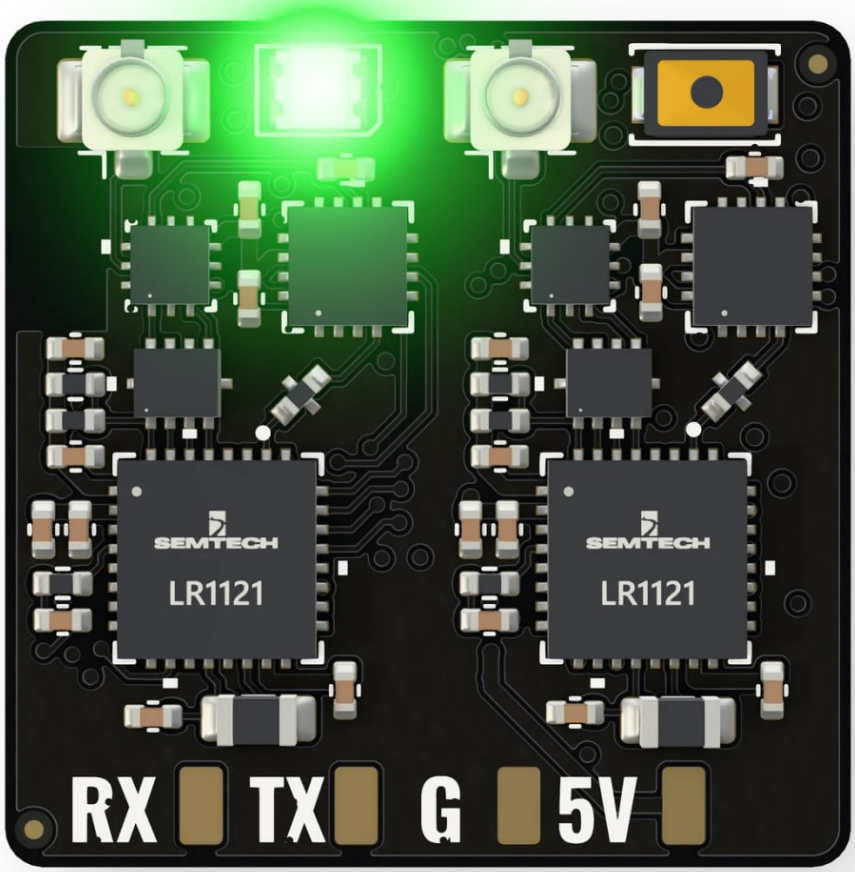
RC RECEIVER · FD-RX-GEMINI

Fiodel Gemini Dual-Band ELRS Receiver

Two LR1121 radios, 2.4 GHz and 900 MHz, true diversity on a 22 × 22 mm board.



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Before you start

> Plugs straight into the receiver sockets (J8 or J5) of the Fiodel F405 Flight Controller — same pinout as the Fiodel ELRS 2.4GHz Receiver.

> Both antennas in the box carry both bands: fit one to each socket. In Gemini Xrossband, radio A (J2) works on 900 MHz and radio B (J3) on 2.4 GHz.

> Gemini and Xrossband modes need a transmitter module that supports them (LR1121-based for Xrossband).

In the box

- Gemini dual-band receiver
- 2 × dual-band T antennas (2.4 GHz and 900 MHz) with U.FL plugs

Overview

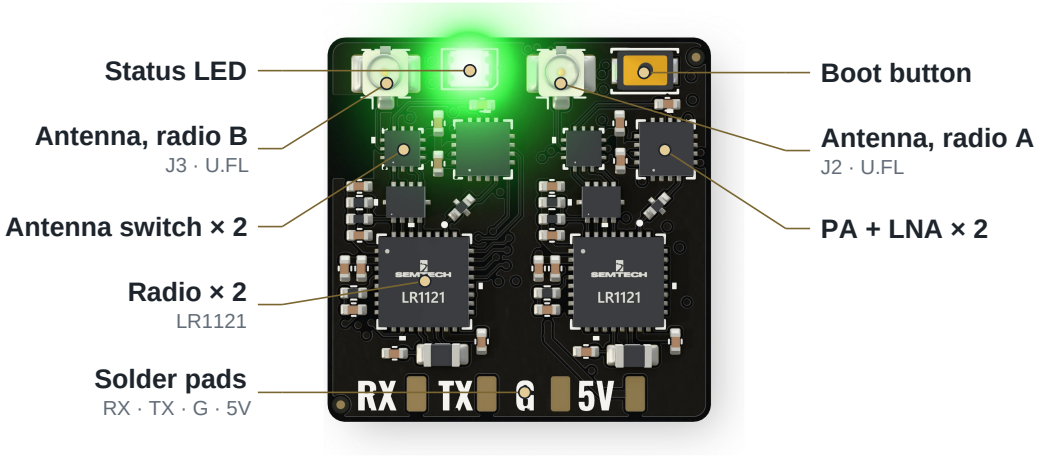
The Fiodel Gemini is a dual-band, true-diversity ExpressLRS receiver. Two Semtech LR1121 multi-band transceivers each drive their own antenna chain — a Skyworks RFX2401C PA/LNA and Johanson band-pass filter on 2.4 GHz, a Johanson integrated balun and harmonic filter on 900 MHz — joined onto one U.FL connector per radio by an SP3T RF switch.

