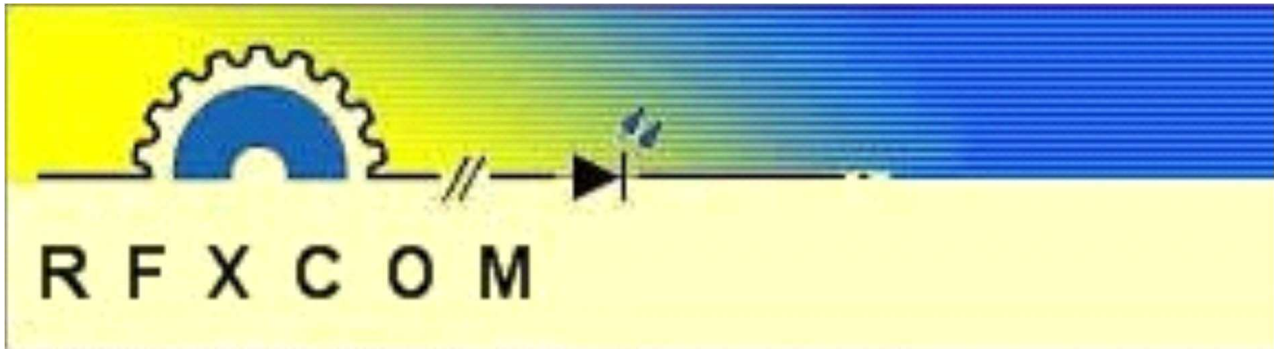




RFX

User Guide

RFX-433 • RFX-433EMC • RFX-868



USB • WiFi • W5500 LAN • MQTT • P1

Completely revised edition

New structure, up-to-date firmware information, improved safety instructions, modern network configuration and a more concise compatibility approach.

Version 3.3 — August 2026

RFXCOM • Made in the Netherlands • www.rfxcom.com

About this guide

This guide describes the current ESP32-S3 generation: RFX-433 and RFX-433EMC (download type 6) and RFX-868 (download type 7). Before downloading, always check the type label on the underside of the enclosure. Firmware for older RFXtrx, RFX433XL and RFX868XL generations is not interchangeable with these models.

Important

Firmware, software and compatibility change regularly. Before installation, always check the download page and changelog on [rfxcom.com](https://www.rfxcom.com). The versions in this document were last verified on 29 August 2026.

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Conventions

- R means receive; T means transmit; RT means both receive and transmit.
- Serial settings are shown as baud rate, data bits, parity and stop bits.
- Commands that must be entered literally are shown in a monospaced font.
- Disconnect the power before opening the enclosure or installing expansion boards.

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1. Product overview and selection guide

RFX transceivers provide a bridge between wireless devices and home automation software. They can receive signals from sensors, switches and remote controls, among others, and transmit commands to lighting, ventilation and motors.

Model	Frequency	Interfaces	Features
RFX-433	433,92 MHz	USB, WiFi	Suitable for many 433 MHz sensors, switches and one-way motors.
RFX-433EMC	433,92 MHz	USB, WiFi, optioneel W5500 LAN, MQTT	Built-in EMC functions for bidirectional Brel/Dooya, Cherubini and Ozroll, among others.
RFX-868	868 MHz	USB, WiFi, optioneel W5500 LAN, MQTT	For supported 868 MHz protocols such as Orcon, Itho, Edisio, FS20 and FineOffset.

Reception sensitivity

Enable only the protocols you actually want to receive. Fewer active receive decoders generally provide better sensitivity and fewer false detections. Transmission does not need to be enabled separately.

1.1 Software variants

Variant	Use	USB port
USB	Direct serial connection to PC, controller or home automation system	38.400 baud, 8N1
WiFi / W5500 LAN	Network connection via TCP port 10001; maximum two simultaneous connections	115.200 baud, 8N1 for diagnostics and recovery
MQTT	Direct connection to broker and Auto Discovery	115.200 baud, 8N1 for diagnostics and recovery

Not interchangeable

The software for RFX-433/RFX-868 is fundamentally different from firmware for older RFXtrx, RFX433XL and RFX868XL products. Use only files intended for your exact model.

2. Safety, power and placement

- Use a stable 5 V USB-C power supply. At least 2 A is required for WiFi/MQTT/LAN; for new installations we recommend 5 V / 3 A for additional headroom.

