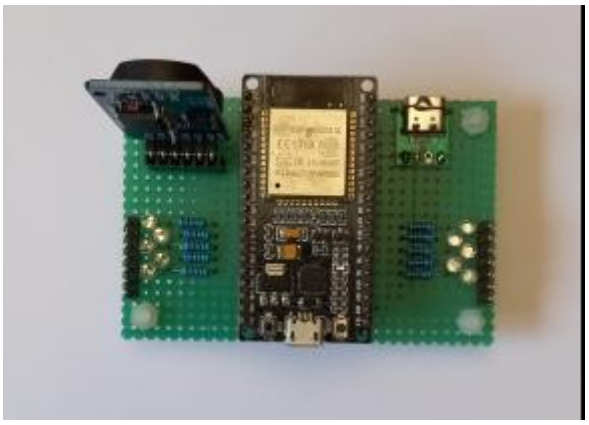
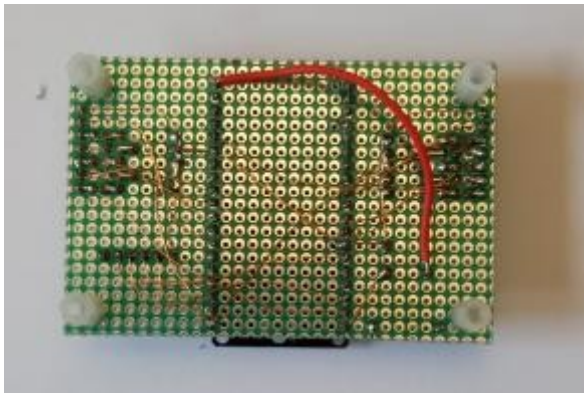
# ESP32 Timer 5 outputs





**ESP32 Timer**

5 outputs

7 possible timers per output
- switch on :
  - chosen day
  - daily
  - weekdays
  - weekend

switch off after xxxx minutes
or
switch off at time hh:mm

1 enable input per output
- can be “0” or “1”

for example, to build an intelligent irrigation system in combination with a moisture sensor

only 2 modules for input / output 3.3V
- ESP32 WROOM dev module
- DS3231SN clock module

Set timers via ESP32 WiFi_AP network

| | |
|---|---|
| Network : | ESP32Timers |
| Password : | ESP32pswd |
| Local IP : | 192.168.4.132 |

Sufficient diagrams and modules are available for adjusting to the desired input and output voltages, for example from Aliexpress.

Easy to build

**See on Github**

https://github.com/thieu-b55/ESP32-Timer-5-outputs

## Parts

1x ESP32-WROOM-32 38 pin
https://nl.aliexpress.com/item/32834130422.html?spm=a2g0o.order_list.order_list_main.198.1eb479d2IpAig9&gatewayAdapt=glo2nld

1 x DS3231SN RTC module met SQW output
https://nl.aliexpress.com/item/1005006431660780.html?spm=a2g0o.productlist.main.3.710b2d50YHi3jg&algo_pvid=3b315357-7d94-4d88-a46f-ada2b104e61a&algo_exp_id=3b315357-7d94-4d88-a46f-ada2b104e61a-1&pdp_npi=4@dis!EUR!4.66!2.38!!!35.94!18.33!@2103868d17241832642518983e9011!12000037153674695!sea!BE!924161374!X&curPageLogUid=gLrdECccmfNs&utparam-url=scene%3Asearch%7Cquery_from%3A

Optioneel
10 x Led  5 voor input / 5 voor output
10 R5K6

**Connections**

**5V power supply**

| | | | |
|---|---|---|---|
| 5V | >> | 5V input | ESP32-WROOM |
| GND | >> | 3x GND | ESP32-WROOM |
| | >> | GND | DS3231SN RTC |
| | >> | Optioneel | |
| | | 10x R5K6 | 5x LED op output |
| | | | 5x LED op input |

**ESP32-WROOM power supply**

| | | | |
|---|---|---|---|
| 5V input | << | 5V | voeding |
| 3x GND | << | GND | voeding |
| 3.3V | >> | VCC | DS3231SN RTC |

**I2C**

| | | | |
|---|---|---|---|
| GPIO21 (SDA) | >> | SDA | DS3231SN RTC |
| GPIO22 (SCL) | >> | SCL | DS3231SN RTC |

**MINUTE PULS**

| | | | |
|---|---|---|---|
| GPIO39 | << | SQW | DS3231SN RTC |

**INPUT**

| | | |
|---|---|---|
| GPIO23 | << | INPUT 0 |
| | >> | LED (optioneel) |
| GPIO25 | << | INPUT 1 |
| | >> | LED (optioneel) |
| GPIO26 | << | INPUT 2 |
| | >> | LED (optioneel) |
| GPIO27 | << | INPUT 3 |
| | >> | LED (optioneel) |
| GPIO32 | << | INPUT 4 |
| | >> | LED (optioneel) |

