Triple Feed Patch Array

GEPRC · directional 5.8 GHz antenna
Circular polarization LHCP / RHCP · Hybrid version



Read the entire manual before first use and keep it for future reference.

Rotorama, s.r.o. · www.rotorama.com

Contents

1. Product description

1.1 Intended use

1.2 Specifications and package contents

2. Use

2.1 Parts overview

2.2 Choosing the polarization and connecting

2.3 Positioning and aiming the antenna

2.4 Safety, care and storage

3. Information for the EU and Czech Market

3.1 Importer and responsible person in the EU

3.2 Disposal of electrical equipment

4. Warranty and rights arising from defective performance

1. Product description

1.1 Intended use

The **GEPRC Triple Feed Patch Array** is a directional, circularly polarized antenna for the **5.8 GHz** band. It connects to a video receiver – FPV goggles, a monitor or a ground station – and is used to receive the signal from the video transmitter (VTX) on a drone or aircraft. The antenna is an array of seven coupled patch elements, which gives it high gain but a narrow beam. It is therefore best suited to long-range flying in one direction; the manufacturer does not recommend it for general flying around the pilot.

This is the **Hybrid** version: on the back it has two SMA connectors, one for left-hand (**LHCP**) and one for right-hand (**RHCP**) circular polarization. You choose the polarization by the connector you attach the cable to; the unused connector is closed with a terminator. The antenna is based on the open TFPA-1 design (Open Source Hardware, CC BY-SA licence) by Maarten Baert and Robin Theunis.



Front (radiating) side of the antenna and the adapter cable

1.2 Specifications and package contents

Manufacturer	GEPRC
Product designation	GEPRC Triple Feed Patch Array 5.8G Antenna; printed on the antenna board: “Triple Feed Patch Array – 1, Hybrid” (TFPA-1)
Frequency band	5.8 GHz
Antenna type	directional, array of 7 coupled patch elements
Polarization	circular – LHCP or RHCP depending on the connector used
Gain	14 dBi
Standing wave ratio (VSWR)	< 1.22 at the centre frequency
Beam width (−3 dB)	30° horizontal and vertical
Impedance	50 Ω
Connectors on the antenna	2× SMA (LHCP and RHCP)
Board diameter	150 mm
Variants	SMA or RP-SMA adapter cable

※ According to the author of the design, the centre frequency may shift slightly between production batches; this is a property of the board material (FR4), not a defect.

▶ Package contents

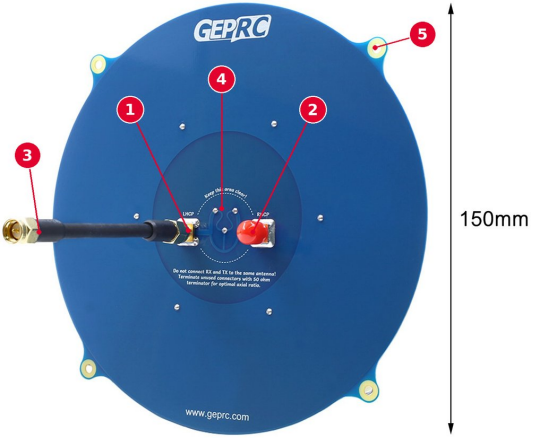
- 1× GEPRC Triple Feed Patch Array antenna
- 1× adapter cable – SMA or RP-SMA depending on the variant purchased
- 1× 50 Ω terminator

▶ Not included

- video receiver, FPV goggles or monitor,
- tripod, mount or screws for fixing the antenna,
- SMA to RP-SMA adapters and other cables.

2. Use

2.1 Parts overview



Back side of the antenna

① **LHCP connector** – left-hand circular polarization.

② **RHCP connector** – right-hand circular polarization; shown closed with the terminator.

③ **Adapter cable**, SMA or RP-SMA, for connecting the receiver.

④ **Antenna feed network** (“Keep this area clear!”) – this area must stay clear: do not cover it, do not stick anything on it and keep metal objects away from it.

⑤ **Mounting lugs** (4×) for fixing the antenna to a mount or tripod.

2.2 Choosing the polarization and connecting

① Find out the polarization of the antenna on the video transmitter (VTX) in your drone. **The receiving and transmitting antennas must have the same polarization** – RHCP with RHCP, LHCP with LHCP. With the opposite polarization the signal strength drops considerably.

② Screw the adapter cable ③ onto the connector of the matching polarization (① LHCP or ② RHCP).

③ Screw the **50 Ω terminator** onto the other, unused connector. Without the terminator, the quality of the antenna's circular polarization (axial ratio) is degraded.

④ Connect the other end of the cable to the antenna input of the video receiver. Tighten the nuts by hand only, gently – do not use pliers and do not overtighten the connectors.

