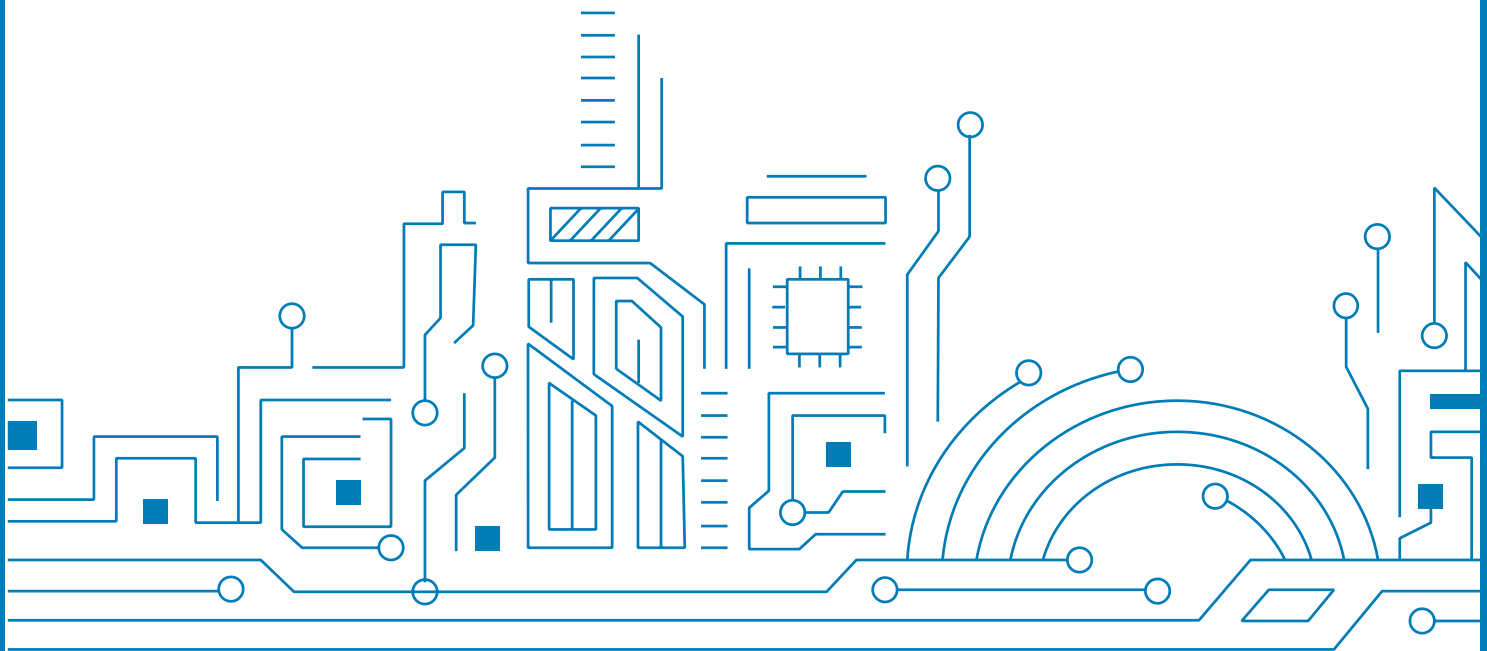
华大北斗
ALLYSTAR

# High Precision Multi-band Active Antenna

## AGR6302 AGR6303

Datasheet V1.1



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# 1 PRODUCT OVERVIEW

## 1.1 General description

With the demands for high precision position, it increases the needs of received GNSS satellites' number, making the trend of receiving multi-band GNSS system. Choosing a correct antenna is hugely important since antennas are the main interface between the GNSS space segment and the user, especially on multi-band system.

ALLYSTAR Active Antenna AGR6302/AGR6303 is designed by unique technology, covering GPS, BDS, Galileo, GLONASS, IRNSS and QZSS system, details please refer to table 1. The antenna features stable signal quality and more angle receiver on the practical conditions. It employs the stack four feeds antenna architecture with hybrid to achieve the multi-band operation/ lower axial ratio/wider half power beam width and excellent right hand circular polarization.

