LAMPIRAN A

KEMENTERIAN RISET,TEKNOLOGI DAN PENDIDIKAN TINGGI
POLITEKNIK NEGERI SRIWIJAYA
Jalan Srijaya Negara, Palembang 30139
Telp. 0711-353414 Fax. 0711-355918
Website : www.polisriwijaya.ac.id **E-mail :** info@polsri.ac.id

KESEPAKATAN BIMBINGAN LAPORAN AKHIR (LA)

Kami yang bertanda tangan di bawah ini,

Pihak Pertama

Nama	: Dwi Amalya
NIM	: 062030321038
Jurusan	: Teknik Elektro
Program Studi	: D3 Teknik Elektronika

Pihak Kedua

Nama	: Niksen Alfarizal, S.T., M.Kom.
NIP	: 197508162001121001
Jurusan	: Teknik Elektro
Program Studi	: D3 Teknik Elektronika

Pada hari ini *Jum'at* tanggal *10 Feb 2023* telah sepakat untuk melakukan konsultasi bimbingan Laporan Akhir.

Konsultasi bimbingan sekurang-kurangnya 1 (satu) kali dalam satu minggu. Pelaksanaan bimbingan pada setiap hari *Rabu* pukul *09.00*, tempat di Politeknik Negeri Sriwijaya.

Demikianlah kesepakatan ini dibuat dengan penuh kesadaran guna kelancaran penyelesaian Laporan Akhir.

Palembang, ……………………

Pihak Pertama,　　　　　　　　　　　　　　　　Pihak Kedua,

Dwi Amalya　　　　　　　　　　　　　　　　　Niksen Alfarizal, S.T., M.Kom
NIM. 062030321038　　　　　　　　　　　　　NIP. 197508162001121001

Mengetahui,
Ketua Jurusan

Ir. Iskandar Lutfi, M.T.
NIP. 196501291991031002

KEMENTERIAN RISET,TEKNOLOGI DAN PENDIDIKAN TINGGI
POLITEKNIK NEGERI SRIWIJAYA
Jalan Srijaya Negara, Palembang 30139
Telp. 0711-353414 Fax. 0711-355918
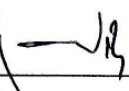**Website :** www.polisriwijaya.ac.id **E-mail :** info@polsri.ac.id

KESEPAKATAN BIMBINGAN LAPORAN AKHIR (LA)

Kami yang bertanda tangan di bawah ini,

Pihak Pertama

Nama   : Dwi Amalya

NIM   : 062030321038

Jurusan   : Teknik Elektro

Program Studi   : D3 Teknik Elektronika

Pihak Kedua

Nama   : Yudi Wijanarko, S.T., M.T.

NIP   : 196705111992031003

Jurusan   : Teknik Elektro

Program Studi   : D3 Teknik Elektronika

Pada hari ini ...*Rabu*... tanggal ...*10 Feb 2023*... telah sepakat untuk melakukan konsultasi bimbingan Laporan Akhir.

Konsultasi bimbingan sekurang-kurangnya 1 (satu) kali dalam satu minggu. Pelaksanaan bimbingan pada setiap hari *Rabu*... pukul ..*07.00*.., tempat di Politeknik Negeri Sriwijaya.

Demikianlah kesepakatan ini dibuat dengan penuh kesadaran guna kelancaran penyelesaian Laporan Akhir.

Palembang, *10 Feb 2023*

Pihak Pertama,

Pihak Kedua,

Dwi Amalya
NIM. 062030321038

Yudi Wijanarko, S.T., M.T.
NIP. 196705111992031003

Mengetahui,
Ketua Jurusan

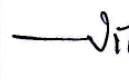Ir. Iskandar Lutfi, M.T.
NIP. 196501291991031002

LEMBAR BIMBINGAN LAPORAN AKHIR

Lembar : 1

Nama	:	Dwi Amalya
NIM	:	062030321038
Jurusan/Program Studi	:	Teknik Elektro/ DIII Teknik Elektronika
Judul Laporan Akhir	:	Rancang Bangun Sistem Monitoring Penetasan Telur Universal Otomatis
		Berbasis *Internet Of Things* (IoT) Menggunakan Node MCU ESP32
Pembimbing I	:	Niksen Alfarizal, ST., M.Kom

No.	Tanggal	Uraian Bimbingan	Tanda Tangan Pembimbing
1.	10/2 '22	Konsultasi judul LA Proposal	✓
2.	23/2 '22	Perbaiki tema judul — Jadwal	✓
3.		- Biaya - pustaka	
4.	17/3 '23	Acc judul Silahkan lanjah, LA, sesegues	✓
5.		mylin	
6.	26/3 '23	perbaiki BAB I & II latar belakng / tujuan	✓
7.	20/5 '23	perbaiki tata tulis lap sesuai pedoman prodi	✓

No.	Tanggal	Uraian Bimbingan	Tanda Tangan Pembimbing
8.	29/7 '23	Perbaiki : Metode pengambilan data telur	
9.		- Uji terus sampai ada progres yg baik	
10.	26/7 '23	perbaiki harga alat	
11.	28/7 '23	perbaiki lapor / lengkapi seluruh komponen lapor	
12.	1/8 '23	Acc ikut ujian LA	

Palembang, ...

Ketua Jurusan/KPS,

(Dewi Permata Sari, ST, M.kom)
NIP 1976.12.13.200.003 2001.....

Catatan:
*) melingkari angka yang sesuai.
Ketua Jurusan/Ketua Program Studi harus memeriksa jumlah pelaksanaan bimbingan sesuai yang dipersyaratkan dalam Pedoman Laporan Akhir sebelum menandatangani lembar bimbingan ini.
Lembar pembimbingan LA ini harus dilampirkan dalam Laporan Akhir.

LEMBAR BIMBINGAN LAPORAN AKHIR

Lembar : 1

Nama	:	Dwi Amalya
NIM	:	062030321038
Jurusan/Program Studi	:	Teknik Elektro / D3 Teknik Elektronika
Judul Laporan Akhir	:	Rancang Bangun Sistem Monitoring Penetasan Telur Universal Otomatis Berbasis Internet Of Things (IoT) Menggunakan Node MCU ESP32
Pembimbing II	:	Yudi Wijanarko, S.T., M.T.

No.	Tanggal	Uraian Bimbingan	Tanda Tangan Pembimbing
1.	31 / 1 2023	Persiapan penyusunan proposal LA / TA	
2.	2/2 -23	- teori propos. - ganti mps	
3.	9/3 -23	- BAB - Tim alteau	
4.	17 / 3 2023	Recomend Propne.	
5.	20 / 3 2023	- Proposal (ACC)	
6.	23 / 3 2023	- Perkembangan LA dan diskusi	
7.	26 / 5 2023	- Persiapan wiring diagram - Paparan cara kerja rangkaian dan coding	

No.	Tanggal	Uraian Bimbingan	Tanda Tangan Pembimbing
8.	29 / 2023 / 5	- Analisis wiring diagram Power Regulator - Pengaruh pembebanan sistem rangkaian integritas - Finalisasi bab III perancang dan Faktor koreksi	
9.	7 / 2023 / 6	- karakteristik dan analisa sistem rangkaian terintentas - Tes point dan analisa rangkaian - Persiapan dan penyempurnaan penulisan LA	
10.	12 / 2023 / 6	- evaluasi dan cara kerja rangkaian - koreksi dan perbaikan contents bab III - Percepatan dalam penyelesaian menuju bab IV	
11.	14 / 2023 / 6	- koreksi bab III menuju Analisa rangkaian test point bab IV	
12.	16 / 2023 / 6	- konsep / draft bab IV, Evaluasi pencapaian yang dibangun - PPT max 12 slide -	

Palembang, ...

Ketua Jurusan/KPS,

(Dewi Permata San, S.T., M.Kom)
NIP 197612132000032001

PELAKSANAAN REVISI LAPORAN AKHIR

Mahasiswa berikut,

Nama	:	Dwi Amalya
NIM	:	062030321038
Jurusan/Program Studi	:	Teknik Elektro / DIII Teknik Elektronika
Judul Laporan Akhir	:	Rancang Bangun Sistem Monitoring Penetasan Telur Universal Berbasis *Internet Of Things* (Iot) Menggunakan Node Mcu Esp32

No.	Komentar	Nama Dosen Penguji *)	Tanggal	Tanda Tangan
	Acc telis revisi	Dr. Rd. Kusumanto, S.T.,M.M.		
	Acc.	Ir. Iskandar Lutfi, M.T.	30/8 2023	
	Acc	Yeni Irdayanti, S.T.,M,Kom.	28/8-23	
	Sudah direvisi	Niksen Alfarizal, S.T.,M.Kom.	1/9 23	
		Ibnu Maja, S.Si.,M.M.		

Palembang, ...

Ketua Penguji **)

(....)