**OUTPUT**

| | | |
|---|---|---|
| GPIO13 | >> | OUTPUT 0 |
| | >> | LED (optioneel) |
| GPIO18 | >> | OUTPUT 1 |
| | >> | LED (optioneel) |
| GPIO19 | >> | OUTPUT 2 |
| | >> | LED (optioneel) |
| GPIO16 | >> | OUTPUT 3 |

| | | |
|---|---|---|
| | >> | LED (optioneel) |
| GPIO17 | >> | OUTPUT 4 |
| | >> | LED (optioneel) |

**LED (optional)**

Kathode **alle** LED's via R5K6 >> GND

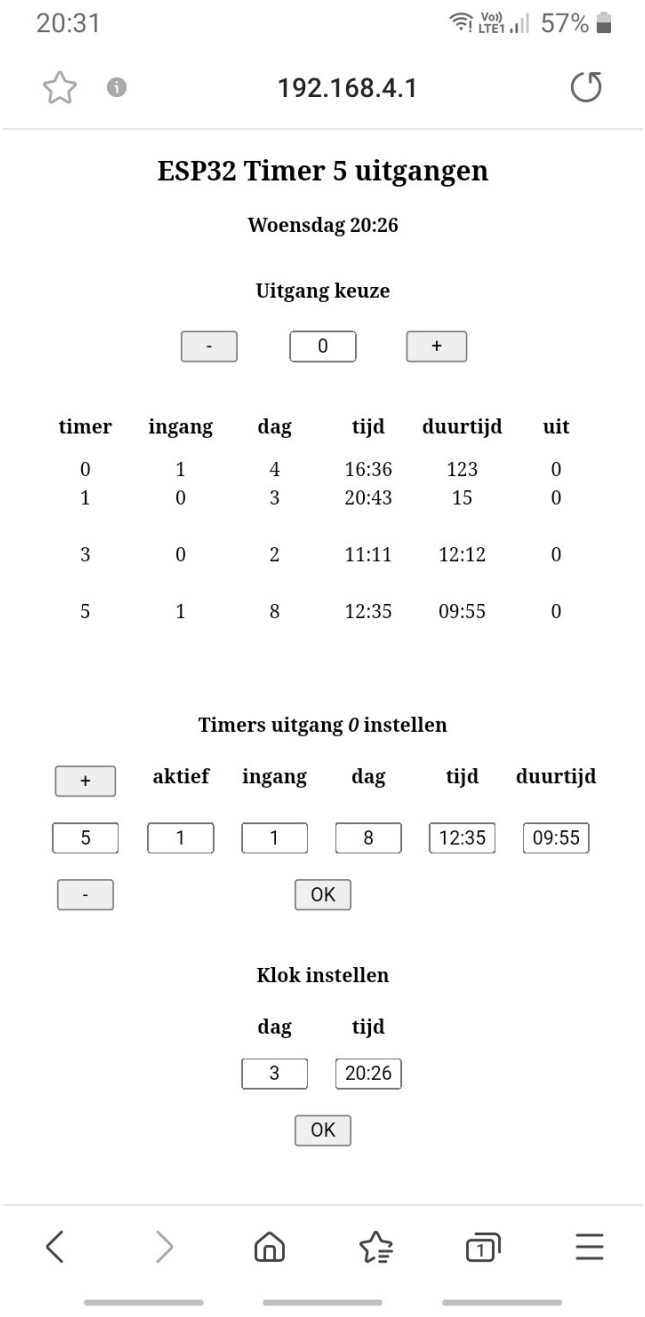
| | | |
|---|---|---|
| Anode LED 1 | >> | GPIO23 |
| Anode LED 2 | >> | GPIO25 |
| Anode LED 3 | >> | GPIO26 |
| Anode LED 4 | >> | GPIO27 |
| Anode LED 5 | >> | GPIO32 |
| | | |
| Anode LED 6 | >> | GPIO13 |
| Anode LED 7 | >> | GPIO18 |
| Anode LED 8 | >> | GPIO19 |
| Anode LED 9 | >> | GPIO16 |
| Anode LED10 | >> | GPIO17 |

**Instructions for use**

Load the program “ESP32_timer_5_outputs” into the ESP32
First run takes a little more time due to formatting of the file system.

Once the program is loaded and started, connect to:

| | | |
|---|---|---|
| Network | : | ESP32Timers |
| Password | : | ESP32pswd |
| Local IP | : | 192.168.4.1 |



**Current day and time**


**Set day and time**


days :

| | |
|---|---|
| 1 | Monday |
| 2 | Tuesday |
| 3 | Wednesday |
| 4 | Thursday |
| 5 | Friday |
| 6 | Saturday |
| 7 | Sunday |

**Choice of output to be programmed**


Select the desired output using the < - > and < + > buttons.
Output from 0 to 4

**Active timers of the desired output**


| timer | ingang | dag | tijd | duurtijd | uit |
|---|---|---|---|---|---|
| 0 | 1 | 4 | 16:36 | 123 | 0 |
| 1 | 0 | 3 | 20:43 | 15 | 0 |
| 3 | 0 | 2 | 11:11 | 12:12 | 0 |
| 5 | 1 | 8 | 12:35 | 09:55 | 0 |