- Do not use damaged cables, loose connectors or power supplies with an incorrect voltage.
- Place the transceiver in a dry, ventilated location away from metal cabinets, powerful power adapters and other RF transmitters.
- Only open the enclosure with power disconnected and prevent electrostatic discharge.
- The antenna must be upright and unobstructed. A suitable external 433 MHz antenna can improve range.

USB-C does not automatically mean USB-PD

The transceiver requires 5 V. Use a reliable power supply that provides a stable 5 V; a higher maximum wattage is acceptable as long as the USB specification is followed.

3. Quick start

3.1 USB in five steps

1. Download the latest RFX software and RFXmngn from the [RFXCOM download page](#).
2. Connect the transceiver with a data-capable USB-C cable.
3. If necessary, install the VCP driver for the fitted USB chip: Silicon Labs CP2102N or FTDI FT231XS.
4. Start RFXmngn and select the correct COM port.
5. Enable only the required receive protocols, select Set Mode and then Save Settings.

3.2 WiFi or LAN in six steps

1. Install the correct WiFi or W5500 LAN software.
2. Open a terminal on the USB port at 115,200 baud, 8N1.
3. Configure WiFi via the temporary access point, or for LAN read the address obtained via DHCP.
4. Preferably use a DHCP reservation or a fixed address outside the DHCP pool.
5. Connect RFXmngn or your application to the IP address on TCP port 10001.
6. Save the selected receive protocols.

3.3 MQTT overview

1. Install MQTT software intended for RFX-433EMC or RFX-868.
2. Configure WiFi/LAN and the MQTT broker details.
3. Create a separate MQTT user for Home Assistant.
4. Enable Auto Discovery and activate only the desired protocols.
5. Activate devices by having a valid signal received, or add them manually.

4. LED status and connections

LED	Meaning	Action
Solid red	Startup, WiFi access point active or no connection to configured WiFi network	Check SSID/password and USB debug output.
Flashing red	No W5500 LAN link	Check cable, switch port and W5500 connection.
Blue	Transceiver module initialization	Normal during startup.
Red + blue, approx. 3 s	EMC function initialization	Normal for RFX-433EMC/EMC option.
Flashing blue	Problem with transceiver module	Restart; check firmware and hardware.
Flashing green	Message sent via USB, WiFi or LAN	Normal activity.

4.1 Serial settings

Use	Setting
USB software / RFX protocol	38.400 baud, 8 data bits, no parity, 1 stop bit
WiFi, LAN or MQTT debug/recovery	115.200 baud, 8 data bits, no parity, 1 stop bit
Network data	TCP port 10001, maximum two connections with WiFi/LAN software

Cable check

Many connection problems are caused by a charge-only USB-C cable. Use a cable confirmed to support data transfer.

5. Updating firmware and software

The official RFXCOM Firmware Updater is the recommended method for updating the current RFX generation via USB. The old manual ESP web flasher using four .bin files and separate flash addresses is no longer required for normal installations.

1. Open flasher.rfxcom.com in Google Chrome or Microsoft Edge.
2. Select the correct RFXCOM product, desired firmware type and firmware version.
3. Connect the RFXCOM with a data-capable USB-C cable and click RFXCOM verbinden. Select the correct USB Serial Port when prompted by the browser.
4. Wait until the Firmware Updater reports that the RFXCOM has been successfully detected.
5. Click Firmware installeren. Keep the USB cable connected and close other programs using the same serial port.
6. Wait until installation is fully completed. The RFXCOM may then restart with the selected firmware.

If connection fails

Hold RESET, start Program and release RESET as soon as the flasher attempts to connect.

The Firmware Updater automatically selects the correct files and flash addresses. Manually entering 0x0000, 0x8000, 0xE000 and 0x10000 is no longer necessary.

