

RFXtrxWifi / RFXtrxUSB

User Guide



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1. Introduction

The RFXtrxWifi and RFXtrxUSB can have the RFM69 433/868MHz) or RFM95 (868MHz) transceiver installed by the user. See the chapter "Install the transceiver" below.

An ESP32 is used for the Wifi TCP/IP connection. Open-source firmware is available.

A microcontroller is used for the RFXtrx firmware. The interface over USB and TCP/IP is the same as the USB RFXtrx versions.

Note: The RFXtrxWifi is default loaded with Wifi firmware. An USB firmware is also available so that the USB interface can be used instead of Wifi.

TCP/IP access is using port 10001

Important: The USB connection of the RFXtrxWifi is only used to flash the ESP32.

A 500mA USB connection can be used to power the RFXtrxWifi or a 5V DC 1A power supply can be used.

The RFXtrxWifi can have 2 applications connected with Wifi at the same time, for example Domoticz and RFXmng or Homeseer and Home Assistant.

2. Contents of the kit.

1 RFXtrxWifi PCB or RFXtrxUSB PCB

1 RF69 with PTF (push-to-fit) connectors

1 enclosure

4 screws

1 USB Cable

For the RFXtrxWifi: 1 power supply DC 5V 1A



3. USB drivers

The CP2102N USB-serial chip is used. The drivers are available at:

<https://www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers?tab=downloads>

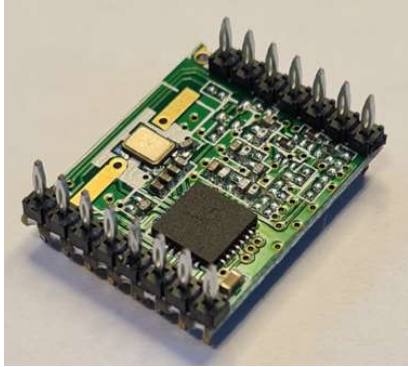
4. Install the transceiver.

The RFXtrxWifi and RFXtrxUSB can be equipped with the RFX69 transceiver module.

This RFX module must be inserted in the RFXtrxWifi / RFXtrxUSB PCB if the RFM module has a Push-To-Fit (PTF) connector. Push the module in the connector holes on the component side. The RFM69 module has on one side 8 pins and 7 pins on the other side to avoid wrong installation.

4.1. RFX69

The RFX69 is a RFM69 with PTF connector.



RFXtrx433XXL firmware for the RFX433 supports all transmit protocols as supported by the RFXtrx433XL. A limited number of receive protocols are working: AC, ARC, Oregon 3.0. Maybe other protocols will be added in the future.

RFXtrx868XL firmware for the RFX868 supports:

Protocol	Protocol	receive	transmit
Alecto ACH2010	Alecto ACH2010	Y	-
Alecto WS5500, FineOffset WH2900, Ventus W830	Alecto WS5500	Y	-
Davis Vantage Vue EU *	Davis EU	Y	-
Edisio	Edisio	Y	Y
FS20	FS20	Y	Y
Itho CVE RFT	Itho CVE RFT	-	Y
Itho CVE ECO RFT	Itho CVE ECO RFT	Y	Y
Keeloq (unencrypted part only)	Keeloq	Y	Y
Orcon	Orcon	Y	Y
Visonic CodeSecure (unencrypted part only)	Visonic	Y	-
Visonic PowerCode	Visonic	Y	-

* based on information available at: wxforum.net – “Implementing a Si1000 based wireless receiver for Davis ISS data” and madscientistlabs.blogspot.com

Important: it is only possible to enable one protocol for receive in the RFXtrx868XL because of the used transmission techniques at 868MHz.

4.2. RFX95

The RFXtrxWifi is prepared to hold the RFX95 transceiver.
RFX95 firmware is not yet available.

