

EA DEMOPACK-WiFiBT



Software documentation ESP32

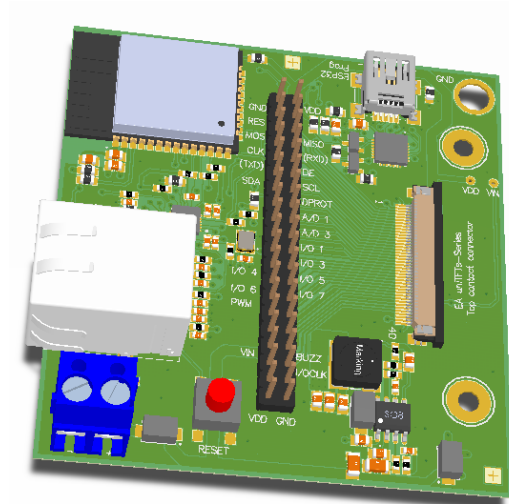


Figure shows EA 97998-E with optional RJ45 connector

FEATURES

- WIFI TO ACCESS NETWORK
- WIFI ACCESSPOINT
- WIRED LAN SUPPORT (-LAN)
- BLUETOOTH DIRECT SERIAL PORT
- BLUETOOTH AS KEYBOARD
- GENERAL BLUETOOTH CONNECTION
- UPDATE DISPLAY CONTENT OVER THE AIR
- UPDATE DISPLAY USER PROGRAMM
- ESP32-WROOM-32 INCLUDED WITH INTERFACE TO EA UNITFTS-SERIES

ORDERING CODES

- EA uniTFTs028-ATC, EA 97998-E without RJ45, FPC-cable, USB-cable
- Same as above but with RJ45 lan cable connector
- ADAPTOR BOARD ONLY

EA DEMOPACK-WiFiBT
EA DEMOPACK-LAN
EA 97998-E

ACCESSORIES

- RJ45 CONNECTOR WITH MAGNETICS
- ZIF-CONNECTOR 40 POS 0.5 MM PITCH
- FPC-CABLE 40 POS, 0.5 MM PITCH
- USB CABLE TYPE A -> MINI-USB 1M

EA
EA WF050-40S
EA KF050-40
EA KUSB-MINI

Contents

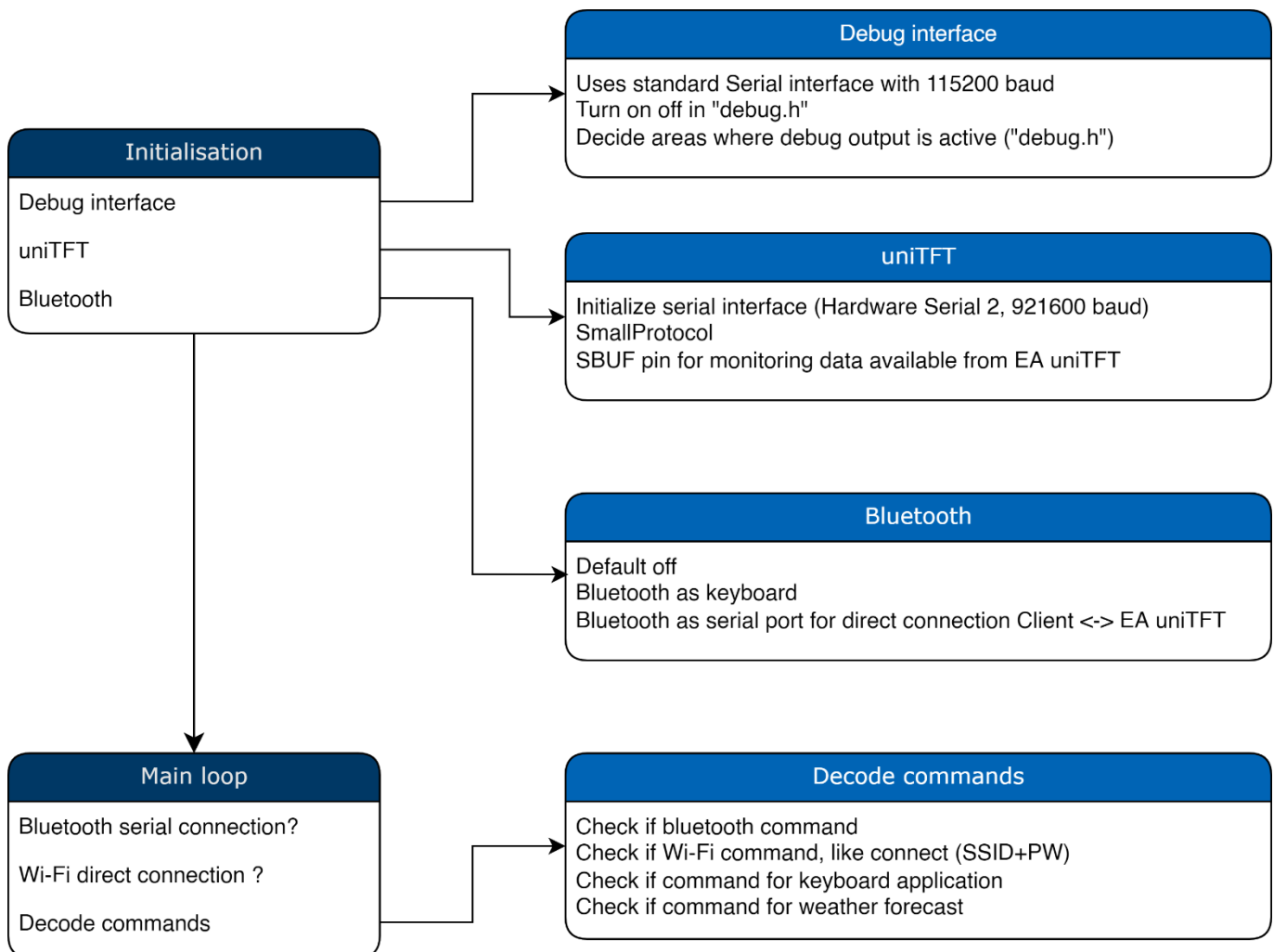
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GENERAL