5.1 Last verified firmware

Product	Version	Date	Note
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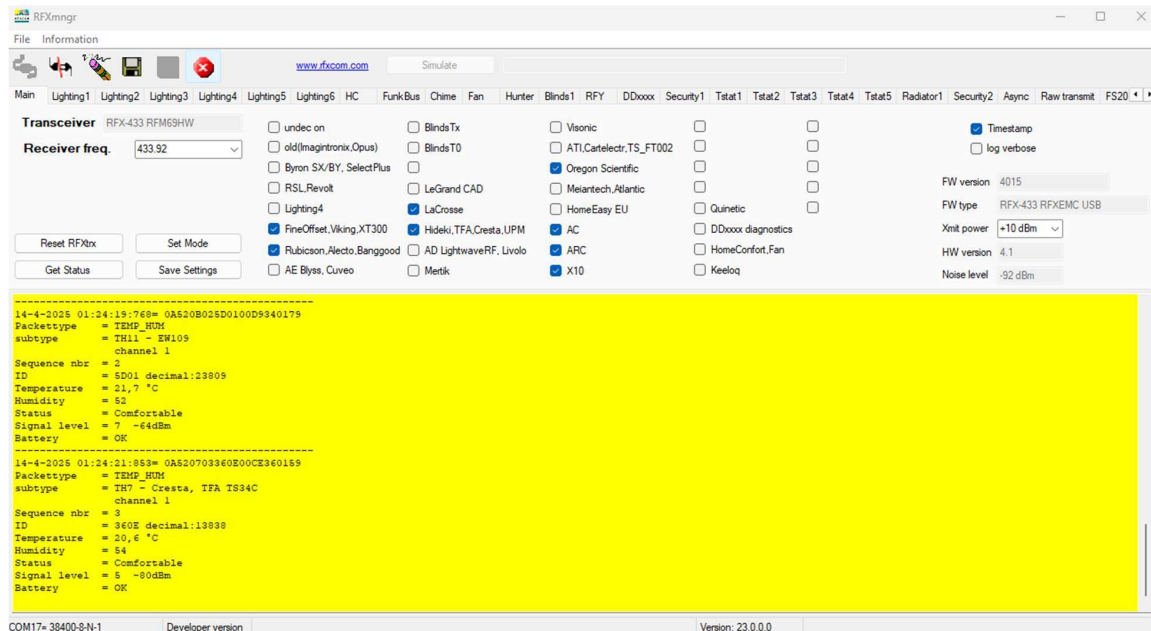
Product	Version	Date	Note
RFX-433 / RFX-433EMC	V4052	current as of 29 Aug. 2026	Current firmware for RFX-433 / RFX-433EMC (download type 6). Check the Firmware Updater for the correct interface variant.
RFX-868	V8028	current as of 29 Aug. 2026	Current firmware for RFX-868 (download type 7). Do not use for older RFX868XL/RFXtrx868XL products.

Always check again

The versions above are a snapshot. The download page and changelog are authoritative.

6. Using RFXmngnr

RFXmngnr is the Windows program for configuration, reception diagnostics and sending test commands. When connecting, the program automatically performs Reset and Get Status.



RFXmngnr: status, protocol selection and decoded messages.

6.1 Configure reception

1. Open the Main tab.
2. Select only the protocols you want to receive.
3. Click Set Mode to activate the setting.
4. Click Save Settings to store the selection in non-volatile memory.
5. Check the yellow output for correctly decoded messages and a usable RSSI level.

6.2 Test transmission

Use the function tabs after Main. First select the protocol type, then enter the ID, unit and command. The yellow output shows the transmitted packet and confirmation from the transceiver.

Protocol selection applies only to reception

All supported transmit protocols are available without enabling them on Main.

6.3 Network connection

- For WiFi or W5500 LAN, use the local IP address and TCP port 10001.
- With network software, RFXmngnr must connect via Ethernet/TCP; the USB port is then used only for diagnostics and recovery.
- MQTT software cannot be used with RFXmngnr.

7. USB configuration

7.1 Driver and COM port

- Check Windows Device Manager to see which COM port appears after connecting.
- The board may contain a Silicon Labs CP2102N or FTDI FT231XS interface.
- Install the official VCP driver from the relevant chip manufacturer if no COM port appears.
- Do not allow two programs to open the same COM port simultaneously.

7.2 Reliability

- Use a short, shielded data cable.
- Avoid passive USB hubs if communication is unstable.
- Disable USB power saving if Windows periodically disconnects the device.
- Record the serial number or fixed device path in permanent installations.

8. WiFi configuration

8.1 Restore factory settings

- New PCB versions: hold RESTORE, briefly press RESET, release RESTORE, then power-cycle the device.
- Older RFXESP32-S3 versions: temporarily connect IO20 to GND, press RESET, remove the connection and perform a power cycle.
- Via USB: open a terminal at 115,200 baud, 8N1 and send Restore followed by Enter.

