

Setting ESP32 APRS AUDIO

Dan Setting Kabel Data Ke Radio

PADA STASIUN YC1JEA

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Teknik Informatika

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Pendahuluan

APRS adalah singkatan dari Automatic Packet Reporting System. Ini adalah protokol komunikasi digital radio amatir yang digunakan untuk mengirimkan paket data kecil seperti koordinat lokasi *real-time*, stasiun cuaca, pesan teks, dan status secara nirkabel melalui gelombang radio. Sistem ini memungkinkan pengguna (biasanya penghobi radio amatir) untuk melakukan beberapa hal:

Pelacakan Posisi: Mengirim dan memetakan posisi GPS secara langsung, berguna untuk pelacakan kendaraan, pendaki, atau operasi pencarian dan penyelamatan.

Pertukaran Pesan: Mengirimkan pesan teks singkat antar stasiun radio tanpa koneksi internet seluler.

Data Telemetry: Membagikan informasi stasiun cuaca lokal atau perangkat tertentu

- Default config then go to WiFi AP SSID: ESP32APRS_LoRa PASS: aprsthnetwork and open a web browser to the website. <http://192.168.4.1> default web auth USER: admin PASS: admin
- Default config then go to share or set router WiFi SSID: APRSTH PASS: aprsthnetwork and use web browser by IP from router/share smartphone default web auth USER: admin PASS: admin

1. Cara Flash ESP32 Audio

Untuk Melakukan Flash, Pertama silahkan download aplikasi berikut:

1) Download **ESP32 Flash Download Tools**

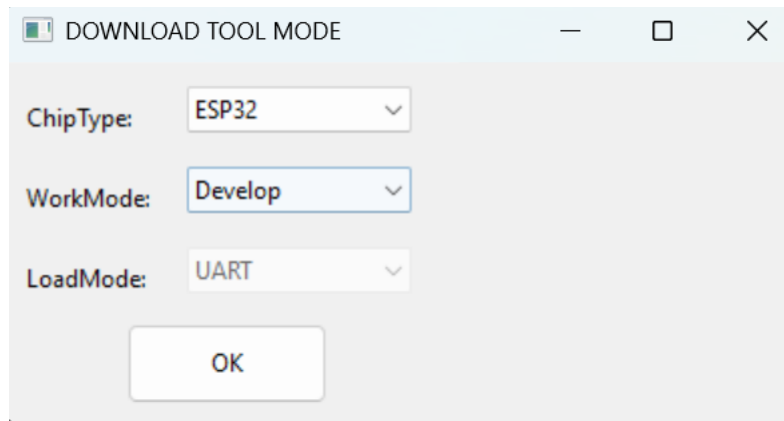
<https://www.espressif.com/en/support/download/other-tools>

2) Download firmware [Releases · nakhonthai/ESP32APRS_Audio](#)

https://github.com/nakhonthai/ESP32APRS_Audio/releases/download/V1.7/ESP32_V17b.zip

Setelah di Download silahkan Jalankan file tersebut.

