

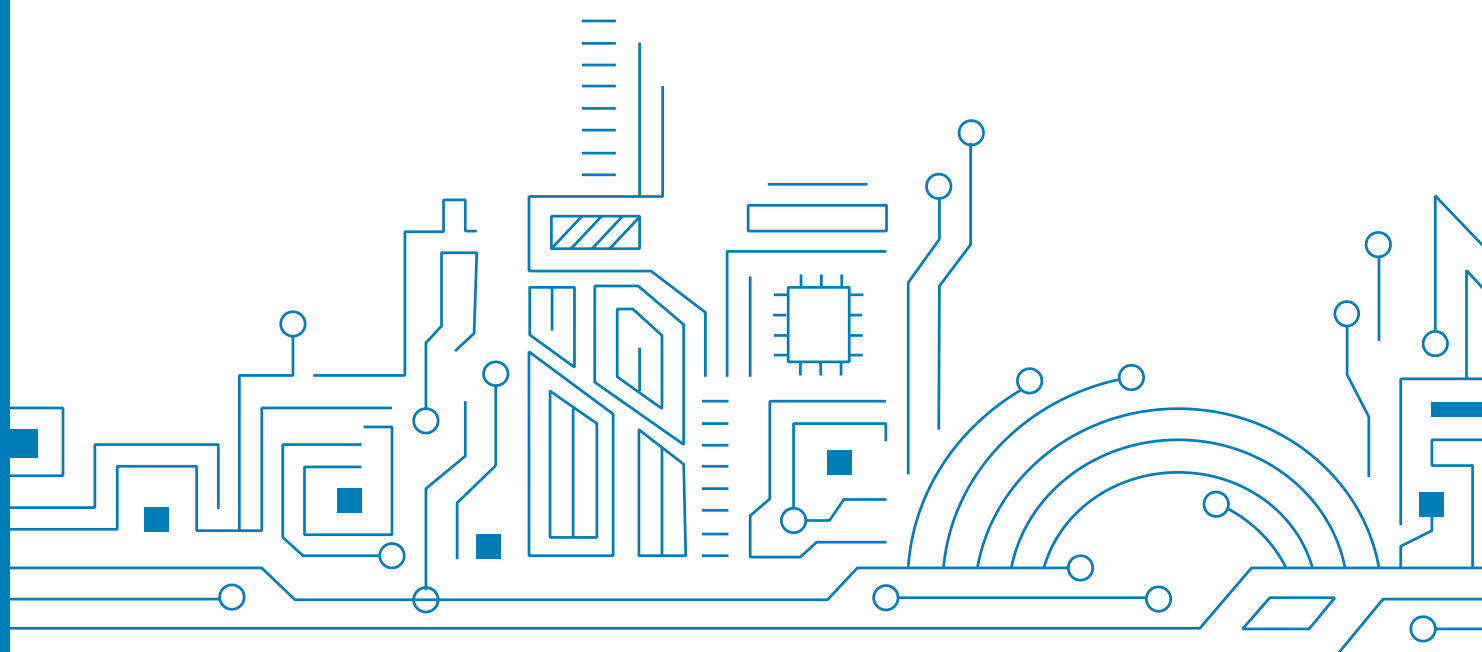


ALLYSTAR

High Precision Active Antenna

AGR6301

Datasheet V2.0



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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.

ALLYSTAR Active Antenna AGR6301 is a professional grade GNSS antenna covering the GPS L1, BeiDou B1 and GLONASS L1 frequency band. It employs ALLYSTAR's dual feed antenna patch technology which offers excellent circular polarized signal reception and great axial ratio (<1dB), resulting in much higher precision than single feed antennas which are typically tuned to a single GNSS frequency. It is especially designed for precision industrial, agricultural and military applications.

AGR6301 features a high performance dual-feed wideband patch element. In order to increase GNSS radio frequency sensitivity and signal noise ratio, AGR6301 uses a LNA+SAW+LNA diagram, which provides excellent noise figure and high gain that is constant across the full frequency band.

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

- LNA gain: 25 dB typ.
- High rejection SAW filter
- Low noise figure
- Waterproof enclosure (IP67)
- Great axial ratio: over full bandwidth
- Magnetic mounting supported
- Dual feed antenna (wide 3dB beam-width)
- GPS L1, BeiDou B1, GLONASS L1 and Galileo E1 frequencies
- Supports single band RTK/RTD
- Supports Allystar HD9301/HD8020/HD8021/HD8040/HD8041