8.2 Configure WiFi

1. Power the RFX via USB-C.

2. Open the WiFi settings on a PC or phone.

3. Connect to the RFXCOM configuration network. The default password is 12345678.

4. Open 192.168.4.1 in a browser.

5. Complete all fields marked with *: SSID, WiFi key, a unique Hostname / MQTT Client, Local IP, Subnet mask, Gateway and the MQTT settings.
6. On the current configuration page, use a unique static IP address appropriate for your network, with the correct subnet mask and gateway address.
7. Click Save settings. Settings are saved only when the entire form is valid. The RFX then restarts and connects to the local network.

RFXCOM WiFi Setup
 Configure WiFi, network and MQTT settings

Important: Complete all fields marked with *. Settings are only saved when the complete form is valid.

Setting	Value	Hint
Network settings		
SSID *		Your WiFi network name, for example: Office-WiFi.
WiFi key *		WiFi password/key. The value is retained if validation fails.
Hostname / MQTT Client *	rfx433	Unique device name on your network, for example: RFXCOM. Max. 15 characters.
Local IP *		Static IP for the RFXCOM, e.g. 192.168.1.50.
Subnet mask *		Usually 255.255.255.0 on a home or small office network.
Gateway *		IP address of your router, e.g. 192.168.1.1.
MQTT settings		
MQTT Server IP *		IP address of your MQTT broker, e.g. 192.168.1.10.
MQTT port *	1883	Usually 1883 for standard MQTT.
MQTT User *	...	Username configured in your MQTT broker.
MQTT Password *	...	Password belonging to the MQTT user.
MQTT topic *	homeassistant	Base topic used by RFXCOM, for example: rfxcom.

Save settings

No restart occurs until all required settings are valid.

Current RFXCOM WiFi Setup. Complete all required network and MQTT fields before saving the settings.

Security

Change default credentials where possible, use WPA2/WPA3 and preferably place IoT devices in a separate network segment. Do not expose TCP port 10001 directly to the internet.

8.3 Web interfaces after initial configuration

Once the RFXCOM has successfully connected to the network, the built-in web server can be reached at the RFXCOM's local IP address. Replace <RFX-IP> below with the actual address of your device.

- <http://<RFX-IP>/network> — view or change network and MQTT settings.
- <http://<RFX-IP>/firmware> — automatic Firmware Manager for the installed firmware variant.
- <http://<RFX-IP>/update> — manually install a specific official .bin firmware file.

8.4 Network configuration — /network

Open <http://<RFX-IP>/network> to manage the network and MQTT configuration later. The page uses the same fields as the initial WiFi configuration. In particular, make sure the Hostname / MQTT Client is unique and all required fields marked with * contain valid values.

RFXCOM WiFi Setup
 Configure WiFi, network and MQTT settings

Important: Complete all fields marked with *. Settings are only saved when the complete form is valid.

Setting	Value	Hint
Network settings		
SSID *		Your WiFi network name, for example: Office-WiFi.
WiFi key *		WiFi password/key. The value is retained if validation fails.
Hostname / MQTT Client *	rfx433	Unique device name on your network, for example: RFXCOM. Max. 15 characters.
Local IP *		Static IP for the RFXCOM, e.g. 192.168.1.50.
Subnet mask *		Usually 255.255.255.0 on a home or small office network.
Gateway *		IP address of your router, e.g. 192.168.1.1.
MQTT settings		
MQTT Server IP *		IP address of your MQTT broker, e.g. 192.168.1.10.
MQTT port *	1883	Usually 1883 for standard MQTT.
MQTT User *	...	Username configured in your MQTT broker.
MQTT Password *	...	Password belonging to the MQTT user.
MQTT topic *	homeassistant	Base topic used by RFXCOM, for example: rfxcom.