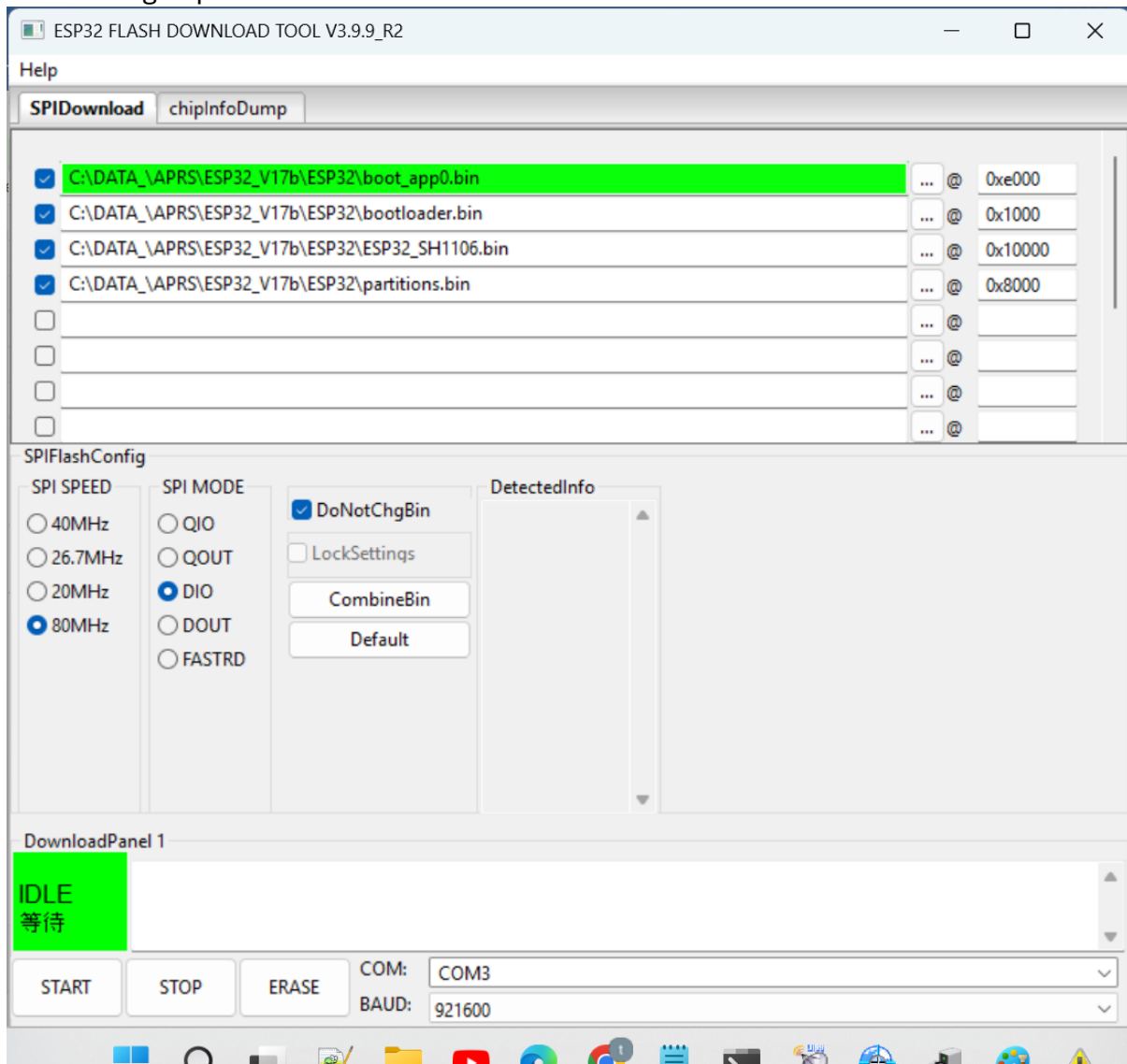
C:\DATA_\APRS\flash_download_tool\flash_download_tool.exe, kemudian akan ditampilkan jendela berikut:



Ubah ChipType sesuai dengan Mode Chip yang anda gunakan, misalnya ESP32, ESP8266 dan lain-lain, Click Ok

Selanjutnya ditampilkan jendela berikut:

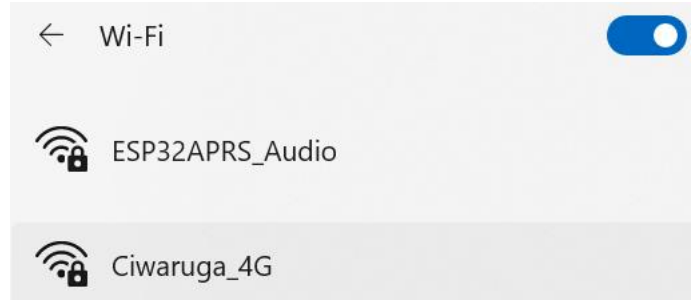
Atur Setting Seperti berikut:



Selanjutnya Click Tombol Start Untuk Memulai
Tunggu Sampai Selesai.

2. Setup ESP32 APRS

Untuk Pertama kali ketika akan men-setting , masuk ke WIFI ESP32APRS_Audio:



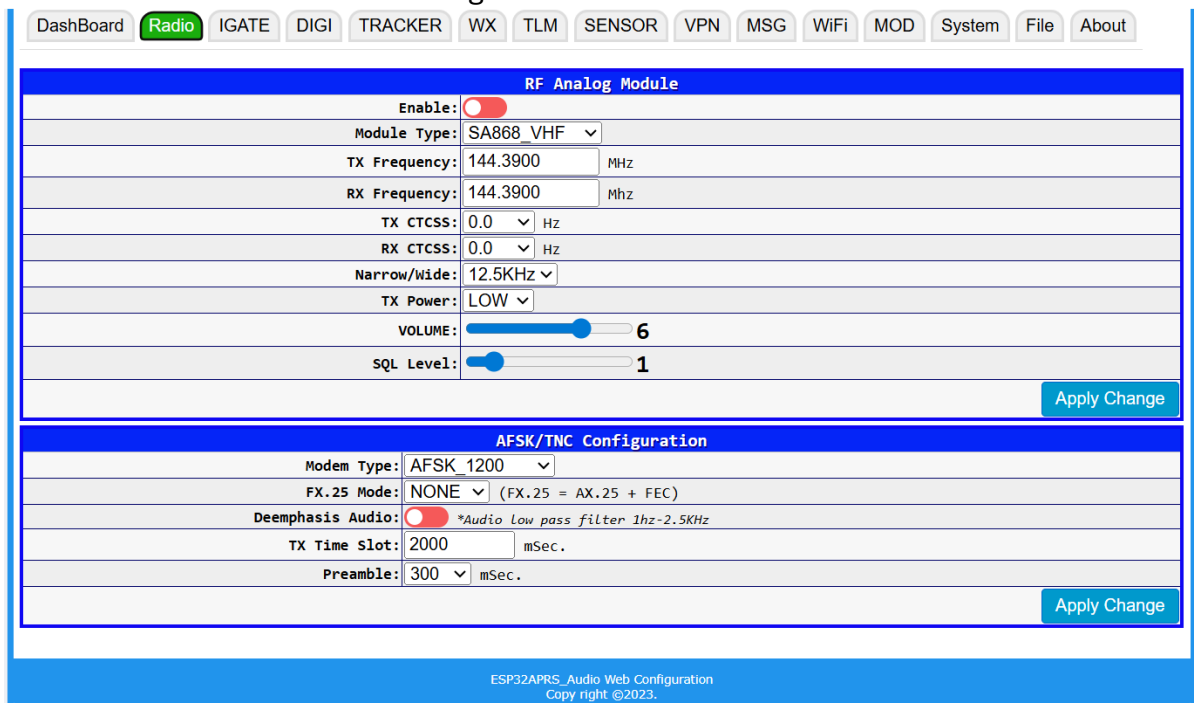
PASS: aprsthnetwork

Selanjutnya masuk ke ip address:192.168.4.1

User:admin passw:admin

2.1. Setting Radio

Masuk ke Tab Radio, kemudian lakukan perubahan seperti contoh berikut, kemudian disesuaikan dengan stasiun Anda:



RF Analog Module	
Enable:	<input checked="" type="checkbox"/>
Module Type:	SA868_VHF
TX Frequency:	144.3900 MHz
RX Frequency:	144.3900 MHz
TX CTCSS:	0.0 Hz
RX CTCSS:	0.0 Hz
Narrow/Wide:	12.5KHz
TX Power:	LOW
VOLUME:	6
SQL Level:	1
Apply Change	

AFSK/TNC Configuration	
Modem Type:	AFSK_1200
FX.25 Mode:	NONE (FX.25 = AX.25 + FEC)
Deemphasis Audio:	<input checked="" type="checkbox"/> *Audio low pass filter 1hz-2.5KHz
TX Time Slot:	2000 mSec.
Preamble:	300 mSec.
Apply Change	

ESP32APRS_Audio Web Configuration
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Jangan Lupa Click Apply Change, untuk menyimpan hasil perubahan tadi.

2.2. Pilih Tab IGATE

Atur Setting Seperti Gambar Berikut, sesuaikan dengan Stasiun Anda:

DashBoard
Radio
IGATE
DIGI
TRACKER
WX
TLM
SENSOR
VPN
MSG
WiFi
MOD
System
File
About

[IGATE] Internet Gateway Mode

Enable:	<input checked="" type="checkbox"/>
Station Callsign:	YC1JEA
Station SSID:	2
Station Symbol:	Table: / Symbol: # <input checked="" type="checkbox"/> *Click icon for select symbol
Item/Obj Name:	*If not used, leave it blank. In use 3-9 character
PATH:	UserDefine 2
Server Host:	asia.aprs2.net *APRS-IS by T2THAI at aprs.dprns.com:14580, CBAPRS at aprs.dprns.com:24580
Server Port:	14580 *AMPR Host at aprs.hs5tqa.ampr.org:14580
Server Filter:	m/10 *Filter: http://www.aprs-is.net/javAPRSFilter.aspx
Text Comment:	ESP32 APRS
Text status:	IGATE YC1JEA APRS 144.390MHz Interval: 1800 Sec.
RF2INET:	<input checked="" type="checkbox"/> *Switch RF to Internet gateway
INET2RF:	<input type="checkbox"/> *Switch Internet to RF gateway
Time Stamp:	<input type="checkbox"/>

