TRX-OEM - ADS-B Module
System integration manual

Record of Revisions

Date	Revision	Description of Change	Inserted by
16 NOV 2010	1.0	Initial release	JG
18 JAN 2011	1.1	Modified: Dimension drawing	JG
23 FEB 2012	1.2	Modified: Port description for standard configuration	JG
15 APR 2013	1.3	Modified: Pin description / Pullup requirements for proper startup	JG
08 AUG 2013	1.4	Modified: Pin descriptions (RES# and BLFORCE#)	GG
08 AUG 2013	1.4a	Amendment: Pinout	JG

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System description

Automatic Dependent Surveillance – **Broadcast** is a modern ATC system for broadcast aircraft position data. Transponders which are connected to a GPS system transmit her own position and other flight data, like call sign, Mode-S address, speed and altitude as well as track and vertical speed. The transponder transmits these data periodically – typically once per second – like a radio station (Broadcast).

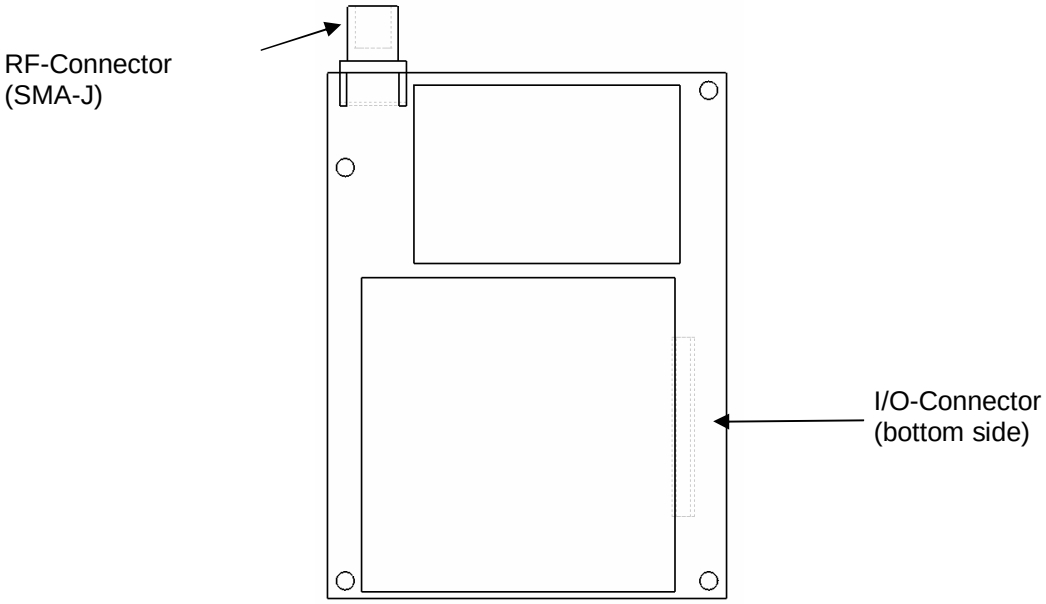
TRX-OEM contains a sensitive 1090 MHz receivers with complex signal processing unit. Transponder signals broadcasted by other aircraft will be received, processed and decoded.

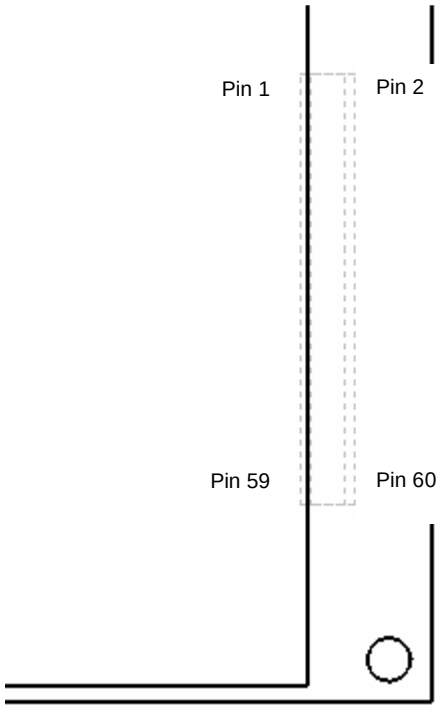
The unit has been designed to be integrated in third party ground based or airborne applications to make them hearing ADS-B out signals broadcasted by aircraft carrying Mode-S transponders with ADS-B out capability.