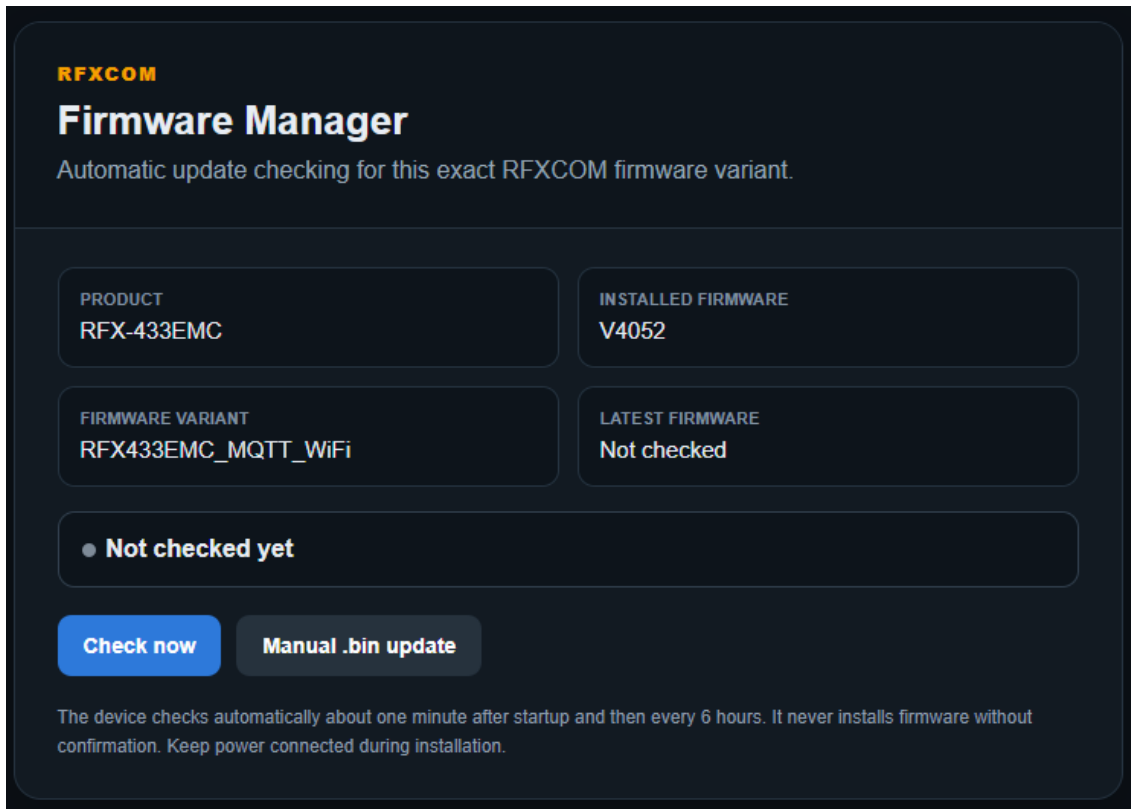
Save settings

No restart occurs until all required settings are valid.

Network and MQTT configuration via /network.

8.5 Firmware Manager — /firmware

Open <http://<RFX-IP>/firmware> for the built-in Firmware Manager. This page detects the exact RFXCOM product and firmware variant, displays the installed version and checks which firmware is available for that variant.



Firmware Manager at /firmware showing product, installed firmware, firmware variant, available firmware and Check now.

Click Check now for an immediate check. The RFXCOM also checks automatically about one minute after startup and then approximately every six hours. Firmware is never installed without confirmation. Keep the power connected during an update.

8.6 Manual firmware update — /update

Open <http://<RFX-IP>/update> when you intentionally want to install a specific official .bin file. Use only firmware intended for your exact RFXCOM model and connection type. For normal updates, /firmware is preferred.

RFXCOM

Firmware update

Select an official RFXCOM .bin firmware file. Keep this page open and do not disconnect power during the update.

DEVICE ID

24EC4A78E060

CURRENT FIRMWARE

V4052

Choose firmware file

Click here to select a .bin file

Install firmware

Only install firmware intended for this exact RFXCOM model and connection type.

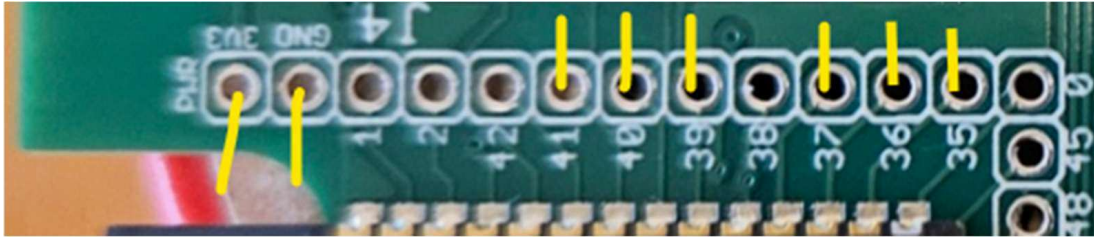
Manual firmware update page at /update. Select the official .bin file and do not interrupt power during installation.

