VAS Avenger

5.8 GHz RHCP directional antenna
User manual



Read this manual carefully before first use and keep it for future reference.

www.rotorama.com

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1. Product description

1.1 Intended use

VAS Avenger is a directional antenna for the **5.8 GHz** band with **RHCP** circular polarization, made by the American antenna manufacturer Video Aerial Systems (VAS). It is designed for long-range flying and, thanks to its low weight, can be comfortably mounted directly on FPV goggles or on a video receiver with an SMA input.

According to the manufacturer, the Avenger builds on the patented technology of the Crosshair Xtreme antenna, extended with a parasitic waveguide that increases gain and improves the axial ratio. The manufacturer recommends combining the Avenger in a **diversity** setup with an omnidirectional antenna (e.g. VAS Ion Pro or Mad Mushroom): the directional antenna extends range and helps the signal “punch through” obstacles such as trees and buildings, while the omnidirectional antenna maintains all-around coverage for recreational flying.



VAS Avenger antenna – front (radiating) side

1.2 Specifications and package contents

Parameter	Value
Manufacturer	Video Aerial Systems (VAS), USA
Product designation	5.8GHz Avenger – RHCP (manufacturer code 580015R)
Frequency band	5.8 GHz
Antenna type	directional
Gain	12.5 dBic
Polarization	RHCP (right-hand circular)
Axial ratio	0.99
Flight beam width	80°
−3 dB point	±25° from the antenna axis
Connector	SMA

▶ Package contents

- 1× VAS Avenger 5.8 GHz RHCP antenna
- 1× 45° SMA angle adapter (elbow)

▶ Not included

- FPV goggles or video receiver,
- an omnidirectional antenna for the diversity setup,
- a video transmitter (VTX) or antenna for the drone.



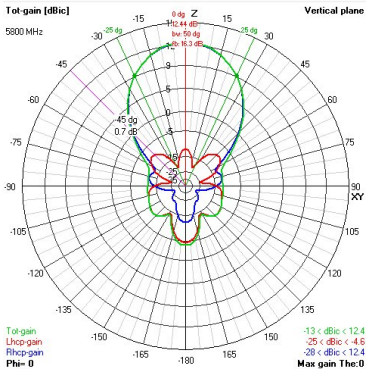
Rear side of the antenna with the SMA connector

2. Use

2.1 How a directional antenna works

Unlike an omnidirectional antenna, the Avenger receives the signal mainly from one direction – from the space in front of its front face. A gain of 12.5 dBic means that in this direction it picks up a considerably stronger signal than an omnidirectional antenna, but outside it the sensitivity drops quickly.

- The manufacturer specifies a usable flight beam width of **80°**.
- The **−3 dB** point lies **±25°** from the antenna axis – at this angle the gain drops to half of the maximum.
- Behind the antenna and to its sides, reception is weak. A drone that leaves the beam must be picked up by the second (omnidirectional) antenna.



Radiation pattern of the antenna in the vertical plane at 5800 MHz (according to the manufacturer). Green curve – total gain, blue – RHCP component, red – LHCP component.

2.2 Mounting on goggles or a receiver

① Switch off the goggles (receiver) and disconnect the power.

② Check that the receiver has an **SMA** socket. RP-SMA connectors look similar but are not compatible – an incorrect connection can damage the center contact.

③ Screw the antenna onto the receiver input **by hand only**, without pliers or wrenches. Do not overtighten the connector – it is enough to tighten it so that the antenna does not come loose.

④ If you need to angle the antenna (e.g. because of the shape of the goggles or the position of the second antenna), insert the supplied **45° SMA angle adapter** between the receiver and the antenna.

⑤ Point the front side of the antenna (the rounded side with the logo) **forward, in the direction of flight**. The board with the SMA connector is the rear side and

faces the receiver.

2.3 Diversity setup

If the receiver has two antenna inputs (diversity), connect the Avenger to one of them and an omnidirectional antenna to the other. The receiver then automatically selects the stronger signal: at long distances in front of the pilot the Avenger does the work, close by and behind the pilot the omnidirectional antenna takes over.

- All antennas in the transmission path must have the **same polarization**. The Avenger is **RHCP** – therefore also use RHCP antennas on the drone's video transmitter (VTX) and as the second antenna on the goggles. With mismatched polarization (RHCP × LHCP) the signal is significantly attenuated.
- Position both antennas so that they do not mechanically interfere with or shade each other.

2.4 Flying with a directional antenna

- Before take-off, decide in which direction you will fly and face so that the drone stays within the beam in front of the antenna. With the antenna on the goggles, the antenna turns with the pilot's head.
- When flying around the pilot or behind the pilot's back, the omnidirectional antenna takes over reception – keep this in mind and do not fly too far away in these directions.
- If the image starts to break up, turn towards the drone and turn the drone back.

2.5 Warnings and care

- The antenna is intended for **receiving** the signal on the goggles or ground station side.
- If you connected the antenna to a video transmitter, the antenna gain would count towards the radiated power (e.i.r.p.). In the Czech Republic, a maximum of 25 mW e.i.r.p. is permitted in the 5725–5875 MHz band (CTU general authorization VO-R/10). Outside the Czech Republic, the limits of the country in which you operate the product apply. The user is responsible for compliance with the limits.
- Protect the antenna from drops, impacts and bending stress on the connector – an antenna attached to goggles acts as a lever on the receiver connector.
- Protect the antenna from moisture and dirt. Wipe a dirty surface with a dry, soft cloth; do not use solvents. Keep the SMA connector clean; after use, store the antenna so that the connector is not under load.

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



- 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.