



TIM-4P

Programmable GPS Receiver Module ANTARIS® 4 Positioning Engine

PRELIMINARY

Overview

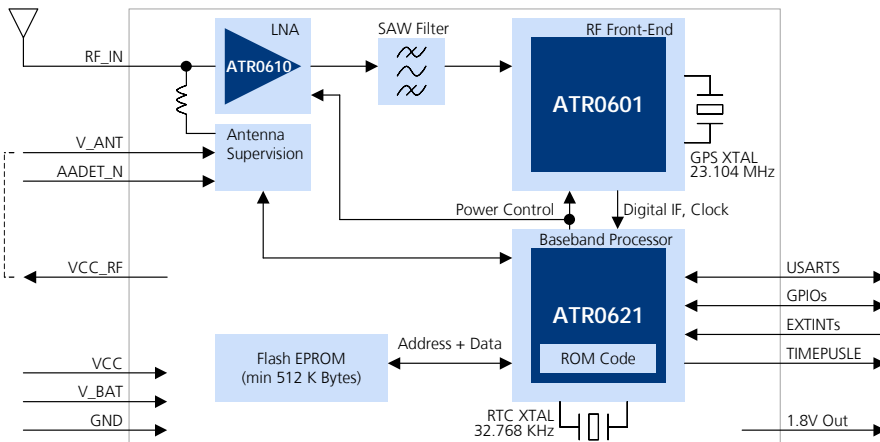
The TIM-4P is a programmable GPS module containing the new u-blox 16-channel ANTARIS 4 receiver technology that provides high receiver performance at low power consumption. The ANTARIS 4 GPS engine offers excellent navigation performance in the most challenging metropolitan areas.



25.4 x 25.4 x 3 mm

It is a suitable successor to the existing ANTARIS modules like the TIM-LP, the TIM-LF and the TIM-LL, with which it also shares the 25.4 x 25.4 x 3 mm industry standard form factor initially created by u-blox. Its 35% reduced power consumption means extended battery time for portable, handheld consumer devices. Finally, its small form factor and SMT pads are designed for fully automatic assembly processes with standard pick-and-place equipment and reflow soldering, enabling cost-efficient, high-volume production.

Block Diagram



New with ANTARIS 4

- 35 mA supply current (Power reduction by more than 35% compared to predecessor modules)
- Significantly lower battery backup current
- RoHS compliant (lead-free)

Key Features

- 16 channel ANTARIS 4 positioning engine
- 4 Hz position update rate
- Assisted GPS (MS-Assisted, MS-Based)
- DGPS and full SBAS (WAAS, EGNOS) support
- FixNOW™ power saving mode
- Supports passive and active antennas
- Antenna short and open circuit detection and protection
- Operating temperature range: -40 to 85°C
- Optional Features:
 - Output of raw tracking data, max. 10 Hz
 - 2-channel precision time mark / counter

*your position
is our focus*



Receiver Performance Data

Receiver Type	16 channel, L1 frequency, C/A code
Max. Update Rate	4 Hz
Accuracy	Position 2.5 m CEP DGPS / SBAS 2.0 m CEP ¹
Start-up Times	Hot start <3.5 sec Warm start 33 sec Cold start 34 sec Aided start 5 sec Reacquisition < 1 s
Sensitivity	Acquisition -140 dBm Tracking -150 dBm
Timing Accuracy	RMS 50 ns 99% <100 ns
Raw Tracking Data (Optional)	Carrier Phase Code Phase Doppler Measurements
Operational Limits	Altitude 18,000 m Velocity 515 m/s One of the limits may be exceeded but not both.

¹ Depends on accuracy of correction data provided by the DGPS or SBAS service

Interfaces

Serial Ports	2 UARTs
Digital I/O	Configurable time pulse 2 EXTINTs inputs for time mark / counter (optional)
Serial and I/O Voltages	3 V levels, 5 V tolerant inputs
Protocols	NMEA, UBX binary, RTCM Supports protocol mixing over same serial port

Electrical Data

Power Supply	2.7 – 3.3 V
Power Consumption	typ. 36 mA @ 3.0 V typ. 35 mA @ 2.7 V Sleep mode: typ. 80 µA
Backup Power	1.5 V – 3.6 V, typ. 5 µA
Antenna Power	External or Internal VCC_RF
Antenna Supervision	Integrated short-circuit detection and antenna shutdown, open circuit detection is supported with AADET_N input and little external circuitry

Available Programming Resources ²

Processor	ARM7 @ 23MHz 3.75 – 9 MIPS ³ @ 1Hz Navigation update
Memory	FLASH Min. 512 K Bytes SRAM 8 K Bytes
Serial Interfaces	2 UARTs Async. and Sync.
Digital I/O	8 GPIOs (2 are interrupt capable)

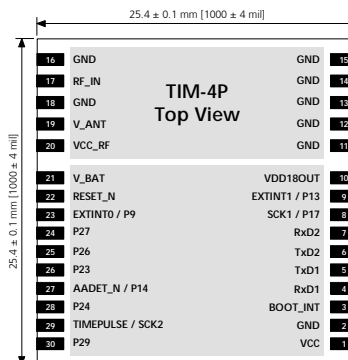
² ANTARIS 4 SCKit is required. Please contact u-blox.

³ "VAX MIPS" Dhrystone, vacant CPU capacity for user code

Environmental Data

Operating Temp.	-40°C to 85°C
Storage Temp.	-40°C to 125°C
Vibration	5 Hz to 500 Hz, 5g (IEC 68-2-6)
Shock	Half sine 30g / 11ms (DIN 40046-7)

Mechanical Data



Support Products

ANTARIS 4 EvalKit	An easy-to-use kit to get familiarized with the ANTARIS 4 positioning technology, to evaluate functionality and to visualize GPS performance.
ANTARIS 4 SCKit	Software Customization Kit for creating own software on TIM-4P. Planned for 1Q 2006

Ordering Information

TIM-4P-0-000-0	TIM-4P – Programmable GPS Receiver Module
	Delivery Packing 0 = Single samples 1 = Tape on reel (100 pieces)

Parts of this product are patent protected.