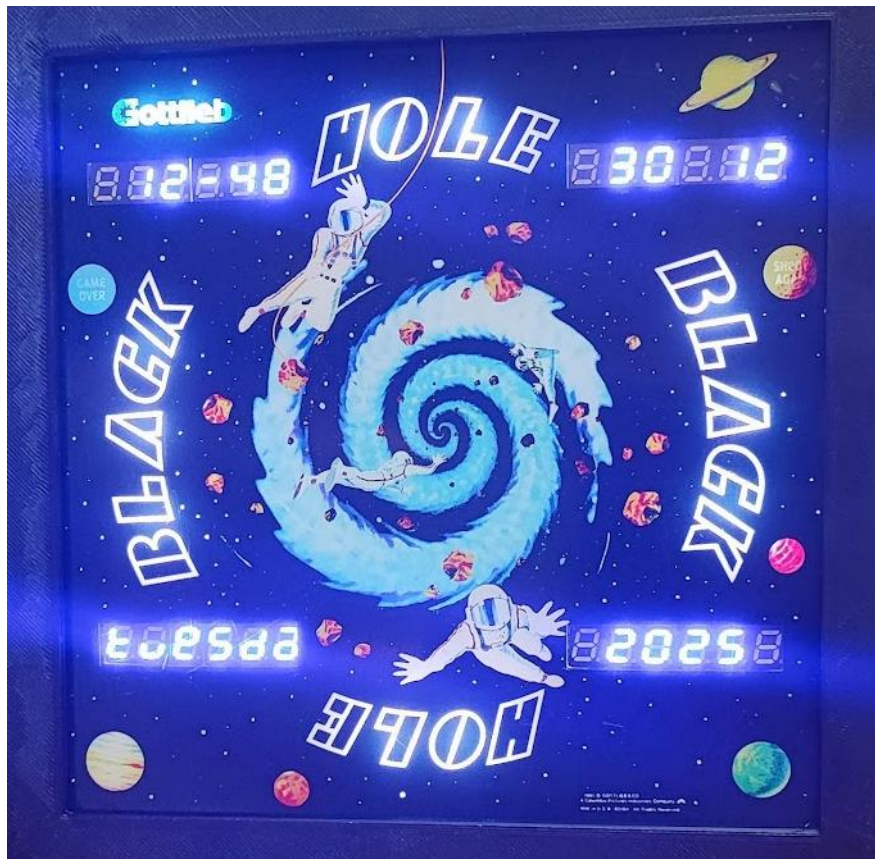




LISYclock

A clock with WiFi and more ...