NIP ....

Catatan:
*) Dosen penguji yang memberikan revisi saat ujian laporan akhir.
**) Dosen penguji yang ditugaskan sebagai Ketua Penguji saat ujian LA.
Lembaran pelaksanaan revisi ini harus dilampirkan dalam Laporan Akhir.

BUKTI PENYERAHAN HASIL KARYA/RANCANG BANGUN

Pada hari ini .... tanggal .... bulan .... tahun .... telah diserahkan seperangkat karya/rancang bangun kepada Jurusan Teknik Elektro Program Studi Teknik Elektronika di Politeknik Negeri Sriwijaya,
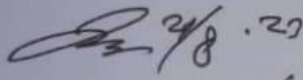
Nama Perangkat	Spesifikasi
Rancang Bangun Sistem Monitoring Penetasan Telur Universal Otomatis Berbasis *Internet Of Things* (Iot) Menggunakan Node Mcu Esp32	

Hasil karya/rancang bangun dari,

Nama	NIM	Nama Pembimbing
Dwi Amalya	062030321038	Niksen Alfarizal,S.T.,M.Kom
		Yudi wijanarko,S.T.,M.T

Yang menerima *),

NIP.
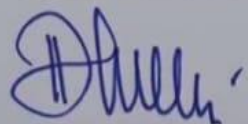
Yang menyerahkan **),

(Dwi Amalya)
NIM. 062030321038

Mengetahui,
Koordinator Program Studi
DIII Teknik Elektronika

(Dewi Permata Sari,S.T.,M.Kom)
NIP. 197612132000032001

LAMPIRAN B

➤ **Meletakkan telur ke rak telur**

➤ **Suasana telur pada alat penetas telur universal**

➤ **Telur menetas**

➤ **Beberapa telur menetas**

➤ **Keadaan visual telur menetas menggunakan ESP32-CAM**

➢ **Proses membuat kodingan dan merangkai elektronika alat penetas telur universal**
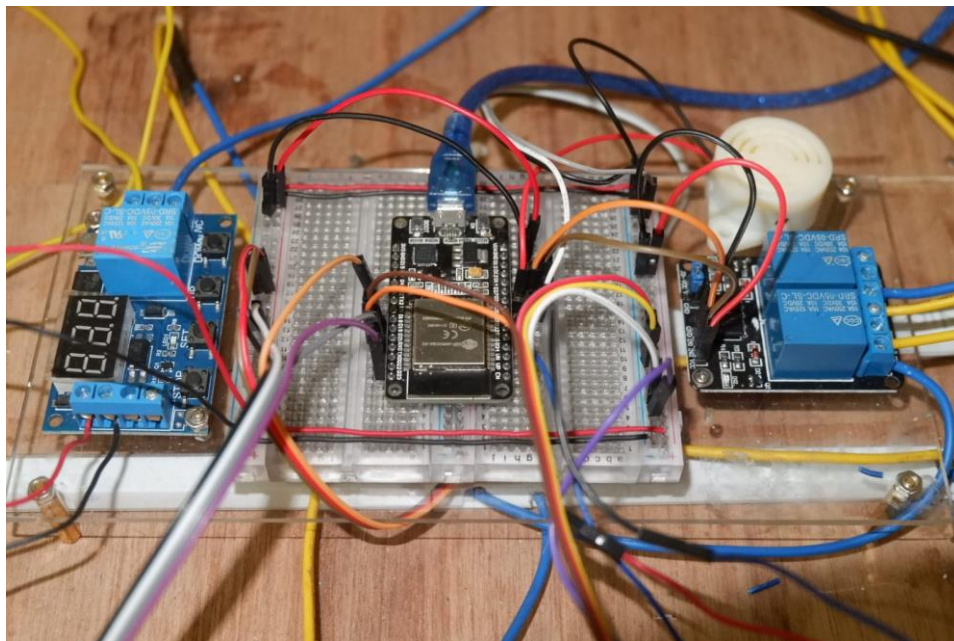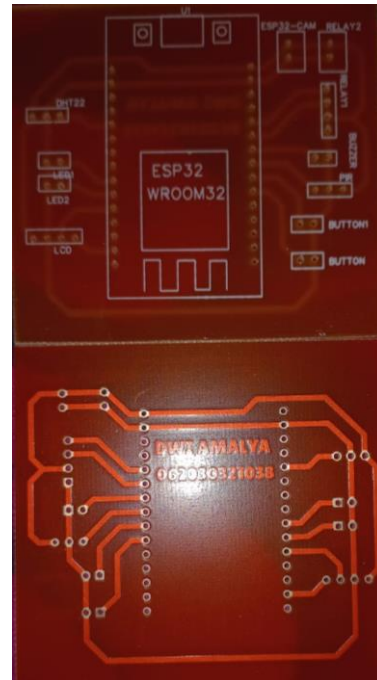
➢ **Dokumentasi alat sedang proses penetasan**

➢ **Dokumentasi setelah wawancara dengan pemilik Ian farm**

LAMPIRAN C

Aosong Electronics Co.,Ltd

Digital-output relative humidity & temperature sensor/module

DHT22 (DHT22 also named as AM2302)
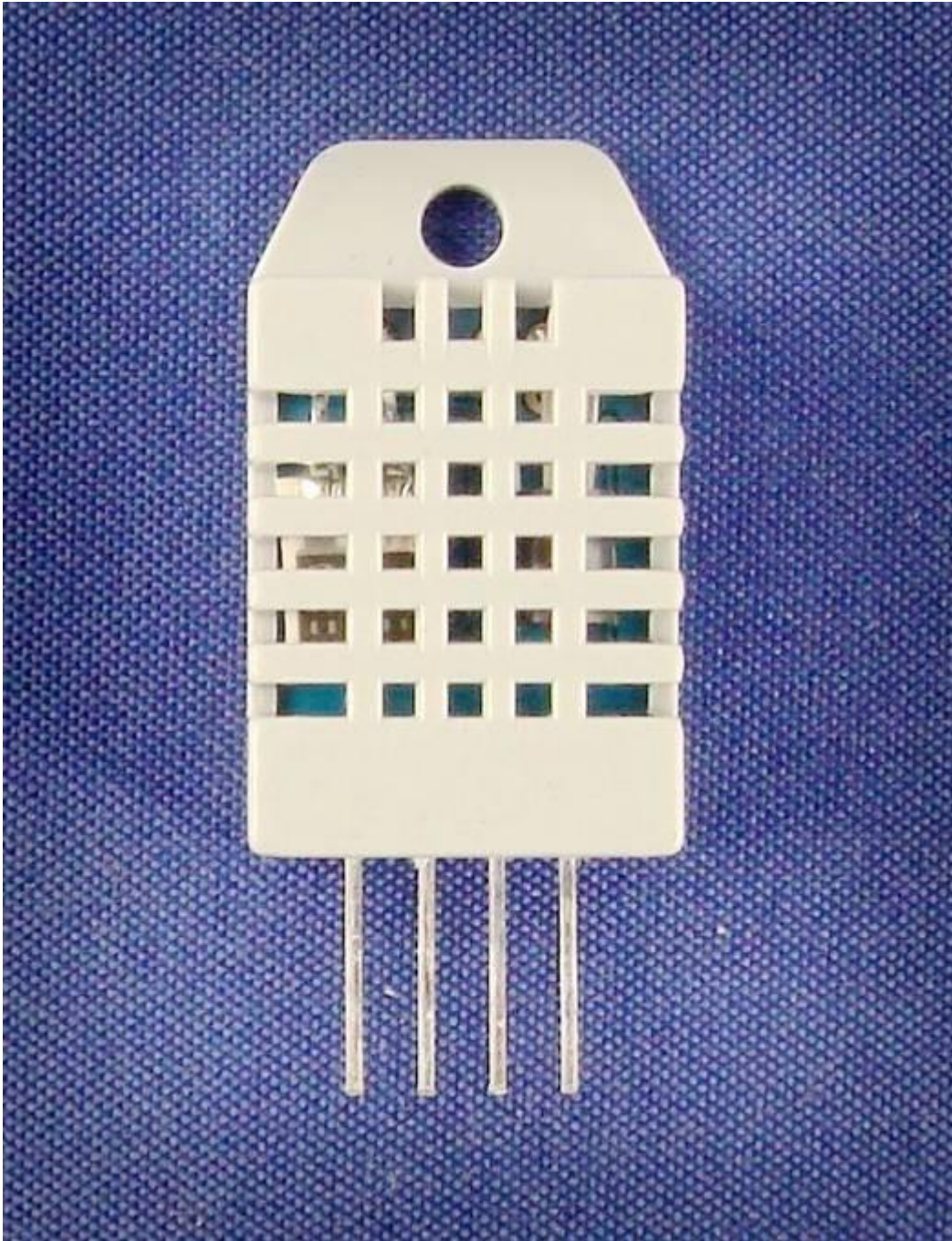
Capacitive-type humidity and temperature module/sensor

Thomas Liu (Business Manager)

Email: thomasliu198518@yahoo.com.cn

Aosong Electronics Co.,Ltd

----

1. Feature & Application:

* Full range temperature compensated   * Relative humidity and temperature measurement
* Calibrated digital signal   *Outstanding long-term stability *Extra components not needed
* Long transmission distance * Low power consumption   *4 pins packaged and fully interchangeable

2. Description:

DHT22 output calibrated digital signal. It utilizes exclusive digital-signal-collecting-technique and humidity sensing technology, assuring its reliability and stability.Its sensing elements is connected with 8-bit single-chip computer.

