



Havid Adhitama | YD2CLX

How To Create Homebrew WX Station

**Langkah-Langkah dan
pengaplikasian**





WX YD2CLX-13

Mengukur 3 parameter:

- Temperatur
- Kelembapan udara
- Tekanan udara

Digunakan untuk memprediksi fenomena embun es Dieng dan penunjuk data realtime cuaca.

Stasiun cuaca YD2CLX-13

Lokasi: Komplek Candi Arjuna Dieng,
Banjarnegara, Jawa Tengah



Embun ES Dieng

Fenomena yang biasa terjadi ketika memasuki musim kemarau antara bulan Juli – September di dataran Tinggi Dieng.





WX Bisa memprediksi?

Sebelum terpasang WX YD2CLX-13, wisatawan yang berburu fenomena ini gambling dan kadang tidak bisa menjumpai walaupun suhu Dieng drop.





Bermanfaat untuk Petani?

“prediksi” dari WX ini membantu para petani
disekitar Dieng untuk menyelamatkan
tanamanya dari Embun Es

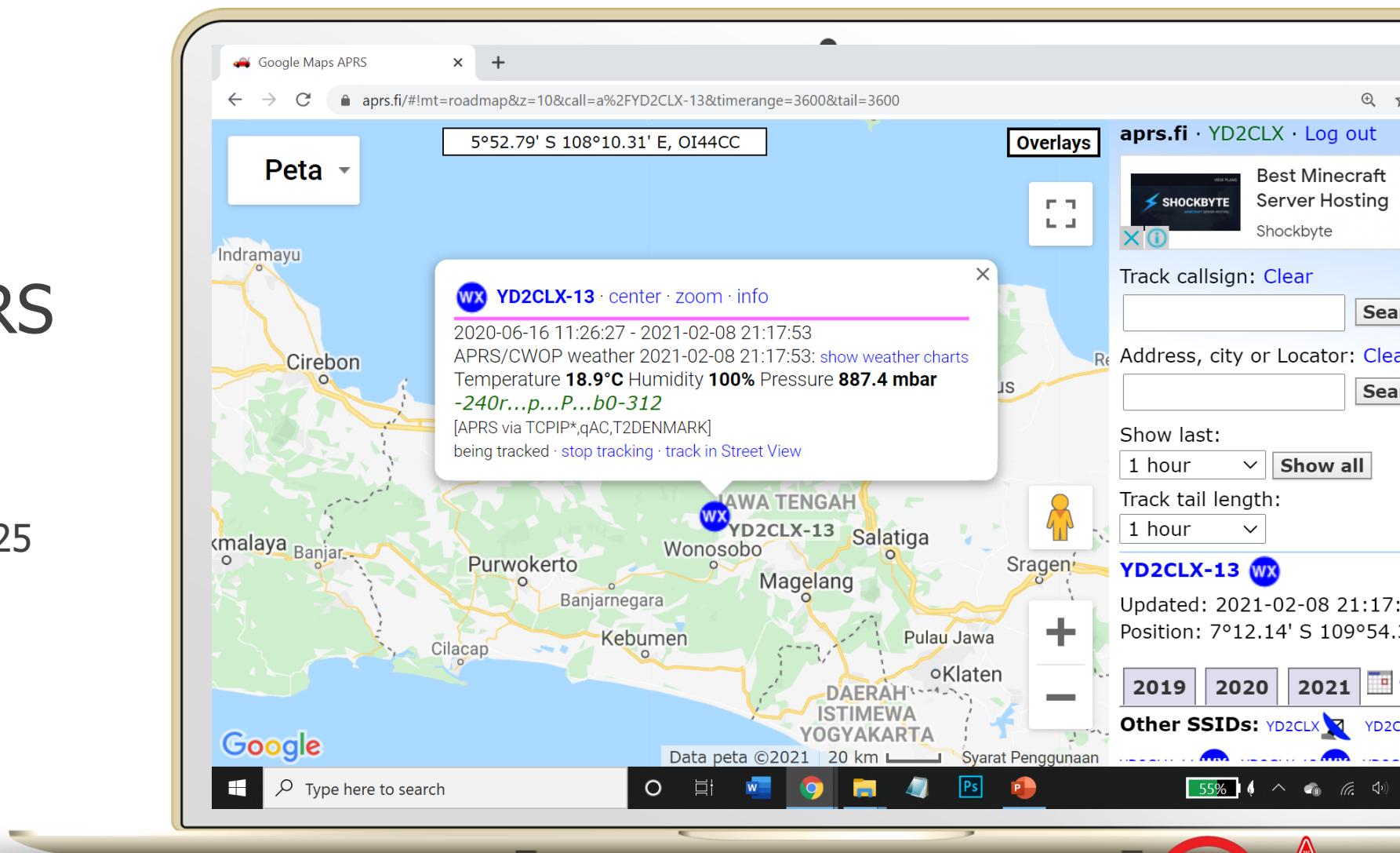


Bagaaimana wisatawan mengakses data?

#1 Akses data melalui APRS.FI

Data dari Stasiun cuaca bisa ditampilkan di APRS maps

Menggunakan Format APRS, AX25



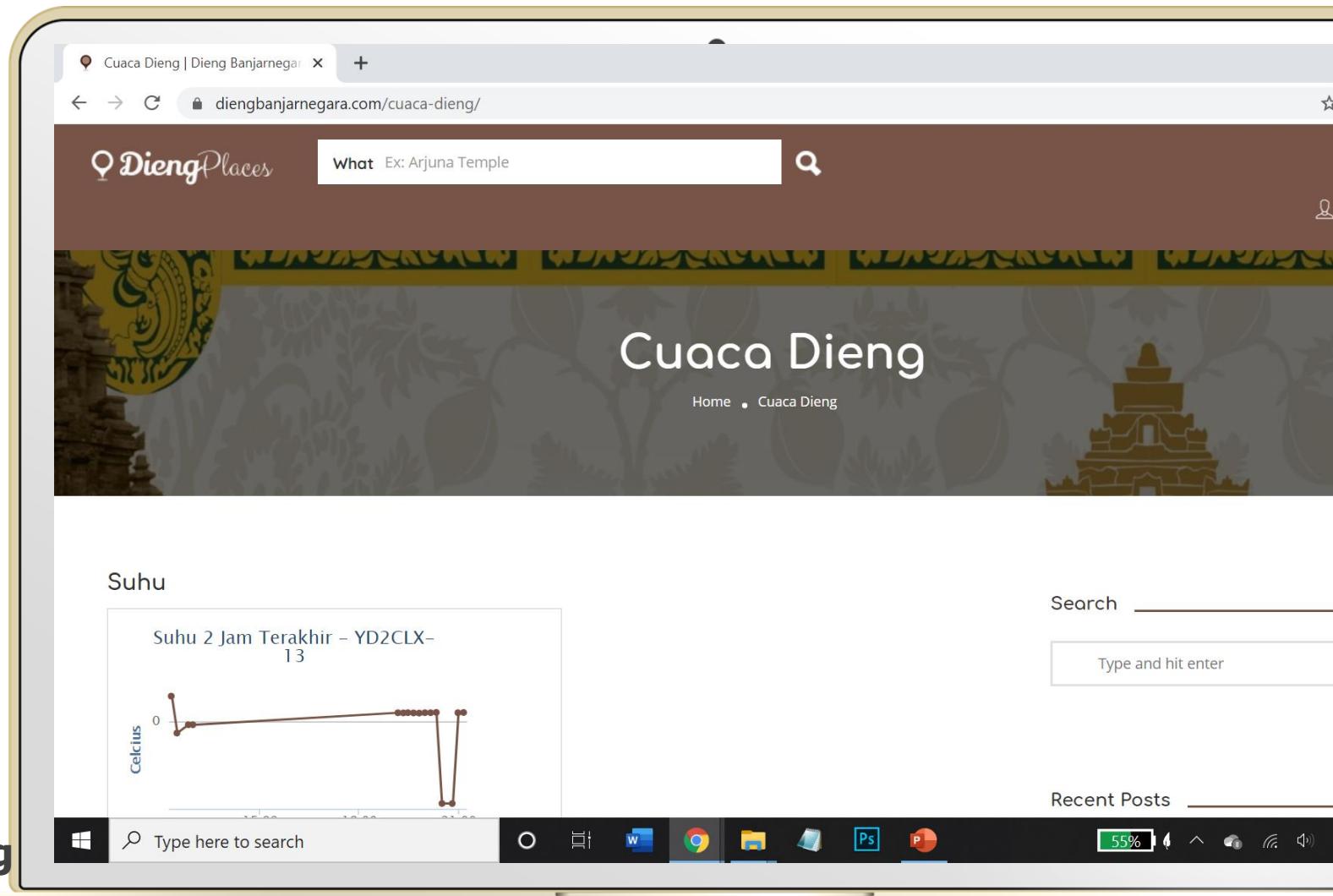
#2 Website

Menampilkan grafik
dan data realtime
melalui laman website.

