

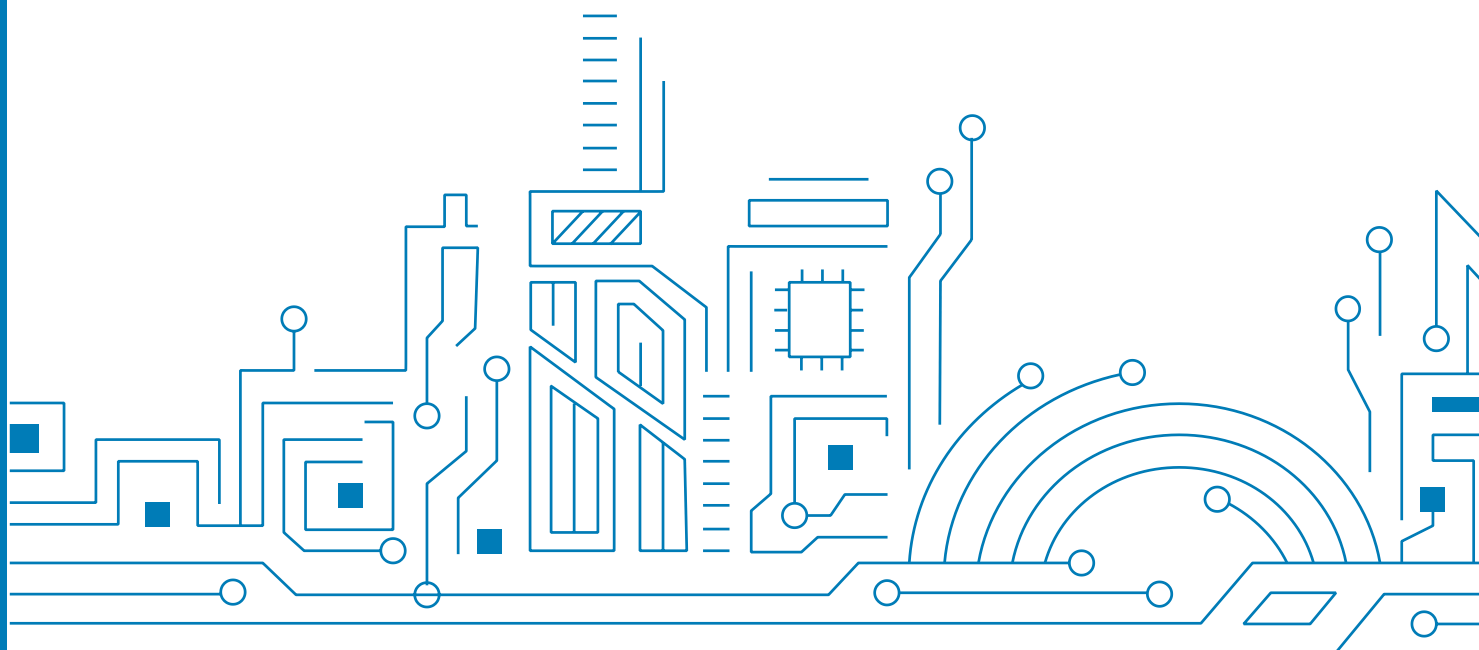


华大北斗  
ALLYSTAR

# Dual-band External Active Antenna

## AGR6116

### Datasheet V1.0



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## 1 PRODUCT OVERVIEW

### 1.1 General description

GNSS antennas are a critical but often overlooked part of a receiver setup. Choosing a correct antenna is hugely important since antennas are the main interface between the GNSS space segment and the user, as they capture the L-band signal transmitted by satellites. Antenna must be able to convert the energy in the electromagnetic waves arriving from the satellites into an electric current that is further processed by the receiver. Given that signals received from GNSS satellite are weak and arriving from any direction, it is clear that choosing the correct antenna is imperative. Choosing the optimal GNSS antenna for the application will maximize GNSS receiver's positioning performance.