Every sensor of this model is temperature compensated and calibrated in accurate calibration chamber and the calibration-coefficient is saved in type of programme in OTP memory, when the sensor is detecting, it will cite coefficient from memory.

Small size & low consumption & long transmission distance(20m) enable DHT22 to be suited in all kinds of harsh application occasions.

Single-row packaged with four pins, making the connection very convenient.

3. Technical Specification:

Model	DHT22
Power supply	3.3-6V DC
Output signal	digital signal via single-bus
Sensing element	Polymer capacitor
Operating range	humidity 0-100%RH; temperature -40~80Celsius
Accuracy	humidity +-2%RH(Max +-5%RH); temperature <+-0.5Celsius
Resolution or sensitivity	humidity 0.1%RH; temperature 0.1Celsius
Repeatability	humidity +-1%RH; temperature +-0.2Celsius
Humidity hysteresis	+-0.3%RH
Long-term Stability	+-0.5%RH/year
Sensing period	Average: 2s
Interchangeability	fully interchangeable
Dimensions	small size 14*18*5.5mm; big size 22*28*5mm

4. Dimensions: (unit ---mm)

1) Small size dimensions: (unit --- mm)

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Pin sequence number: 1 2 3 4 (from left to right direction).

Pin	Function
1	VDD ---power supply
2	DATA--signal
3	NULL
4	GND

4

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Your specialist in innovating humidity & temperature sensors

5. Electrical connection diagram:
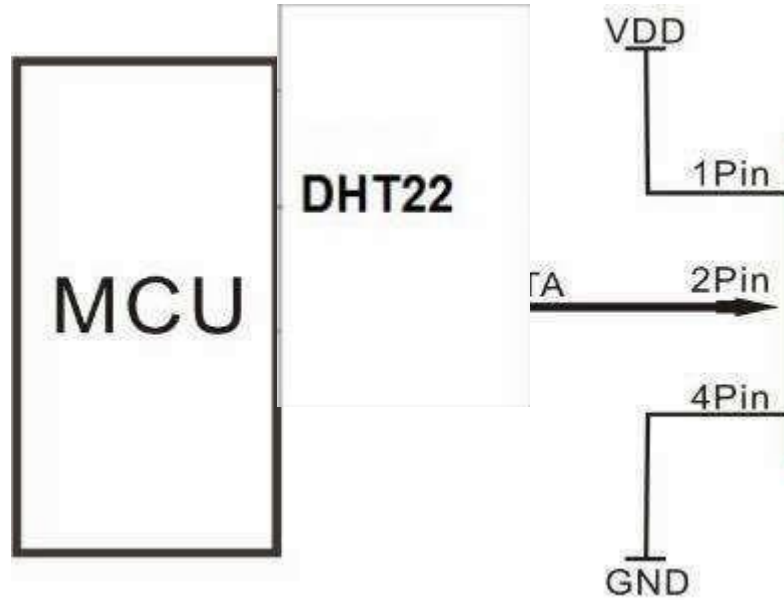
3Pin---NC, AM2302 is another name for DHT22

6. Operating specifications:

(1) Power and Pins
Power's voltage should be 3.3-6V DC. When power is supplied to sensor, don't send any instruction to the sensor within one second to pass unstable status. One capacitor valued 100nF can be added between VDD and GND for wave filtering.

(2) Communication and signal
Single-bus data is used for communication between MCU and DHT22, it costs 5mS for single time communication.

Data is comprised of integral and decimal part, the following is the formula for data.

DHT22 send out higher data bit firstly!
 DATA=8 bit integral RH data+8 bit decimal RH data+8 bit integral T data+8 bit decimal T data+8 bit check-sum
If the data transmission is right, check-sum should be the last 8 bit of "8 bit integral RH data+8 bit decimal RH data+8 bit integral T data+8 bit decimal T data".

When MCU send start signal, DHT22 change from low-power-consumption-mode to running-mode. When MCU finishs sending the start signal, DHT22 will send response signal of 40-bit data that reflect the relative humidity

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and temperature information to MCU. Without start signal from MCU, DHT22 will not give response signal to MCU. One start signal for one time's response data that reflect the relative humidity and temperature information from DHT22. DHT22 will change to low-power-consumption-mode when data collecting finish if it don't receive start signal from MCU again.

1) Check bellow picture for overall communication process:

Host computer send out

start signal.   Data transmission finished,

Sensor send out   and RL pull up bus's voltage

response signal.   Output data: 1bit"0"   for next

transmission

Pull up and wait   Host's signal   Sensor's signal   Output data: 1bit

"1"response from sensor   Sensor pull down

Pull up voltage and get   bus's

voltageready for sensor's output.
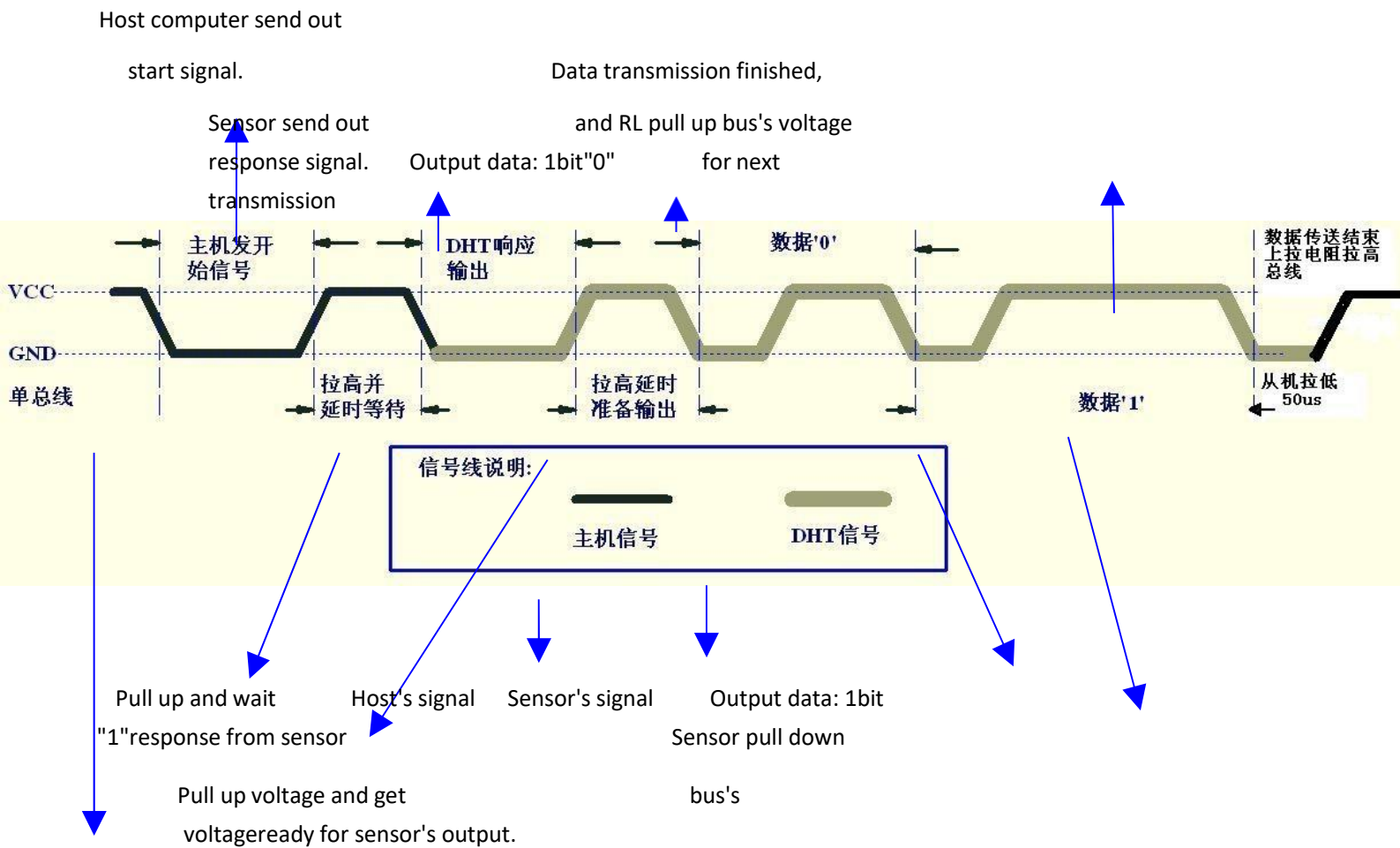
Single-bus output

2) Step 1: MCU send out start signal to DHT22

Data-bus's free status is high voltage level. When communication between MCU and DHT22 begin, program of MCU will transform data-bus's voltage level from high to low level and this process must beyond at least 1ms to ensure DHT22 could detect MCU's signal, then MCU will wait 20-40us for DHT22's response.