The EA uniTFTs-Serie is connected via the fpc flat cable to the demoboard EA 97998-E. That board is equipped with an ESP32-WROOM-32. It's a low-cost, low-power system with integrated Wi-Fi and Bluetooth. The ESP32 has many additional features like serial interfaces, timer and pwm functions or general I/Os. This project focuses on Wi-Fi, Bluetooth and LAN to integrate the EA uniTFTs-Serie in your network. The source for ESP32 is free of charge, user may adopt to their needs. Per default the ESP32 communicates with the uniTFTs-Display with the Hardware Serial 2 at a baudrate of 921600. Please make sure to change accordingly in your uniTFTDesigner project.

SOFTWARE DESCRIPTION

FLOWCHART



AVAILABLE COMMANDS FOR ESP32

A command from EA uniTFT to ESP32 always starts with ESC (0x1B) followed by '?' (0x3F) and two more letters.

The ESP32 sends it's firmware version automatically to Register 199. It's a float value.

General commands

Description	Command	Parameter
Connect to Wi-Fi	ESC ? W C	"SSID" 0x00 "Password" 0x00
Reset Wi-Fi and ESP32	ESC ? W R	none
Network list Wi-Fi	ESC ? W N	None
Network strength indicator	ESC ? W S	None
Bluetooth serial connection	ESC ? B C	2 "DeviceName" 0x00 "ManufacturerName" 0x00. This command needs port 0 to be low. If set to high, bluetooth direct serial connection will be disconnected.

Note: Command "Network list" needs some objects and pictures in the uniTFT-Project. You need a SpinBox (Object-ID: 15) and 4 different icons representing network strength with name "wifi1" to "wifi4" in the picture folder of the module. If the user selects an entry, the Macro "SelectWiFi" is automatically called. The status of the actual Wi-Fi is updating text labels with Obj-ID 116 to 119.

The command "Network strength indicator" uses the same pictures and places the indicator as a picture (Object-ID: 70) in the upper area of the EA uniTFTs-Module. If ethernet is connected. The indicator needs one additional picture: "ethernet"

Application specific commands: Wi-Fi weather

Description	Command	Parameter
Weather location	ESC ? W L	1 "Location" 0x00 "Language" 0x00 unit(byte) "APP-ID" 0x00
Weather GPS location	ESC ? W L	2 "Latitude" 0x00 "Longitude" 0x00 unit(byte) "APP-ID" 0x00

The commands for getting weather do always include the forecast as well. The weather information is based on <https://openweathermap.org/>. Please find the example project visualizing the weather in our example in the [uniTFTDesigner](#).