With two complete radios it runs every ExpressLRS two-radio mode: Gemini on 2.4 GHz, Gemini on 900 MHz, and Gemini Xrossband with one radio on each band at the same time. Every single-band mode works too.

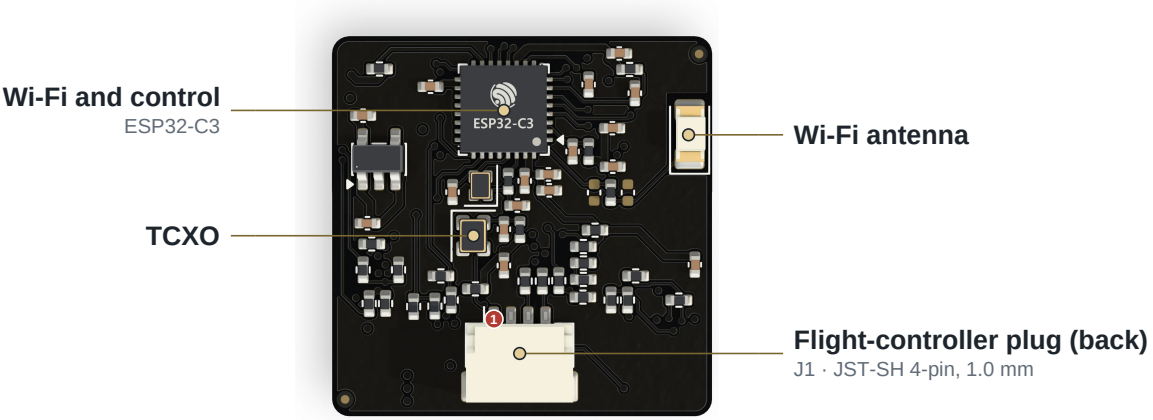
Both radios share one 32 MHz temperature-compensated oscillator. An ESP32-C3 runs the firmware and talks CRSF to the flight controller over a 4-pin JST-SH socket or four solder pads.

Layout

TOP SIDE



BOTTOM SIDE



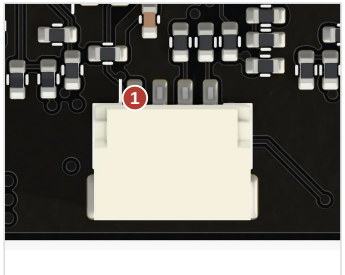
❶ Pin 1 of the socket: the pin tables count from here.

Connections

J1 — Flight-controller plug (back) JST-SH 4-pin, 1.0 mm

Betaflight connector-standard serial pinout, peripheral side.

PIN	SIGNAL	DETAIL
1	5 V in	
2	GND	
3	TX	Receiver -> flight controller RX
4	RX	Receiver <- flight controller TX



Bottom side · red 1 = pin 1

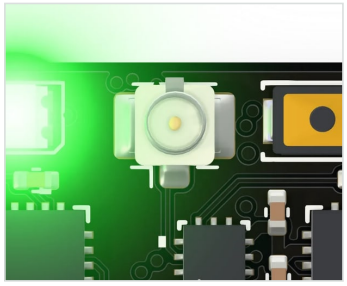
Pads — Solder pads (front) 4 pads

Same signals as the plug. Pads and plug are both fitted.

PIN	SIGNAL	DETAIL
5V	5 V in	
G	GND	
TX	TX	Receiver -> flight controller RX
RX	RX	Receiver <- flight controller TX

J2 — Antenna, radio A U.FL

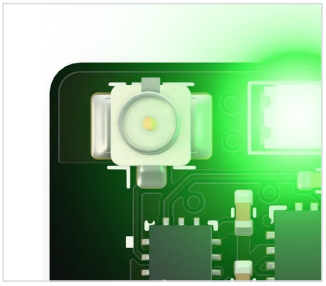
PIN	SIGNAL	DETAIL
RF	Radio A	900 MHz in Gemini Xrossband



Top side

J3 — Antenna, radio B U.FL

PIN	SIGNAL	DETAIL
RF	Radio B	2.4 GHz in Gemini Xrossband



Top side

Specifications

RADIO	
Protocol	ExpressLRS
Bands	2.4 GHz and 900 MHz
Transceivers	2 × Semtech LR1121
Modes	Gemini (2.4 GHz), Gemini (900 MHz), Gemini Xrossband (2.4 GHz + 900 MHz), all single-band modes
2.4 GHz front end	Skyworks RFX2401C PA + LNA and Johanson 2450FM07D0034 band-pass filter, per radio
900 MHz chain	Johanson 0900PC16J0042 balun, match and harmonic filter, per radio
Antenna switch	Skyworks SKY13373 SP3T, per radio