Check bellow picture for step

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- -

Host computer send start signal

signaland keep this signal at least **1ms**

80us

Sensor send out response

and keep this signal

Host pull up voltage

-and wait sensor's

Sensor pull up bus's voltage

主机拉高
20-40us

DHT拉高
80us

VCC

开始传送数据

GND

单总线

主机至少拉低 18ms

DHT响应信号
80us

信号线说明:

主机信号

DHT信号

Signal from host

Start data

Signal from sensor
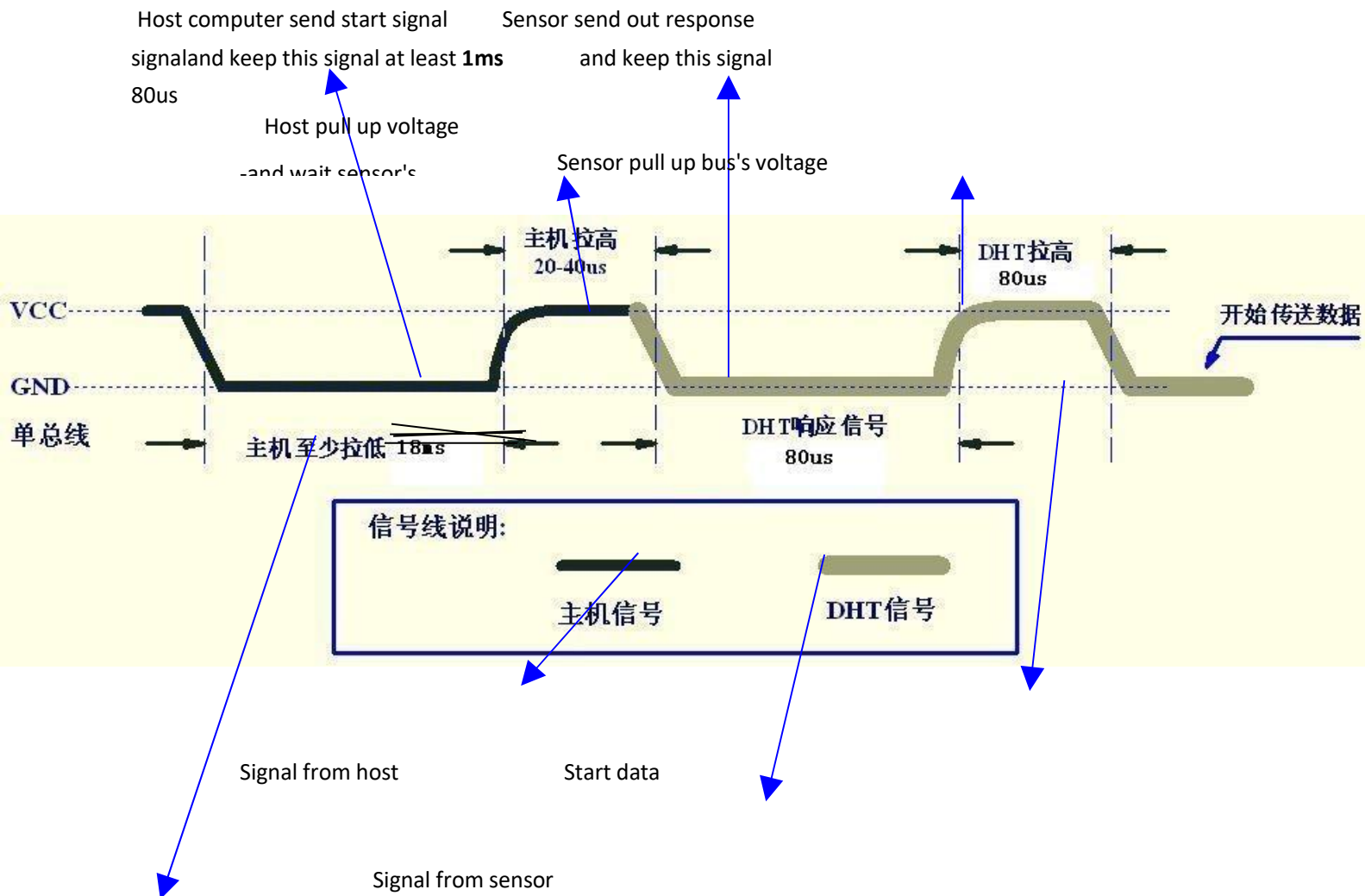
Single-bus signal

- -

Step 2: DHT22 send response signal to MCU

When DHT22 detect the start signal, DHT22 will send out low-voltage-level signal and this signal last 80us as response signal, then program of DHT22 transform data-bus's voltage level from low to high level and last 80us for DHT22's preparation to send data.

Check bellow picture for step 2:

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26-28us voltage-length means data

26us-28us

表示'0'

VCC

下一bit开始

GND

单总线

1bit开始

50us

信号线说明:

主机信号   DHT信号

Host signal   Sesnor's signal

Start transmit 1bit data   Start transmit next bit data
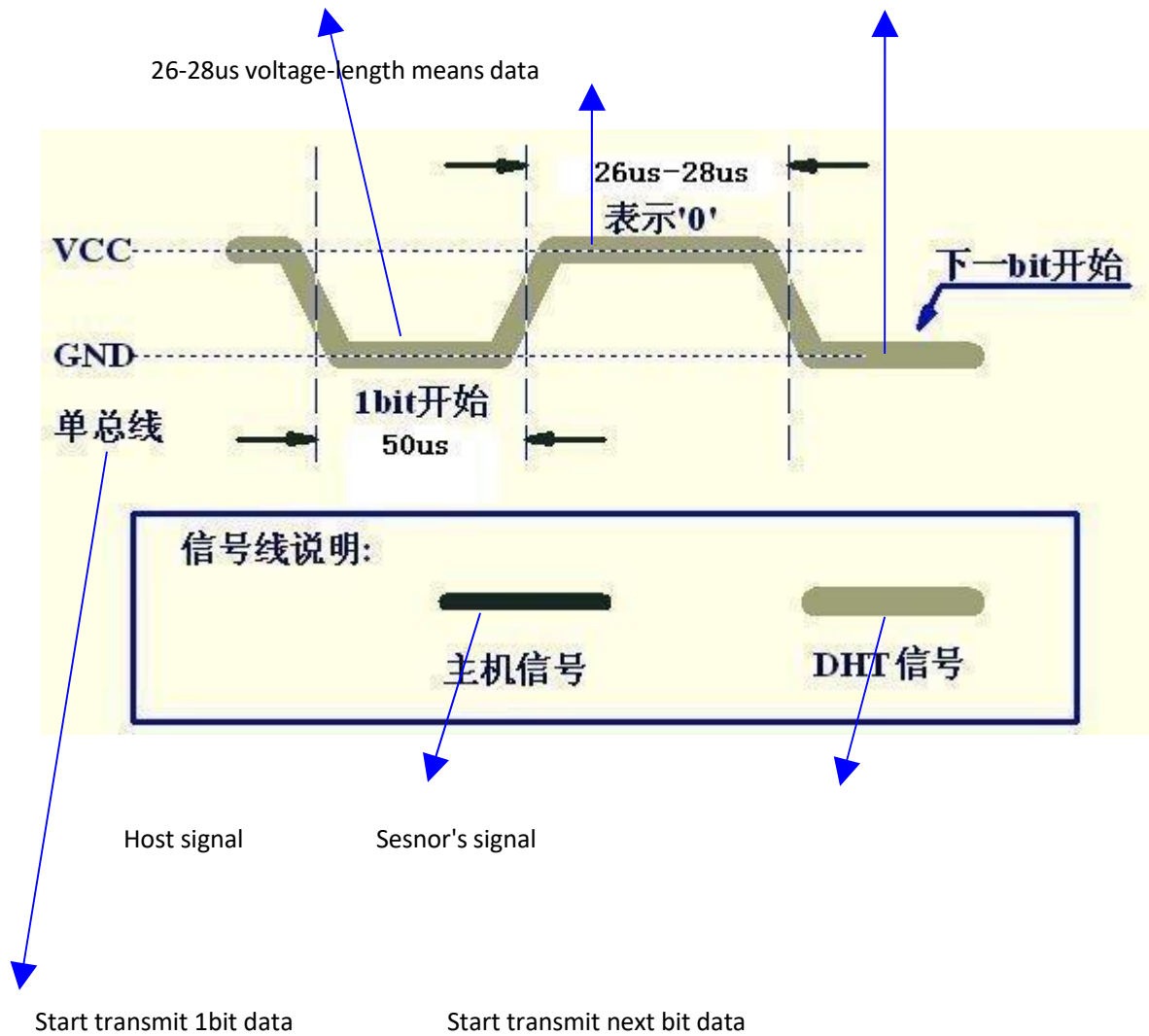
Single-bus signal

Step 3: DHT22 send data to MCU

When DHT22 is sending data to MCU, every bit's transmission begin with low-voltage-level that last 50us, the following high-voltage-level signal's length decide the bit is "1" or "0".

