

MB6WV DXCluster Monitor Using a CYD ESP32.



Spotter	MHz	DX	Comments
G4TRA	144.174	F5UMP	DL1DY DL1DBR J041 0904Z
G4TRA	144.174	DG6YGE	DK7RC DL1DBR 73 0904Z
G4SWX	144.174	F5DQK	FT8 +32 dB NAPOLEON 0903Z
G4TRA	144.174	DG6YGE	891 ~ CQ DK7RC JN69 0901Z
G4SWX	144.174	DA6BC	FT8 +33 dB 1293 Hz DN9SC 0900Z
G4SWX	144.174	OZ1SMB	FT8 +22 dB 802 Hz DAG 0858Z
G4SWX	144.174	DP4E	FT8 +33 dB 1086 Hz PY LOUDER 0856
G4SWX	144.174	DK50PA	FT8 +32 dB 1086 Hz DAG 0851Z
G4SWX	144.174	DG00ME	FT8 +22 dB 802 Hz DAG 0850Z
G4SWX	144.174	DP4E	FT8 +32 dB 1086 Hz DAG 0849Z



What is a DXCluster?

- Evolved from AX25 Packet Radio in the mid 80's.
- Network of nodes linked by RF and or the Internet.
- Reports live activity on all Amateur bands.
- A great tool for finding where the DX is.

```
DX de BG5CIC:      14218.0  EA8VD          59++          0908Z
DX de MD0CCE:      18074.0  4S7LRG        up 1          0910Z
DX de F4FSW-10:    144280.0  F0FPI         JN03RQ / JN05PU 0910Z
DX de IZ7WFL:       7118.0  VP8ORK        59           0911Z
```

- Did you know WVARS have our own (non-RF) DXCluster MB6WV.

address = mb6wv.ddns.net

Port= 7373



About MB6WV

- Runs on a Raspberry Pi 3.
- Connected via the Internet and to a network of DXClusters.
- Use a terminal emulator like PuTTY or configure Ham Radio Deluxe.
- Or build your own monitor, with a CYD.

SuperPuTTY - MB6WV DXCluster

File View Tools Help

Protocol SSH Host Login Password Session

Commands

MB6WV DXCluster

```
login: G1IVG
Hello Colin, this is MB6WV in Mkt,Harborough
running DXSpider V1.57 build 633
Capabilities: ve7cc rbn
Nodes: 1/405 Users [Loc/Clr]: 5/5755 Max: 6/8206 - Uptime: 7d 15h 56m
G1IVG de MB6WV 14-Mar-2026 0850Z dxspider >
DX de IW3ETN: 7193.0 IK0XBU/P POTA CQ CQ 0850Z
DX de IS0JMA: 7117.0 II0ICV Ita Navy Coastal SSB 0850Z
DX de EA5FID: 7032.5 EA3DA Test Lynx DX Group 0850Z
DX de SQ9HZM: 14257.0 SN31ROT SES 0851Z
DX de G4SWX: 144174.0 DK5OPA FT8 +32 dB 1086 Hz DAG 0851Z
DX de DL1TKL: 14082.3 EA1A 73 Tnx FT4 0851Z
DX de CT7AUT: 10136.0 VK1MA FT8 -16 dB 2503 Hz 0851Z
```

Opened session: MB6WV DXCluster [Telnet]

1.5.0.0 <Auto Restore>

Sessions

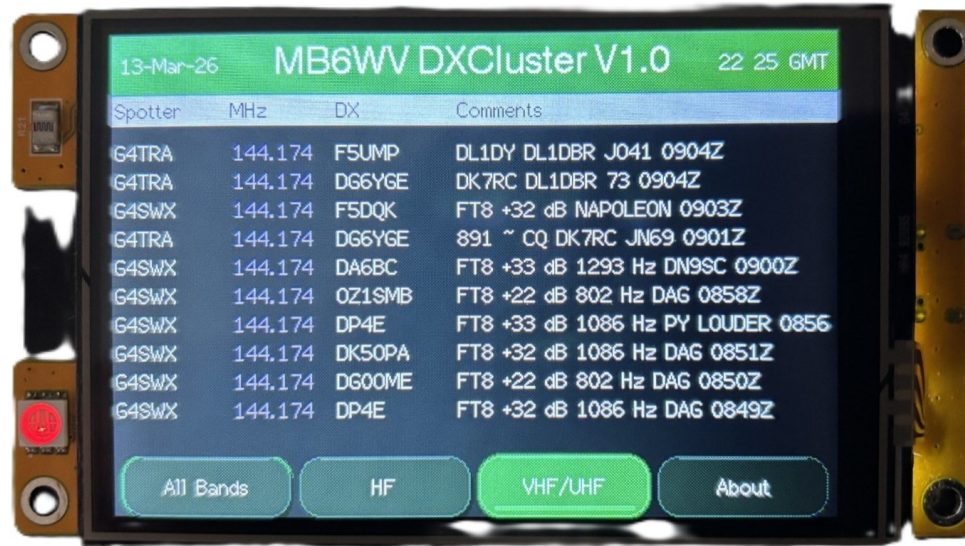
- PutTY Sessions
 - GB7WV RPI-3 SSH
 - MB6WV DXCluster
 - pi-hole