Data yang ditampilkan dikirim melalui
format MQTT

WX YD2CLX-13 bisa diakses di laman
website UPT Dieng Dinas Pariwisata dan
Kebudayaan Kab. Banjarnegara.

Diengbanjarnegara.com/Cuaca-dieng



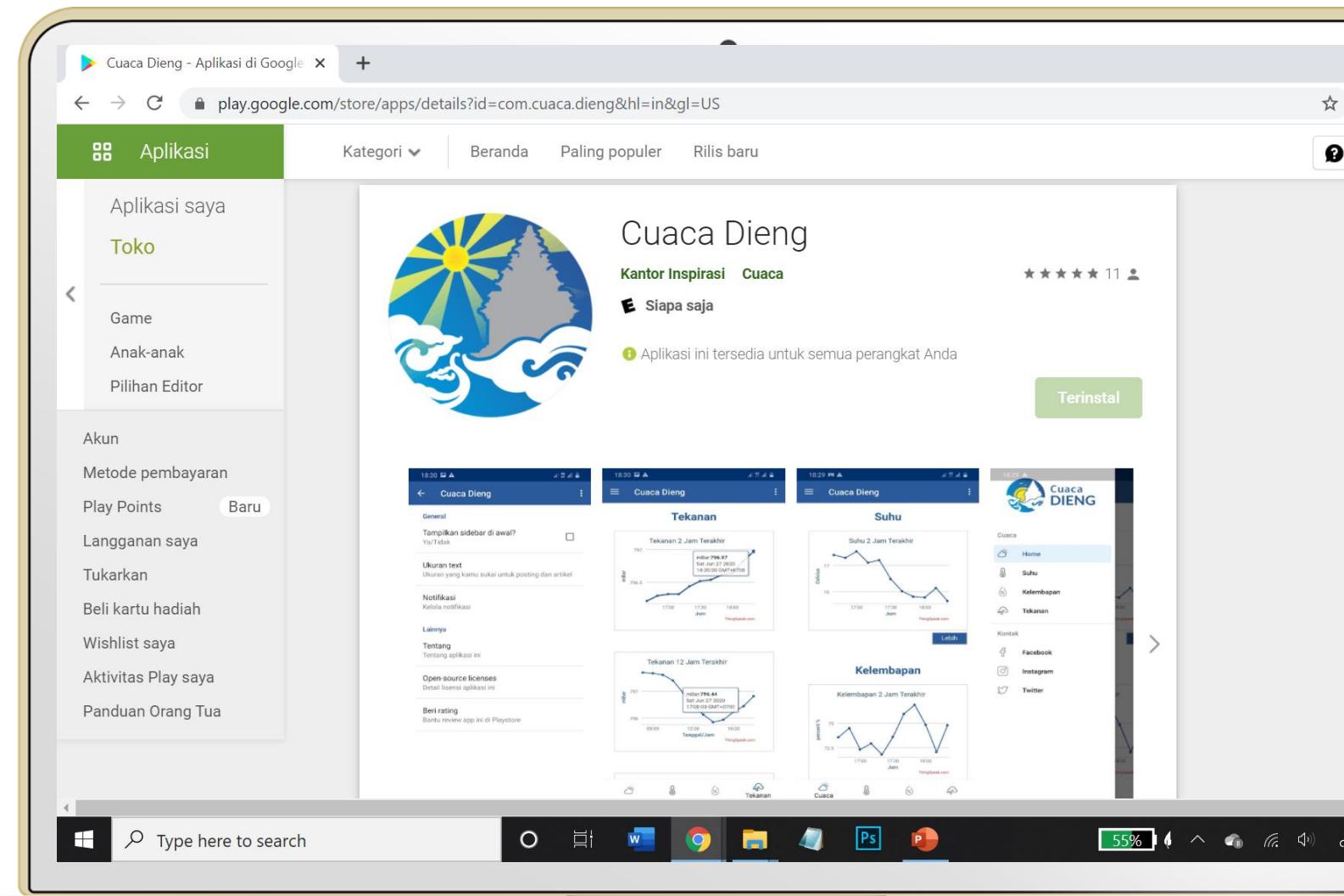
#3 Aplikasi Android

Menampilkan data real time secara Detail dan mengirim notifikasi “prediksi” pada android

