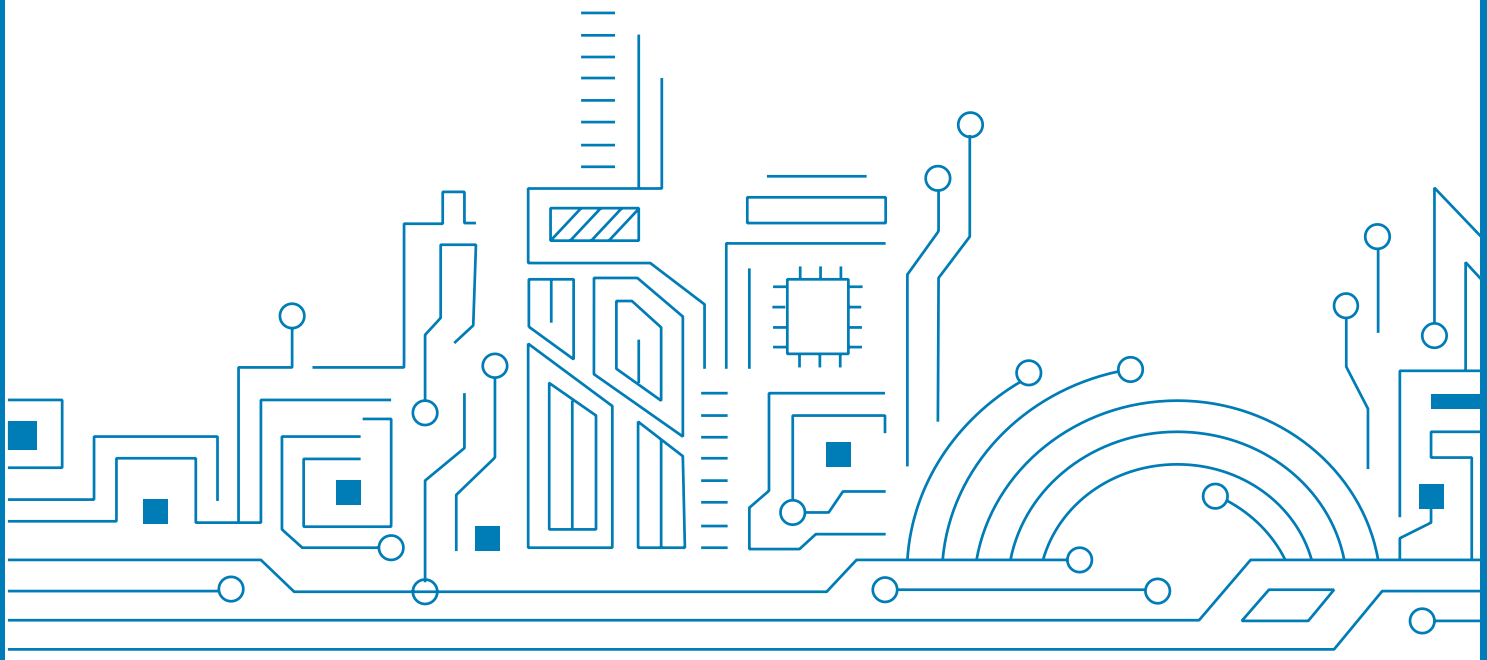
High Precision Multi-frequency Active Antenna

AGR6302 AGR6303

Datasheet V1.4



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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-frequency 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-frequency 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-frequency 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, two level LNA, and also one filter for lower band, the other for higher band. And then, the combiner and the third 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 and magnet mount enclosure. Using internal magnets, the antenna can be installed almost anywhere allowing for greater flexibility.