⑤ To change the polarization, swap the cable and the terminator between the connectors.

Check whether your receiver has an SMA or an RP-SMA connector and choose the cable variant accordingly. SMA and RP-SMA connectors can be screwed together, but their centre contacts do not connect – the antenna will then not work.

Never connect a receiver and a transmitter to the same antenna at the same time (one to the LHCP and the other to the RHCP connector) – as the warning printed on the board says. If you use the antenna on the transmitter side, never switch the transmitter on without an antenna connected; it may be damaged.

2.3 Positioning and aiming the antenna

- The front side of the antenna (with the circular patterns, without connectors) must **face the drone**. The antenna receives almost no signal from behind.
- The antenna beam is narrow. Point it in the direction where you will be flying and re-aim it as needed during longer flights. Outside the beam the signal weakens quickly.
- If your receiver has several antenna inputs (diversity), it is a good idea to combine the directional antenna with an omnidirectional antenna covering the area around the pilot.
- Fix the antenna by its mounting lugs ⑤ to a stable mount or tripod, as high as possible and with a clear view towards the drone. There should be no obstacles between the antenna and the drone – buildings, trees, terrain, vehicles or people.
- Do not place the antenna right next to metal objects or other antennas. Do not bend the adapter cable sharply at the connector.

2.4 Safety, care and storage

- A longer video link range **does not entitle you to fly beyond visual line of sight or outside the rules**. The regulations of the country in which you fly apply – in particular the rules for drone operation and the permitted transmit power of the video transmitter.
- The antenna consists of two printed circuit boards at a precisely set distance. Do not bend or squeeze the boards and protect them from drops and impacts – a change in the distance shifts the operating frequency of the antenna.
- Protect the antenna from moisture, rain, dust and prolonged direct sunlight. Clean it with a dry soft cloth only – no solvents or water.
- Store it dry and flat, with nothing pressing on it and with the terminator screwed on.
- This product is not a toy. Keep it away from children – the small terminator could be swallowed.

3. Information for the EU and Czech Market

3.1 Importer and responsible person in the EU

The product is placed on the European Union market by the importer stated below, who is at the same time the responsible person within the meaning of Article 16 of Regulation (EU) 2023/988 of the European Parliament and of the Council on general product safety (GPSR).

Importer / responsible person in the EU	Rotorama, s.r.o.
Company ID (IČO)	051 57 692
VAT ID (DIČ)	CZ05157692
Registered office	Okrajová 1351, 674 01 Třebíč, Czech Republic
E-mail	info@rotorama.cz
Phone	+420 252 252 098
Website	www.rotorama.com

3.2 Disposal of electrical equipment



- The crossed-out wheeled bin symbol on the product, its packaging or in the documentation means that at the end of its service life the product **must not be disposed of together with mixed municipal waste**.
- Hand it over at a take-back point for electrical equipment – at a collection yard, at a take-back point of a collective system, or at the retailer when purchasing a new equivalent product. Take-back is free of charge for the end user.
- The obligations under Act No. 542/2020 Coll., on end-of-life products, are fulfilled by the importer through a collective take-back system.
- Proper disposal helps prevent negative impacts on the environment and human health and contributes to the reuse of secondary raw materials.

Through its contractual partner **ASEKOL a.s.**, the company ensures the take-back of waste electrical equipment from households and the separate collection of waste electrical equipment, batteries and accumulators in accordance with the applicable legislation. The customer is entitled to hand over old electrical equipment or a battery or accumulator at any collection point of the above contractual partner. The addresses of these take-back points are listed at www.asekol.cz, www.ecobat.cz and also https://visoh2.mzp.cz/RegistrMistZO/RegistrMistZOPublic/MapaMistZpetOdberu.

4. Warranty and rights arising from defective performance

The rights and obligations of the contracting parties are governed by Czech law, in particular by Act No. 89/2012 Coll., the Civil Code, and Act No. 634/1992 Coll., on consumer protection.

- The seller is liable to the buyer for the product being free of defects on receipt. If the buyer is a consumer, a defect may be notified **within two years of receipt** of the product (Section 2165 of the Civil Code).
- If a defect appears within **one year** of receipt, the product is deemed to have been defective already at the time of receipt (Section 2161(5) of the Civil Code).
- When purchasing online, a consumer has the right to **withdraw from the contract within 14 days** of receiving the goods without giving a reason (Section 1829 of the Civil Code).
- Claims should be made with the retailer from whom you purchased the product. The importer's contact details are given in Chapter 3.1.
- The competent body for out-of-court settlement of consumer disputes is the **Czech Trade Inspection Authority**, Štěpánská 796/44, 110 00 Prague 1, www.coi.cz.