With the newly architecture, the active part has two stages, one level filter and also one LNA for respective lower/higher band path. And then, the combiner of dual filter and the second level LNA output the RF gain to receiver. It provides excellent noise figure/ RF linear and LNA gain and out band rejection, resulting in good signal/noise ratio and anti-interference.

It is housed in a compact, industrial-grade waterproof mount enclosure, the antenna can be installed almost anywhere allowing for greater flexibility. Using SMA connector fit together with GNSS module or receiver to show the dual band RTK performance.

## 1.2 Features

- Support GPS, Beidou, Glonass and Galileo system
- Support dual band RTK application
- Great axial ratio: over full bandwidth
- Wide 3dB beam-width
- High rejection for out-band interference
- Lower noise figure
- Provide stable signal/noise ratio
- Waterproof enclosure (IP67)

## 1.3 Product image

Figure 1 Product image

## 1.4 Block diagram

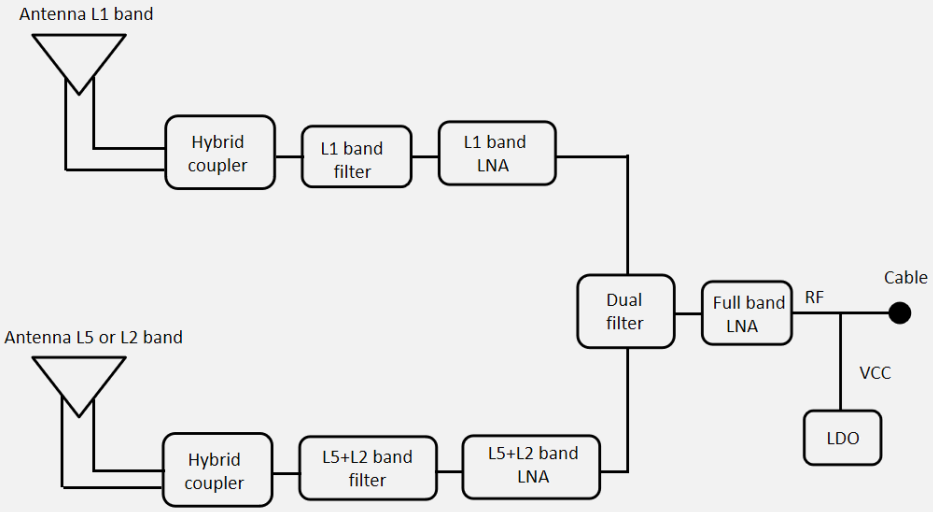



Figure 2 Block diagram

# 2 SPECIFICATIONS

## 2.1 Antenna performance

**Table 1 Antenna performance**

| Parameter | Specification | |
|---|---|---|
| Support system | AGR6302 (L2 version) | GPS: L1, L2C<br>BDS: B1I, B1C, B2I<br>Galileo: E1, E5b<br>GLONASS: L1<br>QZSS: L1-C, L2C |
| | AGR6303 (L5 version) | GPS: L1, L1C, L5C<br>BDS: B1I, B1C, B2a<br>Galileo E1, E5a<br>GLONASS: L1<br>QZSS: L5<br>IRNSS: S-L5 |
| Antenna architecture | Stack four feed | |
| Antenna dimension | 41x41x4mm for higher band<br>47x47x7mm for lower band | |
| Return loss | Under -10dB for operation band | |
| Polarization | RHCP | |
| Axial ratio | <3dB on sky face | |
| Antenna peak gain | 3.5dBi for higher band (with 100x100mm GND)<br>3dBi for lower band (with 100x100mm GND) | |
| 3dB beam width | 100° on X-Z/Y-Z plane for higher band<br>100° on X-Z/Y-Z plane for higher band | |