POSITION:	Beacon:	<input checked="" type="checkbox"/> Interval: 600 Sec.
	Location:	<input checked="" type="radio"/> Fix <input type="radio"/> GPS
	TX Channel:	<input checked="" type="checkbox"/> RF <input checked="" type="checkbox"/> Internet
	Latitude:	-6.85851 degrees (positive for North, negative for South)
	Longitude:	107.57710 degrees (positive for East, negative for West)
	Altitude:	850.00 meter. *Value 0 is not send height

PHG:	Radio TX Power:	1 Watts
	Antenna Gain:	6 dBi
	Height:	10 Feet
	Antenna/Direction:	Omni
	PHG Text:	PHG7060 <input type="button" value="Calculate PHG"/>

Telemetry: (v=0->8280)	Interval:	0 *Number of packets interval, Example: 0 not send, 1 send every packet
	CH A1:	Sensor: CH: NONE Name: Unit: Precision: 0 EQNS: a: 0.00000 b: 1.00000 c: 0.00000 (av ² +bv+c) offset: 0.00000
	CH A2:	Sensor: CH: NONE Name: Unit: Precision: 0 EQNS: a: 0.00000 b: 1.00000 c: 0.00000 (av ² +bv+c) offset: 0.00000
	CH A3:	Sensor: CH: NONE Name: Unit: Precision: 0 EQNS: a: 0.00000 b: 1.00000 c: 0.00000 (av ² +bv+c) offset: 0.00000
	CH A4:	Sensor: CH: NONE Name: Unit: Precision: 0 EQNS: a: 0.00000 b: 1.00000 c: 0.00000 (av ² +bv+c) offset: 0.00000
	CH A5:	Sensor: CH: NONE Name: Unit: Precision: 0 EQNS: a: 0.00000 b: 1.00000 c: 0.00000 (av ² +bv+c) offset: 0.00000

[IGATE] Filter

RF2INET Filter:	Filter RF to Internet
	<input checked="" type="checkbox"/> Message <input checked="" type="checkbox"/> Status <input checked="" type="checkbox"/> Telemetry <input checked="" type="checkbox"/> Weather <input checked="" type="checkbox"/> Object <input checked="" type="checkbox"/> Item <input checked="" type="checkbox"/> Query <input checked="" type="checkbox"/> Buoy <input checked="" type="checkbox"/> Position
INET2RF Filter:	Filter Internet to RF
	<input checked="" type="checkbox"/> Message <input type="checkbox"/> Status <input type="checkbox"/> Telemetry <input type="checkbox"/> Weather <input type="checkbox"/> Object <input type="checkbox"/> Item <input type="checkbox"/> Query <input type="checkbox"/> Buoy <input type="checkbox"/> Position

Jangan Lupa Click Apply Change, untuk menyimpan hasil perubahan tadi.

2.3. Pilih Tab DIGI

Atur Setting Seperti Gambar Berikut, sesuaikan dengan Stasiun Anda:

DashBoard
Radio
IGATE
DIGI
TRACKER
WX
TLM
SENSOR
VPN
MSG
WiFi
MOD
System
File
About