Layouts

- <Auto Restore> (default)

MB6WV Monitor on CYD

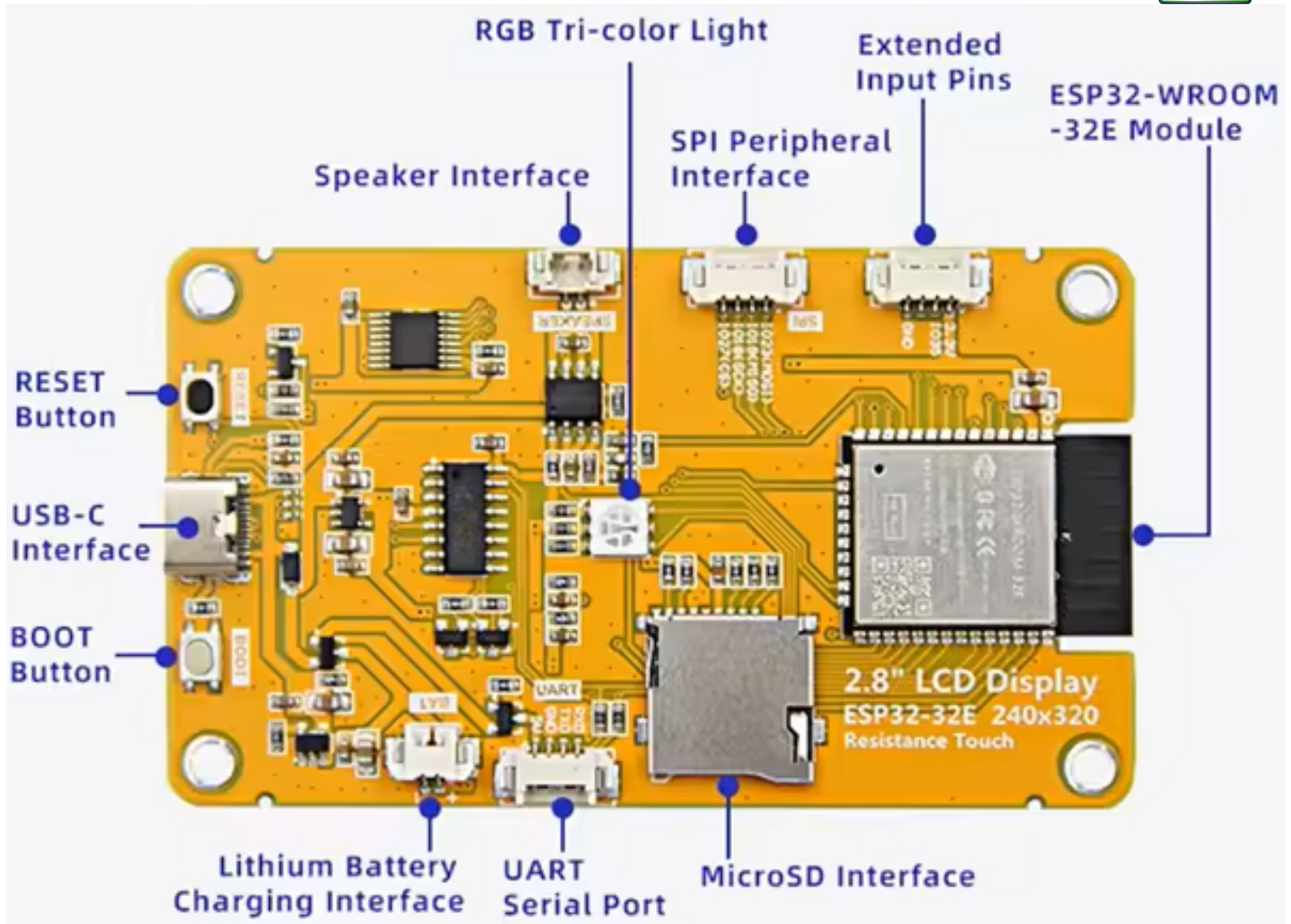
(Cheap Yellow Display)



Why build one?

- Cheap.
- It doesn't tie up your main PC.
- Use in the shack, or on WVARS Special Event Stations, out in the field.
- Easy to program using Arduino IDE.
- CYD can also be used for other Amateur projects.