1.3 Product image



Figure 1 Product image

1.4 Block diagram

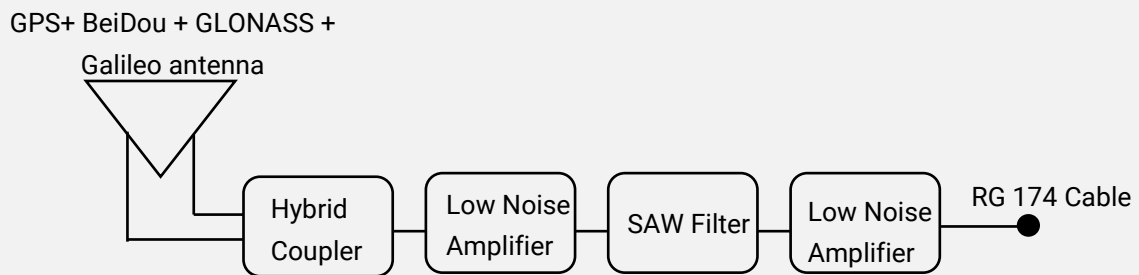


Figure 2 Block diagram

2 SPECIFICATIONS

2.1 Antenna performance

Table 1 Antenna performance

Parameter	Specification
Support system	GPS: L1 BeiDou: B1I/B1C GLONASS: L1 Galileo: E1 QZSS: L1
Operation band	GPS/Galileo 1575.42MHz. BeiDou 1561MHz. GLONASS 1602MHz.
Antenna architecture	Dual feed patch
Antenna dimension	35x35x4mm
Polarization	RHCP
Axial ratio	<2dB
Antenna peak gain	4.8dBi for BeiDou band (with 100x100mm GND) 3.8dBi for GPS/Galileo band (with 100x100mm GND) 5dBi for GLONASS band (with 100x100mm GND)
3dB beam width	XZ plan 95° on support band YZ plan 85° on support band

2.2 RF performance

Table 2 RF performance

Parameter	Specification
LNA gain	25dB typ. at 3.3V
Noise figure	≤2dB
Output SWR	<2.5
Output impedance	50 Ohm
Out-band rejection	>1640MHz (>40dB)
Support voltage	3.0~5.0V
Power consumption	7.5mA at 3.3V
ESD protection	10kv air discharge 4kv contact

2.3 Mechanicals and environment

Table 3 Mechanicals and environment

Parameter	Specification
Dimension	56.5mm x 56.5mm x 21mm
RF cable	RG174 3M SMA(M) 180° (customization)
Operation temperature	-40°C to +85°C

Mounting	Magnet mount
Water proof	IP67
Environment	ROHS and REACH

3 MECHANICAL SPECIFICATION

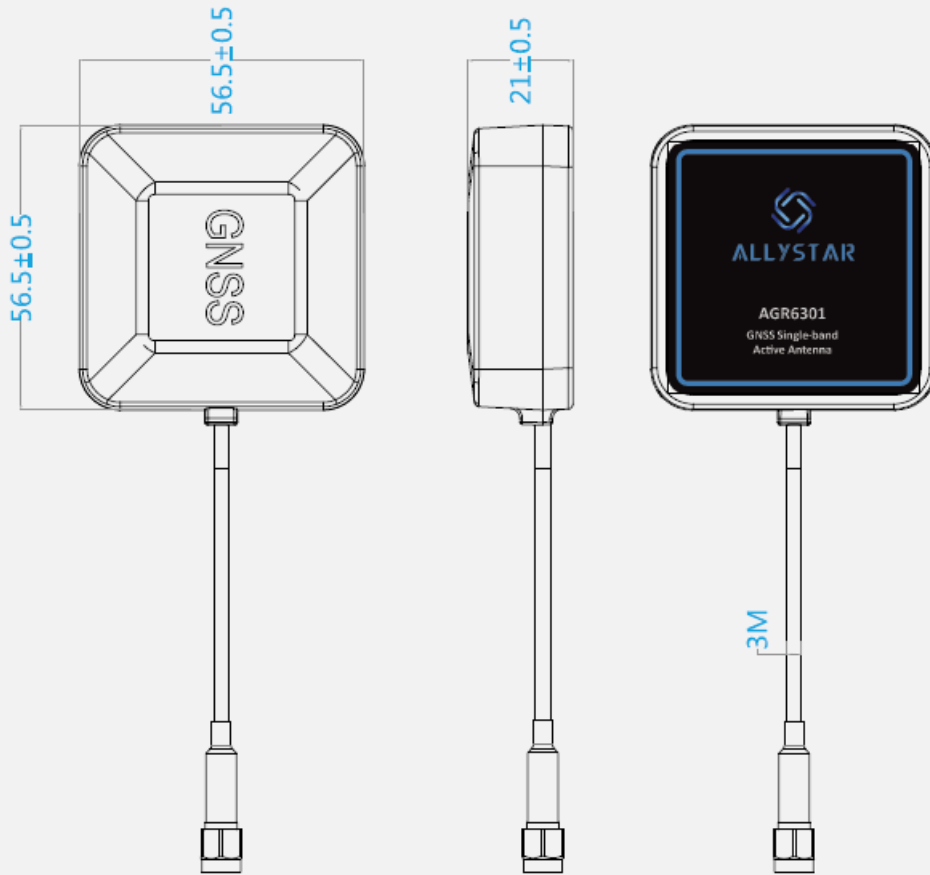


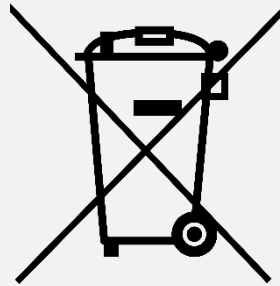
Figure 3 Mechanical specification

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 REVISION HISTORY

Revision	Date	Author	Status / Comments
V1.0	2018-05-17	Daisy	Start version, first released
V2.0	2020-11	Taylor	Modify ID Dimension Updates voltage. Updates Output SWR.



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