[DIGI] Digital Repeater Mode

Enable:	<input checked="" type="checkbox"/>			
Auto Enable:	<input checked="" type="checkbox"/> *Automatic enable when APRS-IS disconnected			
Station Callsign:	YC1JEA			
Station SSID:	2			
Station Symbol:	Table: /	Symbol: #	*Click icon for select symbol	
PATH:	UserDefine 2			
Text Comment:	ESP32 APRS			
Text Status:	DIGI YC1JEA APRS 144.390MHz	Interval:	1800 Sec.	
Repeat Delay:	0 mSec. *0 is auto, other random of delay time			
Time Stamp:	<input checked="" type="checkbox"/>			
POSITION:	Beacon:	<input checked="" type="checkbox"/>	Interval: 600 Sec.	
	Location:	<input checked="" type="radio"/> Fix <input type="radio"/> GPS		
	TX Channel:	<input checked="" type="checkbox"/> RF <input checked="" type="checkbox"/> Internet		
	Latitude:	-6.85850	degrees (positive for North, negative for South)	
	Longitude:	107.57710	degrees (positive for East, negative for West)	
	Altitude:	850.00	meter. *Value 0 is not send height	
PHG:	Radio TX Power	1	Watts	
	Antenna Gain	6	dBi	
	Height	10	Feet	
	Antenna/Direction	Omni		
	PHG Text	PHG7060	<input type="button" value="Calculate PHG"/>	
Filter:	Filter repeater			
	<input checked="" type="checkbox"/> Message	<input checked="" type="checkbox"/> Status	<input checked="" type="checkbox"/> Telemetry	
	<input checked="" type="checkbox"/> Item	<input checked="" type="checkbox"/> Query	<input checked="" type="checkbox"/> Buoy	
	<input checked="" type="checkbox"/> Weather	<input checked="" type="checkbox"/> Position	<input checked="" type="checkbox"/> Object	
Telemetry: (v=0->8280)	Interval:	0 *Number of packets interval, Example: 0 not send, 1 send every packet		
	CH A1:	Sensor: CH:	NONE	Name: <input type="text"/> Unit: <input type="text"/> Precision: 0
		EQNS: a:	0.00000	b: 1.00000 c: 0.00000 (av ² +bv+c) Offset: 0.00000
	CH A2:	Sensor: CH:	NONE	Name: <input type="text"/> Unit: <input type="text"/> Precision: 0
		EQNS: a:	0.00000	b: 1.00000 c: 0.00000 (av ² +bv+c) Offset: 0.00000
	CH A3:	Sensor: CH:	NONE	Name: <input type="text"/> Unit: <input type="text"/> Precision: 0
		EQNS: a:	0.00000	b: 1.00000 c: 0.00000 (av ² +bv+c) Offset: 0.00000
CH A4:	Sensor: CH:	NONE	Name: <input type="text"/> Unit: <input type="text"/> Precision: 0	
	EQNS: a:	0.00000	b: 1.00000 c: 0.00000 (av ² +bv+c) Offset: 0.00000	
CH A5:	Sensor: CH:	NONE	Name: <input type="text"/> Unit: <input type="text"/> Precision: 0	
	EQNS: a:	0.00000	b: 1.00000 c: 0.00000 (av ² +bv+c) Offset: 0.00000	

Jangan Lupa Click Apply Change, untuk menyimpan hasil perubahan tadi.

2.4. Pilih Tab MSG

Atur Setting Seperti Gambar Berikut, sesuaikan dengan Stasiun Anda:

DashBoard	Radio	IGATE	DIGI	TRACKER	WX	TLM	SENSOR	VPN	MSG	WiFi	MOD	System	File	About
-----------	-------	-------	------	---------	----	-----	--------	-----	------------	------	-----	--------	------	-------

Message Configuration	
Enable:	<input checked="" type="checkbox"/>
My Callsign:	YC1JEA-2 *Callsign with SSID (Ex. HS5TQA-12)
TX Channel:	<input checked="" type="checkbox"/> RF <input checked="" type="checkbox"/> Internet
Encryption:	<input type="checkbox"/>
AES Key:	8EC8233E91D59B0164C24E771BA66307 *ASCII HEX 16Byte
Send Retry:	3
Send Timeout:	30 Sec.
PATH:	UserDefine 2
Apply Change	

CHAT MESSAGE			
Time (+7)	Callsign	Message	ACK/msgID
TO:	MSG:		Send

Jangan Lupa Click Apply Change, untuk menyimpan hasil perubahan tadi.

2.5. Pilih Tab WiFi

Atur Setting Seperti Gambar Berikut, sesuaikan dengan Stasiun Anda:

DashBoard	Radio	IGATE	DIGI	TRACKER	WX	TLM	SENSOR	VPN	MSG	WiFi	MOD	System	File	About
-----------	-------	-------	------	---------	----	-----	--------	-----	-----	-------------	-----	--------	------	-------

WiFi Access Point	
Enable:	<input checked="" type="checkbox"/>
WiFi AP SSID:	ESP32APRS_Audio
WiFi AP PASSWORD:	*****
Apply Change	

WiFi Multi Station	
WiFi STA Enable:	<input checked="" type="checkbox"/>
WiFi RF Power:	11.0 dBm
Station #1:	WiFi Station #1
	Enable: <input checked="" type="checkbox"/>
	WiFi SSID: APRSTH WiFi PASSWORD: *****
Station #2:	WiFi Station #2
	Enable: <input checked="" type="checkbox"/>
	WiFi SSID: APRS_YC1JEA WiFi PASSWORD: *****
Apply Change	

Jangan Lupa Click Apply Change, untuk menyimpan hasil perubahan tadi.