5. RFXtrxUSB

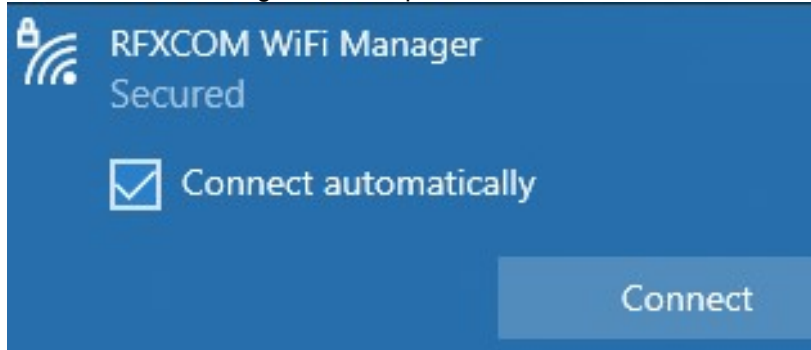
Configure and check operation of the RFX433 or RFX868 using RFXmngn on a Windows system.
Connect the USB cable of the RFXtrxUSB to your Home Automation system and configure the right COM port.

6. RFXtrxWifi

6.1. Configure the RFXtrxWifi.

Connect the RFXtrxWifi to an USB or external 5V 1A power supply.

Open the Wifi network settings on your PC or mobile and connect the access point RFXCOM WiFi Manager and use password: 12345678



Open a browser and open 192.168.4.1 and enter your Wifi credentials, SSID and password of your Wifi network.

Optional enter a Local IP with Subnet Mask and Gateway, for example:

192.168.1.150

255.255.255.255.0

192.168.1.1

DHCP is used if no Local IP info is entered



Enter your WiFi credentials

for DHCP do not enter any value at Local IP, Subnet Mask and Gateway

SSID:	<input type="text"/>
Key:	<input type="text"/>
Local IP:	<input type="text"/>
Subnet Mask:	<input type="text"/>
Gateway:	<input type="text"/>
<input type="button" value="Save"/>	

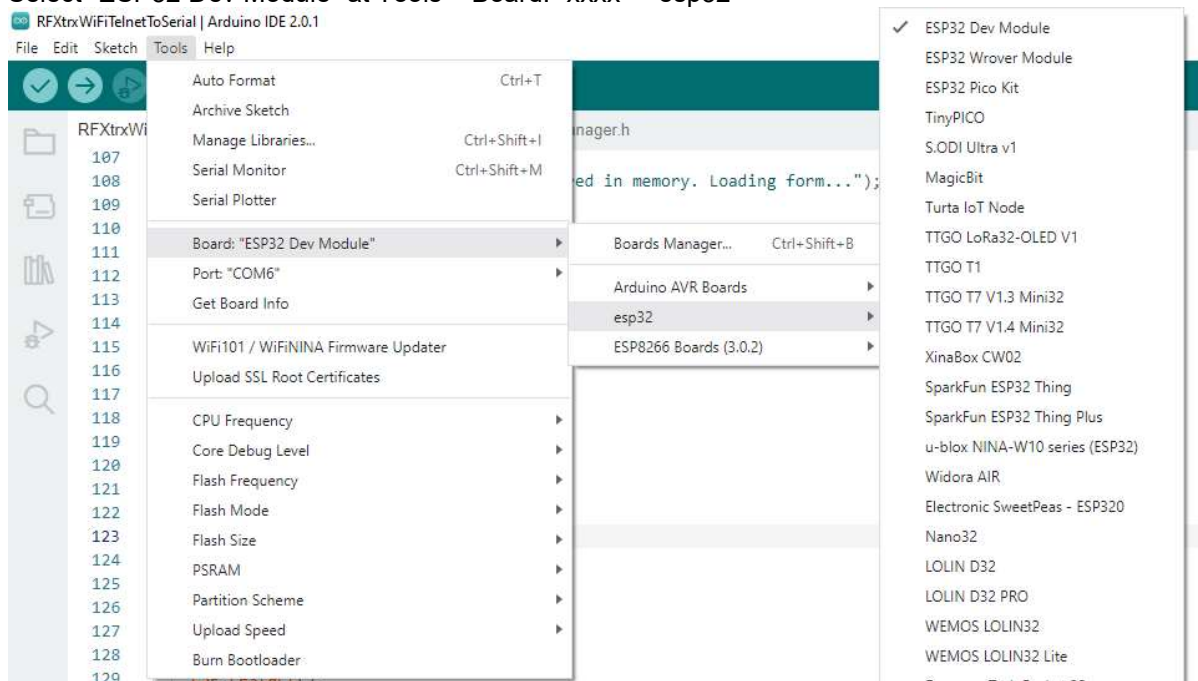
Click Save and the RFXtrxWifi will restart and connect your Wifi.