NOTE: Please create your own account and change the APP-ID to your personal ID.

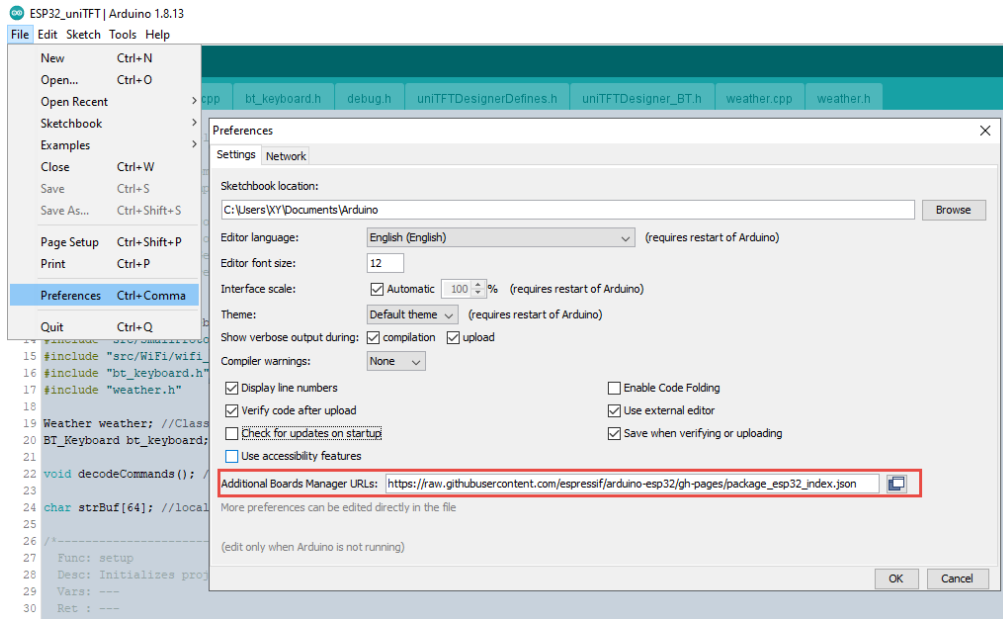
Application specific commands: Bluetooth keyboard

Description	Command	Parameter
Keyboard connect	ESC ? B C	1 "DeviceName" 0x00 "ManufacturerName" 0x00
Keyboard press	ESC ? B P	lowByte highByte MediaKey (all bytes)
Keyboard release	ESC ? B R	lowByte highByte MediaKey (all bytes)
Keyboard write key	ESC ? B W	lowByte highByte MediaKey (all bytes)

The keyboard key commands always receive 3 bytes, using the standard key reports. The media key byte only indicates, if ESP needs to interpret the parameter "lowByte" and "highByte" as MediaKey (0x01) or not (0x00).

ARDUINO IDE INSTALL GUIDE

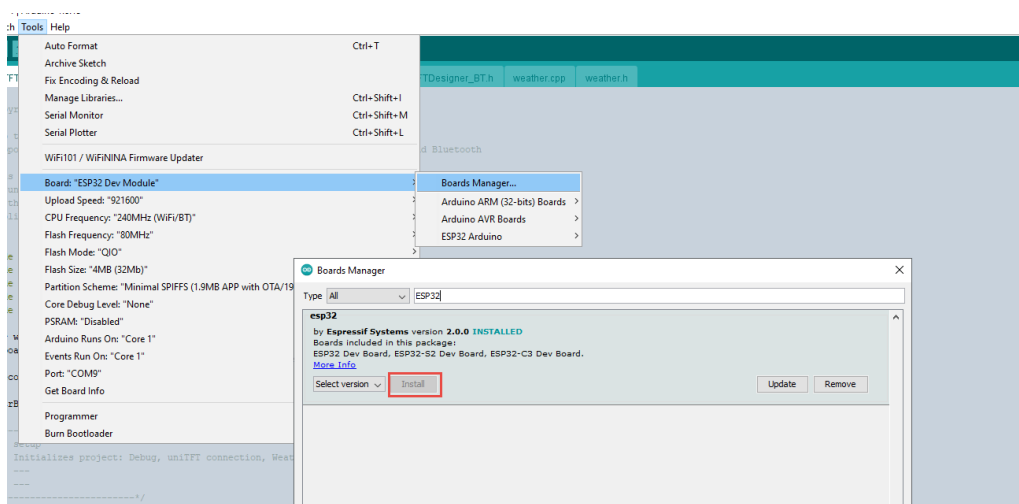
1. Download Arduino IDE and install: <https://www.arduino.cc/en/software>
2. Install ESP32 Support for Arduino IDE