9. W5500 LAN configuration

W5500 LAN is available for suitable RFX-433EMC and RFX-868 hardware. Before installation, check whether your board and EMC version are suitable.

9.1 Connection diagram

W5500	RFX
3.3V	3V3
GND	GND
MISO	IO37
MOSI	IO35
SCLK	IO36
SCS	IO39
RST	IO40
INT	IO41



W5500 connection points on the RFX board.

9.2 Configure network

1. **Disconnect the LAN cable and connect the RFX via USB.**
2. Open een terminal op 115.200 baud, 8N1.
3. **Connect the LAN cable and read the address assigned via DHCP.**
4. **Open this address in a browser.**
5. **Enter hostname, local IP address, subnet mask and gateway, or use DHCP with a reservation.**
6. **Click Save and allow the RFX to restart.**

9.3 Recovery

- Hardware: hold RESTORE, briefly press RESET, release RESTORE and perform a power cycle.
- USB terminal: send Restore followed by Enter at 115,200 baud, 8N1.

10. MQTT and Home Assistant

RFX-433EMC and RFX-868 can communicate directly with an MQTT broker via WiFi or W5500 LAN. MQTT Auto Discovery can automatically create supported devices in Home Assistant. RFXmngr cannot be used while MQTT firmware is loaded on the RFX.

1. Install the MQTT software for the correct model.
2. Configure the network, broker address, port and login credentials.
3. Create a separate broker user; do not use reserved Home Assistant names.
4. Enable the MQTT integration and Discovery in Home Assistant.
5. Enable only the required RF protocols.
6. Have each device transmit at least one valid message, or add it manually.

Changes after firmware update

A firmware update may change entity types or MQTT IDs. If necessary, remove the old device in Home Assistant, enable Auto Discovery & Clear IDs, save, and relearn the device.

Auto Discovery: enable this temporarily while adding devices and disable it afterwards. This prevents unwanted or neighbouring RF devices from being added automatically.

10.1 MQTT best practices

- Use a fixed hostname and DHCP reservation.
- Use unique MQTT client names when multiple RFX transceivers are present.
- Limit broker permissions to the required topics.
- After updates, check the add-on or broker log for authentication and discovery errors.
- Keep an export or screenshot of the configuration before major changes.

For all fields and Home Assistant steps, refer to the separate documents “RFX MQTT User Guide” and “RFX MQTT in Home Assistant” on the RFXCOM download page.

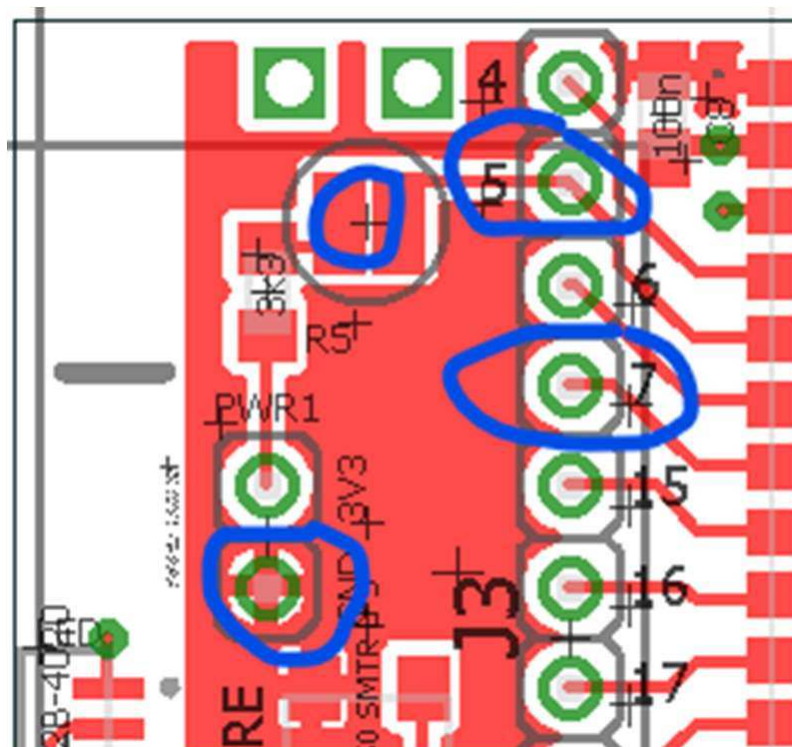
11. RFX-P1 and smart meters

The RFX can read P1 telegrams from supported smart meters via an RFX-P1 option board or a suitable RJ12 cable.