Check bellow picture for step 3:

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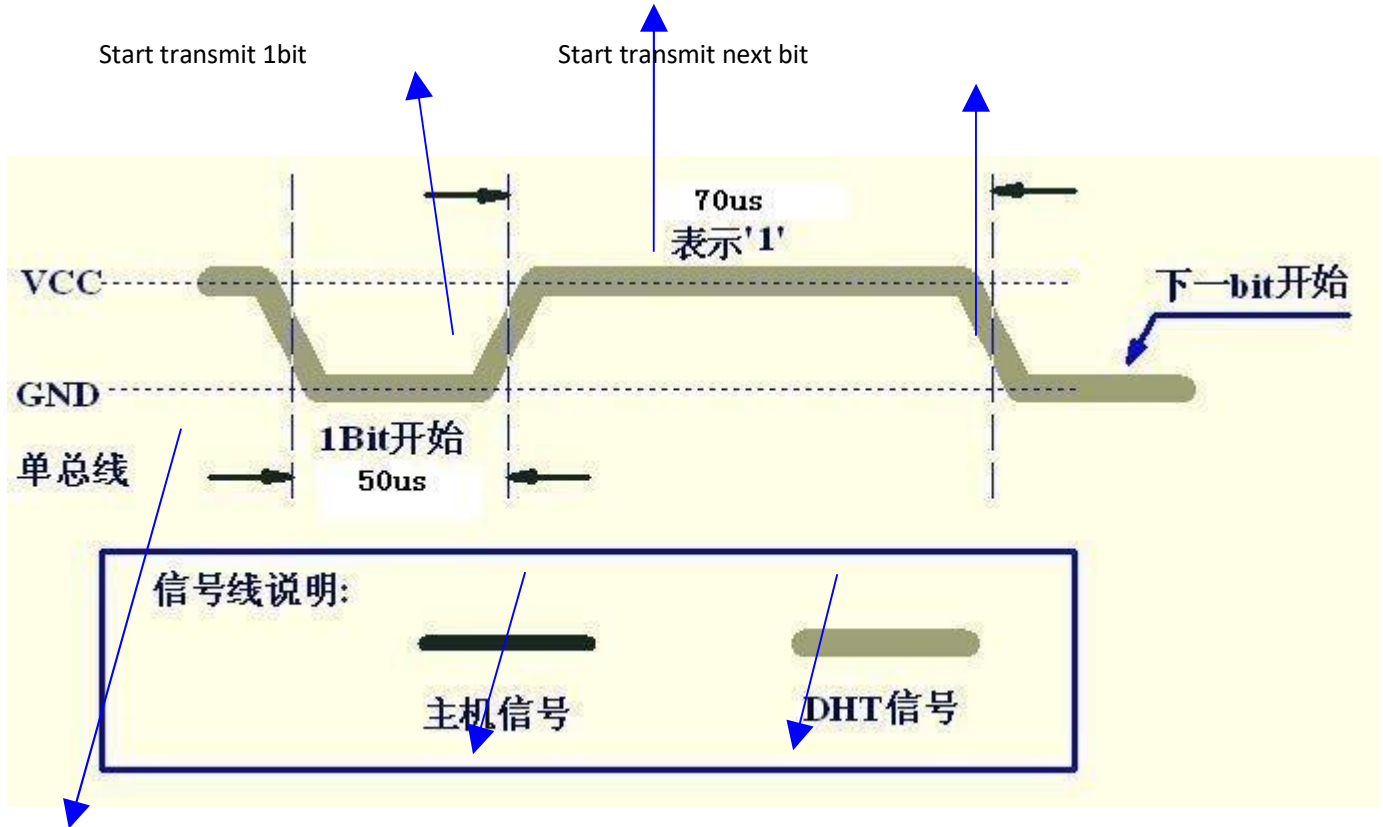- -

Start transmit 1bit   Start transmit next bit

70us
表示'1'

VCC

GND

下一bit开始

单总线

1Bit开始
50us

信号线说明：

主机信号   DHT信号

70us voltage-length means 1bit data "1"

Host signal   Sesnor's signal

Single-bus signal

- -

If signal from DHT22 is always high-voltage-level, it means DHT22 is not working properly, please check the electrical connection status.

7. Electrical Characteristics:

Item	Condition	Min	Typical	Max	Unit
Power supply	DC	3.3	5	6	V
Current supply	Measuring	1		1.5	mA
	Stand-by	40	Null	50	uA
Collecting period	Second		2		Second

*Collecting period should be : >2 second.

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8. Attentions of application:

(1) Operating and storage conditions

We don't recommend the applying RH-range beyond the range stated in this specification. The DHT22 sensor can recover after working in non-normal operating condition to calibrated status, but will accelerate sensors' aging.

(2) Attentions to chemical materials

Vapor from chemical materials may interfere DHT22's sensitive-elements and debase DHT22's sensitivity.

(3) Disposal when (1) & (2) happens

Step one: Keep the DHT22 sensor at condition of Temperature 50~60Celsius, humidity <10%RH for 2 hours;

Step two: After step one, keep the DHT22 sensor at condition of Temperature 20~30Celsius, humidity >70%RH for 5 hours.

(4) Attention to temperature's affection

Relative humidity strongly depend on temperature, that is why we use temperature compensation technology to ensure accurate measurement of RH. But it's still be much better to keep the sensor at same temperature when sensing.

DHT22 should be mounted at the place as far as possible from parts that may cause change to temperature.

(5) Attentions to light

Long time exposure to strong light and ultraviolet may debase DHT22's performance.

(6) Attentions to connection wires

The connection wires' quality will effect communication's quality and distance, high quality shielding-wire is recommended.

(7) Other attentions

* Welding temperature should be bellow 260Celsius.

* Avoid using the sensor under dew condition.

* Don't use this product in safety or emergency stop devices or any other occasion that failure of DHT22 may cause personal injury.

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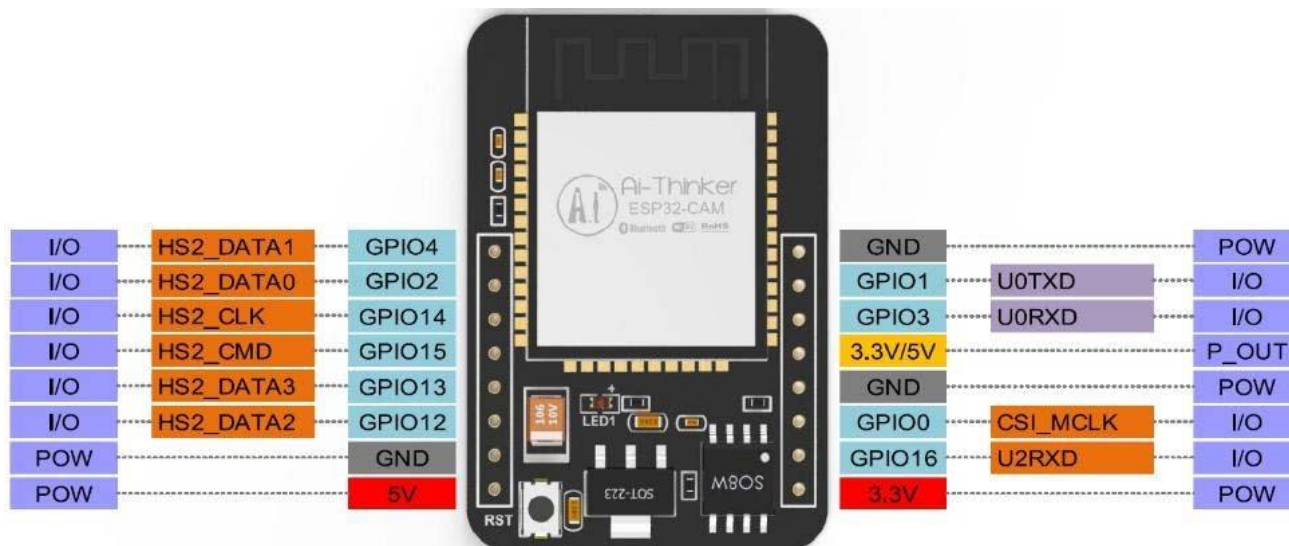
ESP32-CAM Development Board

SKU:DFR0602

INTRODUCTION

ESP32-CAM is a low-cost ESP32-based development board with onboard camera, small insize. It is an ideal solution for IoT application, prototypes constructions and DIY projects.