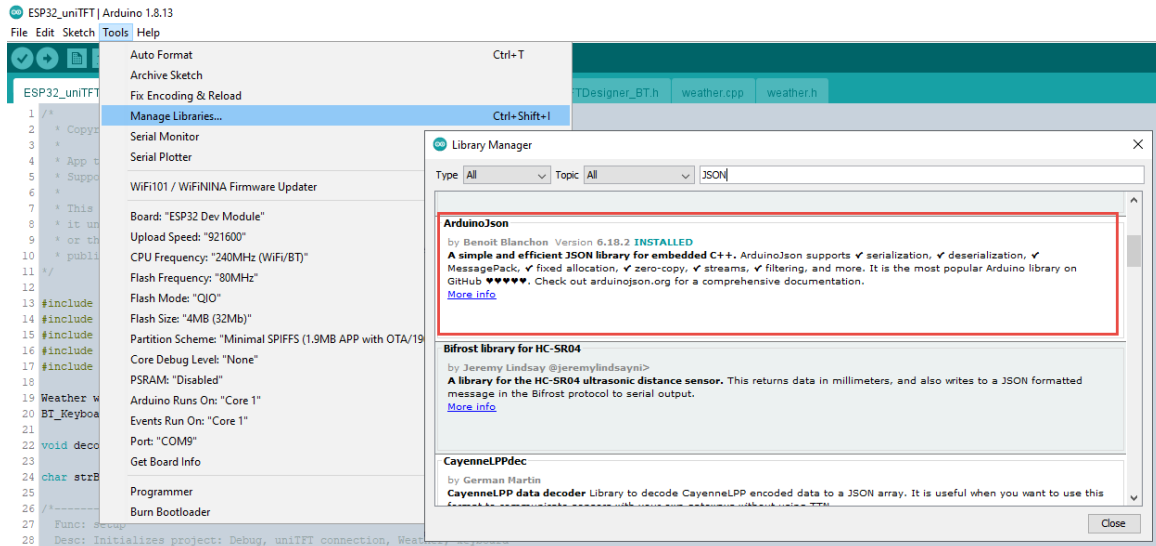
Stable release link (Espressif):

https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_index.json

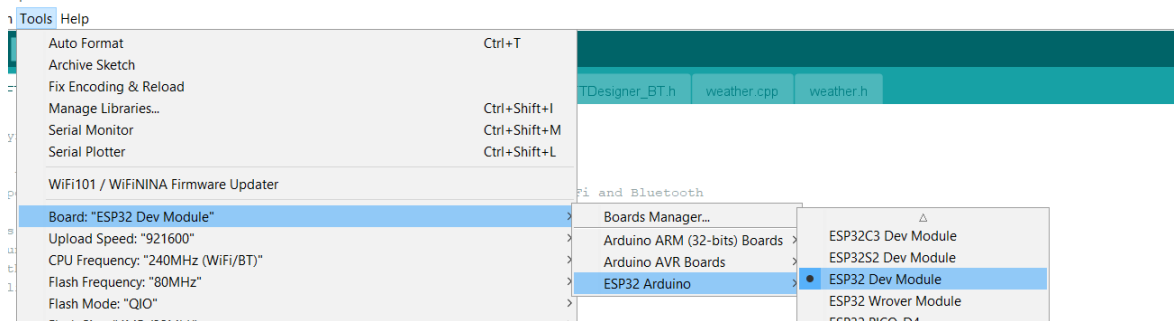
3. Open Board manager and install ESP32 boards by Espressif Systems