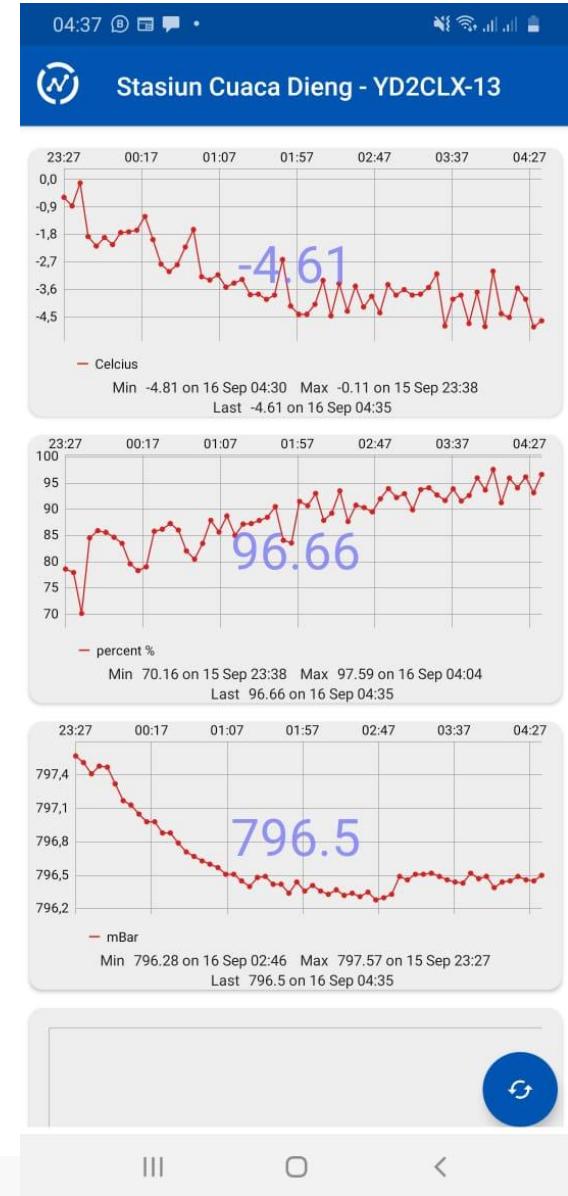
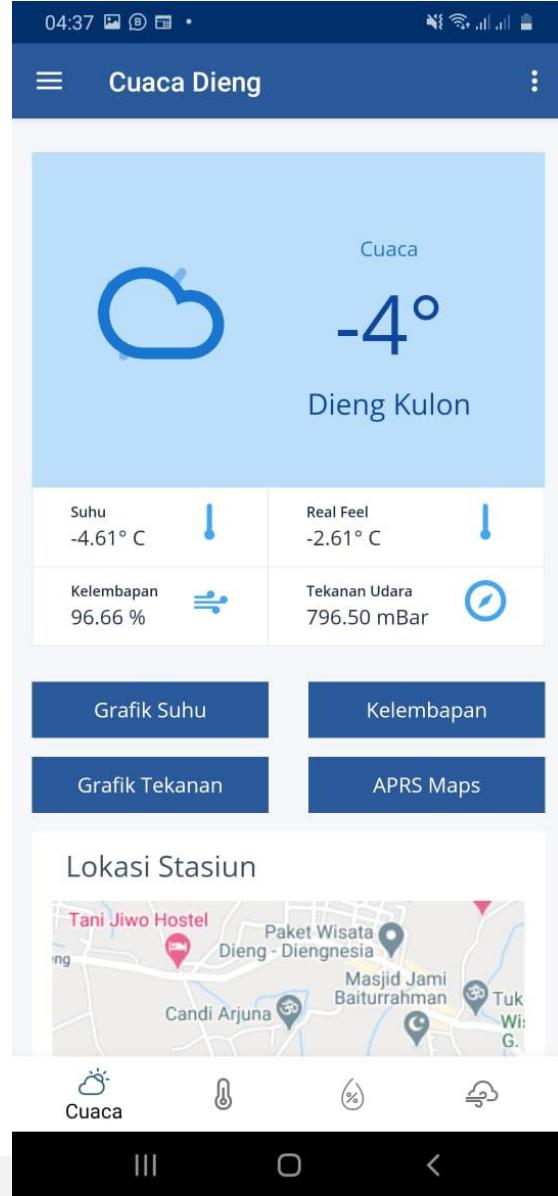
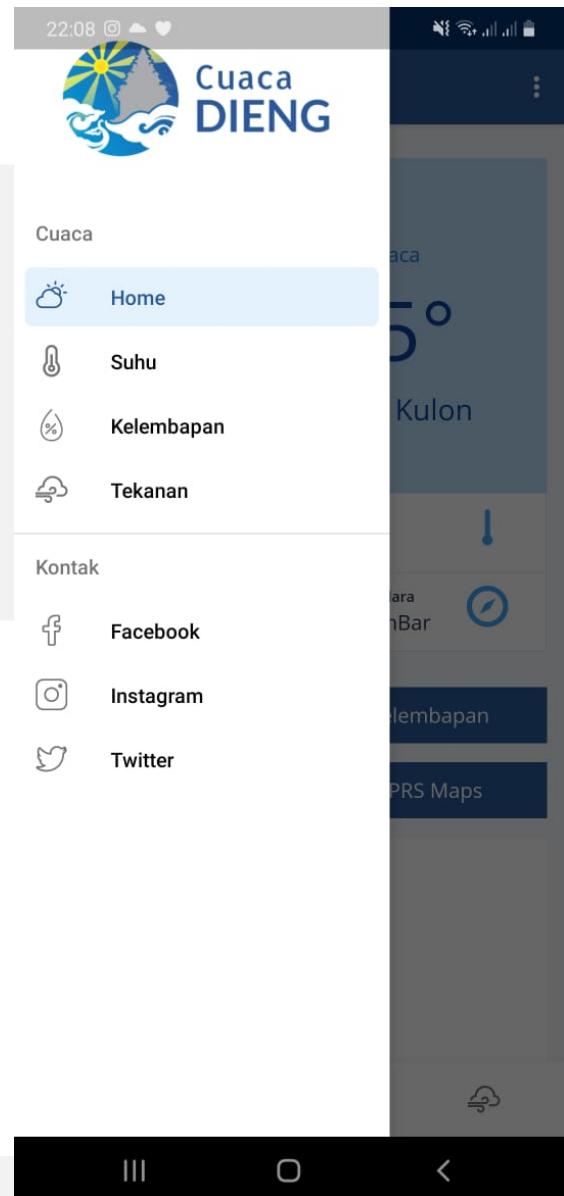
Data yang ditampilkan dikirim melalui format MQTT

Aplikasi Bisa diunduh di Playstore.

“cuaca Dieng”



Tampilan Aplikasi



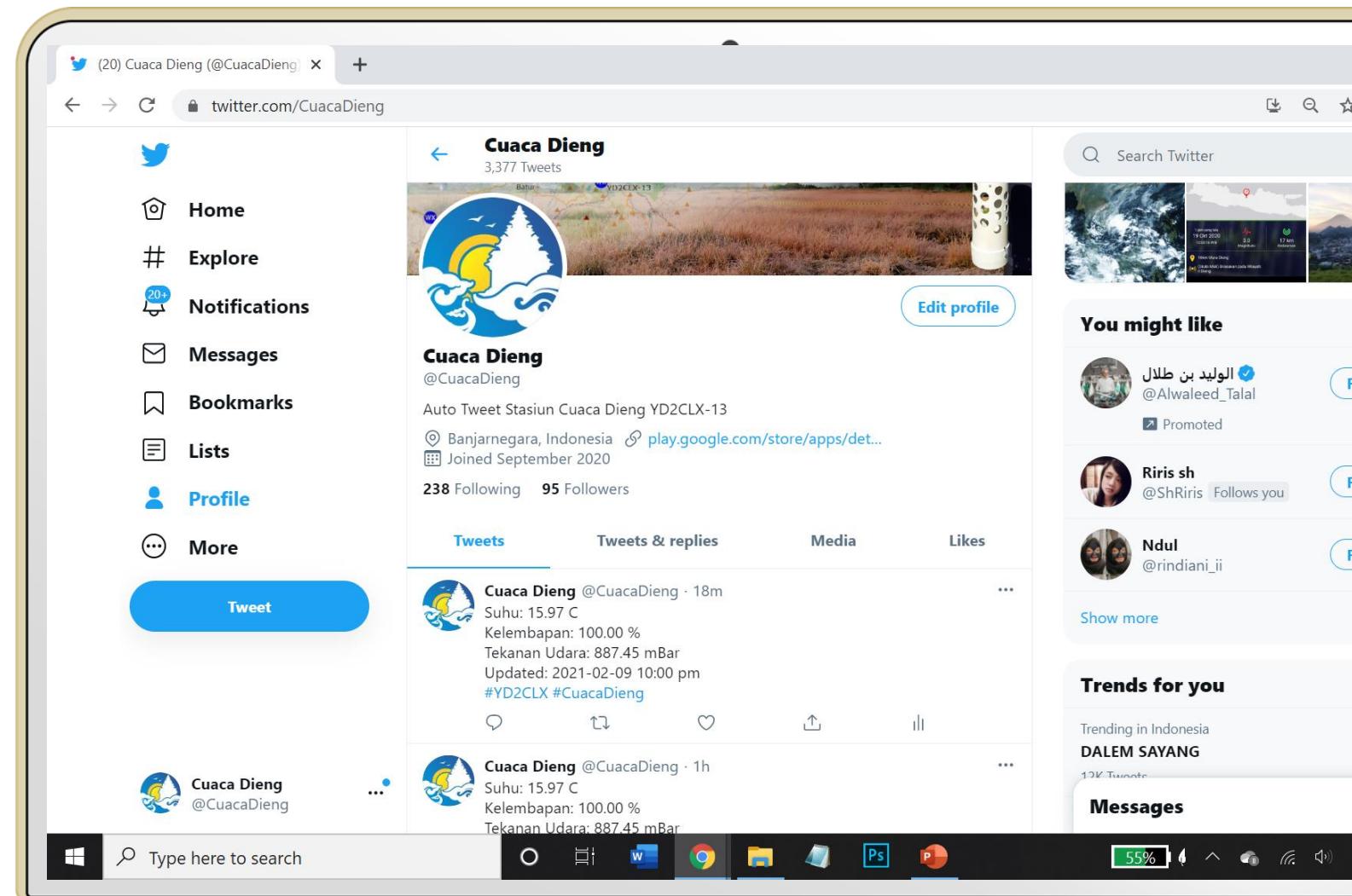
#4 Bot AutoTweet Twitter

Mengirim Tweet data WX realtime secara berkala.

 **Cuaca Dieng** @CuacaDieng · 20m
Suhu: 15.97 C
Kelembapan: 100.00 %
Tekanan Udara: 887.45 mBar
Updated: 2021-02-09 10:00 pm
#YD2CLX #CuacaDieng

 **Cuaca Dieng** @CuacaDieng · 1h
Suhu: 15.97 C
Kelembapan: 100.00 %
Tekanan Udara: 887.45 mBar
Updated: 2021-02-09 9:00 pm
#YD2CLX #CuacaDieng



(20) Cuaca Dieng (@CuacaDieng) +

← → ⌛ 🔍 ⌂

twitter.com/CuacaDieng

Cuaca Dieng 3,377 Tweets

 Edit profile

Cuaca Dieng @CuacaDieng

Auto Tweet Stasiun Cuaca Dieng YD2CLX-13

Banjarnegara, Indonesia play.google.com/store/apps/det...