6.2. Restore Wifi settings

To reset the Wifi settings press the RESTORE button inside the RFXtrxWifi and configure the RFXtrxWifi as described above.

6.3. Flash the Wifi firmware in the RFXtrxWifi

- Download the Arduino IDE to flash the ESP32 in the RFXtrxWifi with new firmware.
<https://www.arduino.cc/en/software>
- In Arduino IDE:
Open File – Preferences and add at Additional boards manager URLs:
https://dl.espressif.com/dl/package_esp32_index.json
- Open Tools – Board: “xxxxxx” -Boards Manager
At BOARDS MANAGER enter ESP32 and INSTALL the latest version “esp32 by Espressif Systems”.
- Select “ESP32 Dev Module” at Tools – Board: “xxxx” – esp32



- Select the COM port of the RFXtrxWifi at Tools – Port
- To know the Sketchbook location open File – Preferences – Settings.
Copy the RFXtrxWiFiTelnetToSerial directory to your Arduino sketch directory
RFXtrxWiFiTelnetToSerial directory contains:
 - HTML.h
 - revisions.txt
 - RFXtrxWiFiTelnetToSerial.ino
 - WifiFunc.h
- Open RFXtrxWiFiTelnetToSerial.ino and click the Upload button. The firmware will be compiled and flashed in the RFXtrxWifi ESP32



6.4. Use the COM port of the RFXtrxWifi for the RFX433/RFX868

Copy the RFXtrxUSB directory to your Arduino sketch directory. The RFXtrxUSB directory contains only RFXtrxUSB.ino

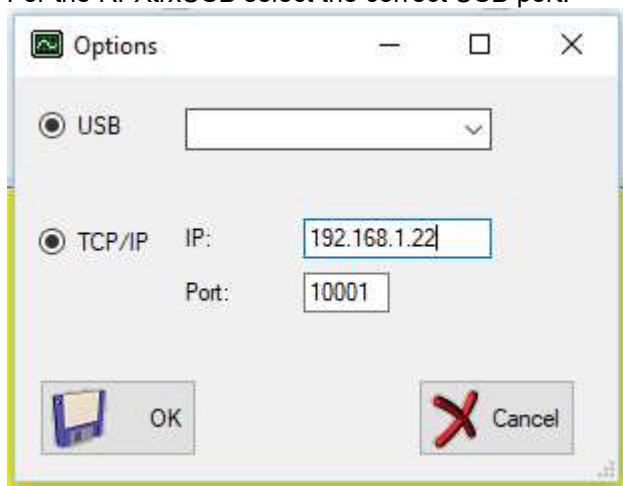
Open RFXtrxUSB.ino and click the Upload button. The USB firmware will be compiled and flashed in the RFXtrxWifi

7. Configure the transceiver

The transceiver can be tested and configured with the RFXmngnr program.

For the RFXtrxWifi set the IP address of the RFXtrxWifi and port 10001.

For the RFXtrxUSB select the correct USB port.