The board integrates WiFi, traditional Bluetooth and low power BLE , with 2 high-performance 32-bit LX6 CPUs. It adopts 7-stage pipeline architecture, on-chip sensor,Hall sensor, temperature sensor and so on, and its main frequency adjustment rangesfrom 80MHz to 240MHz.

Fully compliant with WiFi 802.11b/g/n/e/i and Bluetooth 4.2 standards, it can be used asa master mode to build an independent network controller, or as a slave to other host MCUs to add networking capabilities to existing devices

ESP32-CAM can be widely used in various IoT applications. It is suitable for home smart devices, industrial wireless control, wireless monitoring, QR wireless identification, wireless positioning system signals and other IoT applications. It is anideal solution for IoT applications.

I/O	HS2_DATA1	GPIO4
I/O	HS2_DATA0	GPIO2
I/O	HS2_CLK	GPIO14
I/O	HS2_CMD	GPIO15
I/O	HS2_DATA3	GPIO13
I/O	HS2_DATA2	GPIO12
POW		GND
POW		5V

GND		POW
GPIO1	U0TXD	I/O
GPIO3	U0RXD	I/O
3.3V/5V		P_OUT
GND		POW
GPIO0	CSI_MCLK	I/O
GPIO16	U2RXD	I/O
3.3V		POW

Schematic Diagram
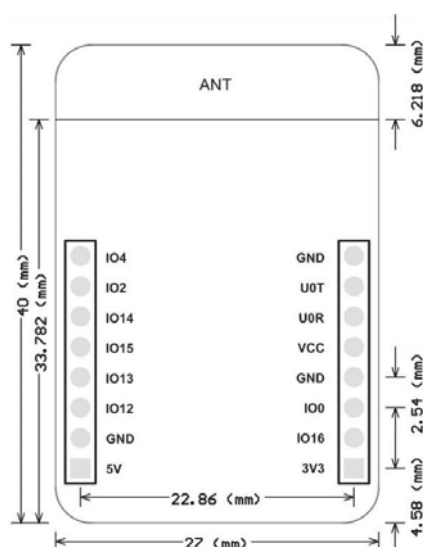
Dimension Diagram

Notes:
1. Please be sure that the power supply for the module should be at least 5V 2A,otherwise maybe there would be water ripple appearing on the image.
2. ESP32 GPIO32 pin is used to control the power of the camera, so when the camera isin working, pull GPIO32 pin low.

3. Since IO pin is connected to camera XCLK, it should be left floating in using, and donot connect it to high/low level.

4. The product has been equipped with default firmware before leaving the factory,

andwe do not provide additional ones for you to download. So, please be cautious when you choose to burn other firmwares.

FEATURES

- Up to 160MHz clock speed，Summary computing power up to 600 DMIPS
- Built-in 520 KB SRAM, external 4MPSRAM
- Supports UART/SPI/I2C/PWM/ADC/DAC
- Support OV2640 and OV7670 cameras, Built-in Flash lamp.
- Support image WiFI upload
- Support TF card
- Supports multiple sleep modes.
- Embedded Lwip and FreeRTOS
- Supports STA/AP/STA+AP operation mode
- Support Smart Config/AirKiss technology
- Support for serial port local and remote firmware upgrades (FOTA)

SPECIFICATION

- SPI Flash: default 32Mbit

- RAM: built-in 520 KB+external 4MPSRAM

- Dimension: 27*40.5*4.5（±0.2）mm/1.06*1.59*0.18"

- Bluetooth: Bluetooth 4.2 BR/EDR and BLE standards

- Wi-Fi: 802.11b/g/n/e/i

- Support Interface: UART, SPI, I2C, PWM

- Support TF card: maximum support 4G

- IO port: 9

- Serial Port Baud-rate: Default 115200 bps

- Image Output Format: JPEG(OV2640 support only), BMP, GRAYSCALE

- Spectrum Range: 2412 ~2484MHz

- Antenna: onboard PCB antenna, gain 2dBi

- Transmit Power: 802.11b: 17±2 dBm (@11Mbps);
  802.11g: 14±2 dBm (@54Mbps);

  802.11n: 13±2 dBm (@MCS7)

- Receiving Sensitivity: CCK, 1 Mbps : -90dBm;
  CCK, 11 Mbps: -85dBm;

  6 Mbps (1/2 BPSK): -88dBm;

  54 Mbps (3/4 64-QAM): -70dBm;
  MCS7 (65 Mbps, 72.2 Mbps): -
  67dBm

- Power consumption: Turn off the flash: 180mA@5V
  Turn on the flash and adjust the brightness to the maximum:

  310mA@5V

- Deep-sleep   : the lowest power consumption can reach 6mA@5VModerm-sleep: up to
  20mA@5V Light-sleep: up to 6.7mA@5V

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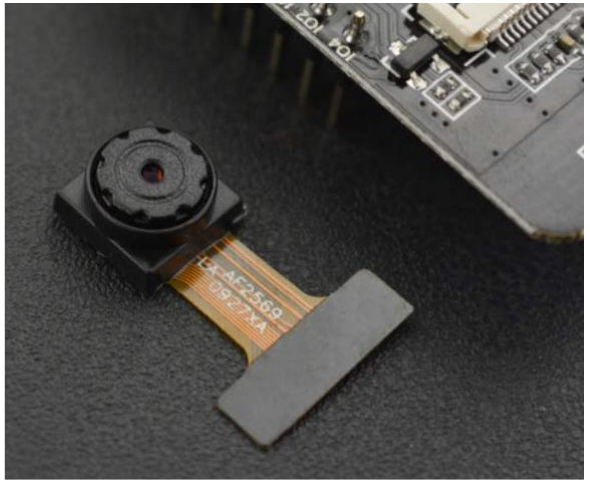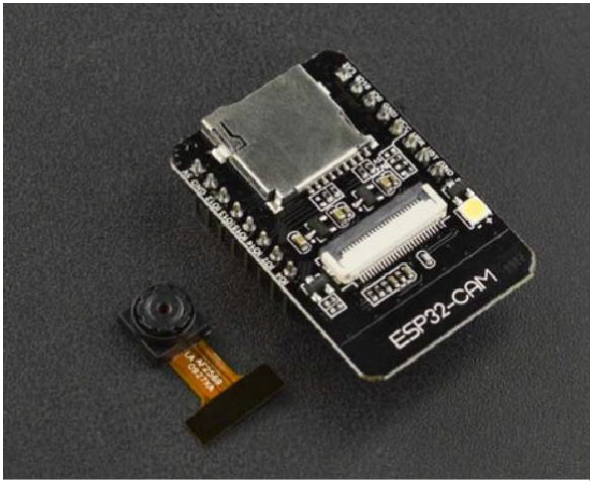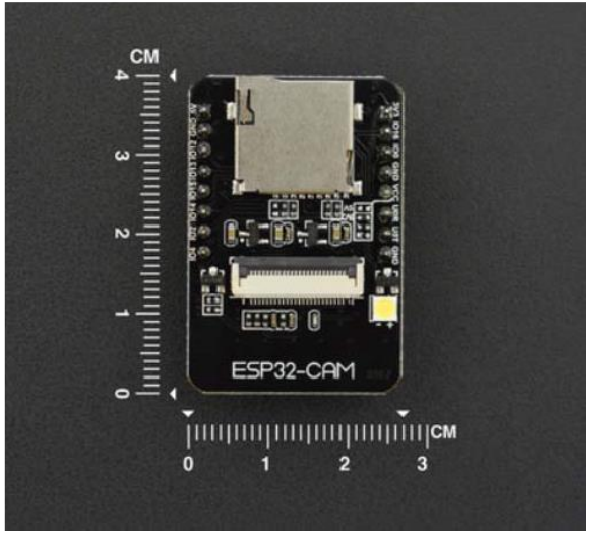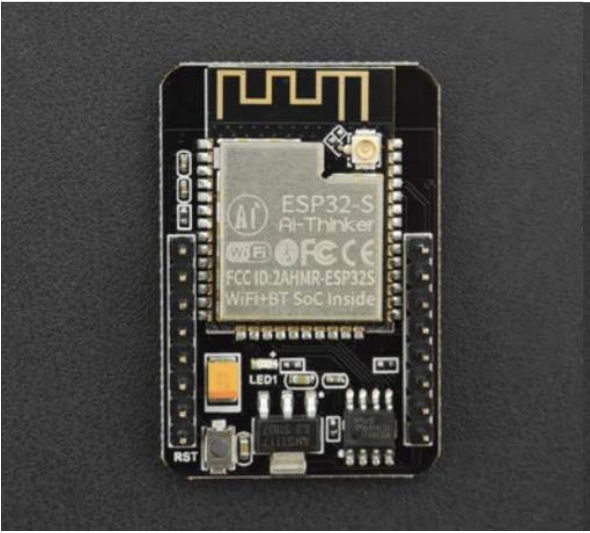
HC-SR501 PIR MOTION DETECTOR

Product Discription

HC-SR501 is based on infrared technology, automatic control module, using Germany imported LHI778 probe design, high sensitivity, high reliability, ultra-low-voltage operating mode, widely used in various auto-sensing electrical equipment, especially for battery-powered automatic controlled products.

