Standard Serial Port ADS-B Ground Receiver ADSBR301

Product Introduction

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1. Introduction

ADSBR301 is a standard ADS-B ground receiver that complies with the RTCA DO260B/DO260C standards. Integrated with ADS-B signal processing module, the receiver can output raw ADS-B messages and decoded CSV plaintext data via USB or serial port. ADSBR301 supports simultaneous output of both raw ADS-B messages DF17/DF18 and decoded CSV plaintext data. The serial port output protocol supports RS232, RS422, and RS485. This ADS-B receiver supports both BDS and GPS, providing ADS-B data reception, processing, and display services. It is applicable in fields such as civil aviation flight tracking, airport management, general aviation aircrafts surveillance, Detect-and-Avoid (DAA) subsystem, ADS-B IN capability for UAS situational awareness, radar calibration, academic research and education.

Packing List:

No.	Name	Quantity	Remarks
1	ADSBR301	1 unit	Included
2	Power Cable	1 piece	Included
3	ADS-B Antenna and Bracket	1 set	Included
4	ADS-B Antenna Cable	1 piece (10 meters)	Included

5	Type-B USB Data Cable	1 piece	Included
6	GPS/BDS Antenna	1 set (includes 3-meter cable)	Included

2. Specifications

ADSBR301:

No.	Specifications	
1	Power Supply	DC12V 2A
2	Power Consumption	3.6W
3	Receiving Frequency	1090MHz
4	Sensitivity	≤ -95dBm
5	Receiving Range	> 350km(no interference, unobstructed)
6	Data Format	ADS-B raw message, CSV plaintext
7	Data Interface	Type-B USB and DB9 female (both interfaces can output data simultaneously)
8	Serial Port Protocol	RS232, RS422, RS485 (configuration needs to be selected before factory shipment)
9	ADS-B Antenna Interface	N female
10	GPS/BDS Antenna Interface	SMA female
11	Dimensions	220*160*72mm (main body)
12	Weight	1250g

ADS-B Antenna:

No.	Specifications	
1	Frequency Range	1089-1091MHz
2	Bandwidth	60MHz
3	Gain	6dBi
4	VSWR	≤1.5
5	Direction Type	Omnidirectional
6	Polarization	Vertical polarization

7	Length	60cm
8	Weight	0.6kg
9	Connector Type	N female
10	Mounting Type	Mast mount

GPS/BDS Antenna:

No.	Specifications	
1	Gain	5dBi
2	VSWR	≤1.5
3	LNA Gain	28dBi
4	Noise Figure	<1.0
5	Connector Type	SMA male
6	Cable Length	3m
7	Mounting Method	Magnetic mount

3. Interface Description

Interfaces:

No.	Interface Name	Function
1	POWER	Power supply interface for main unit, DC 12V 2A
2	GPS/BDS	GPS/BDS antenna interface, SMA female
3	ADS-B ANT	ADS-B antenna interface, N female
4	USB	Data interface 1, Type-B connector, combined output for raw messages and decoded plaintext, displays as SERIAL-A, SERIAL-B when connected to a computer
5	SERIAL1	Data interface 2, DB9 connector, raw message output, default protocol is RS232 (other protocols can be configured upon request)
6	SERIAL2	Data interface 3, DB9 connector, decoded plaintext output, default protocol is RS232 (other protocols can be configured upon request)

USB (SERIAL-A) / SERIAL1 Configuration (ADS-B Raw Messages):

No.	Name	Configuration
1	Baud Rate	115200
2	Data Bits	8
3	Parity	none
4	Stop Bits	1

USB(SERIAL-B) / SERIAL2 Configuration (CSV plaintext data):

No.	Name	Configuration
1	Baud Rate	115200
2	Data Bits	8
3	Parity	none
4	Stop Bits	1

RS232 Interface Pinout Description:

Pin Number	Description
2	RXD
3	TXD

Pin Number	Description
5	GND

RS485 Interface Pinout Description:

Pin Number	Description
1	485−A
2	485−B

RS422 Interface Pinout Description:

Pin Number	Description
1	422−R+
2	422−R−
3	422−T+
4	422−T−

4. Connection

The ADSBR301 can be connected to a computer via the USB interface, and the computer will recognize two COM ports. The data received by the two COM ports will be the ADS-B raw messages and the decoded CSV plaintext, respectively.

In the serial port debugger, input the connection information for both COM ports. After connecting, data can be received.

Example of Raw Message Data:

```
1A 33 11 82 1C 6F E1 8C C8 80 E1 91 B8 58 8F 80 2A CF 36 C6 25 61 2A
1A 33 11 82 1D B3 32 C4 C8 8D 39 4A 03 99 08 7A BF 90 04 95 F9 22 91
1A 33 11 82 1E 97 A0 20 C8 8D 78 08 F6 F8 23 00 02 00 49 B8 E9 62 A8
1A 33 11 82 1E C6 C7 04 C8 A0 00 12 B4 00 00 00 00 00 00 00 2D AE BC
```

Data Description:

Data	Description
1A	Start Byte
33	Type Byte
11 82 1C 6F E1 8C	Timestamp Field (6bit)
C8	Signal Strength Field (1bit)

8D 78 05 86 99 09 DA 87 58 04 93 51 33 38	Raw ADS-B Data (14bit)

Example of Decoded CSV Plaintext Data:

2025-01-19T13:26:10.337Z,780DED,CDG2124 ,4121,36.251861572265625,117.37432479858
3984,31100,488.545,166.988,0.000,false#
2025-01-19T13:26:10.465Z,780DED,CDG2124 ,4121,36.251861572265625
,117.374324798583984,31100,488.545,166.988,0.000,false#

Data Description:

Data	Description	Remarks
2025-01-19T 13:26:10.337Z	Time	The time is the system device's time (reference format: ISO 8601), format: yyyy-MM-ddTHH:mm:ss.zzzZ
780DED	ICAO 24-bit Address	6-digit hexadecimal format data
CDG2124	Call Sign	8 characters output
4121	Secondary Code	4-digit octal format number
36.251861572265625	Latitude	Latitude in decimal degrees, North is positive, South is negative
117.374324798583984	Longitude	Longitude in decimal degrees, East is positive, West is negative
31100	Pressure Altitude	Feet
488.545	Ground Speed	Knots per hour
166.988	Heading Angle	Decimal, in degrees
0.000	Pressure Vertical Rate	Meters per minute, negative for descent, positive for ascent
false	Air/Ground Indicator	true indicates ground, false indicates air

Note: If data is missing, the value will be left empty and will not be output.

The ADSBR301 can also be connected to a device via serial port.

5. Software Connection

ADSBR301 can be connected to the display software adsbScope.

6. Customization

All our products can be supplied tailored to your specific needs and customized with your brand and logo. We tailor designs, enclosures, features, and data formats to meet your specifications. Our OEM services empower you to launch unique products swiftly and risk-free.

7. Contact Us

We welcome users, integrators, dealers and distributors to contact us.

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