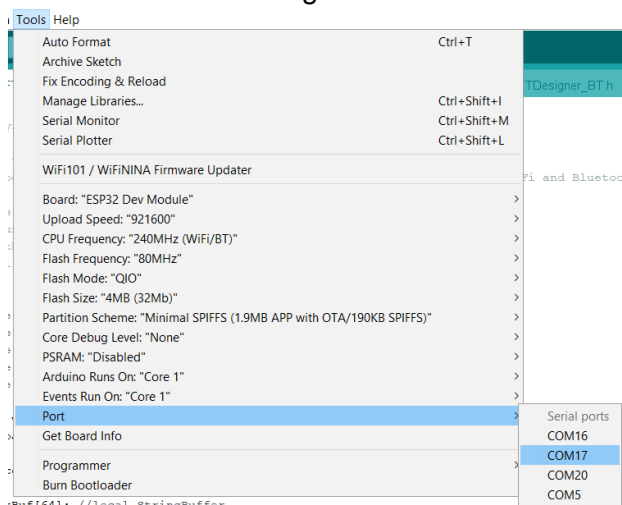
- Install ArduinoJson package by Benoit Blanchon to deserialize weather data. Open Library Manager and install



- Restart Arduino IDE and open the ino-projectfile
- Set the correct board:



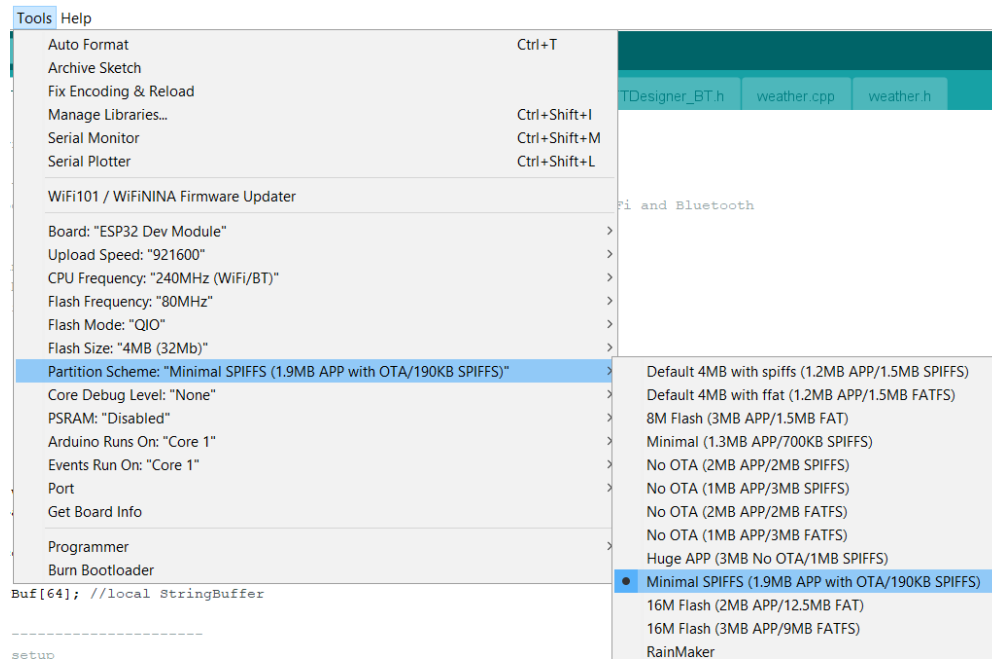
- Select the port the ESP32 is connected to. If you have multiple entries, please have a look into the Windows device manager and search Silcon Labs CP210x virtual com port.



If device manager does not show the virtual com port, you need to install the driver:

Please go to the official Silicon labs website (<https://www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers>) and follow their install instructions.

8. Set the partition scheme, as the project is too large for default scheme



ARDUINO IDE USEFUL TIPS

1. Compiling slow: Often the antivirus software checks every compiled file. This slows the machine down. Create rule in your antivirus software not to check the folder %LocalAppData%\Arduino15.
2. Upload to device. Shortcut Ctrl + U
3. Open Terminal (Serial Monitor) to get Debug information through serial interface: Shortcut Ctrl + Shift + M. The baudrate is 115200.
4. Comment / Uncomment: Shortcut Ctrl + /