Joined September 2020

238 Following 95 Followers

Tweets Tweets & replies Media Likes

Cuaca Dieng @CuacaDieng · 18m
Suhu: 15.97 C
Kelembapan: 100.00 %
Tekanan Udara: 887.45 mBar
Updated: 2021-02-09 10:00 pm
#YD2CLX #CuacaDieng

Cuaca Dieng @CuacaDieng · 1h
Suhu: 15.97 C
Kelembapan: 100.00 %
Tekanan Udara: 887.45 mBar
Updated: 2021-02-09 9:00 pm
#YD2CLX #CuacaDieng

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- Riris sh @ShRiris Follows you
- Ndul @rindiani_ii

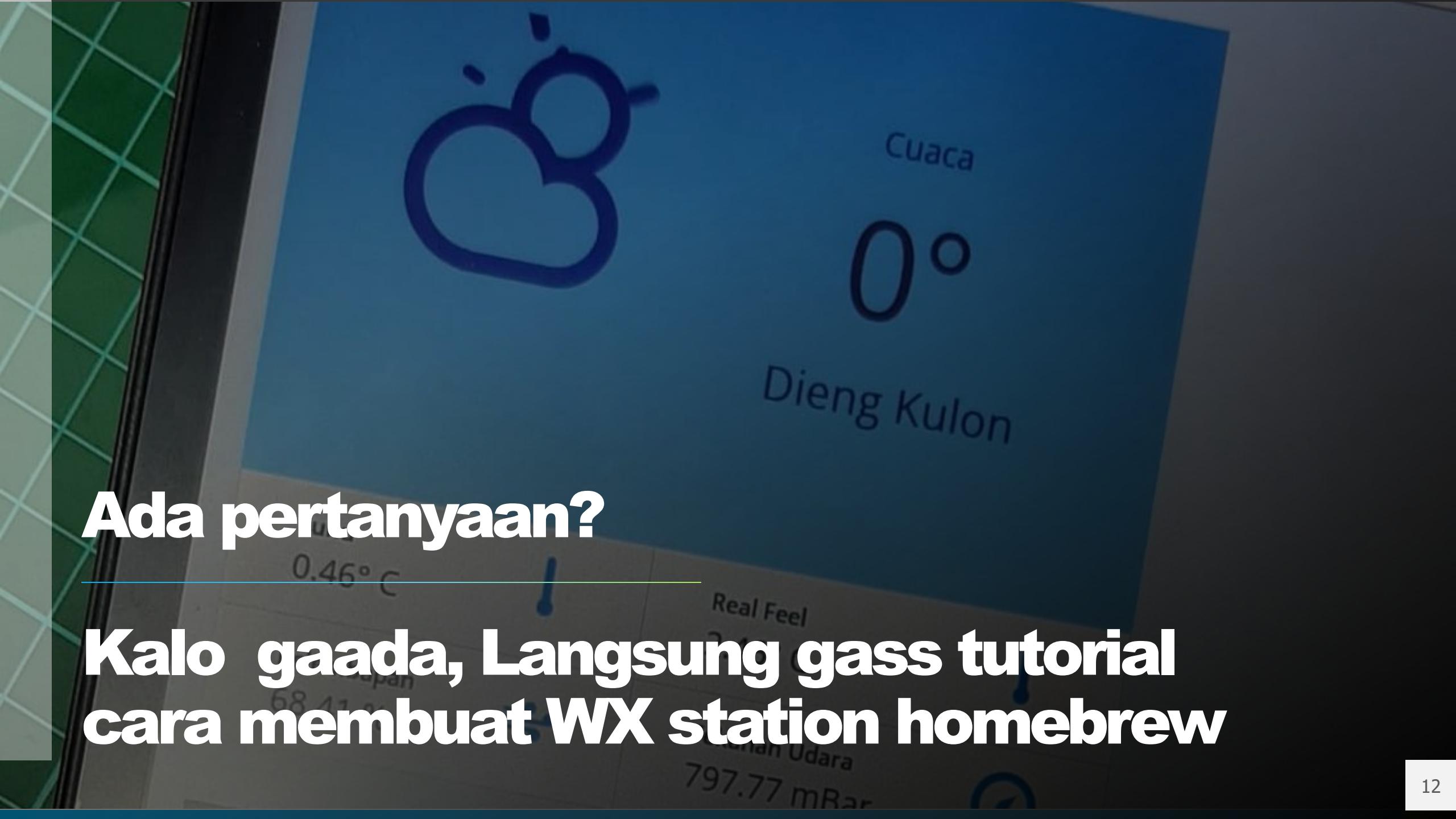
Show more

Trends for you

Trending in Indonesia DALEM SAYANG 10K Tweets

Messages

55%



Ada pertanyaan?

**Kalo gaada, Langsung gass tutorial
cara membuat WX station homebrew**

#1 Material Utama



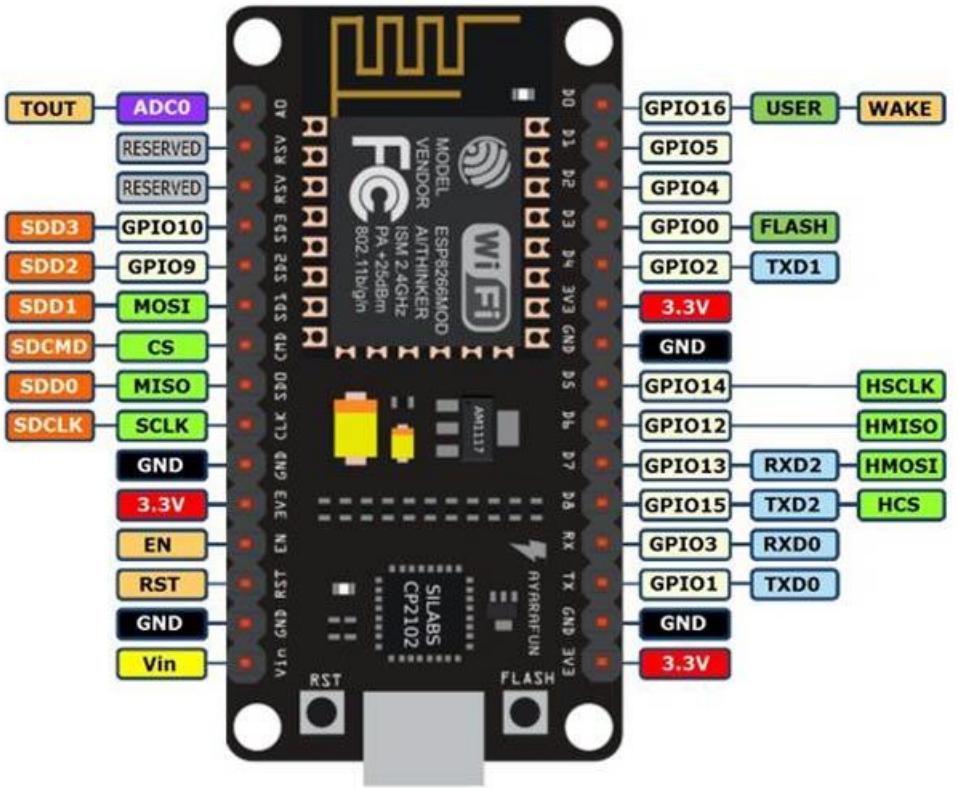
Board ESP

- Board NodeMCU ESP8266
- Ada banyak versi
 - NodeMCU ESP8266 lolin
 - ~~NodeMCU ESP8266 Amica~~