Hardware version 1.00

Software version 0.22

user manual

ralf@lisy.dev

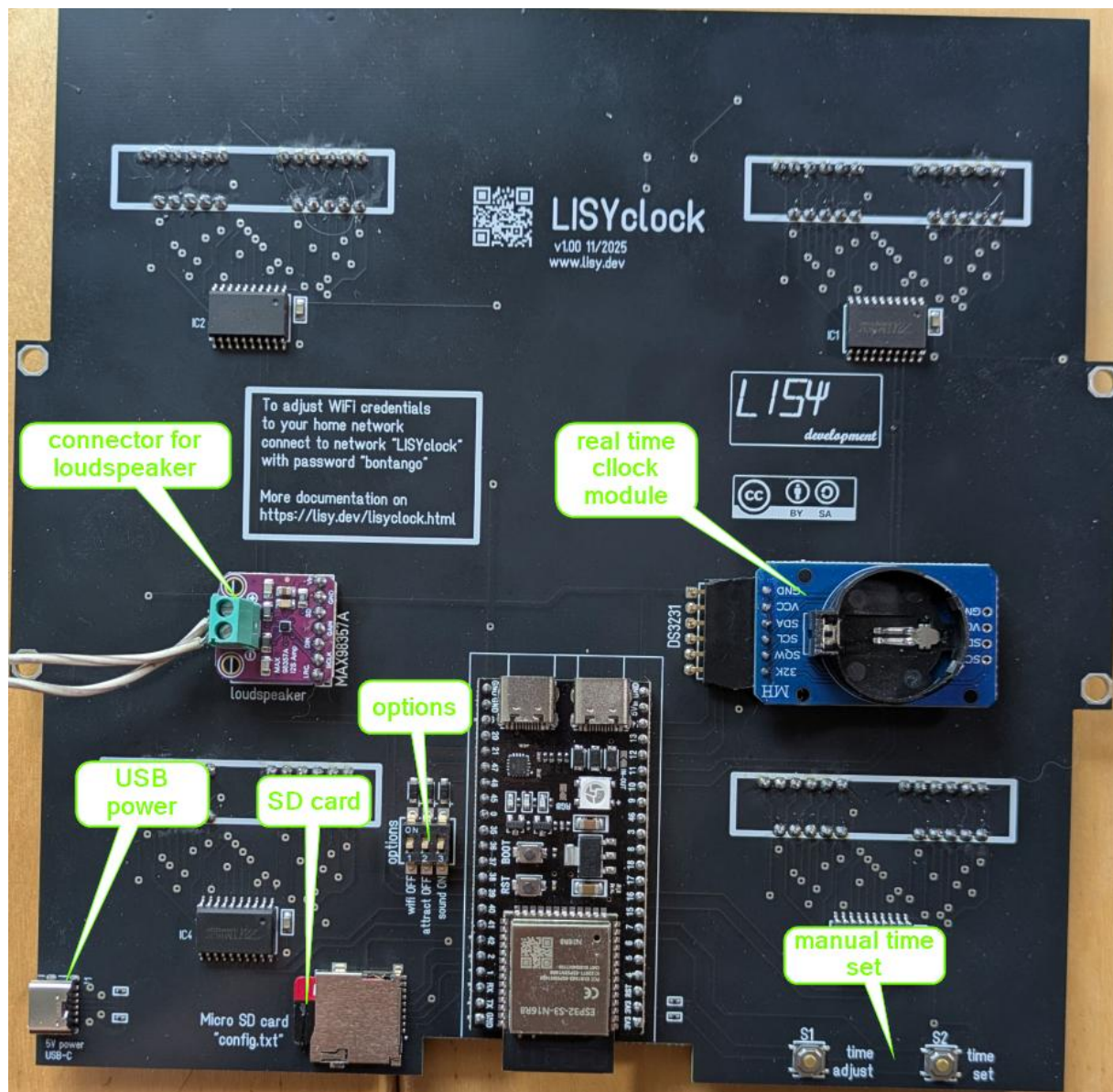
04.01.2026

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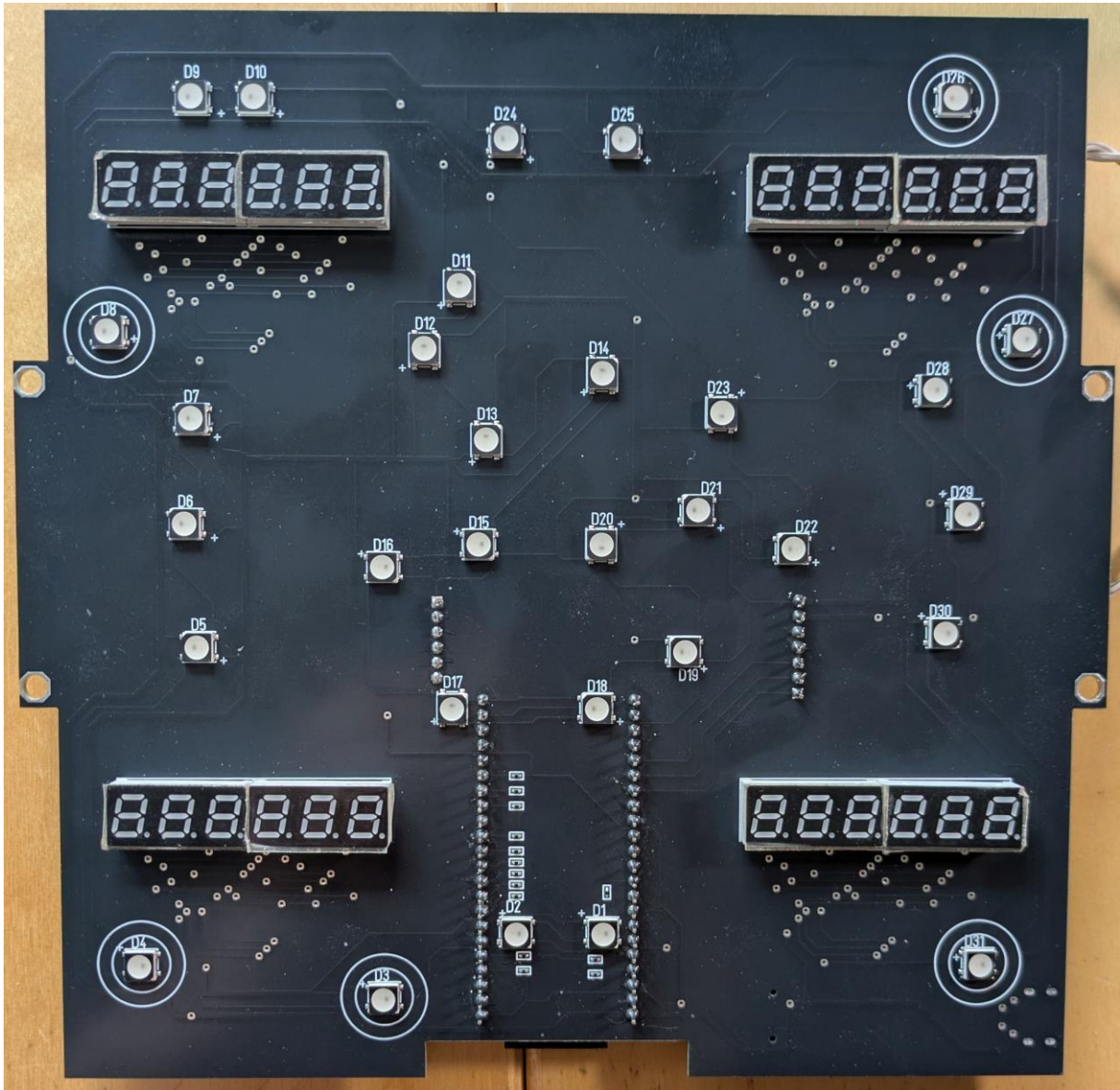
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1. Overview

1.1. components



1.2. LED numbering



2. Configuration

Basic configuration can be done with the DIP switches and the push buttons. Advanced configuration is possible via a text file on the SD card. See section 'config.txt' for details.

2.1. DIP switches

2.1.1. DIP1 WiFi OFF

By setting DIP switch #1 to ON the WiFi connect will be disabled and the RTC (real time clock) module will be activated.

2.1.2. DIP2 attract OFF

By setting DIP switch #2 to ON all LEDs will be deactivated

2.1.3. DIP3 sound ON

Not implemented yet

2.2. push buttons

2.2.1. in WiFi mode

- Pushing 'time set' will show current IP address of LISYclock
- Pushing 'time adjust' will play file 'no_one.wav' from SD card

2.2.2. in RTC mode

To adjust the time. Not implemented yet

2.3. config.txt

Without an SD card or a config file LISYclock will come up with a set of defaults. You can adjust these defaults by editing the file 'config.txt' on the SD card.