The AGR6116 active antenna are use Allystar's unique technology to achieved GNSS dual band system operation, that can covering the GPS L1, BeiDou B1 and GPS L5 frequency band. In order to meet simple foot print layout on main board and low cost demand, Allystar use stack with one feed pin of antenna to generate two frequency mode, which are still shows the low axial ratio and RHCP polarization radiation performance. (The operation band of patch element can be choosing by customer demand)

In order to increase GNSS radio frequency sensitivity and signal noise ratio, AGR6116 uses a LNA+ Dual SAW+PD+LNA diagram, which provides excellent noise figure and high gain that is constant across the full frequency band. The final output with the SMA female connector, it's easy to fit together with RF cable.

The AGR6116 active antenna has portable and dual band features, which can use on tracker, navigation device and autonomous vehicles.

### 1.2 Features

- One pin feed in
- low AR
- Support dual band system
- Multi-band GNSS reception
- LNA gain: 28 dB typ.
- High rejection SAW filter
- Low noise figure  $\leq 2$ dB
- General position

### 1.3 Product image

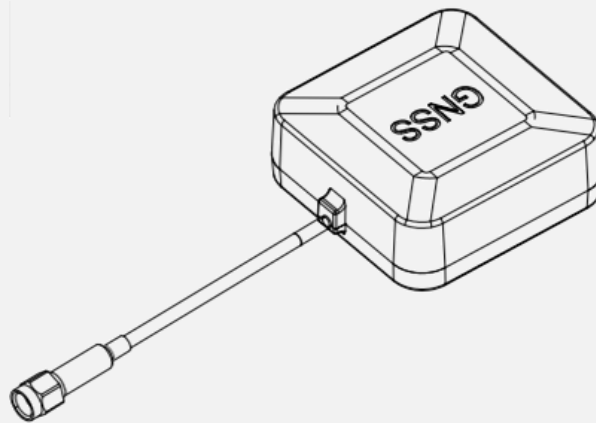


Figure 1 Product image

### 1.4 Block diagram

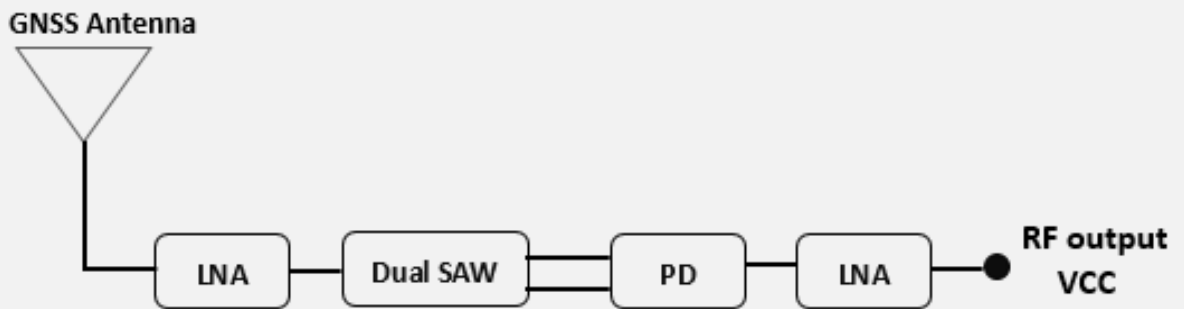


Figure 2 Block diagram

## 2 SPECIFICATIONS

### 2.1 Antenna performance

**Table 1 Antenna performance**

| Parameter            | Specification   |
|----------------------|---|
| Support system       | GPS: L1, L1C, L5C<br>BDS: B1I, B1C, B2a<br>Galileo E1, E5a<br>QZSS: L5<br>IRNSS: S-L5 |
| Antenna architecture | One pin feed  |
| Antenna dimension    | 25x25x4mm for higher band<br>35x35x4mm for lower band                                 |
| Polarization         | RHCP  |
| Axial ratio          | Max 3.0dB@zenith  |
| Antenna peak gain    | 2.68dBi for higher band (with35x35mm GND)<br>1.98dBi for lower band (with35x35mm GND) |