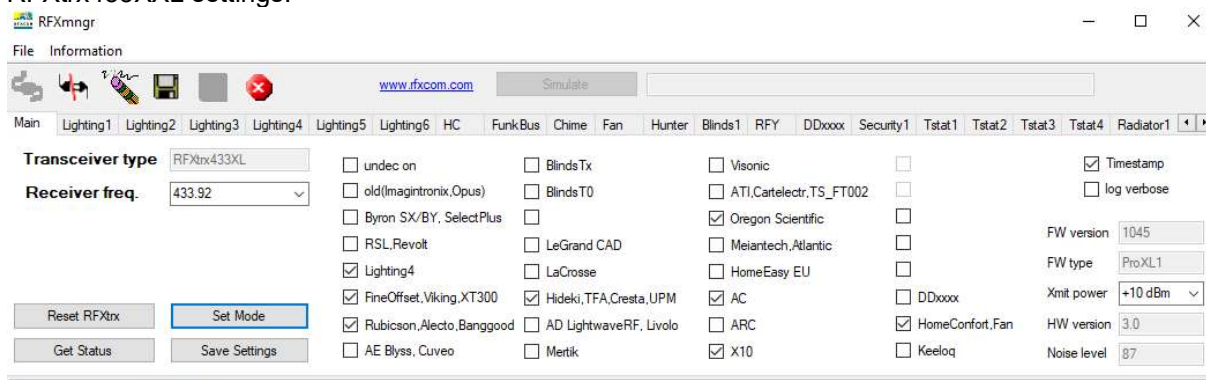
Select the protocols necessary for receive and click Set Mode followed by Save Settings.

There is no need to select protocols for transmit!

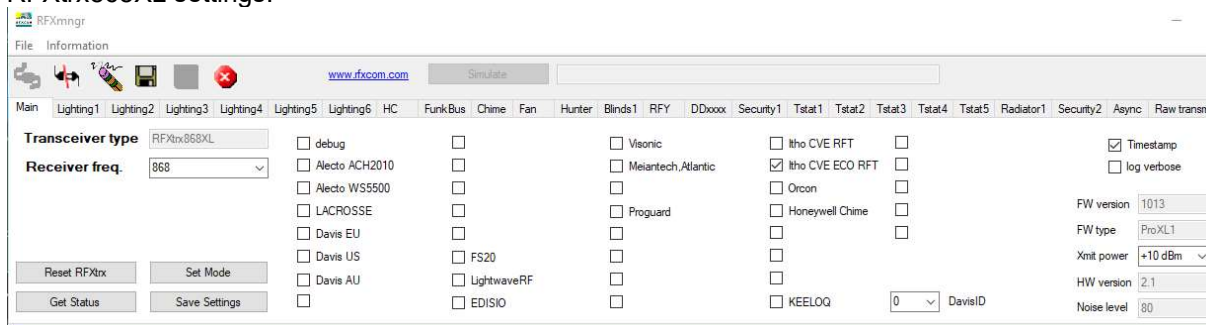
Note that you can only select 1 protocol for reception in the RFXtrx868XL.

The reason for this is because each protocol uses different frequencies and modulation!!!

RFXtrx433XXL settings:



RFXtrx868XL settings:



8. Update the RFXtrx transceiver firmware

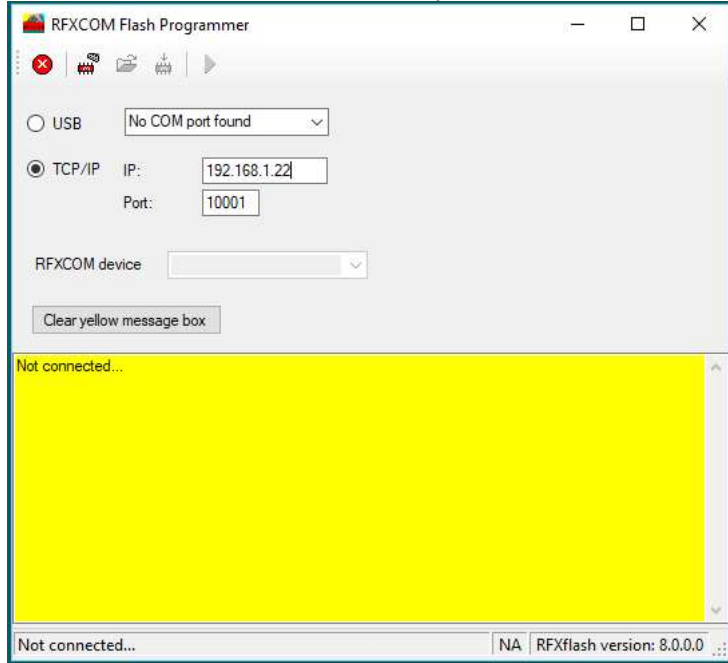
If required, the transceiver firmware can be updated with the RFXflash program version 10.0.0.0 or higher.