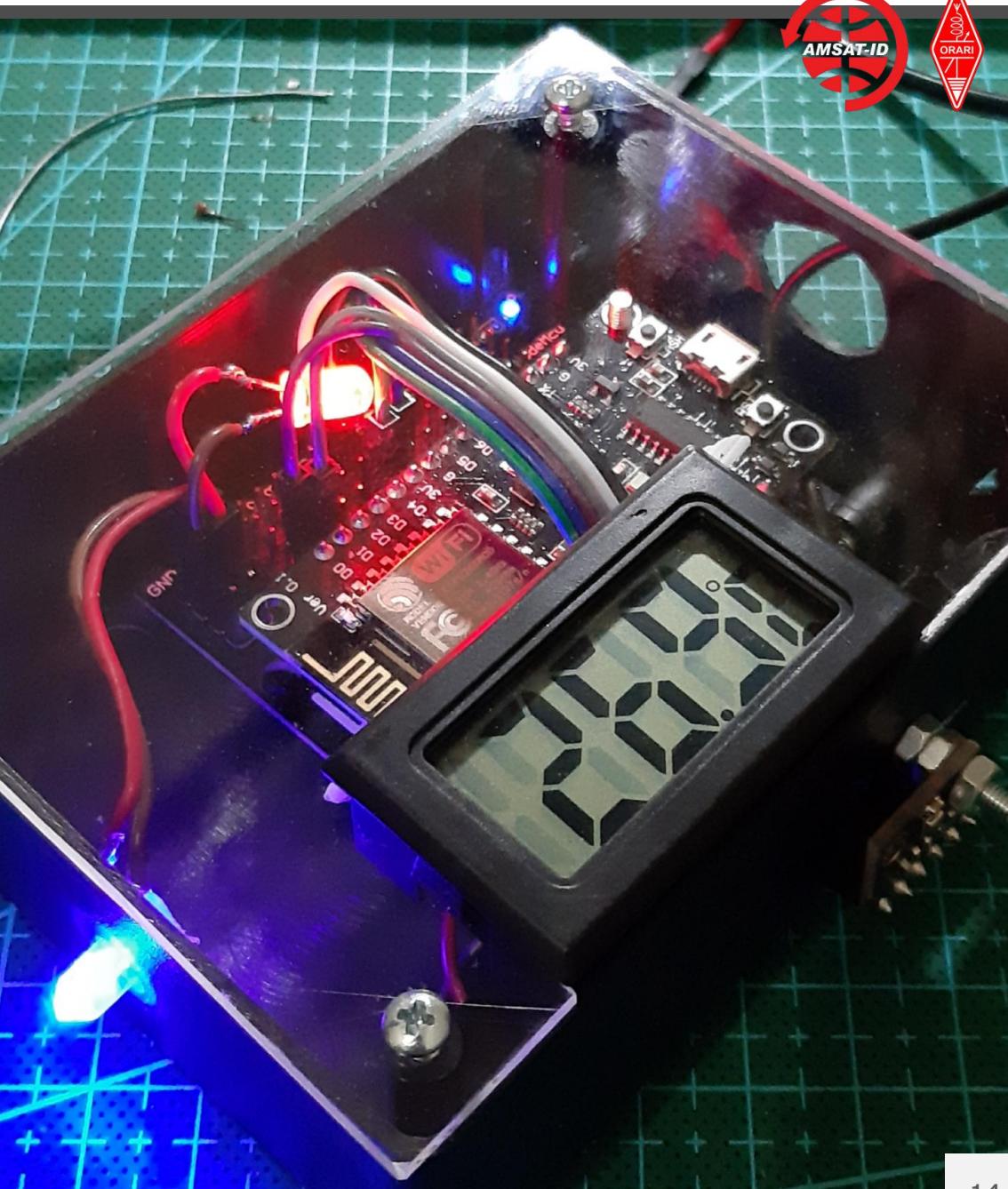
Sensor BME280

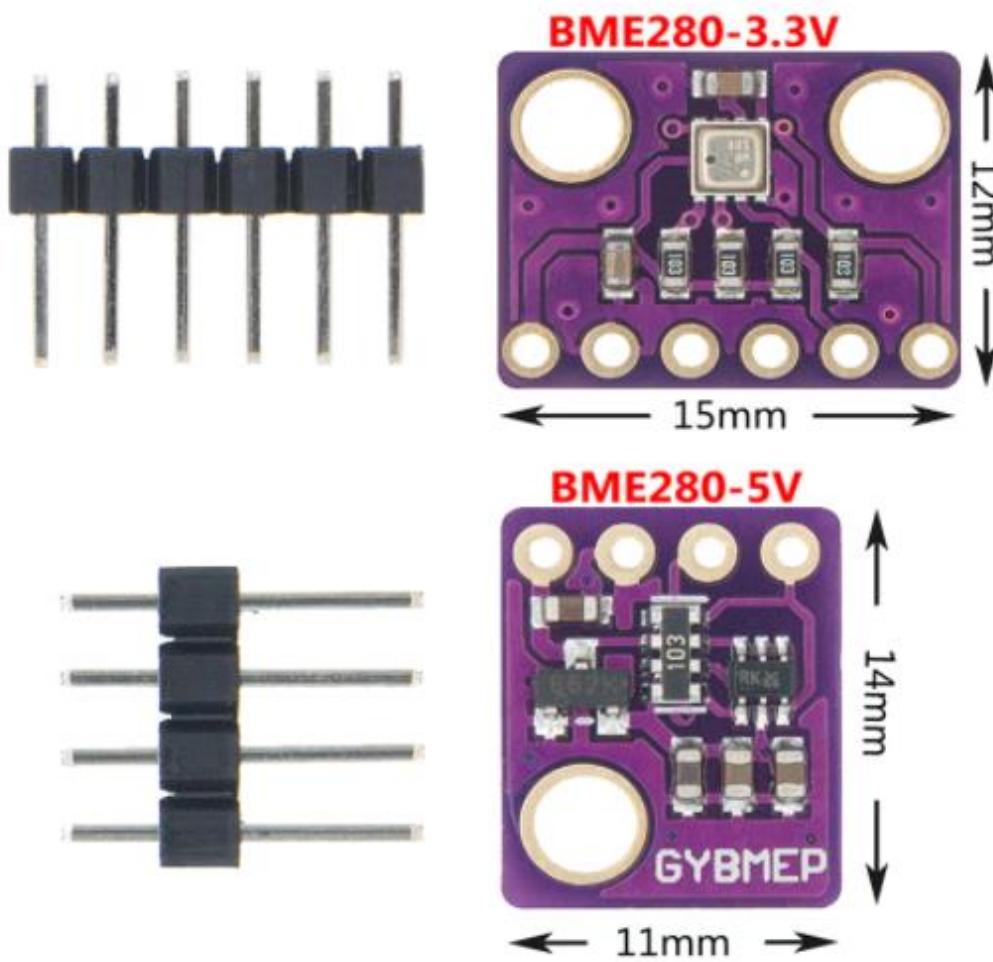
- BME280 sensor dengan tiga pengukuran; Temperatur, Kelembapan dan Tekanan.
- Mesti teliti, secara fisik sangat mirip dengan BMP280
- Terdapat 2 jenis, 5v dan 3.3v