RJ12 pin	Signal	RFX connection
2	RTS/DR	IO7, of volgens metertype +5 V
3	GND	GND
5	RxD	IO5

Parallel P1 connection

When the RFX is connected in parallel with another P1 device, do not connect RTS/DR and do not use a 3.3 kΩ pull-up on IO5.



P1 connection points on the RFX board.

11.1 Serial parameters

Example meter	DSMR	ID	Baud rate	Format
Iskra ME382 / MT382	2.2	/ISK5	9.600	7E1
Iskra AM550	5.0	/ISK5	115.200	8N1
Kaifa / Landis+Gyr / Sagemcom	Depending on version	Check meter label	9.600 of 115.200	7E1 of 8N1

1. Connect the P1 connection before configuring the asynchronous port.
2. Open RFXmng and select the meter parameters.
3. Click Set Async Port.
4. With USB software, use a read interval of at least 30 seconds.
5. Check that telegrams appear without framing or parity errors.

12. Motors, blinds and special devices

12.1 Somfy RTS, ASA, Simu and TUBE

- Use RFY commands for Somfy RTS, ASA, Simu and supported TUBE motors.
- Add the RFX as an additional remote control according to the motor's learning procedure.
- Treat remote IDs as configuration data and create a list or backup before migration.
- For Somfy Centralis, use RFY2 commands when specified for the device.

12.2 Brel, Dooya and compatible motors

Type	Direction	Requirement
BlindsT6	One-way	RFX-433 of RFX-433EMC
BlindsT21 / DD27xx	Bidirectional	RFX-433EMC / EMC-functie
Dooya DT52E / DT82TV / DT82TN	Depending on model	Follow the specific learning procedure and channel layout

12.3 Cherubini and Ozroll

- Cherubini and Ozroll require EMC functionality.
- Check the permitted ID range and avoid duplicate IDs.
- Use ListIDS to check stored motor IDs when supported by the firmware.

12.4 Ventilation, extraction and heaters

- RFX-868 supports selected Orcon and Itho protocols, among others.
- RFX-433 supports selected Novy, Falmec, Siemens and other ventilation/extraction protocols.
- MCZ pellet stoves use Thermostat4. Test all commands under supervision and do not rely solely on RF for safety-critical control.

Mechanical safety

Make sure blinds, curtains, fans and other moving devices can move freely. Test learning and end positions while keeping the device in sight.

13. RAW data and diagnostics

RAW/undecoded mode is intended for protocol research and support. It increases the amount of data and may reduce normal reception quality.

- Enable undecoded/RAW only temporarily.
- Record the time, frequency, distance, device model and exact operating command.
- Make several captures per command and also a capture without operating the device.
- When requesting support, include the RFX version, hardware version and relevant log lines.
- Disable RAW mode again after the investigation.

Not a default setting

Use “undec on” only when requested by RFXCOM support or when deliberately analysing an unknown protocol.

14. Compatibility

The compatibility list is too large and dynamic to maintain reliably as a static table in a guide. This edition therefore uses a model- and protocol-oriented approach, with the current website as the authoritative source.

Category	Examples	Most common RFX
Switches and dimmers	KlikAanKlikUit/CoCo, Chacon, Intertechno, Nexa, X10	RFX-433 / RFX-433EMC
Weather sensors	Oregon, FineOffset, La Crosse, Hideki, Rubicson	RFX-433 / RFX-433EMC; some 868 models on RFX-868
Blinds and curtains	Somfy RTS, Brel, Dooya, Cherubini, Motionblinds, Gaposa	RFX-433EMC for the broadest support
Ventilation	Orcon, Itho, Novy, Falmec	RFX-868 or RFX-433EMC, depending on protocol
Security and doorbells	Byron, Meiantech, Visonic, selected smoke detectors	Depending on frequency and protocol

Check three things

Always check the frequency, exact protocol and whether reception, transmission or both are supported. A brand name alone is insufficient because different product series may use different protocols.

