

TR-1W

1 Watt ADS-B Transceiver

Overview

TR-1W belongs to the class of the smallest ADS-B transceivers on market and has been developed for civil and commercial Unmanned Aircraft Systems. The device operates on 1090MHz and allows to receive and transmit ADS-B data with 1 Watt output power. The transceiver does not require external devices to operate. It is equipped with a high quality multi-GNSS receiver and a pressure sensor. The aluminium housing and ESD protection guarantee high resistance of the device to work in difficult conditions. **TR-1W** opens the way to the implementation of the Detect and Avoid algorithms, supporting the integration of UAS into the airspace.

Basic features

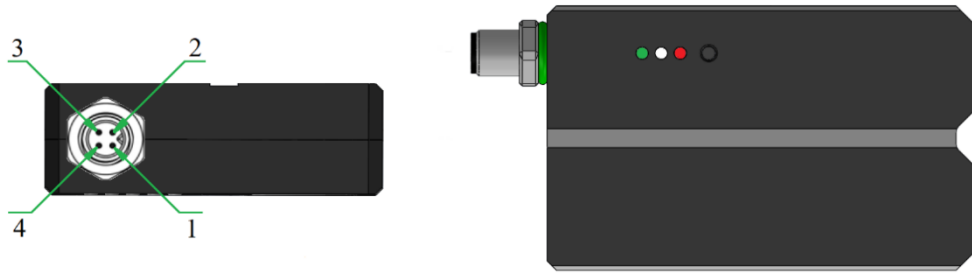
- ✓ Real-time aircraft tracking on 1090MHz
- ✓ Patented FPGA-In-The-Loop™ technology with the capability of receiving thousands of frames per second
- ✓ Integrated GNSS source and pressure sensor
- ✓ 1 Watt RF output power
- ✓ Implemented MAVLink and AERO™ protocol
- ✓ Low-power consumption and low weight design
- ✓ Simple plug&play integration
- ✓ Programming via AT commands
- ✓ Designed to meet MOPS DO-260B (except the output power)
- ✓ Dimension: 45.5x28.0x10.0mm

Technical parameters

Parameter	Value
Frequency	1090MHz
Input voltage	5V
Current consumption	130mA
Sensitivity	-72dBm
RF Output power	+30dBm
ESD protection	All lines
MAVLink (baud)	115000bps
AERO (baud)	115000bps (AT commands)
Main connector	PXMBNI05RPM04APC
Antenna connector	2x MCX
Dimension	45.5x28.0x10.0mm
Weight (without cables and antennas)	30grams

Electrical specification

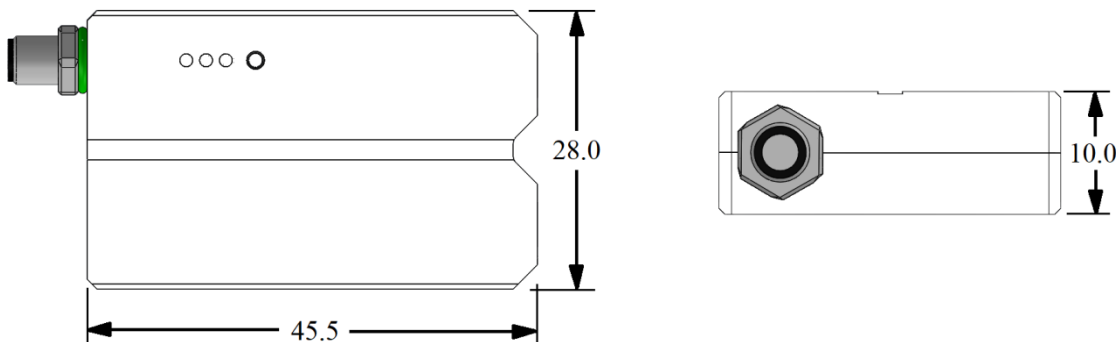
Pin	Wire colour	Name	Function
1	Red	+5V	Power supply (5V/70mA)
2	Green	TX	MAVLink, Aero TXD
3	White	RX	MAVLink, AERO RXD
4	Black	GND	Ground



LED	Function
Green	Power supply indicator
White	Frame detection / receive indicator
Red	ADS-B OUT indicator – 1. OFF – Disabled 2. Blink – Wait for FIX 3. ON – Active

Mechanical specification

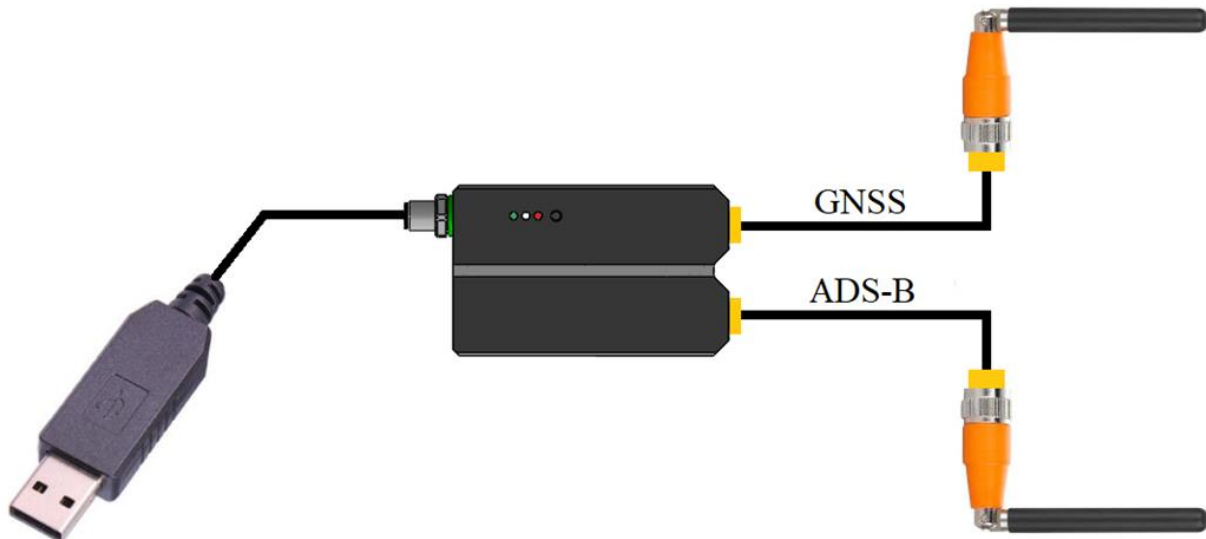
All dimensions in mm (tolerances ± 0.1 mm)