Stop all connections with the transceiver and be sure that no other program connects the transceiver during flash of the transceiver!

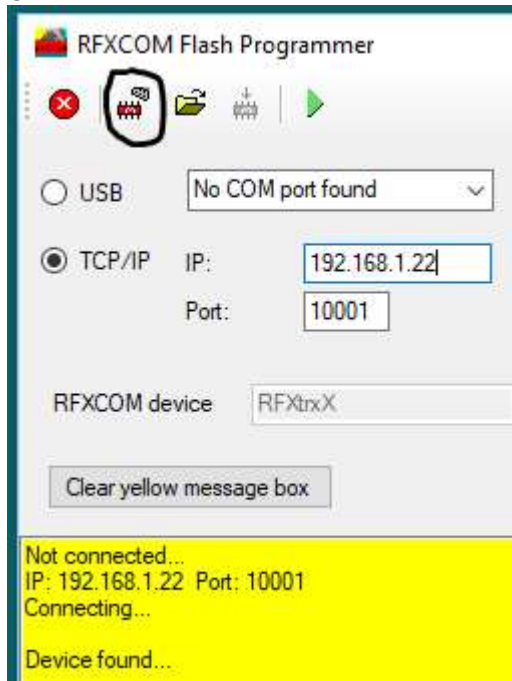
Start the RFXflash program.

For the RFXtrxWifi, select the IP address and select port 10001.

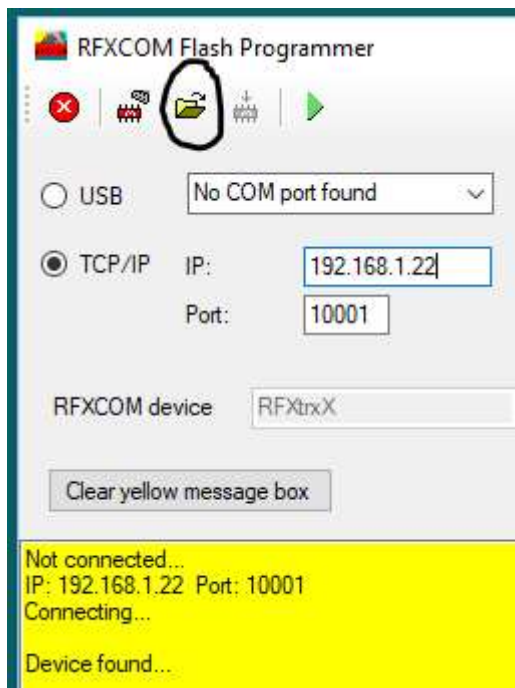
For the RFXtrxUSB select the COM port



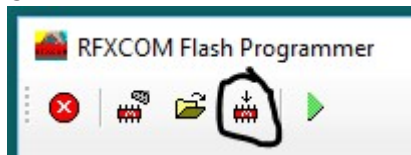
Click the connect button:



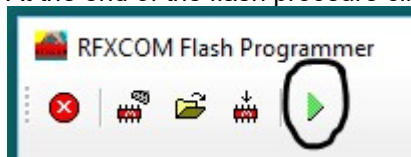
Click the Open HEX file and select the correct firmware file.



Click the Write device button. The firmware will be flashed in about one minute:



At the end of the flash procedure click the Normal Execution Mode button:



Test the RFXtrxWifi or RFXtrxUSB with RFXmngnr.

9. Warning:

- RF signals are possible disturbed, and it has not been justified for this equipment at uses in circumstances where life-threatening or dangerous situations are possible.
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12. Revision History

Version 0.0 November 15, 2022

Initial version

Version 0.1 November 16, 2022

USB driver added

RFX69-PTF picture added

Version 0.2 November 30, 2022

RFXtrxUSB added

Version 1.0 December 19, 2022

RFXtrxUSB and RFXtrxWifi chapters added

Version 1.1 May 1, 2024

Chapter numbering corrected