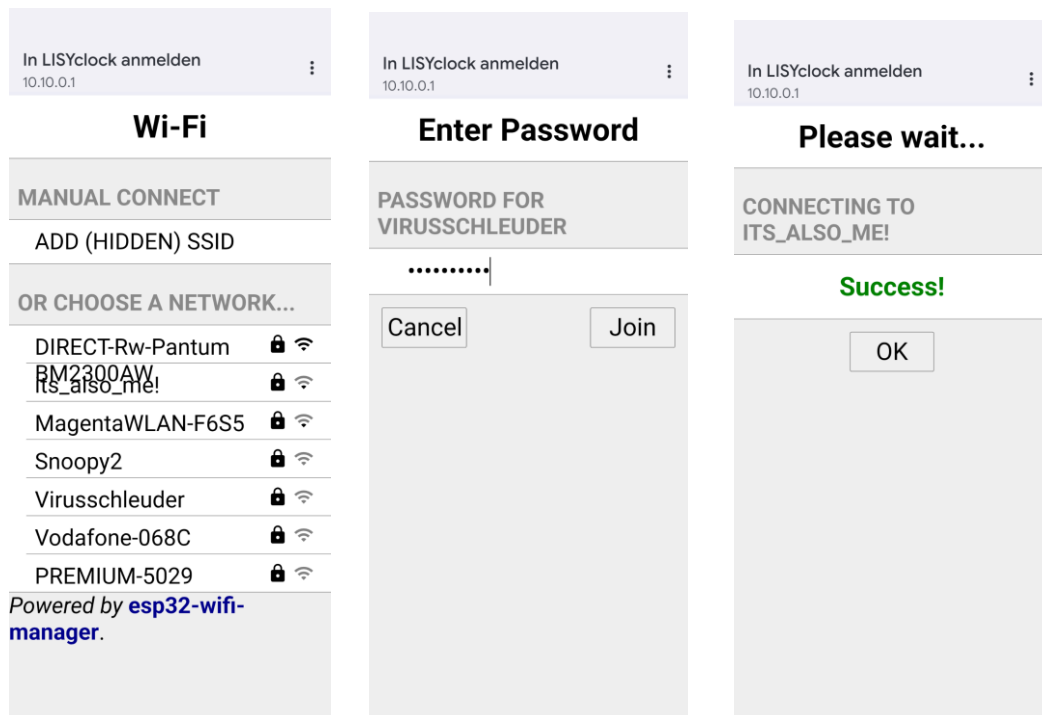
See Appendix A for possible settings and defaults in case you do not have a SD card inserted.

3. WiFi connect

By default LISYclock sync the time by connecting a timeserver via a standard WiFi internet connection. If you do not have WiFi access in the area your LISYclock resides you can use the Real Time Clock module. (See next chapter for details.)

To be able to enter your WiFi credentials LISYclock open a WiFi host with SSID “LISYclock”. The password for this connection is “bontango”. After entering the correct credentials for your WiFi network and connecting to the internet for ntp ‘time services’ the time/date will be automatically set.

You need to do this only for the first boot or in case your WiFi network changes. LISYclock stores your credentials and will try to connect to the same WiFi network after next boot.



4. Real time clock (RTC)

If you do not have WiFi access in the area your LISYclock resides you can use the Real Time Clock module. (see chapter 'DS3231 modul' for module installation instructions.)

4.1. setting RTC time

4.1.1. automatic

Start LISYclock 'one time' in an area with WiFi access. Once the clock has reached time servers over the internet the correct time will be stored into the RTC. Then select 'WiFi Off'

4.1.2. manual

With 'time set' and 'time adjust' push buttons. Not implemented yet.

5. Software

If your clock do not come preconfigured you need to initially program it one time with the Espressif 'esptool'. After that you can use the automatic update procedure implemented in LISYclock.

5.1. initial

Needed software can be downloaded from my repository server

<https://lisy.dev/swrep/misc/LISYclock/bin/esptool/>

Then use Chrome, Edge or Opera browser (Firefox will not work) and open the online esptool page at <https://esptool.spacehuhn.com/> and after connecting configure it as in the picture below.