NODEMCU ESP8266

VERSI LOLIN





SENSOR BME280

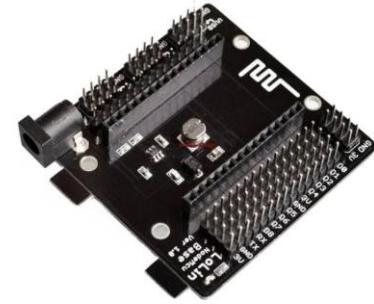
Perbedaan antara versi 5v dan 3.3V

#2 Komponen Pendukung



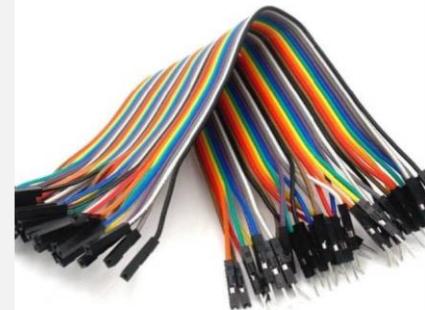
Power Suply

Rekomendasi:
Adaptor 9V



Expansion Board

Lorem ipsum dolor sit amet, consectetur adipiscing elit



Kabel/jumper

Jumper female to female



Case Waterproof

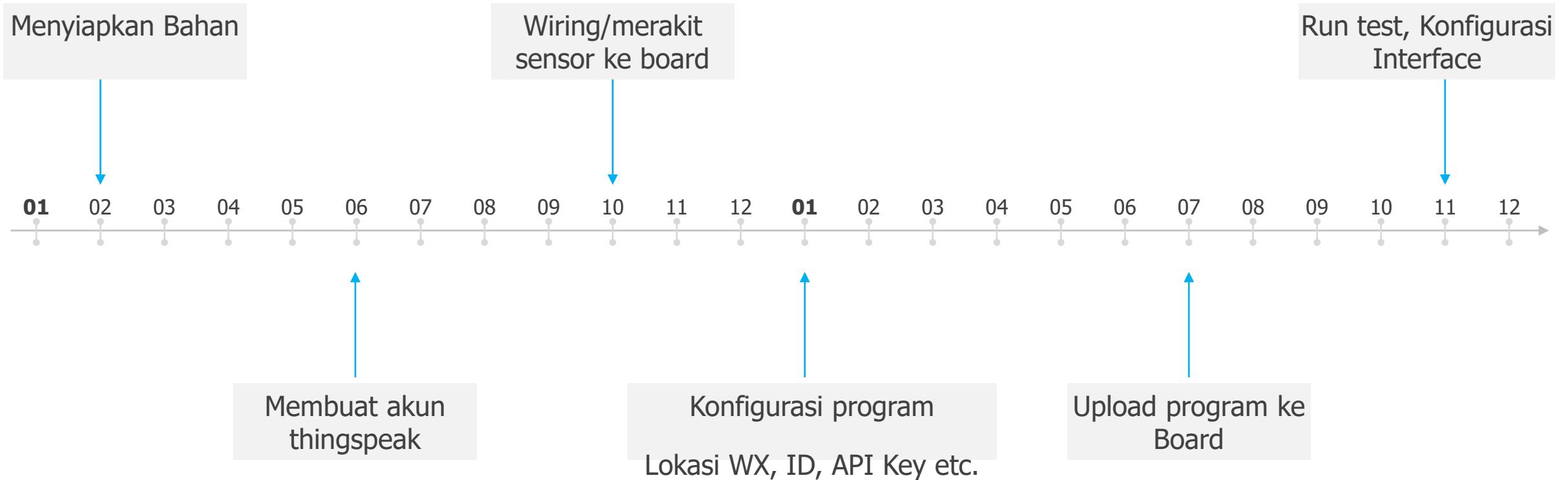
Atau apapun, bisa pakai pipa PVC



Akun Thingspeak

Untuk mengkoneksikan data dari WX ke interface. By MQTT

#3 Langkah



Mendaftar Thingspeak

- Berbayar, namun bisa mendapatkan akun gratis dengan email kampus / company

← → ⌂ thingspeak.com/channels

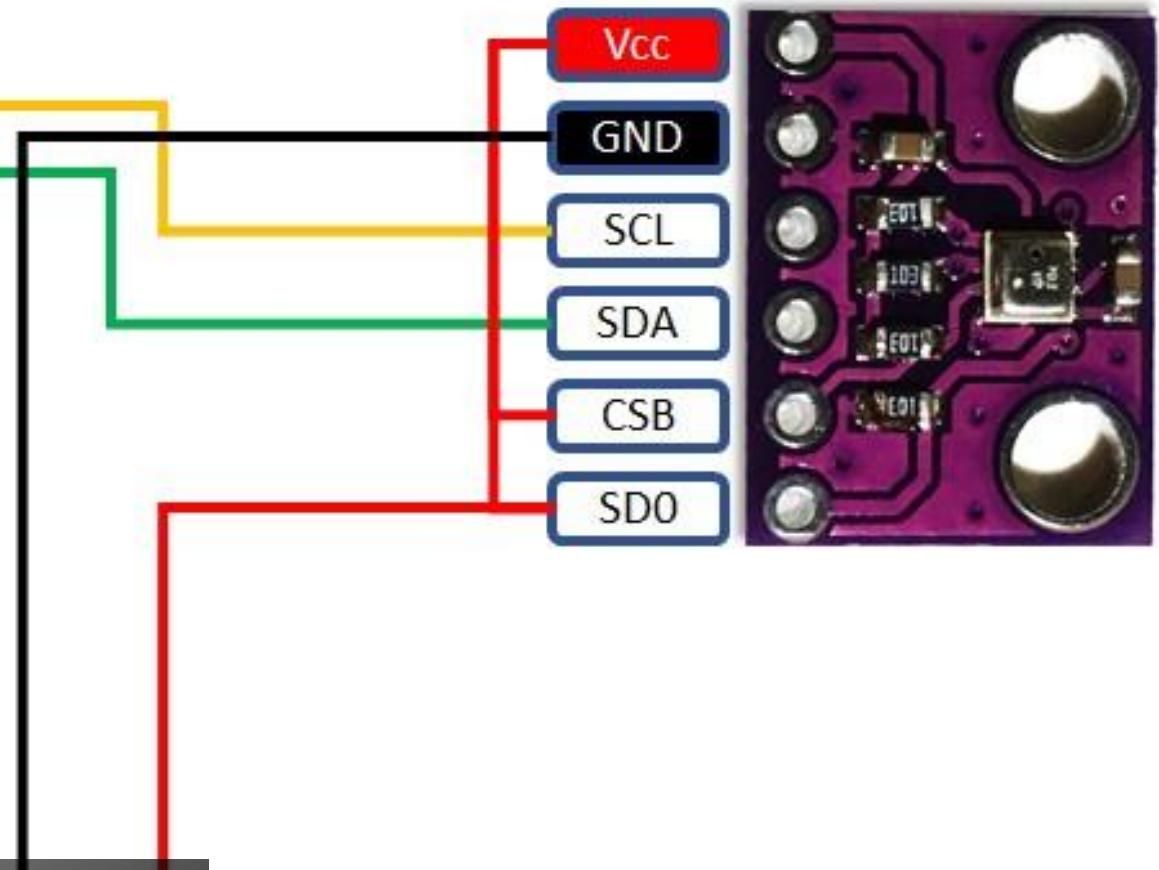
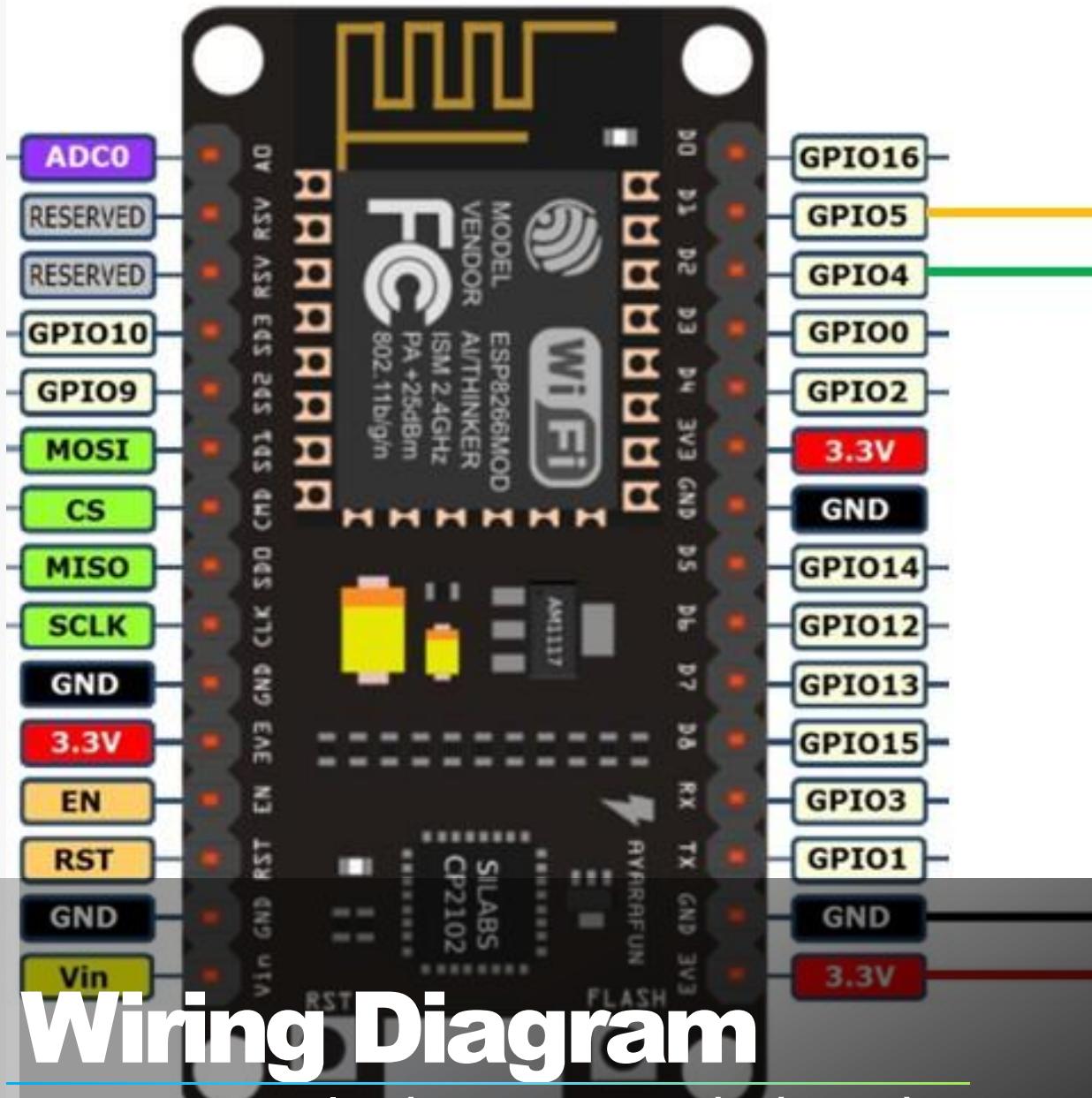
 ThingSpeak™ [Channels](#) [Apps](#) [Support](#)