2.6. Pilih Tab MOD

Atur Setting Seperti Gambar Berikut, sesuaikan dengan Stasiun Anda:

DashBoard	Radio	IGATE	DIGI	TRACKER	WX	TLM	SENSOR	VPN	MSG	WiFi	MOD	System	File	About
-----------	-------	-------	------	---------	----	-----	--------	-----	-----	------	------------	--------	------	-------

UART0 Modify		UART1 Modify		1-Wire Bus Modify	
Enable	<input type="checkbox"/>	Enable	<input type="checkbox"/>	Enable	<input type="checkbox"/>
RX GPIO:	<input type="text" value="3"/>	RX GPIO:	<input type="text" value="18"/>	GPIO:	<input type="text" value="-1"/>
TX GPIO:	<input type="text" value="1"/>	TX GPIO:	<input type="text" value="19"/>		
RTS/DE GPIO:	<input type="text" value="-1"/>	RTS/DE GPIO:	<input type="text" value="-1"/>		
Baudrate:	<input type="text" value="9600"/> bps	Baudrate:	<input type="text" value="9600"/> bps		
	<input type="button" value="Apply"/>		<input type="button" value="Apply"/>		<input type="button" value="Apply"/>

RF GPIO Modify		I2C_0(OLED) Modify		I2C_1 Modify	
ADC Attenuation:	<input type="text" value="0dB (100-950mV)"/> DC-Offset: 634 mV	Enable	<input checked="" type="checkbox"/>	Enable	<input type="checkbox"/>
UART2 Baudrate:	<input type="text" value="9600"/> bps	SDA GPIO:	<input type="text" value="21"/>	SDA GPIO:	<input type="text" value="-1"/>
UART2 RX GPIO:	<input type="text" value="14"/>	SCK GPIO:	<input type="text" value="22"/>	SCK GPIO:	<input type="text" value="-1"/>
UART2 TX GPIO:	<input type="text" value="13"/>	Frequency:	<input type="text" value="400000"/>	Frequency:	<input type="text" value="100000"/>
PD GPIO:	<input type="text" value="27"/> Active: <input type="radio"/> LOW <input checked="" type="radio"/> HIGH		<input type="button" value="Apply"/>		<input type="button" value="Apply"/>
H/L GPIO:	<input type="text" value="-1"/> Active: <input type="radio"/> LOW <input checked="" type="radio"/> HIGH				
SQL GPIO:	<input type="text" value="-1"/> Active: <input checked="" type="radio"/> LOW <input type="radio"/> HIGH				
PTT GPIO:	<input type="text" value="32"/> Active: <input type="radio"/> LOW <input checked="" type="radio"/> HIGH				
	<input type="button" value="Apply"/>				

Counter_0 Modify		Counter_1 Modify	
Enable	<input type="checkbox"/>	Enable	<input type="checkbox"/>
INPUT GPIO:	<input type="text" value="-1"/>	INPUT GPIO:	<input type="text" value="-1"/>
Active	<input checked="" type="radio"/> LOW <input type="radio"/> HIGH	Active	<input checked="" type="radio"/> LOW <input type="radio"/> HIGH
	<input type="button" value="Apply"/>		<input type="button" value="Apply"/>

Jangan Lupa Click Apply Change, untuk menyimpan hasil perubahan tadi.

2.7.Pilih Tab MOD

Atur Setting Seperti Gambar Berikut, sesuaikan dengan Stasiun Anda:

DashBoard	Radio	IGATE	DIGI	TRACKER	WX	TLM	SENSOR	VPN	MSG	WiFi	MOD	System	File	About
-----------	-------	-------	------	---------	----	-----	--------	-----	-----	------	-----	---------------	------	-------

System Setting		
Host Name:	ESP32APRS_Audio	Apply
LOCAL DATE/TIME	2026-05-23 14:52:12	Time Update
NTP Host	ntp.dprns.com	NTP Update
Auto REBOOT:	10 Minutes	Update *0=No reset
Time Zone	(GMT +7:00) Bangkok, Hanoi, Jakarta Sec	TZ Update
SYSTEM CONTROL	REBOOT	Factory Reset Load Default

Web Authentication	
Web USER:	admin
Web PASSWORD:	*****
Apply Change	

PATH USER Define	
PATH_1:	TRACE2-2
PATH_2:	WIDE2-1
PATH_3:	WIDE1-1,WIDE2-1
PATH_4:	RFONLY
Apply Change	

Display Setting	
OLED/TFT Enable	<input checked="" type="checkbox"/>
Flip Rotate	<input type="checkbox"/>
TX Display	<input checked="" type="checkbox"/> *ALL TX Packet for display affter filter.
RX Display	<input checked="" type="checkbox"/> *ALL RX Packet for display affter filter.
Head Up	<input checked="" type="checkbox"/> *The compass will rotate in the direction of movement.
TFT Brightness	250
Popup Delay	3 Sec
OLED/TFT Sleep	60 Sec
RX channel	<input checked="" type="checkbox"/> RF <input type="checkbox"/> Internet
Filter DX:	0 Km. *Value 0 is all distant allow.
Filter:	<input checked="" type="checkbox"/> Message <input checked="" type="checkbox"/> Status <input type="checkbox"/> Telemetry <input checked="" type="checkbox"/> Weather <input checked="" type="checkbox"/> Object <input checked="" type="checkbox"/> Item <input checked="" type="checkbox"/> Query <input checked="" type="checkbox"/> Buoy <input checked="" type="checkbox"/> Position
Apply Change	

Jangan Lupa Click Apply Change, untuk menyimpan hasil perubahan tadi.