The screenshot shows the esptool online interface with the following configuration:

Address	File Name	Action
0x0	bootloader.bin	⊗
0x20000	LISYclock.bin	⊗
0x8000	partition-table.bin	⊗
0xf000	ota_data_initial.bin	⊗

At the bottom left, there is a **RESET** button with a circular arrow icon. At the bottom right, there is an **ADD** button with a plus icon. Below the table, there are two buttons: **ERASE** (outlined) and **PROGRAM** (solid green).

5.2. updates

Copy the latest version of LISYclock.bin in the root folder of the SD card and rename it to 'update.bin'

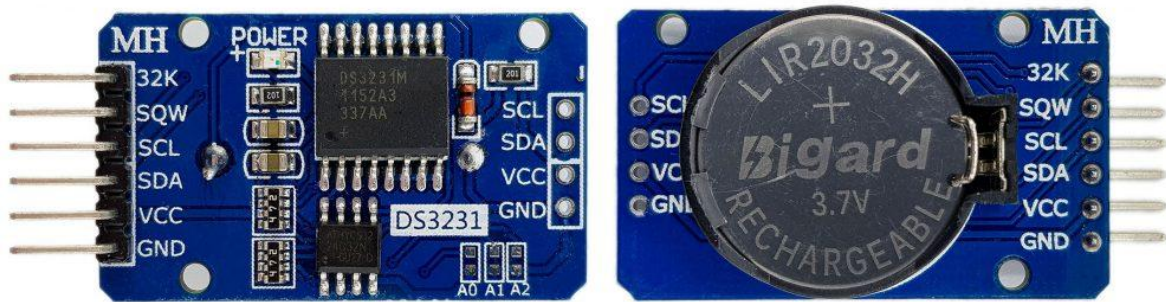
On next boot LISYclock will do an automatic update.

6. DS3231 modul

With this (optional) modul LISYclock can run without WiFi connection.

The RTC module has its own tiny clock inside to keep track of time by themselves. It comes with a battery holder to connect a battery so that they keep working even if the ESP32 resets or in the event of a power loss.

For this a battery or accumulator need to be inserted.



6.1. battery or accumulator

You **should** use a LIR2032 battery, which is rechargeable.

If you want to use a CR2032 battery, which is non-rechargeable, you must disconnect the battery charging circuit by unsoldering and removing the diode or the resistor next to the diode.