My Channels

[New Channel](#) 

Name	Created	Updated
 Stasiun Cuaca Dieng - YD2CLX-13  esp8266 , bme280 , mq135 , wx , yd2clx Private Public Settings Sharing API Keys Data Import / Export	2020-06-16	2020-06-16 08:13
 Stasiun Cuaca YD2CLX-11  Private Public Settings Sharing API Keys Data Import / Export	2020-07-02	2020-07-13 15:07
 Stasiun Cuaca YC8NYJ-13  bme280 , nodemcu Private Public Settings Sharing API Keys Data Import / Export	2020-08-05	2020-08-12 17:36

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Wiring Diagram

Sangat simple, hanya menghubungkan sensor ke pin

Source: <https://x.benny.id>

Konfigurasi

WX ini mempunyai 2 output;

APRS dan MQTT

- Untuk setup APRS cukup setting koordinat WX, Station ID dan APRS passcode.
- Untuk MQTT thingspeak, perlu setup Chanel ID, API Chanel dan API MQTT. Cukup Copy paste dari akun Thingspeak yang sudah dibuat.

Code original? Bisa download di blognya om Benny YC0SPU <https://x.benny.id/>

☺ .. Untuk versi pengembanganya bisa jepri saya

```
#include <stdio.h>          /* printf */
#include <math.h>           /* round, floor, ceil, trunc */

// Configuration. Should be self explanatory
#define WIFI_SSID "NodeMCU"
#define WIFI_PASS "20204eni"
#define STATION_ID "YD2CLX-13"
#define STATION_LAT "0712.14S"
#define STATION_LONG "10954.30E"
#define STATION_TZ 0
#define APRS_SERVER_NAME "rotate.aprs2.net"
#define APRS_SERVER_PORT 14580
#define APRS_PASS "21003"
#define SCAN_INTERVAL 600
#define THINGSPEAK_CLIENT_ID "YD2CLX-13"
#define THINGSPEAK_MQTT_API "21003@MQTT.BOU"
#define THINGSPEAK_CHANNEL_API "P2Ri/10576F-Y7D3" // Ganti dengan Channel API Key dari ThingSpeak
#define THINGSPEAK_CHANNEL_ID 1002329 // Ganti dengan Channel ID dari ThingSpeak

// End Configuration

// Setup for BME 280 Sensor
#define BME_SDA D3
#define BME_SCL D4
#define BME_SCK 13
#define BME_MISO 12
#define BME_MOSI 11
#define BME_CS 10
```



Upload Program ke Board!

Cek serial monitor, RAW data APRS.FI Dan Channel akun Thingspeak

Cek Serial monitor

Pastikan tidak ada error report dari serial print

The screenshot shows the Arduino IDE interface with the following details:

- Title Bar:** NodeMCU_APRS_WX3_FIX_YD2CLX-13_versi_2 | Arduino 1.8.13
- File Menu:** File Edit Sketch Tools Help
- Toolbar:** Includes icons for upload, download, and other functions.
- Sketch Area:** Displays the C++ code for the NodeMCU_APRS_WX3_FIX_YD2CLX-13_versi_2 sketch. The code includes setup for a BME 280 sensor, NTP configuration, and WiFi connection logic.
- Serial Monitor:** A window titled "COM5" showing the serial output. The log starts with boot information and ends with a successful NTP request to pool.ntp.org.
- Status Bar:** Board at COM7 is not available

```
// End Configuration

// Setup for BME 280 Sensor
#define BME_SDA D3
#define BME_SCL D4
#define BME_SCK 13
#define BME_MISO 12
#define BME_MOSI 11
#define BME_CS 10
Adafruit_BME280 bme;

// Setup for NTP
WiFiUDP NtpUdp;
unsigned int localPort = 8888; // local port to
void sendNTPpacket(IPAddress &address);

void connect () {
    // Connect to Wifi.
    Serial.println();
    Serial.println();
    Serial.print("Connecting to ");
    Serial.println(WIFI_SSID);

    // WiFi fix: https://github.com/esp8266/Arduino
    // WiFi.persistent(false);
    // WiFi.mode(WIFI_OFF);
    WiFi.mode(WIFI_STA);
}

Board at COM7 is not available
```

COM5

21:47:54.381 -> ets Jan 8 2013,rst cause:2, boot mode:(3,

21:47:54.381 ->

21:47:54.381 -> load 0x4010f000, len 3584, room 16

21:47:54.381 -> tail 0

21:47:54.381 -> chksum 0xb0

21:47:54.381 -> csum 0xb0

21:47:54.381 -> v2843a5ac

21:47:54.381 -> ~ld

21:47:54.449 -> Device Started

21:47:54.449 -> -----

21:47:54.449 -> Running NodeMCU_APRS_WX3!

21:47:54.449 -> -----

21:47:54.449 ->

21:47:54.449 ->

21:47:54.449 -> Connecting to NorthAdv

21:47:54.925 -> 3

21:47:54.925 ->

21:47:54.925 -> WiFi connected

21:47:54.925 -> IP address:

21:47:54.959 -> 192.168.1.11

21:47:54.959 ->

21:47:54.959 -> Starting UDP

21:47:54.959 -> Local port: 8888

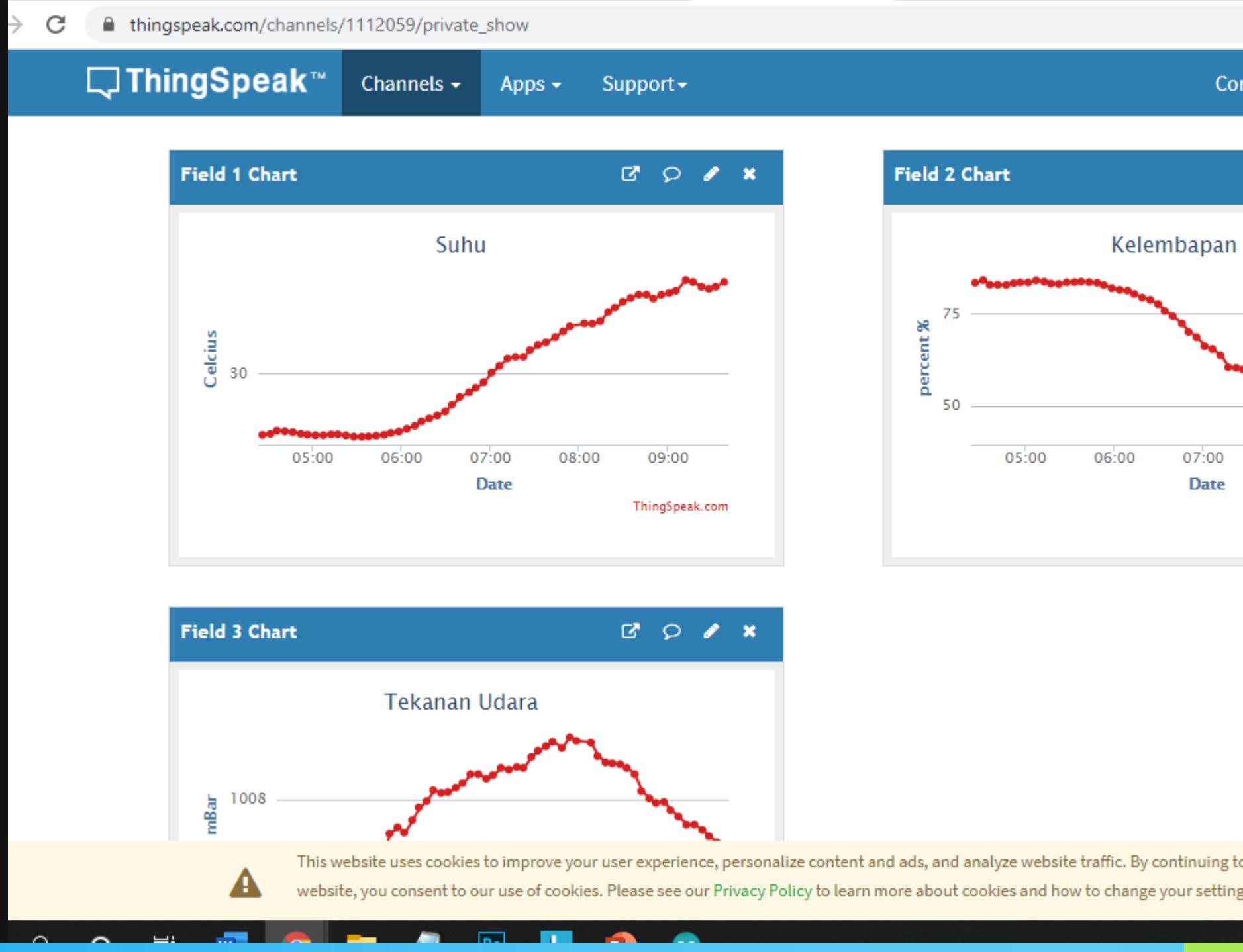
21:47:54.959 -> waiting for sync

21:47:54.959 -> Transmit NTP Request

21:47:54.959 -> pool.ntp.org: 162.159.200.123

Cek Channel thingspeak

Pastikan data sudah masuk



Cek Raw data APRS

Pastikan paket yang terkirim memiliki format yang benar

aprs.fi/?c=raw&call=YD2CLX-13
2021-02-08 19:56:23 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2LUDLINT:@08125620/12.14S/10954.30E
2021-02-08 20:03:33 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2NANJING:@081303z0712.14S/10954.30E
2021-02-08 20:11:59 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2DENMARK:@081311z0712.14S/10954.30E
2021-02-08 20:27:04 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2FZ:@081327z0712.14S/10954.30E_...
2021-02-08 20:35:21 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2GYOR:@081335z0712.14S/10954.30E_...
2021-02-08 20:56:04 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2HK:@081356z0712.14S/10954.30E_...
2021-02-08 21:06:26 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2UKRAINE:@081406z0712.14S/10954.30E_...
2021-02-08 21:17:53 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2DENMARK:@081417z0712.14S/10954.30E_...
2021-02-10 06:19:20 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2MEXICO:@092319z0712.14S/10954.30E_...
2021-02-11 14:49:42 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2CSNGRAD:@110749z0712.14S/10954.30E_...
2021-02-11 14:54:55 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2UKRAINE:@110754z0712.14S/10954.30E_...
2021-02-11 15:00:07 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2SWEDEN:@110800z0712.14S/10954.30E_...
2021-02-11 15:05:21 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2VAN:@110805z0712.14S/10954.30E_...
2021-02-11 15:10:35 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2UK:@110810z0712.14S/10954.30E_...
2021-02-11 15:21:20 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2UKRAINE:@110821z0712.14S/10954.30E_...
2021-02-11 15:26:35 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2TEXAS:@110826z0712.14S/10954.30E_...
2021-02-11 15:31:50 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2TEXAS:@110831z0712.14S/10954.30E_...
2021-02-11 15:37:03 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2CAEAST:@110836z0712.14S/10954.30E_...
2021-02-11 15:42:11 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2TAIWAN:@110842z0712.14S/10954.30E_...
2021-02-11 15:47:25 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2POLC:@110847z0712.14S/10954.30E_...
2021-02-11 15:52:38 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2CAEAST:@110852z0712.14S/10954.30E_...
2021-02-11 15:57:51 WIB: YD2CLX-13>APRS,TCPIP*,qAC,T2IRELAND:@110857z0712.14S/10954.30E_...

< previous

Bagaimana cara menampilkannya ke web ?

Menggunakan embed code

Untuk menampilkan channel ke website atau platform online lain, kita bisa memanfaatkan embed code dari thingspeak.

The screenshot shows a ThingSpeak channel page with the URL thingspeak.com/channels/1082329/private_show. The page displays 'Channel Stats' with a creation date of '8.months.ago', a last entry of 'about 6.hours.ago', and 51148 entries. Below the stats is a chart titled 'Field 1 Chart' for the field 'Suhu'. The chart shows temperature data over time, with a notable dip around the 10-hour mark. On the right side of the chart, there is an 'Embed' button highlighted with a white circle, which contains the embed code:

```
<iframe width="450" height="260" style="border:none; border:1px solid black; margin-bottom:10px;">
```

The chart area also includes a legend with the word 'Suhu' and a vertical axis labeled 'Suhu'.

Bagaimana cara menampilkannya ke Aplikasi dan bot autotweet?

Menggunakan fitur thingtweet

Untuk meneruskan data MQTT WX ke akun twitter

thingspeak.com/apps/thingtweets

ThingSpeak™ Channels Apps Support

Apps / ThingTweet

Link Twitter Account

Twitter Account	API Key	Action
cuacawanayasa	ASU7W9ABE7C9A7V4	<button>Regenerate API Key</button> <button>Unlink Account</button>
CuacaDieng	7D8Q7U5JL1MCA651	<button>Regenerate API Key</button> <button>Unlink Account</button>



Menggunakan fitur ThingHTTP

Untuk mengkonfigurasi data dari thingspeak ke "source" aplikasi

thingspeak.com/apps

ThingSpeak™ Channels Apps Support

The screenshot shows the ThingSpeak website's 'Apps' section. It features four cards:

- ThingTweet**: Connect a device to Twitter® and send alerts.
- TimeControl**: Automatically perform actions at predetermined times with ThingSpeak apps.
- TalkBack**: Queue up commands for your device.
- ThingHTTP**: Simplify device communication with web services and APIs.

Adakah kendala dalam instalasi WX di Dieng?

LIPUTAN 6

berita apa yang ingin anda baca

HOME NEWS BISNIS SAHAM SHOWBIZ BOLA FO

REGIONAL Jawa Timur Sumatera Bali Nusra Su

Home > Regional > Jawa Tengah - DIY

Mengintip Kecanggihan Alat Memprediksi Kemunculan Embun Membeku

Rudal Afgani Dirgantara
10 Jul 2020, 18:00 WIB

HARIAN KOMPAS KOMPAS TV LIVE RADIO NEW KOMPASIANA.COM KOMPASKARIER.COM GRAMEDIA.COM GRAM

KOMPAS.com 25
JERNIH MELIHAT DUNIA

NEWS TRENDING HEALTH FOOD EDUCASI INSPIRASI MONEY TEKNO LIFESTYLE HOMEY PROPERTI BOLA TRAVEL

Home / News / Regional

Ingin Melihat Fenomena Embun Membeku di Dieng? Coba Aplikasi Ini

Kompas.com - 04/08/2020, 13:56 WIB

BAGIKAN:



Dieng Weather Station, Pengukur Suhu Ekstrem di Dataran Tinggi Dieng

1.049 x ditonton • 30 Sep 2020

1 like 25 0 BAGIKAN SIMPAN ...

rri.co.id

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EDITORIAL BERITA FOTO PODCAST VIDEO JURNALIS INDEKS

Terimakasih | Ada Pertanyaan?

Pemuda Banjarnegara, Bangun Stasiun Cuaca Dieng

detiktravel



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