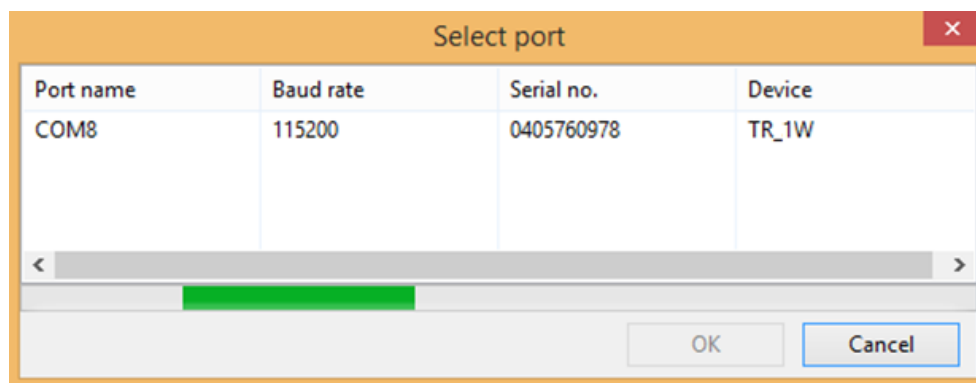
Connector	Type	Example
Main	Installed on board	BULGIN, PXMBNI05RPM04APC
	Mating connector	BULGIN, PXPPVC05FBF04ACL010PVC
Antenna	Installed on board	MOLEX, 73415-1061
	Mating connector	MOLEX, 73366-0010

Quick start with TR-1W

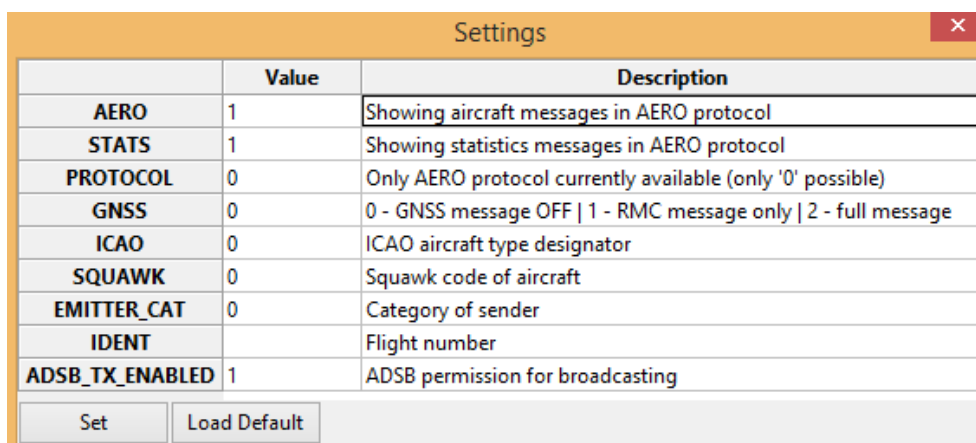
TR-1W is a stand-alone device and in the simplest case of its operation requires only a power supply. However during the first start-up, you must configure the device. That can be performed in the few steps described below. First install the antennas using the MCX-> SMA adapters included in the kit. Also connect the configuration cable that will help you set the device parameters. The following figure shows the installation method.



1. Connect the device to the PC. The converter is supplied with the FTDI chip. In this case, the installation of the controller takes place automatically.
2. Download the latest Micro ADS-B software from www.aerobits.pl. Install Micro ADS-B on your Windows computer. If the device is connected to a PC, it should be found automatically after clicking the "Connect" button. The connection window should look similar to the one in the picture. Select the device found and press "OK".



3. Press "Settings" to enter the parameterization mode of the module. After setting the parameters, press the "Set" button to save the settings. TR-1W is ready to work.



1. Module installation – There is a high concentration of various electronic systems on a small area at UAS. Try to keep as much separation between **TR-1W** and other devices, especially radio ones. Despite the high robustness of **TR-1W** to jamming, try to install the antenna away from other on-board systems.
2. AERO vs. MAVLink protocol – **TR-1W** is based on OEM TIM-SC1a module. The default is in AERO protocol mode, which is an ASCII protocol. If you want to use the module to work with MAVLink system, it is possible to switch the protocol to **MAVLink**, which has the binary representation. Details of the module programming can be found on the website.