

AC180 RTL8812AU 5W + 4xAntenna 7.5db

User manual



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1. Product overview

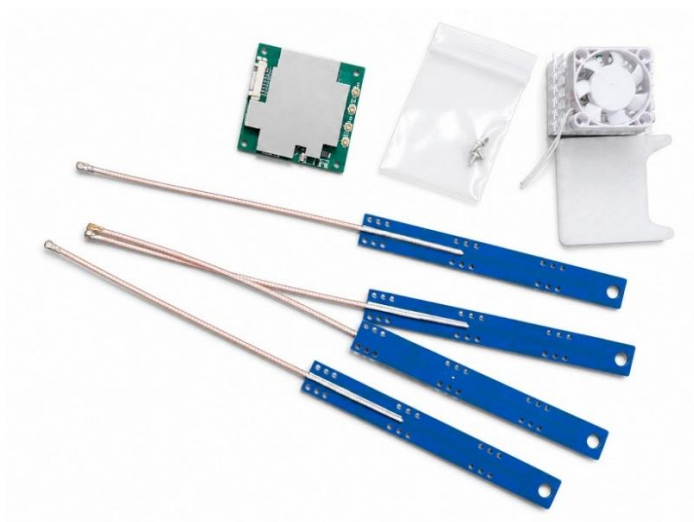


Fig.1. AC180 RTL8812AU 5W + 4xAntenna 7.5db

The AC180 is a high-power 5.8 GHz wireless FPV video and data transmission module built around the RTL8812AU chipset. It combines 5 W RF power amplifiers with four I-PEX Generation 1 antenna ports (2× RX, 2× TX) for use with the supplied 7.5 dBi antennas, and provides onboard voltage regulation to power an FPV camera and cooling fan directly from the module. The RTL8812AU module is a wireless network module based on the RTL8812AU chipset and equipped with high-power RF power amplifiers.

It is designed for network data transmission and can be used with FPV systems such as:

- RubyFPV
- OpenHD
- OpenIPC

The module supports two power-input methods.

VI/VIN power input

When the [VI/VIN] port is used as the power input:

- Input-voltage range: 8–31 V
- Integrated switching regulator: MP9447 or MP4470
- Auxiliary output: approximately 5.19 V at up to 1 A

The auxiliary output can be used to power compatible cooling fans, cameras, and other peripherals.

5V19 power input

The module can also be powered directly through the [5V19] port.

- Input-voltage range: 5.0–5.5 V

Do not apply power to both input ports unless this operating mode has been explicitly confirmed as safe.

2. Installation

Step 1: Connect the antennas

Connect one suitable 5–6 GHz antenna to each of the module's two antenna ports. Make sure both connectors are fully seated before applying power. Never power on the module with either antenna disconnected.

Step 2: Connect the cooling fan

Connect the cooling fan using the SH1.0 connector. Alternatively, solder the fan's power wires directly to the module's [F–] and [F+] pads:

- Connect [F–] to the fan's negative wire, which is usually black.
- Connect [F+] to the fan's positive wire, which is usually red.

Confirm that the fan is rated for 5 V operation and verify the polarity before powering on the module.

Step 3: Connect the USB data lines

Use three thin wires arranged as a twisted data cable to connect the module to the MC-L12B camera's USB 2.0 interface.

Make the following connections:

- Connect [D+] on the RTL8812AU module to [USB D+] or [DP] on the MC-L12B.
- Connect [D–] on the RTL8812AU module to [USB D–] or [DN] on the MC-L12B.
- Connect [USB GND] on the MC-L12B to the ground wire in the twisted data cable.

The ground wire helps provide a common reference and improves resistance to electromagnetic interference. Keep the USB data wires short and twist D+ and D– together to help maintain signal integrity.

Step 4: Connect the module's power output to the camera

Use two suitable power wires:

- Connect [5V] on the RTL8812AU module to the positive power-input terminal of the MC-L12B.
- Connect [GND] on the RTL8812AU module to the negative power-input terminal, or GND, of the MC-L12B.

Before making this connection, confirm that the MC-L12B supports a 5.19 V power input. Do not connect the module's 5.19 V output to a device that requires a different input voltage.

Step 5: Connect the input power supply

Use two suitable power wires:

- Connect [GND] on the RTL8812AU module to the negative terminal of the external power supply.
- Connect [VI/VIN] on the RTL8812AU module to the positive terminal of the external power

supply.

Verify the polarity and input voltage before switching on the power supply.