Specification:

- Voltage: 5V – 20V
- Power Consumption: 65mA
- TTL output: 3.3V, 0V
- **Delay time: Adjustable (.3->5min)**
- Lock time: 0.2 sec
- Trigger methods: L – disable repeat trigger, H enable repeat trigger
- Sensing range: less than 120 degree, within 7 meters
- Temperature: – 15 ~ +70
- Dimension: 32*24 mm, distance between screw 28mm, M2, Lens dimension in diameter: 23mm

Application:

Automatically sensing light for Floor, bathroom, basement, porch, warehouse, Garage, etc, ventilator, alarm, etc.

Features:

- Automatic induction: to enter the sensing range of the output is high, the person leaves the sensing range of the automatic delay off high, output low.
- Photosensitive control (optional, not factory-set) can be set photosensitive control, day or light intensity without induction.
- Temperature compensation (optional, factory reset): In the summer when the ambient temperature rises to 30 ° C to 32 ° C, the detection distance is slightly shorter, temperature compensation can be used for performance compensation.
- Triggered in two ways: (jumper selectable)
  - non-repeatable trigger: the sensor output high, the delay time is over, the output is automatically changed from high level to low level;
  - repeatable trigger: the sensor output high, the delay period, if there is human activity in its sensing range, the output will always remain high until the people left after the delay will be high level goes low (sensor module detects a time delay period will be automatically extended every human activity, and the starting point for the delay time to the last event of the time).
- With induction blocking time (the default setting: 2.5s blocked time): sensor module after each sensor output (high into low), followed by a blockade set period of time, during this time period sensor does not accept any sensor signal. This feature can be achieved sensor output time "and" blocking time "interval between the work can be applied to interval detection products; This function can inhibit a variety of interference in the process of load switching. (This time can be set at zero seconds – a few tens of seconds).
- Wide operating voltage range: default voltage DC4.5V-20V.
- Micropower consumption: static current <50 microamps, particularly suitable for battery-powered automatic control products.
- Output high signal: easy to achieve docking with the various types of circuit.
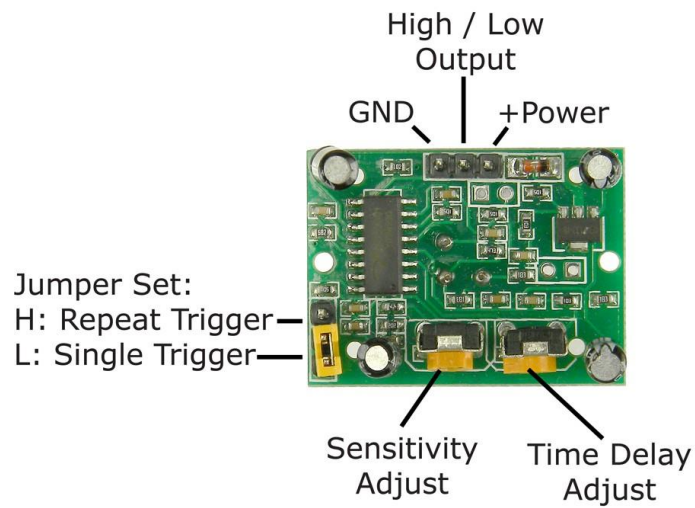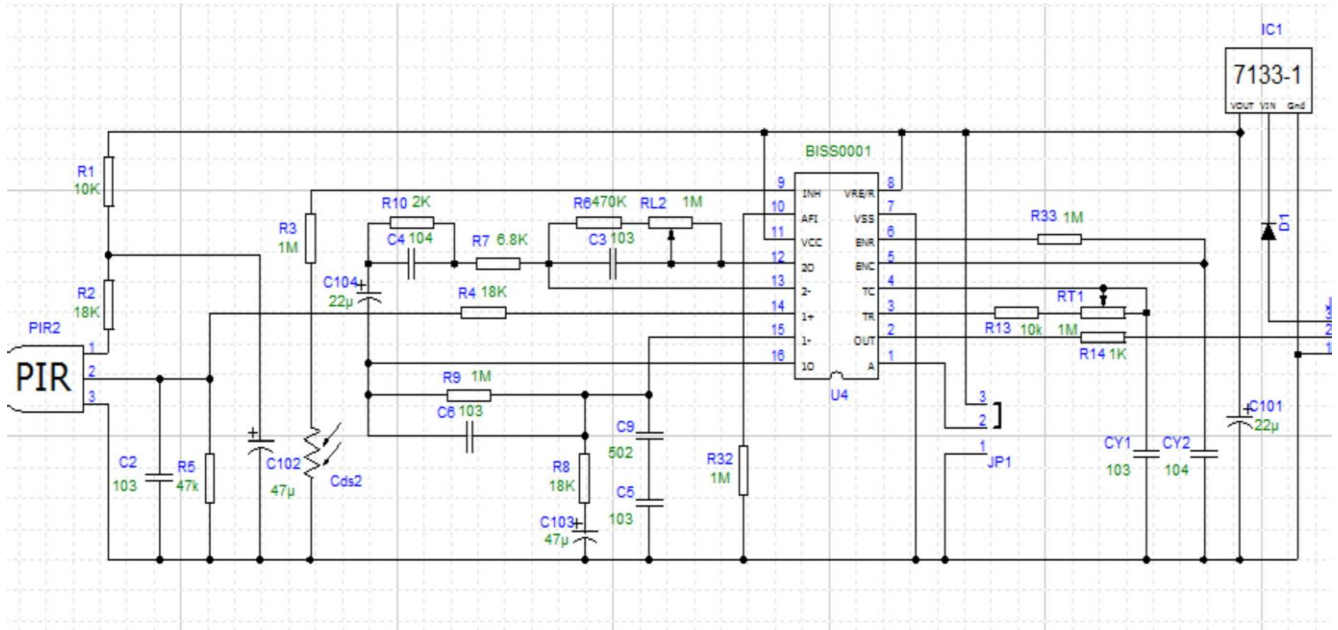
Adjustment:

- Adjust the distance potentiometer clockwise rotation, increased sensing distance (about 7 meters), on the contrary, the sensing distance decreases (about 3 meters).
- Adjust the delay potentiometer clockwise rotation sensor the delay lengthened (300S), on the contrary, shorten the induction delay (5S).

Instructions for use:

- Sensor module is powered up after a minute, in this initialization time intervals during this module will output 0-3 times, a minute later enters the standby state.
- Should try to avoid the lights and other sources of interference close direct module surface of the lens, in order to avoid the introduction of interference signal malfunction; environment should avoid the wind flow, the wind will cause interference on the sensor.
- Sensor module with dual probe, the probe window is rectangular, dual (A B) in both ends of the longitudinal direction
  - so when the human body from left to right or right to left through the infrared spectrum to reach dual time, distance difference, the greater the difference, the more sensitive the sensor,
  - when the human body from the front to the probe or from top to bottom or from bottom to top on the direction traveled, double detects changes in the distance of less than infrared spectroscopy, no difference value the sensor insensitive or does not work;
- The dual direction of sensor should be installed parallel as far as possible in inline with human movement. In order to increase the sensor angle range, the module using a circular lens also makes the probe surrounded induction, but the left and right sides still up and down in both directions sensing range, sensitivity, still need to try to install the above requirements.

