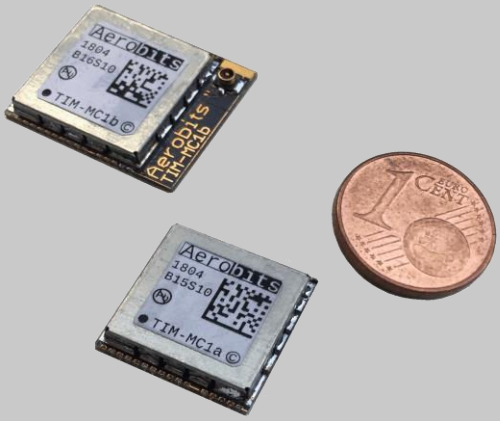
TIM-MC1 series

(Basic Information)



TIM-MC1 is a high-performance OEM series dedicated especially for ground stations. It offers high-speed ADS-B and Mode A/C/S implementation with RF receive power analysis and time stamps for multilateration. Simultaneous miniaturization of the module and its OEM nature open a wide range of possible applications.

Features

- **FPGA-In-The-Loop** technology for the fastest ADS-B implementation on a surface of ~4cm^2
- High-resolution ADC with real-time signal processing based on an adaptive algorithm; **best-in-class aircraft tracking**
- **ADS-B and Mode-A/C/S** with a capability of receiving thousands of frames per second
- **RF power measurement** for each frame (useful for distance estimation in case of Mode-A/C/S)
- Time stamp for each frame for **multilateration**
- High sensitive front-end (jamming and ESD protection) with **ranges over 300 km** (1dBi antenna)
- Simple module integration - programming using UART and **AT commands**
- Many interfaces available: UART(standard), USB, SPI, CAN, I2C
- Scalable OEM solution with enormous customization potential eg. **ADS-B/Out (digital)**
- Power supply 3.3V/5V, current 220mA
- Designed to meet the requirements of TSO-C199
- Small outline (a): 18.0 x 19.0 x 2.5mm (1.8g weight)
- Small outline (b): 22.5 x 19.0 x 2.5mm (2.0g weight)
- **Evaluation board available**

Applications

- **SAA/DAA** (Sense and Avoid / Detect and Avoid)
- Mobile and stationary **traffic surveillance**
- Ground infrastructure with **multilateration**
- **Traffic-flow** analysis and statistics
- For **UTM** / **U-Space** construction, systems that meet the **NextGen** / **SESAR** philosophy

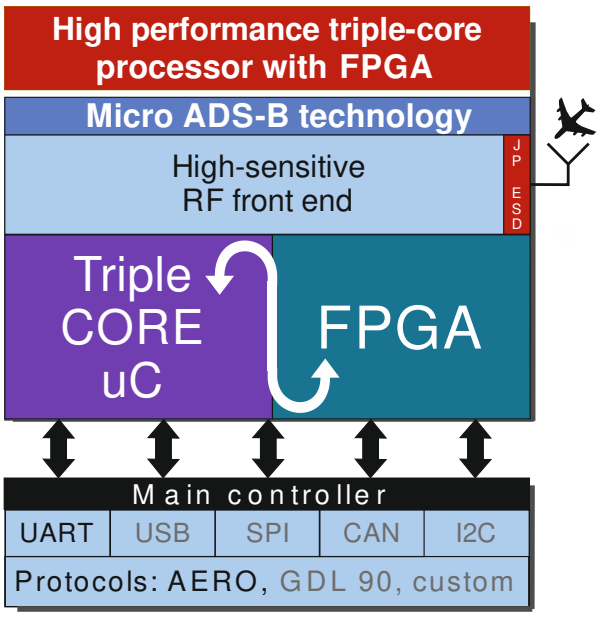


Fig. 1 Hardware block diagram.

Basic Electrical Specification					
Parameter	Description	Min.	Typ.	Max.	Unit
Carrier frequency		-	1090	-	MHz
RX sensitivity	For operation at 50Ω (U.fl connector ver.b)	-	-90	-	dBm
Power supply 1	Digital part	3.0	3.3	3.6	DCV
Power supply 2	RF part	4.0	5.0	5.5	DCV
Current consumption		-	220	-	mA

Tab. 1 Basic electrical specification.

About 20 AT commands are used for simple communication with the module. There are 3 types of commands: *execute, write value and read value*. Some of commands are marked as settings "S". It means that the parameter is non-volatile, and it is stored in internal memory. Typical responses of the module are "AT+OK" and "AT+ERROR (description)".

Output example of AERO protocol:

```
#C:55.9,591,140056,E789
#G:52.47116,13.39779,42,5,1EB8
#M:A4FA49,,,,,,,,,,,700,2,67A2
#A:3C0A45,,EWG9YH,2550,51.52670,14.11587,37000,102,490,0,116.597,700,1565,B1E8
#A:A954CA,,CKS205,1000,50.57259,12.79625,40000,296,453,0,215.711,725,1606,9114
#A:45AC4C,,SAS48K,6644,52.55967,11.94991,36000,8,495,0,99.154,825,3738,1D7A
#A:3C66AB,,DLH9WY,7350,53.17250,10.69362,36975,26,530,0,198.203,750,1648,BA3
#M:3C4D66,,,,,,,,,,,700,1,8622
```

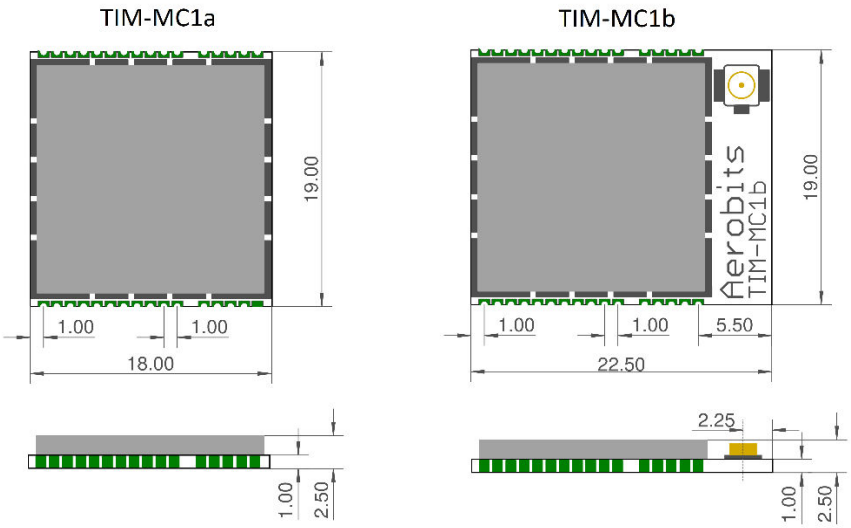


Fig. 2 Mechanical drawing (all dimensions in mm).

For technical questions please contact: support@aerobits.pl
For ordering: sales@aerobits.pl