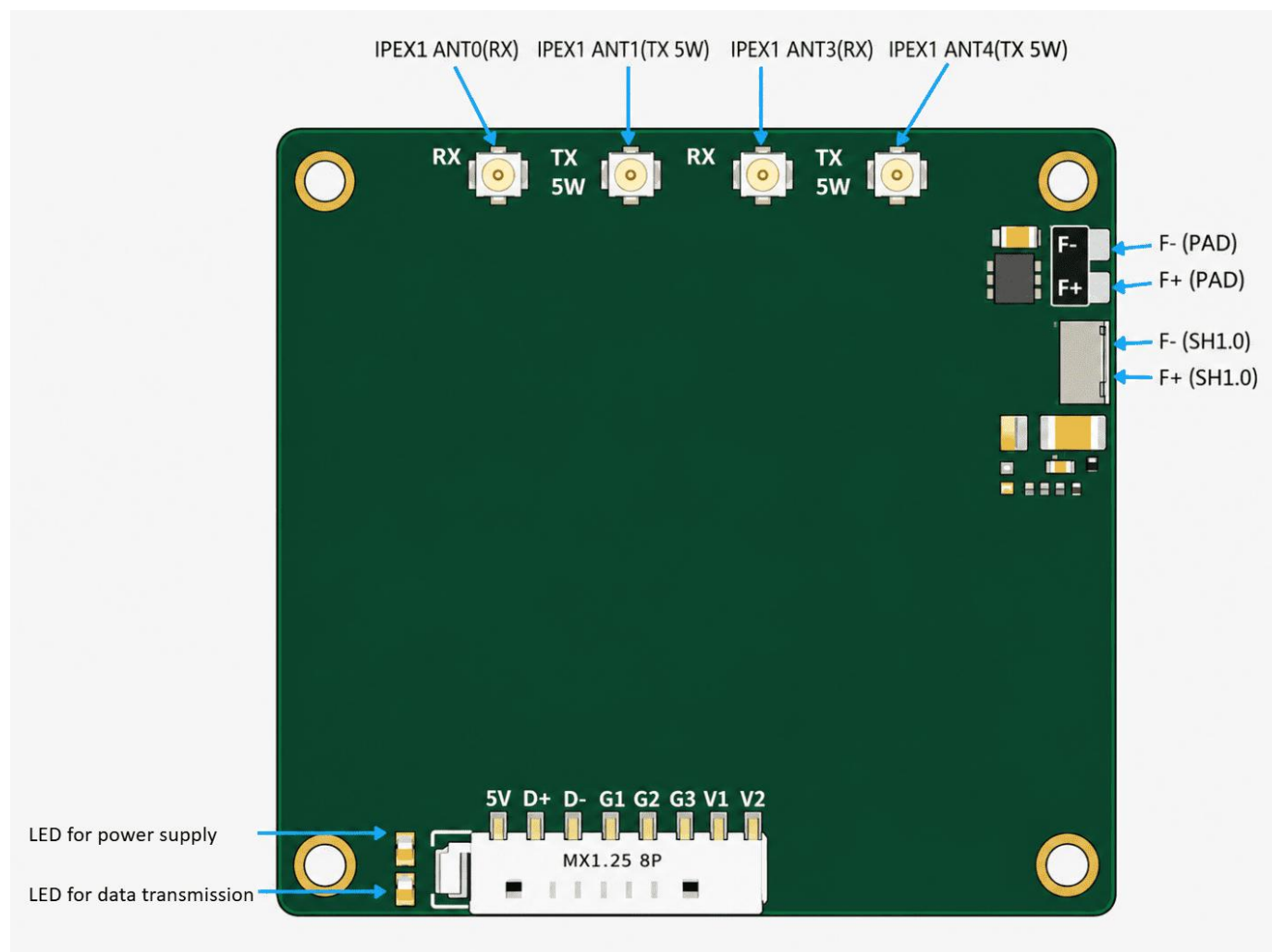


Fig.2. Wiring diagram

The diagram above shows the module's connector layout, referenced throughout the installation steps:

LED indicators: one LED shows power-supply status; the second LED shows data-transmission activity.

F-/F+ pads and SH1.0 connector: negative and positive terminals for the cooling fan, available both as solder pads and as a plug-in SH1.0 connector.

MX1.25 8P connector: 5V – auxiliary power output, approximately 5.19 V at up to 1 A; D+/D- – USB data lines; G1–G3 – ground; V1/V2 – VI/VIN power input, 8–31 V DC.

3. Safety warnings

1. Connect the antennas before applying power

Before powering on the module, connect suitable antennas to both antenna ports.

The antennas must:

- Operate within the 5–6 GHz frequency range.
- Have a voltage standing wave ratio (VSWR) of 2.0 or lower.

Never power on the module without properly connected antennas. Doing so may permanently damage the RF power amplifiers.

2. Provide adequate cooling

This high-power module generates considerable heat during operation. Proper cooling is essential. Apply a thermally conductive material—such as thermal grease, thermal gel, or thermal adhesive tape—to the gold-plated heat-dissipation areas of the module. Install an aluminium heat sink of approximately 30 × 40 × 11 mm and use a high-speed cooling fan. Insufficient cooling may cause overheating and permanent damage to the module.

3. Do not connect the module to a computer while it is powered through VI/VIN

When power is supplied through the module's [VI/VIN] input, the [5V] port outputs approximately 5.19 V. Under these conditions, never connect the module to the USB port of a computer or another USB host device. The module's 5.19 V output may feed power back into the USB port and permanently damage the connected device.

4. Disconnect the module before configuring the camera

Before connecting the MC-L12B camera to its network interface or an external power adapter for configuration, fully disconnect the RTL8812AU module from the camera — in particular, disconnect the module's [5V] output from the MC-L12B's power input. Otherwise, the camera's own power adapter may feed voltage back into the module's [5V] output, causing immediate and permanent overvoltage damage. Before reconnecting the module, disconnect the MC-L12B's external power adapter and confirm that no external voltage is present on the camera's power-input terminals.

Before every power-on, confirm that:

- Both antennas are securely connected and have a VSWR of 2.0 or lower.
- A suitable heat sink and cooling fan are installed.
- The cooling fan is rated for 5 V operation and correctly polarised.
- The input voltage is within the specified range and power polarity is correct.
- The USB data wiring is correct and the module is not connected to an externally powered USB host.
- No external voltage can feed back into the module's [5V] output.

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