2.8.Pilih Tab About

Atur Setting Seperti Gambar Berikut, sesuaikan dengan Stasiun Anda:

DashBoard Radio IGATE DIGI **TRACKER** WX TLM SENSOR VPN MSG WiFi MOD System File **About**

System Information	
Hardware Version:	ESP32-WROOM,ESP32 DoIt DevKit
Firmware Version:	V1.7d
RF Module:	SA868_VHF
ESP32 Model:	ESP32-D0WD-V3
Revision:	301
Chip ID:	4C2459F924F0
Flash:	4096 KByte
PSRAM:	0.0/0.0 KByte
FILE SYSTEM:	16.0/128.0 KByte

Developer/Support Information	
Author:	Mr.Somkiat Nakhonthai
Callsign:	HS5TQA,Atten,Nakhonthai
Country:	Bangkok,Thailand
Github:	https://github.com/nakhonthai
Youtube:	https://www.youtube.com/@HS5TQA
Facebook:	https://www.facebook.com/atten
Chat:	Telegram:@HS5TQA , WeChat:HS5TQA
Sponsors:	https://github.com/sponsors/nakhonthai
Donate:	https://www.paypal.me/0hs5tqa0

WiFi Status	
Mode:	AP+STA (802.11bgn)
MAC:	F0:24:F9:59:24:4C
Channel:	4
TX Power:	19.5 dBm
SSID:	APRS_YC1JEA
Local IP:	192.168.0.102
Gateway IP:	192.168.0.1
DNS:	192.168.0.1

Firmware Update	
File:	<input type="button" value="Choose File"/> No file chosen
Progress:	
Support Firmware:	https://github.com/nakhonthai/ESP32APRS_Audio/releases

Jika Sudah Aktif anda bisa secara berkala untuk Memperbaharui Firmware, dari menu firmware update.