14.1 Meaning of compatibility codes

Code	Meaning
R	The RFX can receive signals from the device.
T	The RFX can send commands to the device.
RT	Both reception and transmission are supported.
Always active	The protocol cannot be disabled separately.

Use the Compatibility, Brands, Downloads and Examples pages on [rfxcom.com](https://www.rfxcom.com) for the current status and application examples.

15. Troubleshooting

Problem	Likely cause	Solution
No USB port	Charge-only cable, missing driver, hub problem	Use a data cable, install the CP210x/FTDI driver, test directly on the PC.
RFXmngmr cannot connect	Wrong COM port/IP/port or port in use	Close other software; check 38,400 baud for USB or TCP 10001 for network.
Red LED remains on	AP mode or WiFi cannot connect	Check SSID, password, range and debug output at 115,200 baud.
LAN address unknown	DHCP address not recorded	Read the address via USB debug or check DHCP leases in the router.
Poor range	Too many protocols, poor antenna placement, interference	Disable unused protocols, reposition the antenna, test another power supply.
No MQTT device	Discovery disabled, incorrect broker login, protocol inactive	Check broker log, unique client ID, Auto Discovery and protocol selection.
Entities missing after update	MQTT ID or entity type changed	Remove old device, Clear IDs/Discovery and relearn.
Motor does not respond	Wrong protocol/ID/channel or learning procedure not completed	Check model, frequency, remote ID and learning steps.
WiFi form appears not to save	Outdated firmware, invalid input or browser/form problem	Check the latest software, test with a Chromium browser, read the USB debug log at 115,200 8N1 and, if necessary, run Restore before configuring again.
Old configuration remains active after flashing	Settings are still stored in non-volatile memory	Only when necessary, perform a Restore/factory reset and reconfigure the network and protocols.
Many unknown/incorrect receptions	Too many receive protocols or RAW/undec active	Disable RAW/undec and enable only protocols that are actually required.

15.1 Diagnostic sequence

1. Check power, cable and LED status.
2. Check the model and installed software variant.
3. Read the version and startup log via USB.
4. Test locally via RFXmngmr or terminal before investigating home automation software.
5. Enable only one required protocol and test at short range.
6. Check the network, broker or integration only after the local test succeeds.
7. Collect logs, version numbers and steps before contacting support.

16. Safety, conformity and licence

16.1 Warnings

- Use the product only within the specified power and environmental conditions.
- Do not modify the antenna, RF output stage or transmit settings outside the permitted configuration.
- The device is not a replacement for certified alarm, fire, medical or safety control systems.
- Operate heating, stoves and moving systems only with suitable independent safety measures.
- Incorrect installation of expansion hardware may damage the product and affect conformity.

16.2 Conformity

The applicable EU Declaration of Conformity and product documentation are available from RFXCOM. Check the declaration specific to your model and hardware version.

16.3 Licence and copyright

RFXCOM software, firmware, images and documentation remain subject to the applicable RFXCOM licence and copyright terms. This revised guide was prepared as an editorial and layout update of the supplied RFX User Guide, supplemented with current public RFXCOM information.

16.4 Support information

Include with a support request	Example
Product and hardware version	RFX-433EMC, PCB V3
Software variant and version	For example USB V4052 or MQTT V4052
Connection	WiFi, fixed IP, local broker
Active protocol	BlindsT6
Device	Brand, exact model number, frequency
Log	Startup log and relevant received/transmitted packets

Current information

Downloads, firmware, guides, compatibility and examples: www.rfxcom.com

Revision history

Version	Date	Change
3.1	20 August 2026	Technical clarifications; RFX-868 updated to 8026; types 6/7 made explicit; power supply and MQTT Auto

Version	Date	Change
		Discovery clarified; additional WiFi/flash/RAW troubleshooting.
2.05	2026	Previous English source edition.
3.0	15 July 2026	Complete Dutch restructuring and new layout.
3.2	29 August 2026	Firmware updated to RFX-433/RFX-433EMC V4052 and RFX-868 V8028; official RFXCOM Firmware Updater replaces the old manual ESP web flasher procedure.

www.rfxcom.com

End of guide