The maximum receving range is up to 300 km, depending on the antenna type and location.

1. Connector location and pin descriptions

1.1. Module diagram with connector location





Pin Location (Top View)

1.2. Connector specification

1.2.1. I/O Connetor

To integrate the TRX-OEM boad in your application, the following connector type is required for the baseboard:

Manufacturer	**P/N**	**Description**	**Remark**
Würth Elektronik www.we-online.de	658 80**4** 100 360	SMT Socket, 0,8mm pitch, Socket Height: **4.15** mm	For btb distance: **5** mm
	658 80**5** 100 360	SMT Socket, 0,8mm pitch, Socket Height: **5.15** mm	For btb distance: **6** mm

1.2.2. RF Connector

The standard configuration of the TRX-OEM Board is SMA-J (edgemount version). For different style connectors, the PCB provides a footprint, which allows the installation of various connector types (such as SMB, MCX, etc.) and different orientations (right angle or vertical).

If your application required different connector type, than SMA-J (edgemount version), please contact the manufacturer to specify the required type in detail.

1.3. Pin description

Pin (*1)	Name	Type	Remark
1, 2	VDD	Pwr	Power Supply 3.3V, 0.4 A
4, 6, 8, 10, 12 14,16,18	GND	Pwr	Connect to common GND
19	RXD1	I	RXD serial port 1
22	TXD1	O	TXD serial port 1
25	RXD2	I	RXD serial port 2
26	TXD2	O	TXD serial port 2
27	RXD3	I	RXD serial port 3
28	TXD3	O	TXD serial port 3
51	BL_FORCE#	I/O	Always to be externally pulled up to VDD with 22k. If used, must only be driven by open-drain source. Pulling to GND during power-up or Reset force Module into Bootloader mode (e.g. for software updates). Ask manufacturer for alternate means of activating the Bootloader
53	RESERVED	I/O	Always to be externally pulled up to VDD with 22k
54	TXD0	O	TXD serial port 0
55	RXD0	I	RXD serial port 0
59	CPU_RES# (*2)	I/O	Active low reset Internally pulled up to VDD with 4k7

*1 : all Pins not mentioned must not be connected !!
*2 : only available on PCB revisions 03 and higher:

2. Port description

In the standard configuration. the TRX-OEM provides in total four serial ports (TX, RX, no flow control), that can be used as specified below:

Port #	Line	Description
0	TXD0	For future application
	RXD0	For future application
1	TXD1	For future application
	RXD1	For future application
2	TXD2	Protocols as specified in the TRX dataport specification manual
	RXD2	Protocols as specified in the TRX dataport specification manual
3	TXD3	For future application
	RXD3	For future application

Specific OEM configuration can be arranged by the manufacturer Garrecht Avionik GmbH.