1.2 Features

- Multi-frequency GNSS reception
- LNA gain: 27 dB typ.
- High rejection SAW filter
- Low noise figure
- Waterproof enclosure (IP67)
- Great axial ratio: over full bandwidth
- Magnetic mounting supported
- Wide 3 dB beam-width
- Supports dual band RTK/RTD
- Supports Allystar HD9311/HD8040D/HD8041D

1.3 Product image

Figure 1 Product image

1.4 Block diagram

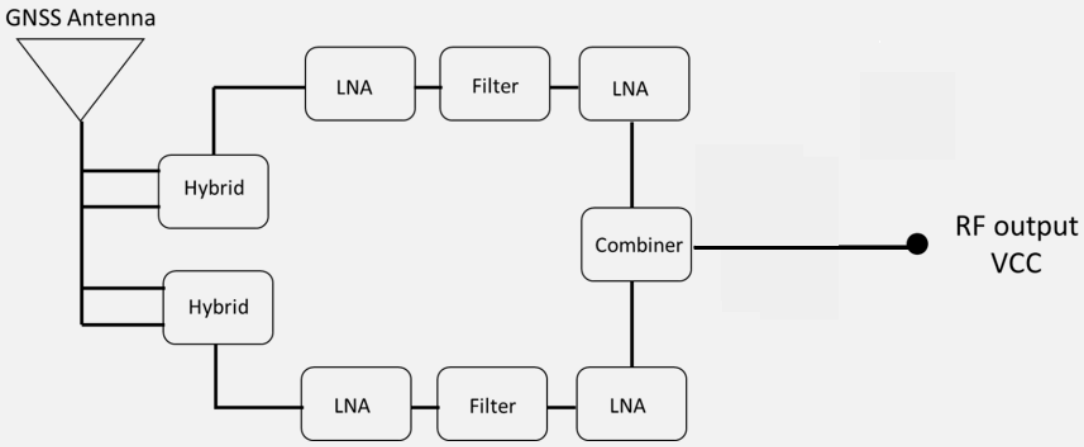


Figure 2 Block diagram

2 SPECIFICATIONS

2.1 Antenna performance

Table 1 Antenna performance

Parameter	Specification	
Support system	AGR6302	GPS: L1, L2C BDS: B1I, B1C, B2I Galileo: E1, E5b GLONASS: L1, L2 QZSS: L1-C, L2C
	AGR6303	GPS: L1, L1C, L5C BDS: B1I, B1C, B2a Galileo E1, E5a GLONASS: L1 QZSS: L5 IRNSS: S-L5
Antenna architecture	Stack four feed	
Antenna dimension	41x41x4 mm for higher band 47x47x7 mm for lower band	
Polarization	RHCP	
Axial ratio	< 2 dB	
Antenna gain	3-5 dBi	
3dB beam width	122° on X-Z plane for higher band 122° on Y-Z plane for higher band 100° on X-Z plane for lower band 104° on Y-Z plane for lower band	

2.2 RF performance

Table 2 RF performance

Parameter	Specification	
LNA gain	27 dB typ. at all operation band on 3.3 V	
Noise figure	≤ 2 dB	
Output SWR	< 2.5	
Output impedance	50 Ohm	
Out-band rejection	Higher band	In-band ±80 MHz > 35 dB
	Lower band	In-band ±80 MHz > 35 dB
Support voltage	3.0-5.0 V/3.3 V typ.	
Power consumption	< 20 mA at 3.3 V	
ESD protection	10 kV air discharge 4 kV contact	

2.3 Mechanicals and environment

Table 3 Mechanicals and environment

Parameter	Specification
Dimension	79x24 mm (D*H)
RF cable	RG174 3M SMA(M) 180° (customization)
Operation temperature	-40℃ to +85℃
Relative humidity	40%-95%
Mounting	Magnet mount
Water proof	IP67
Environment	ROHS and REACH