CYD





Programming the CYD

- Use Arduino IDE or PlatformIO to write your Sketch and program the ESP32.
- Tools menu – Important settings.

```
dxcluster_v1.0 | Arduino IDE 2.3.8
File Edit Sketch Tools Help
[Icons] ESP32 Dev Module [Icons]
dxcluster_v1.0.ino about.h cluster.h friends.h secrets.h ...
1  /*****
2  * ESP32 DXCluster Display V1.0 (Modified)
3  * DXCluster monitor, written to run on a Cheap Yelly Display model
4  * CYD 3.5", ST7796 + XPT2046 - To program it using Arduino IDE use
5  * board type ESP32 Dev Module, with the correct serial port selected
6  * and set to 115200 baud.
7  *
8  * This sketch was written by Colin Lowe G1IVG with the help of AI
9  * Contact glivg@glivg.com or take a look at our Amateur Radio clubs
10 * website that can be found on www.wvars.com
11 *****/
12 #include <Arduino.h>
13 #include <SPI.h>
14 #include <WiFi.h>
15 #include <stdlib.h>
16 #include "time.h"
17 #define LGFX_USE_V1
18 #include <LovyanGFX.hpp>
19 #include "secrets.h" // WIFI_SSID, WIFI_PASSWORD
20 #include "cluster.h" // CLUSTER_HOST, CLUSTER_PORT, CLUSTER_USER
21 #include "about.h" // ABOUT_TEXT
22 #include "friends.h" // FRIEND_CALLSIGNS[], FRIEND_COUNT
23
```

Board: "ESP32 Dev Module"

Port: "COM4"

Reload Board Data

Get Board Info

CPU Frequency: "240MHz (WiFi/BT)"

Core Debug Level: "None"

Erase All Flash Before Sketch Upload: "Disabled"

Events Run On: "Core 1"

Flash Frequency: "80MHz"

Flash Mode: "QIO"

Flash Size: "4MB (32Mb)"

JTAG Adapter: "Disabled"

Arduino Runs On: "Core 1"

Partition Scheme: "Default 4MB with spiiffs (1.2MB APP/1.5MB SPIFFS)"

PSRAM: "Disabled"

Upload Speed: "921600"

Zigbee Mode: "Disabled"

Use of AI

- AI - speeds up writing code.
- Great for debugging my very poor code!
- For this project I used.....



- You can also use.....





Example of AI Query

Hi, how can I help?

Write an Arduino sketch that I can load into a CYD ESP32 3.5" board and uses WiFi to connect to a telnet DXCluster mb6wv.ddns.net using port 7373. The WiFi SSID is "WVARS" and the Password is "letmein". Once connected the incoming DXCluster data needs to be displayed on the TTF screen.



 Copilot

Reasoning completed in 2 steps >

Below is a complete Arduino sketch for the **CYD ESP32 3.5"** ("Cheap Yellow Display", ESP32-2432S028) that:

- Connects to Wi-Fi (SSID: **WVARS**, Password: **letmein**)
- Opens a **Telnet** TCP connection to the DXCluster at **mb6wv.ddns.net:7373**
- Streams and **displays the incoming DXCluster text** on the **3.5" TFT** with smooth scrolling
- Lets you **type commands from the USB Serial Monitor** and sends them to the cluster

It's written for the popular **TFT_eSPI** display library configured for the ILI9488 panel on the CYD board.

- ✓ **Tested pattern:** This approach is widely used on CYD boards (ILI9488, 480×320) with TFT_eSPI.
- i **DXCluster** servers often request a **callsign** on connect. The sketch can auto-send one if you set **CALLSIGN**. If you leave it empty, it will just display whatever the cluster sends, and you can type your callsign in the **Serial Monitor**.



The Code (Sketch)

- Copy from AI into the Arduino Code (Sketch)

```
dxcluster_v1_0 | Arduino IDE 2.3.8
File Edit Sketch Tools Help

ESP32 Dev Module

dxcluster_v1_0.ino about.h cluster.h friends.h secrets.h
1 /*****
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21 #include "about.h" // ABOUT_TEXT
22 #include "friends.h" // FRIEND_CALLSIGNSET, FRIEND_COUNT
```

MB6WV DXCluster CYD ESP32 Monitor



15-Mar-26 MB6WV DXCluster V1.0 12:54 GMT

Spotter	MHz	DX	Comments
IS0AWZ	18.100	IR0IDP	Ita Navy Coastal ft8 1300Z
OH0M	14.314	MM/LY3X/P	WWFF GMFF-0035 1300Z
OH0M	7.064	WB3GCK	WWFF KFF-4363 1300Z
KC1YCS	21.273	VP2EAD	59 in MA 1300Z
IZ0JNU	21.074	N1TI	73 Tnx FT8 1300Z
9A7DX	7.176	PD1TV	9a1ccy yl13 yota 1300Z
OK2K0J	14.233	OK4NEO	YOTA Contest 22yo 1300Z
PD2WL	14.081	TF1EM	73 Tnx FT4 1300Z
IZ6ASI	7.163	II6ICA	ssb Ita Navy Coastal 1259Z
LY9A	7.121	LY9A	YOTA Contest 1259Z

All Bands HF VHF/UHF About

MB6WV DXCluster CYD ESP32 Monitor



Any
Questions?