Radio reference	32 MHz TCXO, ±1.5 ppm, shared by both radios
Antennas	2 × U.FL, each carrying both bands of its radio

CONTROLLER

MCU	Espressif ESP32-C3FH4, Wi-Fi
Wi-Fi antenna	On-board chip antenna
Output	CRSF serial
Status LED	WS2812 RGB
Button	Boot

POWER

Input	5 V
Regulator	TI TLV75733 3.3 V LDO, 1 A
3.3 V rail load	About 0.15 A average, 0.35 A peak

BOARD

Size	22 × 22 mm
Construction	6-layer, 1.0 mm

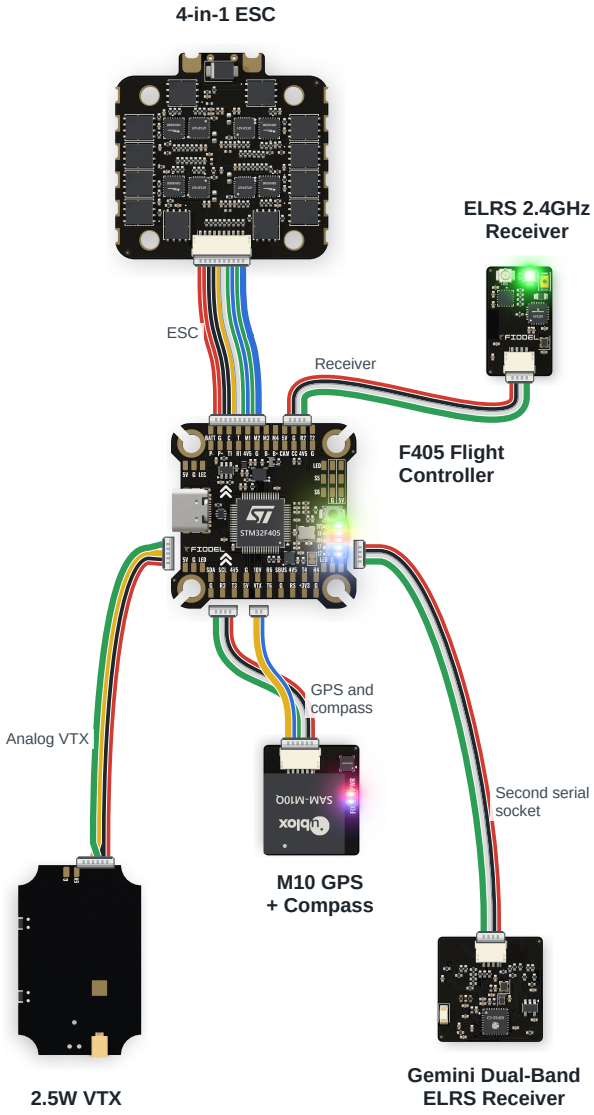
Firmware

Runs	ExpressLRS
Updating	It is updated over Wi-Fi, from the receiver's own page.

The board ships with its firmware flashed. The firmware file will be on fiodel.com/products/gemini-dual-band-elrs-receiver before the first boards ship.

How the range connects

Every Fiodel board plugs into the flight controller with its own cable, every wire on the pin it really joins. The flight controller is drawn from above, its sockets underneath along the edges its cables leave by; every board is at its true size.



ESC	10-pin cable, in the ESC's box
Receiver	4-pin cable, in the receiver's box
Second serial socket	Same plug as the receiver socket
GPS and compass	Y-cable, in the GPS's box: its 4-pin end to GPS, its 2-pin end to Compass
Analog VTX	10 V, ground, video and SmartAudio

Wire colours: red is power, black is ground, white is data into the flight controller, green is data out of it. Yellow and blue are a cable's other lines.

Setup guides

Step by step, on our site:

Binding a Fiodel ELRS Receiver
fiodel.com/guides/binding-a-fiodel-elrs-receiver

Questions

What is the difference between this and the ELRS 2.4GHz Receiver?
The ELRS 2.4GHz Receiver has one radio on one band. The Gemini has two complete radios that each work on 2.4 GHz and 900 MHz, so it can receive on two antennas, two frequencies or two bands at once.

Can I use it as a plain 2.4 GHz receiver?
Yes. It runs every single-band ExpressLRS mode as well as the two-radio modes.

Warranty and support

- 6-month warranty against manufacturing defects, serviced at our workshop in Gurugram. Terms: fiodel.com/warranty
- Returns within 7 days for wrong, damaged or dead-on-arrival items: fiodel.com/returns
- Questions: WhatsApp or call +91-9891446688, or write to contact@fiodel.com. 9am–6pm, Monday to Saturday.

This manual is made from the product's page: fiodel.com/products/gemini-dual-band-elrs-receiver always has the latest.