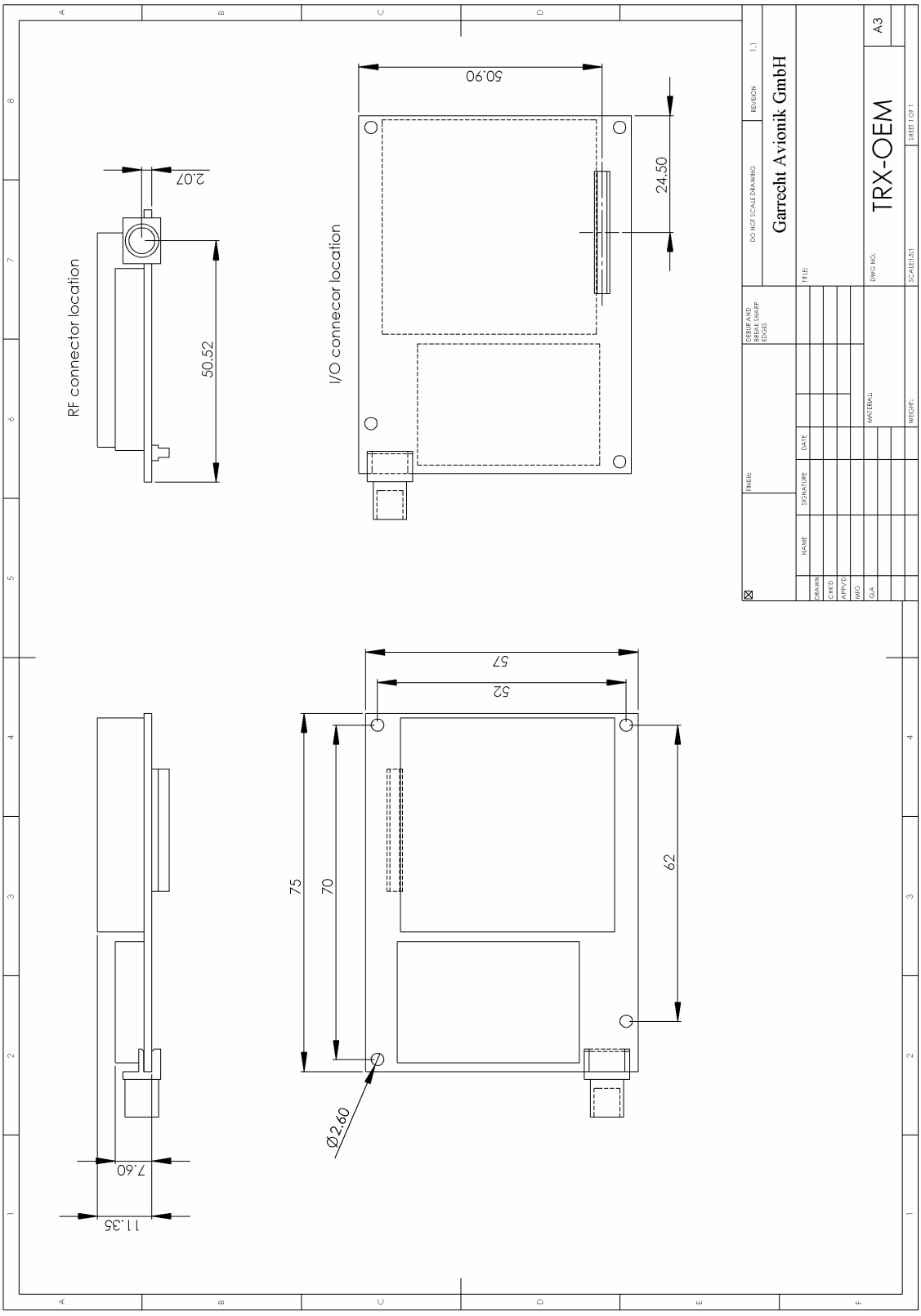
3. Characteristics

Item	Specifications	Unit
Physical size	75 x 57 x 11.35 (LxWxH)	mm
Weight	0.03	kg
Nominal Power Input voltage VDD	3.3	Volt
Typical Power consumption	1.2	Watt
Receiving frequency	1090	MHz
Sensitivity	- 85	dBm
Temperature Range Operating Storage	 -20 … +70 -30 … +85	 ℃ ℃

4. Absolute maximum Ratings

Item	Min	Max	Unit	Remark
Supply Voltage	-0.3	3.6	V	
Input Signal Voltage	-0.3	3.6	V	

5. Dimensions



6. TRX Data port specification

The TRX-OEM data port specification is available as a separate document from the manufacturer.