The active timers of output 0.
Number of timers per output 7 (0 to 6)

Active here

Timer 0
Input 0 must be 1 to start the timer, once started the input no longer has any influence.
Timer starts on day 4 at 4:36 PM and switches off after 123 minutes.
Output currently not controlled

Timer 1
Input  1 must be 0 to start timer
Timer starts on day 3 at 8:43 PM and switches off after 15 minutes
Output currently not controlled

Timer 2 not visible >> is not active

Timer 3
Input 3 must be 0 to start timer
Timer starts on day 2 at 11:11 and turns off at 12:12
Output currently not controlled

Timer 4 not visible >> is not active

Timer 5
Input 5 must be 1 to start timer
Timer starts daily at 12:35 and turns off at 9:35 (this is the next day)
Output currently not controlled

Timer 6 not visible >> is not active

**Set timers of the selected output**


Use the < + > and < - > buttons to select the timer to be set

**actief** if 1 timer is active
if 0 timer not active

**ingang** value that the input must have (0 or 1) to start the timer.
If not connected, the input is logic “0” (INPUT_X, INPUT_PULLDOWN)

**dag** day that timer can switch

| | |
|---|---|
| 1 | Monday |
| 2 | Tuesday |
| 3 | Wednesday |
| 4 | Thursday |
| 5 | Friday |
| 6 | Saturday |
| 7 | Sunday |
| 8 | daily |
| 9 | weekdays (Monday to Friday) |
| 10 | weekend (Saturday Sunday) |

**tijd** switching time hh:mm

**duurtijd** here there are 2 possibilities

| | | |
|---|---|---|
| or switch time | >> | enter with hh:mm |
| or switch after xx minutes | >> | enter xxxx |

## Input / output

In this version, the inputs and outputs are directly connected to the GPIOs of the ESP32.
There are sufficient modules available at Aliexpress to adapt these inputs and outputs to the desired input and output voltages.

## Input optocoupler

https://nl.aliexpress.com/item/1005005763978549.html?spm=a2g0o.productlist.main.1.7a0c26363QFqSL&algo_pvid=b9064ca0-1bf5-42bd-8e24-6d871b12f59d&algo_exp_id=b9064ca0-1bf5-42bd-8e24-6d871b12f59d-0&pdp_npi=4%40dis%21EUR%211.01%210.76%21%21%211.09%210.82%21%40210384b217260824490995280e1cee%211200003426721046O%21sea%21BE%210%21ABX&curPageLogUid=jrHdtE3kY25B&utparam-url=scene%3Asearch%7Cquery_from%3A

## Output

3.3V relais
https://nl.aliexpress.com/item/1005005502748588.html?spm=a2g0o.productlist.main.3.6b74289dc15P78&algo_pvid=fc5c4160-f27f-4da3-a7f5-7deb902aa559&algo_exp_id=fc5c4160-f27f-4da3-a7f5-7deb902aa559-1&pdp_npi=4%40dis%21EUR%212.18%210.92%21%21%212.35%210.99%21%40210384b217260826368183540e1cee%211200003333360705 3%21sea%21BE%210%21ABX&curPageLogUid=oIvpDovwGmb4&utparam-url=scene%3Asearch%7Cquery_from%3A

Solid State relais
https://nl.aliexpress.com/item/32901033574.html?spm=a2g0o.productlist.main.9.21bb4673AcuQ0U&algo_pvid=7b767b3e-c97e-462e-943f-240f51d0aa77&algo_exp_id=7b767b3e-c97e-462e-943f-240f51d0aa77-4&pdp_npi=4%40dis%21EUR%217.23%217.23%21%21%217.79%217.79%21%40210384b217260827369067198e1cee%211000000006933592 34%21sea%21BE%210%21ABX&curPageLogUid=TTBygFb9EmjV&utparam-url=scene%3Asearch%7Cquery_from%3A

## Intelligent irrigation

soil moisture sensor

https://nl.aliexpress.com/item/1005006005975181.html?spm=a2g0o.productlist.main.1.489e2c6bKPCvEe&algo_pvid=9980438c-540b-476d-8d57-12904e59d363&algo_exp_id=9980438c-540b-476d-8d57-12904e59d363-0&pdp_npi=4%40dis%21EUR%214.87%210.92%21%21%2137.36%217.01%21%40210384b217260835222216674e1cff%211200003534815627 9%21sea%21BE%210%21ABX&curPageLogUid=mG29UeJPngwo&utparam-url=scene%3Asearch%7Cquery_from%3A

Connect the sensor to the GND and 3.3V of the ESP32
connect DO to the input oof the desired output from the irrigation system.
The desired humidity can be set with the potentiometer.
If soil is too dry, output is logic “1”.
So select “1” under the “input” option for the desired output and desired timer.


The output will be activated in this way if the soil is too dry.

Succes,

greetings,
thieu-b55

**See Github**

https://github.com/thieu-b55/ESP32-Timer-5-outputs