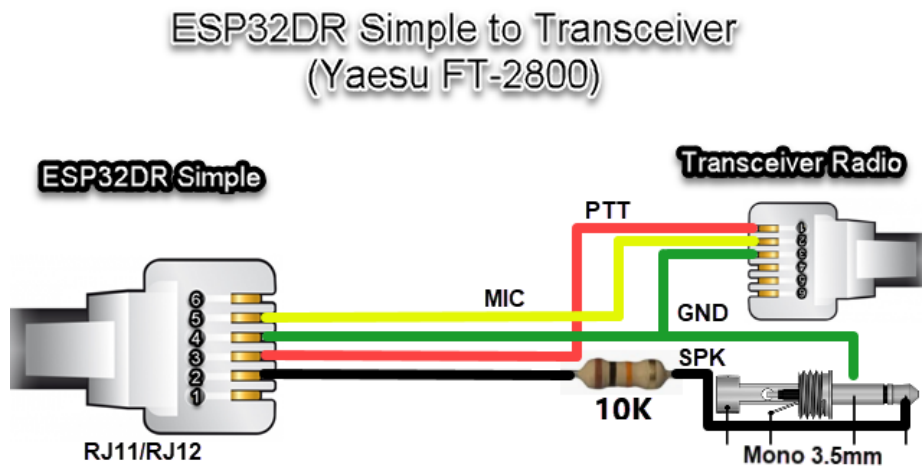


Stasiun APRS YC1JEA

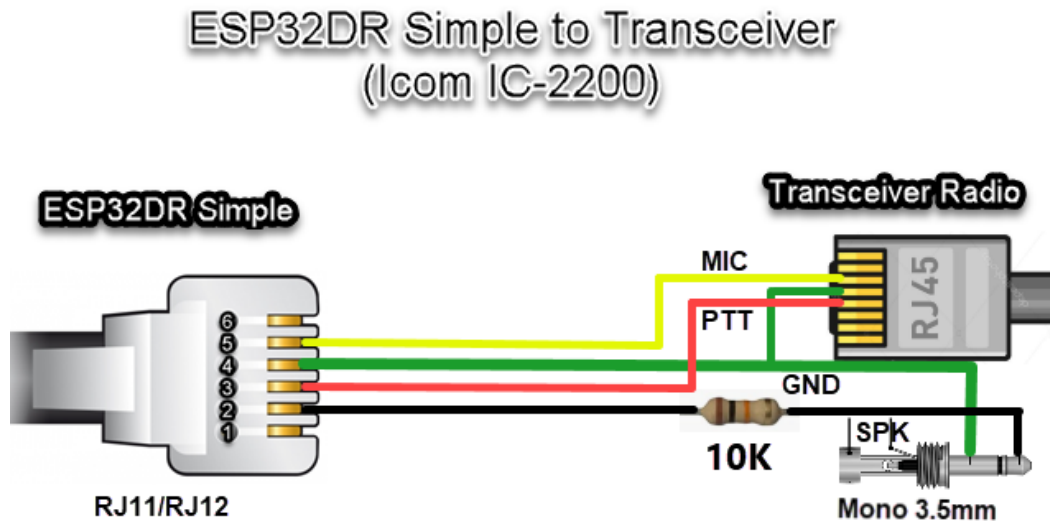
2.9. Kabel Data

Untuk menghubungkan antara Perangkat ESP32 APRS dengan Perangkat Radio Transceiver agar dapat digunakan untuk mengirim dan menerima data dapat digunakan salah satu contoh pengkabelan berikut:

1.Koneksi ESP32DR ke Radio Yaesu FT-2800, FT-2900

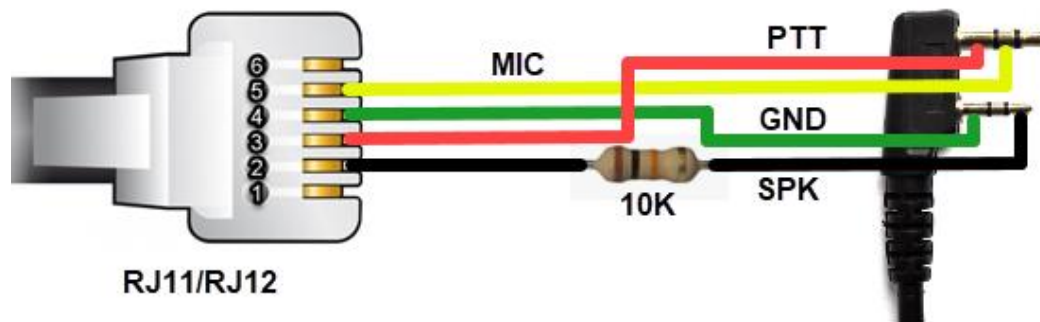


2.Koneksi ESP32DR ke Radio Icom IC-2200,IC-2300



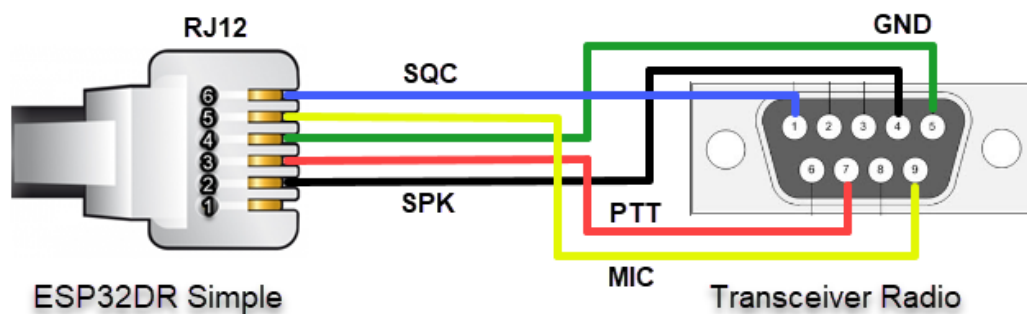
3. Koneksi ESP32DR ke Radio HT Kenwood, Spender, Baofeng, Icom.

ESP32DR Simple to HT-Transceiver (Kenwood, Spender, Icom...)



4. Koneksi ESP32DR ke Radio Alinco DR-135

ESP32DR Simple to Transceiver (Alinco DR-135)



PUSTAKA: Dari Berbagai Sumber di Internet

- <http://repository.unikom.ac.id/71038/>
- <http://repository.unikom.ac.id/71039/>
- <https://orari.or.id/aprs-pada-amatir-radio-bagian-pertama/>
- <https://hamradioprep.com/aprs-for-ham-radio/>
- https://github.com/nakhonthai/ESP32APRS_Audio/releases