3 MECHANICAL SPECIFICATION

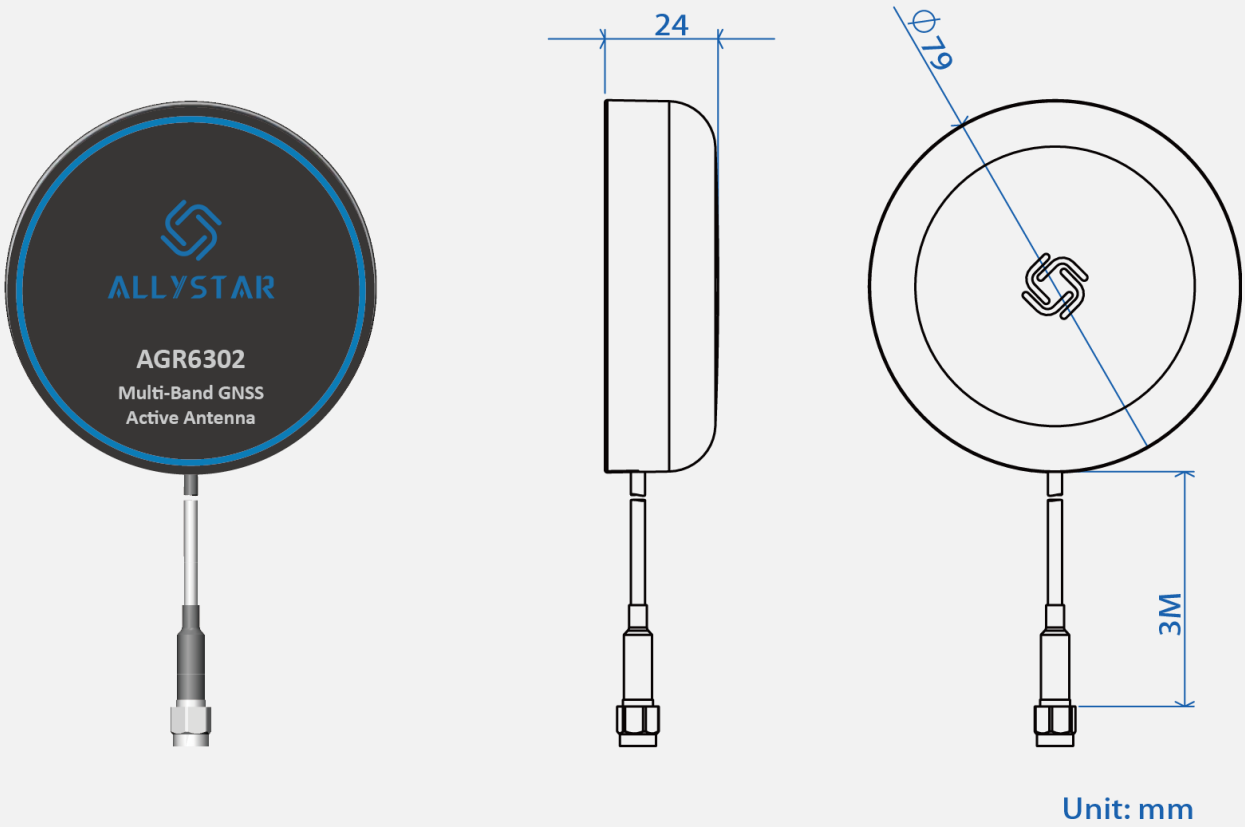
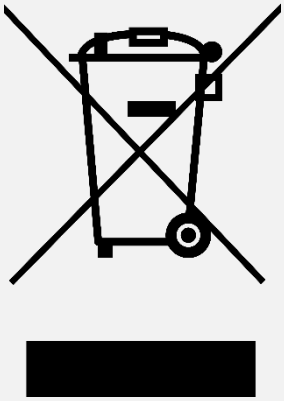


Figure 3 Mechanical specification

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-D079AA0	Active antenna	✓	✓	✓	✓	--	L1 + L2 band
AGR6303-D079AA0	Active antenna	✓	✓	✓	✓	✓	L1 + L5 band

6 REVISION HISTORY

Revision	Date	Reviser	Status / Comments
V1.0	2018-12-03	Daisy	Start version, first released
V1.1	2019-01-09	Taylor	page 5/1.3; Page 6.7; product image
V1.2	2020-10	Vita Wu	Localization.
V1.3	2020-12	Vita Wu	Add IC supported in *Section 1.2 Features.* Updates voltage. Updates LNA gain typ.
V1.4	2021-11	Cao Min	Updates antenna gain Updates headquarters address Adds GLONASS L2 support (AGR6302)

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