### 2.2 RF performance

**Table 2 RF performance**

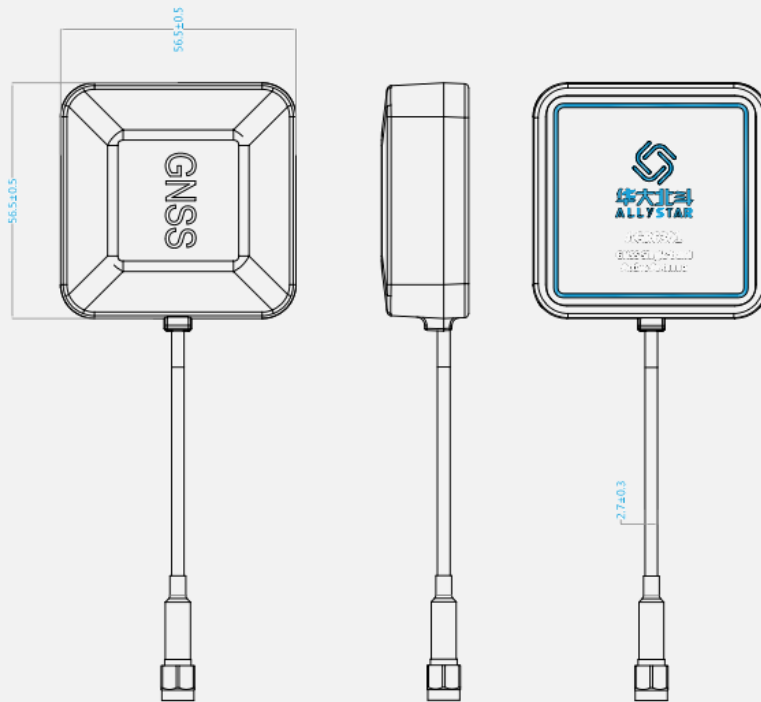
| Parameter          | Specification                            |                     |
|--------------------|--|---------------------|
| LNA gain           | 28 dB typ. at all operation band on 3.3V |                     |
| Noise figure       | ≤2dB                                     |                     |
| Output SWR         | <2.5                                     |                     |
| Output impedance   | 50 Ohm                                   |                     |
| Out-band rejection | Higher band                              | In-band ±50MHz>30dB |
|                    | lower band                               | In-band ±50MHz>30dB |
| Support voltage    | 2.5-5.5V / 3.3V typ.                     |                     |
| Power consumption  | <15mA at 3.3V                            |                     |
| ESD protection     | 10kv air discharge                       |                     |
|                    | 4kv contact                              |                     |

### 2.3 Mechanicals and environment

**Table 3 Mechanicals and environment**

| Parameter             | Specification                         |
|-----------------------|---------------------------------------|
| Dimension             | Diameter 56.7mm x 56.7mmx Height 21mm |
| Operation temperature | -40° to +85°                          |
| Relative humidity     | 40% to 95%                            |
| Environment           | ROHS and REACH                        |

### 3 MECHANICAL SPECIFICATION



Unit:mm

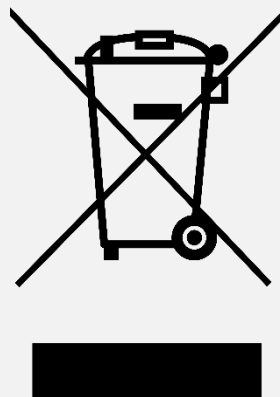
Figure 3 Mechanical specification

### 4 PRODUCT HANDLING

#### 4.1 Disposal information

This device must not be treated as household waste.

For more detailed information about recycling electronic components contact your local waste management authority.





## 5 ORDERING CODES

Table 4 Ordering codes

| Ordering Number   | Category                       | GNSS     |     |         |       | Features     |
|-------------------|--------------------------------|----------|-----|---------|-------|--------------|
|                   |                                | GPS/QZSS | BDS | Galileo | IRNSS |              |
| AGR6116-3540AA0-A | Active antenna with housing    | ✓        | ✓   | ✓       | ✓     | L1 + L5 band |
| AGR6116-3540AA0-B | Active antenna without housing | ✓        | ✓   | ✓       | ✓     | L1 + L5 band |

## 6 REVISION HISTORY

| Revision | Date       | Author | Status / Comments             |
|----------|------------|--------|-------------------------------|
| V1.0     | 2020-10-30 | Toby   | Start version, first released |
|          |            |        |                               |
|          |            |        |                               |
|          |            |        |                               |
|          |            |        |                               |
|          |            |        |                               |
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