



Four-Element CRPA Antenna

For Reliable GPS and GNSS Connectivity in Hostile Environments

FEATURES

- M-Code-capable with GPS L1 / L2 coverage
- Galileo, and Compass also supported
- Compact size and low weight for easy installation on new and existing platforms
- Designed for platforms requiring interference mitigation but with stringent antenna SWaP requirements

APPLICATIONS

- Fixed-wing aircraft
- Rotary-wing aircraft
- Ground vehicles
- Unmanned aerial vehicles

Background

Global Positioning System (GPS) and Global Navigational Satellite System (GNSS) connectivity is becoming increasingly important for maintaining position, navigation, and timing accuracy on airborne and ground vehicle platforms. Satellite signals are relatively weak and reception is highly susceptible to interference. Controlled Reception Pattern Arrays (CRPAs) can help mitigate the impact of interference on GNSS connectivity when operated with compatible Antenna Electronics.

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4- and 7-Element CRPA Antenna Family

Description

The **CRPA-3-4-GIAS-01** antenna is a compact array of four (4) wideband antenna elements designed to receive GPS and GNSS signals. Small size and low weight make this antenna ideal for size, weight, and power (SWaP) constrained platforms as well as for platform upgrades and retrofits.

The wideband antenna elements offer M-Code-capable GPS reception within the GPS L1 and L2 bands as well as coverage for Galileo, and Compass signals. Additional covered bands include GPS L1 / L2 / L5, L1 / L2 / L3 / L5, Galileo E1 / E5a / E5b / E6, and Compass B1 / B2 / B3.

Each passive antenna element within the **CRPA-3-4-GIAS-01** provides hemispherical reception coverage within all operating bands. The antenna elements are each quadrature fed at four points for Right Hand Circular Polarization (RHCP) reception. Compared with typical “turnstile”-fed elements, the four-point feeding method enables more consistent reception coverage across the sky and reduced performance variation versus frequency and temperature.

This rugged antenna is designed to withstand harsh environmental conditions including direct effects lightning, high-speed rain erosion, solar radiation, temperature variations, mechanical shock, and vibration.

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Consult TE for the latest dimensions and design specifications.

North America +1 800 522 6752 • Asia Pacific +86 0 400 820 6015 • France +33 1 34 20 86 86 • Germany +49 6251 133 1999 • United Kingdom +44 800 267 666
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Specifications

ELECTRICAL

- **Frequency Bands:**
GPS L1: 1575.42 MHz $\pm$ 12 MHz
GPS L2: 1227.60 MHz $\pm$ 12 MHz
Wideband: 1150 – 1650 MHz
- **VSWR:** < 2.0:1
- **Polarization:** Predominantly RHCP
- **Gain Tracking:** < $\pm$ 1 dB within GPS L1 / L2 bands
- **Element-to-Element Isolation:** > 15 dB within GPS L1 / L2 bands

MECHANICAL

- **Dimensions:** 4.13 inch (105 mm) diameter x 1.17 inch (30 mm) height, excluding connectors
- **Weight:** 0.88 lbs (400 grams)
- **Connectors:** Four (4) SMA female connectors meet MIL-STD-1472G Human Factors Engineering requirements
- **Mounting:** Four (4) holes equally spaced on a 3.575 inch (90.8 mm) diameter

ENVIRONMENTAL

- **Mechanical Vibration:** MIL-STD-810G, Method 514.6, Procedure I, Random Vibration, Category 12 (Jet Aircraft)
- **Mechanical Shock:** MIL-STD-810G, Method 516, Procedure I, 20g, terminal sawtooth, 10 μ s duration
- **Temperature:** MIL-STD-810G, Method 503.5, Procedure I-C, -55°C to +85°C
- **Altitude:** MIL-STD-810G, Method 500.5, Procedure II, Operational limit = 50,000 feet
- **Humidity:** MIL-STD-810G, Method 507.5, Procedure I, 95% relative humidity, non-condensing
- **Lightning:** RTCA / DO-160G, Section 23, Category 1A
- **Rain Impact:** MIL-STD-810G, Method 506.6, Procedure I, Rate = 1 in/hr, 885 mph (700 knots), 1 minute duration
- **Rain Erosion:** MIL-STD-810G, Method 506.6, Procedure I, Rate = 1 in/hr, 500 mph (435 knots), 5 minute duration
- **Solar Radiation:** MIL-STD-810G, Method 505.4, Procedure II, Cycle 1A, Steady State

Ordering Information

Description	Part Number
CRPA-3-4-GIAS-01	EG4466-000