HC-SR501 PIR MOTION DETECTOR

High / Low Output

GND   +Power

Jumper Set:
H: Repeat Trigger
L: Single Trigger

Sensitivity Adjust

Time Delay Adjust

1 working voltage range :DC 4.5-20V

2 Quiescent Current :50uA

3 high output level 3.3 V / Low 0V

4. Trigger L trigger can not be repeated / H repeated
   trigger

5. circuit board dimensions :32 * 24 mm

6. maximum 110 ° angle sensor

7. 7 m maximum sensing distance

Product Type	HC--SR501 Body Sensor Module
Operating Voltage Range	5-20VDC
Quiescent Current	<50uA
Level output	High 3.3 V /Low 0V
Trigger	L can not be repeated trigger/H can be repeated trigger(Default repeated trigger)
Delay time	5-300S(adjustable) Range (approximately .3Sec -5Min)
Block time	2.5S(default)Can be made a range(0.xx to tens of seconds
Board Dimensions	32mm*24mm
Angle Sensor	<110 ° cone angle
Operation Temp.	-15-+70 degrees
Lens size sensor	Diameter:23mm(Default)

Application scope

•Security products

•Body induction toys

•Body induction lamps

•Industrial automation control etc

Pyroelectric infrared switch is a passive infrared switch which consists of BISS0001 ,pyroelectric infrared sensors and a few external components. It can a open all kinds of equipments, inculding incandescent lamp, fluorescent lamp, intercom, automatic, electric fan, dryer and automatic washing machine, etc. It is widely used in enterprises, hotels, stores, and corridor and other sensitive area for automatical lamplight, lighting and alarm system.

Instructions

Induction module needs a minute or so to initialize. During initializing time, it will output 0-3 times. One minute later it comes into standby. Keep the surface of the lens from close lighting source and wind, which will introduce interference.

Induction module has double -probe whose window is rectangle. The two sub-probe (A and B) is located at the two ends of rectangle. When human body to right, or from right to left, Time for IR to reach to reach the two sub-probes differs.The lager the time diffference is, the more sensitive this module is. Wh body moves face-to probe, or up to down, or down to up, there is no time difference. So it does not work. So instal the module in the direction in which mo activities behaves, to guarantee the induction of human by dual sub-probes. In order to increase the induction range, this module uses round lens which ca from all direction. However, induction from right or left is more sensitivity than from up or down.

KODINGAN ESP32

```
#define BLYNK_PRINT Serial
#include <WiFi.h>
#include <WiFiClient.h>
//#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp32.h>
#include <TimeLib.h>

#include <DHT.h>
#include <Wire.h>
#include <LiquidCrystal_I2C.h>

char auth[] = "hqxzH153Tib5vwTPqu8w2i_BUPzVNKOC";
char ssid[] = "KOPIHITAM";  // type your wifi name
char pass[] = "bayardulu";  // type your wifi password
char domain[] = "prakitblog.com";
BlynkTimer timer;

#define DHT_PIN 4
#define DHTTYPE DHT22
DHT dht(DHT_PIN, DHTTYPE);
LiquidCrystal_I2C lcd (0x27, 16, 2);

#define PIN_BUTTON1 32
#define PIN_BUTTON2 33

int state_relay1_kipas = 0;
int state_relay2_lampu = 0;
```

```cpp
float humidity, temperature;
int relay1_kipas = 14;
int relay2_lampu = 27;

int ledmerah = 18;
int ledhijau = 19;

int buzzer = 26;
int pirPin = 25;
int pirState = LOW; // we start, assuming no motion detected
int val = 0; // variable for reading the pin status
int counter = 0;
int currentState = 0;
int previousState = 0;

//pin virtual untuk blynk
#define VPIN_BUTTON1  V2
#define VPIN_BUTTON2  V3

int pinValue = 0;
//Fungsi ini dipanggil setiap kali perangkat terhubung ke Blynk.Cloud
//Minta status terbaru dari server
BLYNK_CONNECTED() {
Blynk.syncVirtual(VPIN_BUTTON1);
Blynk.syncVirtual(VPIN_BUTTON2);
}
// Fungsi ini dipanggil setiap kali keadaan Pin Virtual berubah
// yaitu ketika Anda menekan tombol dari Blynk App atau Web Dashboard
BLYNK_WRITE(VPIN_BUTTON1) {
  state_relay1_kipas = param.asInt();
  digitalWrite(relay1_kipas, state_relay1_kipas);
```

```
}
//-------------------------------------------------------------------------
BLYNK_WRITE(VPIN_BUTTON2) {
  state_relay2_lampu = param.asInt();
  digitalWrite(relay2_lampu, state_relay2_lampu);
}
//-------------------------------------------------------------------------
void sendSensor()
{
  float h = dht.readHumidity();
  float t = dht.readTemperature(); // or dht.readTemperature(true) for Fahrenheit

  if (isnan(humidity) || isnan(temperature)) {
    Serial.println("Failed to read from DHT sensor!");
    return;
  }
  // You can send any value at any time.
  // Please don't send more that 10 values per second.
    Blynk.virtualWrite(V0, t);
    Blynk.virtualWrite(V1, h);
    Serial.print("Temperature : ");
    Serial.print(temperature);
      Serial.print("°C");
    Serial.print("Humidity : ");
    Serial.println(humidity);
      Serial.print("%");
}

void setup(){
Serial.begin(115200);
Blynk.begin(auth, ssid, pass, domain, 8181);
```

```
      timer.setInterval(100L,sendSensor);

      timer.setInterval(5000L, notifyOnTheft);


      dht.begin();

      Wire.begin();

      lcd.begin ();

      pinMode(PIN_BUTTON1, INPUT_PULLUP);

      pinMode(PIN_BUTTON2, INPUT_PULLUP);


      pinMode(relay1_kipas, OUTPUT);

      pinMode(relay2_lampu, OUTPUT);

      //------------------------------------------------------------------

      //During Starting all Relays should TURN OFF

      digitalWrite(relay1_kipas, HIGH);

      digitalWrite(relay2_lampu, HIGH);


      pinMode(ledmerah, OUTPUT);

      pinMode(ledhijau, OUTPUT);


      pinMode(buzzer, OUTPUT);

      pinMode(pirPin, INPUT);


      lcd.setCursor(1, 0);

       lcd.print("  DWI AMALYA   ");

       lcd.setCursor(0, 1);

       lcd.print("TELUR UNGGAS A20");

       delay(3000);

       lcd.clear();

       delay(300);

      }

      BLYNK_WRITE(V4) {
```

```
  pinValue = param.asInt();
}
//blynk pir
void notifyOnTheft()
{
  bool sensor = digitalRead(25);
  Serial.println(sensor);
  if (pinValue == 1) {
    Serial.println("System is ON");
    if (sensor == 1) {
      Blynk.notify("WARNING! TELUR MENETAS");
      digitalWrite(26, HIGH);


    } else if (sensor == 0) {
      digitalWrite(26, LOW);


    }
  } else if (pinValue == 0) {
    Serial.println("System is OFF");
  }
}


void loop(){

//KODINGAN DHT22 RELAY DAN LED
temperature = dht.readTemperature();
humidity  = dht.readHumidity();


//HASIL DETEKSI DARI SENSOR KE SERIAL MONITOR
int data = digitalRead (26);
```

```
if (data == 1 )
{
 digitalWrite( 26, HIGH);
 lcd.setCursor(0, 0);
lcd.print(" TELUR MENETAS ");
delay (1000 );
}
else {
digitalWrite( 4, HIGH);
lcd.setCursor(0, 0);
lcd.print("Kelembaban: ");
lcd.print((int) humidity);
lcd.print("%");
lcd.setCursor(0, 1);
lcd.print("Suhu: ");
lcd.print(temperature);
lcd.print((char)223);
lcd.print("C ");
delay (1000);
lcd.clear ();
}

if ( temperature >39.05){
digitalWrite(relay1_kipas, HIGH);
digitalWrite(ledmerah, HIGH);
digitalWrite(relay2_lampu, LOW);
digitalWrite(ledhijau, LOW);
}
else if ( temperature <38.05){
digitalWrite(relay2_lampu, HIGH);
digitalWrite(ledhijau, HIGH);
```

```
    digitalWrite(relay1_kipas, LOW);
    digitalWrite(ledmerah,LOW);
  }


    Blynk.run();
    timer.run();
    listen_push_buttons();


}
//KODINGAN PUSH BUTTON
void listen_push_buttons(){
 //------------------------------------------------------------------------
    if(digitalRead(PIN_BUTTON1) == LOW){
      delay(200);
      control_relay(1);
      Blynk.virtualWrite(VPIN_BUTTON1, state_relay1_kipas); //update button
state
    }
//------------------------------------------------------------------------
    else if (digitalRead(PIN_BUTTON2) == LOW){
      delay(200);
      control_relay(2);
      Blynk.virtualWrite(VPIN_BUTTON2, state_relay2_lampu); //update button
state
    }
}

void control_relay(int relay){
 //------------------------------------------------
  if(relay == 1){
    state_relay1_kipas = !state_relay1_kipas;
```

```
    digitalWrite(relay1_kipas, state_relay1_kipas);
    Serial.println("control_relay: Relay1 State = "+String(state_relay1_kipas));
    delay(50);
  }
 //----------------------------------------------
  else if(relay == 2){
    state_relay2_lampu = !state_relay2_lampu;
    digitalWrite(relay2_lampu, state_relay2_lampu);
    delay(50);
  }
 //----------------------------------------------
}
```