## 2.2 RF performance

**Table 2 RF performance**

| Parameter | Specification | |
|---|---|---|
| LNA gain | 25 +/- 2 dB at all operation band on 3.3V | |
| Noise figure | ≤2.5dB | |
| Output SWR | <2 | |
| Output impedance | 50 Ohm | |
| Out-band rejection | Higher band | In-band ±80MHz>40dB |
| | lower band | In-band ±80MHz>40dB |
| Support voltage | 3-5V / 3.3V typ. | |
| Power consumption | <20mA at 3.3V | |
| ESD protection | 10kv air discharge<br>4kv contact | |

## 2.3 Mechanicals and environment

**Table 3 Mechanicals and environment**

| Parameter | Specification |
|---|---|
| Dimension | 67.85 x 67.85 x 25mm$^3$ |
| RF cable | RG174 3M SMA(M) 180° (customization) |
| Operation temperature | -40° to +85° |
| Relative humidity | 40% to 95% |
| Mounting | Adhesive mount |
| Weight | 176g |
| Water proof | IP67 |
| Environment | ROHS and REACH |

# 3 MECHANICAL SPECIFICATION

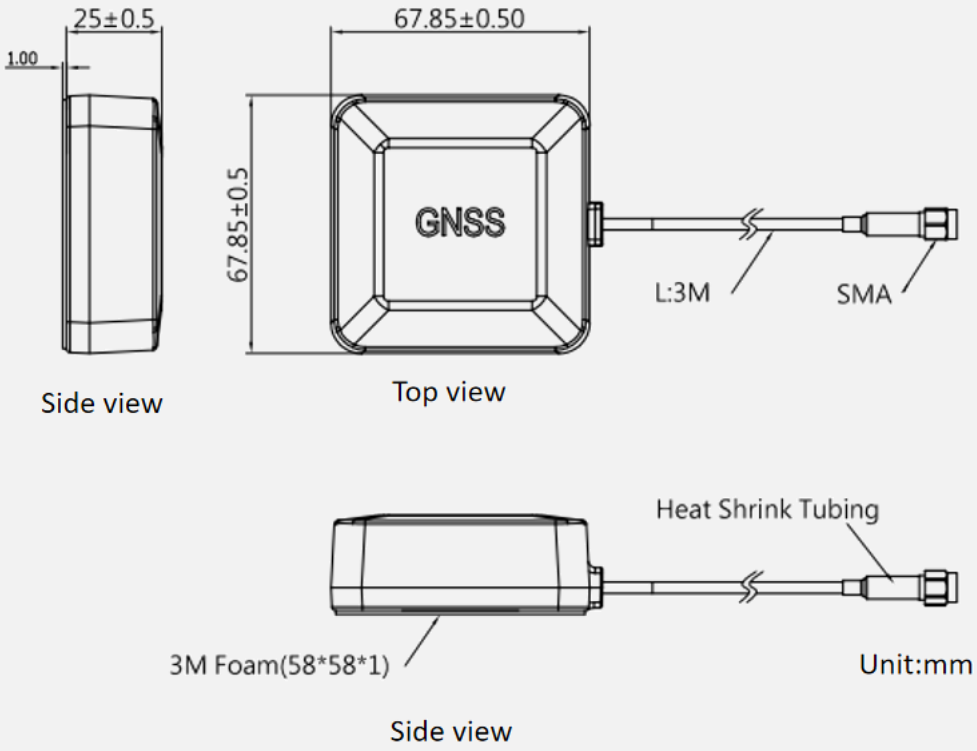


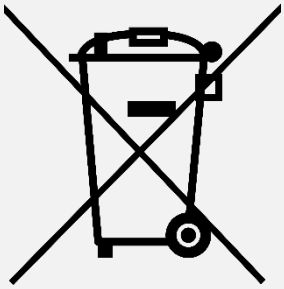

**Figure 3 Mechanical specification**

# 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 | GLONASS | Galileo | IRNSS | |
| AGR6302-Ant9100 | Active antenna | ✓ | ✓ | ✓ | ✓ | -- | L1 + L2 band |
| AGR6303-Ant9100 | Active antenna | ✓ | ✓ | ✓ | ✓ | ✓ | L1 + L5 band |