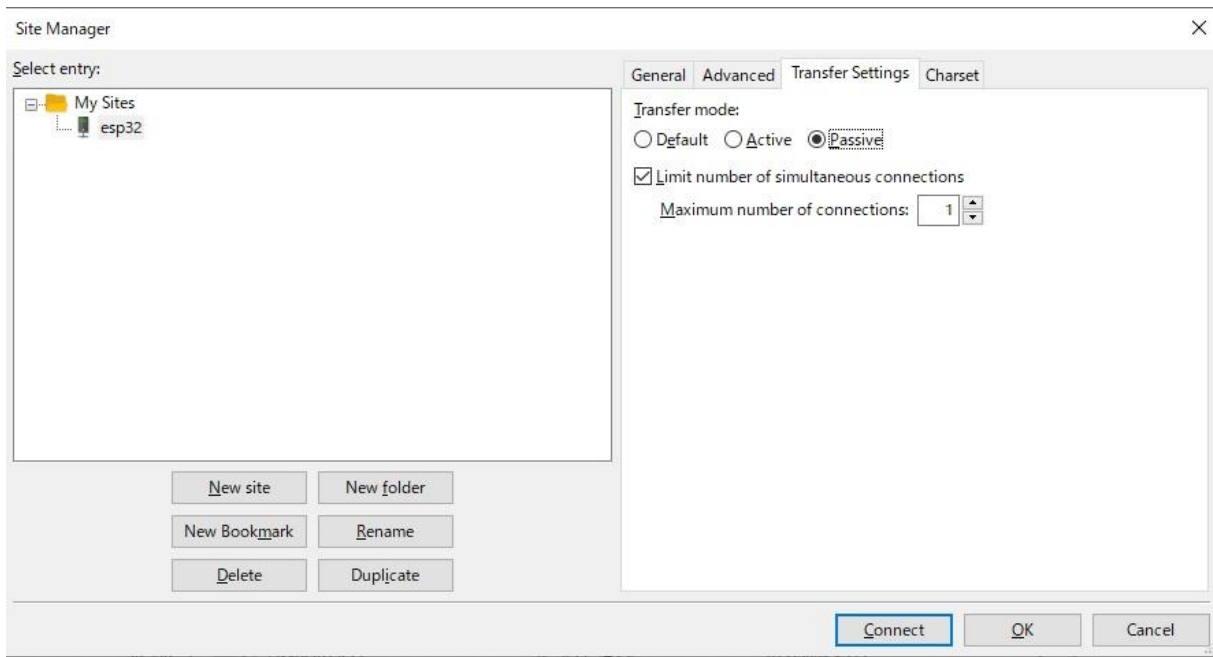


7. FTP server

In WiFi mode, if enabled via config.txt', LISYclock do provide an FTP server to easily change config.txt and/or do software updates.

It uses the work of 'noprnp2002' which you can find here <https://github.com/noprnp2002/esp-idf-ftpClient>

The FTP server do support FTP 'passive mode' only, so you need to configure your FTP client accordingly. See below config needed for 'Filezilla', other config hints are on 'noprnp2002' github page.



Appendix A 'config.txt'

config for LISYclock v0.21

lines starting with '#' are comments

FTP server defaults

#FTP_SERVER_ENABLE=no

FTP_SERVER_ENABLE=yes

#FTP_USER=lisy

#FTP_PWD=bontango

display brightness 0...7

DISP_BRIGHT=1

local timezone default

TIMEZONE="CET-1CEST,M3.5.0,M10.5.0/3"

weekday strings (must be 6 chars! fill up with spaces if shorter)

defaults

#DAY_SUN="Sunday"

#DAY_MON="Monday"

#DAY_TUE="Tuesda"

#DAY_WED="Wednes"

#DAY_THU="Thursd"

#DAY_FRI="Friday"

#DAY_SAT="Saturd"

GI LEDs are permanent on

```
#  
  
# use GI_LED <LED number>,<red 0..255>,<green 0..255>,<blue 0..255>  
  
# for white use same value for red,green,blue  
  
#  
  
# Black Hole  
  
GI_LED=1,100,100,100  
  
GI_LED=2,100,100,100  
  
GI_LED=5,100,100,100  
  
GI_LED=6,100,100,100  
  
GI_LED=7,100,100,100  
  
GI_LED=24,100,100,100  
  
GI_LED=25,100,100,100  
  
GI_LED=28,100,100,100  
  
GI_LED=29,100,100,100  
  
GI_LED=30,100,100,100  
  
#  
  
# Gottlieb  
  
GI_LED=9,100,100,100  
  
GI_LED=10,100,100,100  
  
  
#  
  
# attract mode  
  
# three groups of LEDs with different blink rates & optional random activation  
  
  
# attract mode blink rate in ms  
  
AT1_BLINK_RATE=200  
  
AT2_BLINK_RATE=500  
  
AT3_BLINK_RATE=1000
```

random LED activation for group2 (default off)

AT2_RAND=1

attract mode LEDs

will be ON/OFF in this order or random (see option)

AT1_LED=11,0,0,66

AT1_LED=12,0,0,66

AT1_LED=16,0,0,66

AT1_LED=17,0,0,66

AT1_LED=18,0,0,66

AT1_LED=15,0,0,66

AT1_LED=19,0,0,66

AT1_LED=21,0,0,66

AT1_LED=23,0,0,66

AT1_LED=14,0,0,66

AT1_LED=13,0,0,66

AT1_LED=20,0,0,66

planets

AT2_LED=3,100,0,0

AT2_LED=4,0,100,0

AT2_LED=8,0,0,100

AT2_LED=26,0,0,100

AT2_LED=27,0,0,100

AT2_LED=31,100,100,0