# 6 REVISION HISTORY

| Revision | Date | Author | Status / Comments |
|---|---|---|---|
| V1.0 | 2018-12-03 | Daisy | Start version, first released |
| V1.1 | 2019-01-09 | zhongyl | page 5 / 1.3; Page 6.7; product image |
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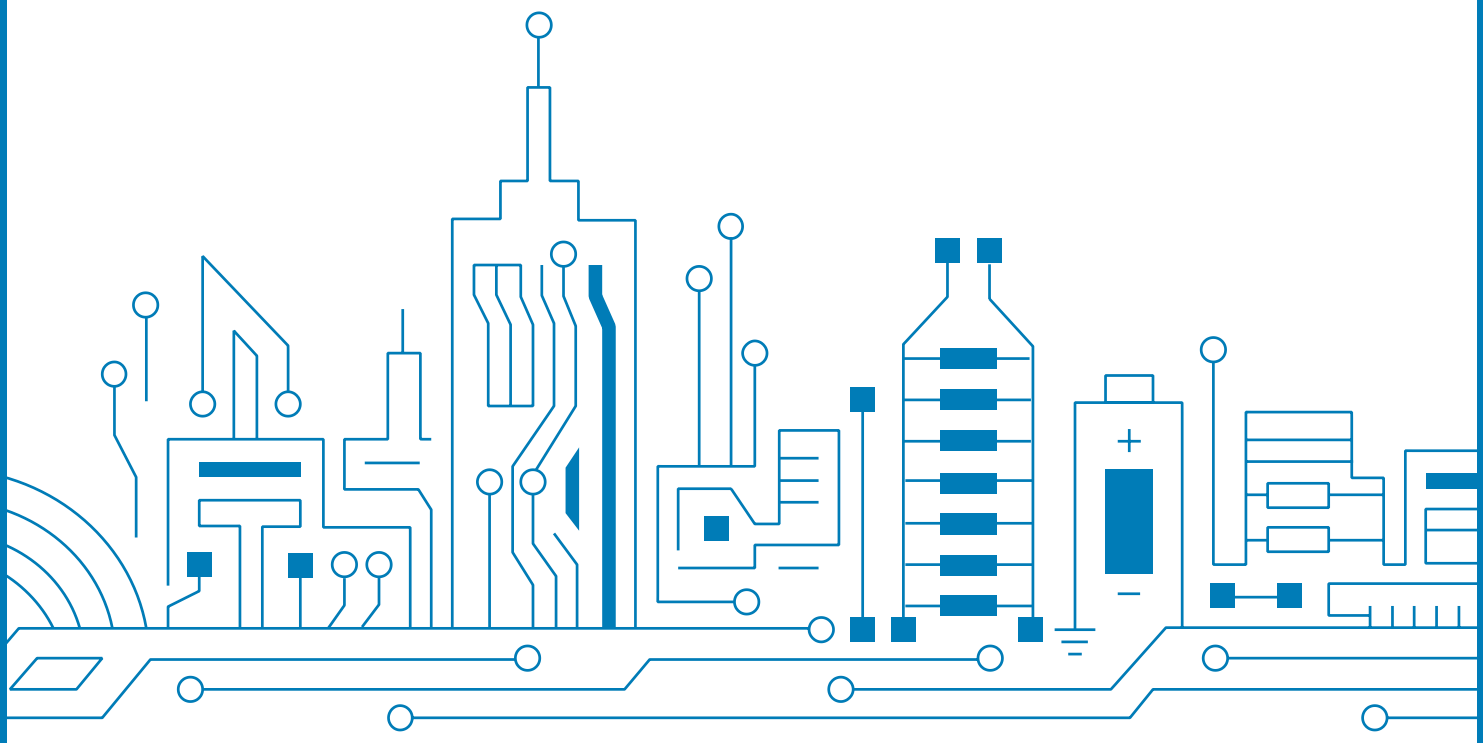

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