

MAX-7 series

Compact u-blox 7 GPS/GNSS modules

Highlights

- Small and low power multi-GNSS modules
- Cost and performance optimized versions
- Simple integration with u-blox wireless modules
- Easy migration from MAX-6 family



MAX-7 series:
9.7 x 10.1 x 2.5 mm

Product description

The MAX-7 series is the newest family of standalone GPS/GNSS modules from u-blox. With the exceptional performance of the u-blox 7 multi-GNSS (GPS, GLONASS, Galileo, QZSS and SBAS) engine, the MAX-7 series delivers high sensitivity and minimal acquisition times in the ultra compact MAX form factor.

The MAX-7 series provides maximum sensitivity while maintaining low system power. The MAX-7C is optimized for cost sensitive applications. The MAX-7Q provides best performance and lowest power, while the MAX-7W provides best performance and is optimized for active antennas. The industry proven MAX form factor allows easy migration from MAX-6 modules. Sophisticated RF-architecture and interference suppression ensure maximum performance even in GPS-hostile environments.

The MAX-7 series combines a high level of integration capability with flexible connectivity options in a miniature package. This makes it perfectly suited for industrial and mass-market end products with strict size and cost requirements. The DDC (I²C compliant) interface provides connectivity and enables synergies with u-blox SARA, LEON and LISA wireless modules.

u-blox 7 modules use GPS/GNSS chips qualified according to AEC-Q100 and are manufactured in ISO/TS 16949 certified sites. Qualification tests are performed as stipulated in the ISO16750 standard: "Road vehicles – Environmental conditions and testing for electrical and electronic equipment". MAX-7Q complies with green/halogen free standards.

Product selector

Model	Type			Supply	Interfaces	Features																		
	GPS	QZSS	GLONASS																					
				Timing	Dead Reckoning	Precise Point Positioning	2.7 V – 3.6 V	1.65 V – 3.6 V	Lowest power (DC/DC)	UART	USB	SPI	DDC (I ² C compliant)	Programmable (Flash)	Data logger	Extra front-end LNA	Front-end SAW filter	Oscillator	RTC crystal	Antenna supply	Antenna short circuit detection / protection	Antenna open circuit detection pin	Timepulse	External interrupt / Wakeup
MAX-7C	•	•	•				•	•		•			•					C	■	○	○	○	•	•
MAX-7Q	•	•	•				•	•		•			•					T	•	○	○	○	•	•
MAX-7W	•	•	•				•			•			•					T	•	•	•	○	•	•

○ = Optional, not activated per default or requires external components

C = Crystal / T = TCXO

■ = higher backup current

Features

Receiver type	56-channel u-blox7 engine GPS/QZSS L1 C/A, GLONASS L1 FDMA, SBAS: WAAS, EGNOS, MSAS	
Navigation update rate	up to 10 Hz	
Accuracy	GPS	GLONASS
	Position	2.5 m CEP 4.0 m
	SBAS	2.0 m CEP n.a.
Acquisition	Cold starts:	29 s 30 s
	Aided starts:	5 s n.a.
	Reacquisition:	1 s 3 s
Sensitivity	Tracking:	-162 dBm -158 dBm
	Cold starts:	-148 dBm -140 dBm
	Warm starts:	-148 dBm -145 dBm
Assistance	AssistNow Online AssistNow Offline AssistNow Autonomous OMA SUPL & 3GPP compliant	
Oscillator	TCXO (MAX-7Q/7W), crystal (MAX-7C)	
RTC crystal	Built-In (MAX-7Q/7W)	
Anti jamming	Active CW detection and removal	
Memory	Onboard ROM	
Supported antennas	Active and passive	

Electrical data

Supply voltage	1.65 V to 3.6 V (MAX-7C) 2.0 to 3.6 V (MAX-7Q/7W)
Digital I/O voltage level	1.65 – 3.6 V
Power Consumption	47 mW @ 1.8 V (Continuous) ¹ 51 mW @ 3 V (Continuous) ¹ 14 mW @ 1.8V Power Save mode (1 Hz) ¹
Backup Supply	1.4 to 3.6V

¹ MAX-7C

Interfaces

Serial interfaces	1 UART 1 DDC (I ² C compliant)
Digital I/O	Configurable timepulse 1 EXTINT input for Wakeup
Timepulse	Configurable 0.25 Hz to 1 kHz
Protocols	NMEA, UBX binary, RTCM

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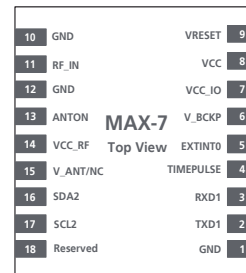
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Package

18 pin LCC (Leadless Chip Carrier): 9.7 x 10.1 x 2.5 mm

Pinout



Environmental data, quality & reliability

Operating temp.	-40° C to 85° C
Storage temp.	-40° C to 85° C
RoHS compliant (lead-free)	
Green (halogen-free):	MAX-7Q
Qualification according to ISO 16750	
Manufactured in ISO/TS 16949 certified production sites	
Uses u-blox 7 chips qualified according to AEC-Q100	

Ordering information

MAX-7C-0	u-blox 7 GPS/GNSS Module, 1.65–3.6V, 9.7x10.1mm, 500 pcs/reel
MAX-7Q-0	u-blox 7 GPS/GNSS Module, TCXO, 9.7x10.1mm, 500 pcs/reel
MAX-7W-0	u-blox 7 GPS/GNSS Module, TCXO, antenna supply, 9.7x10.1mm, 500 pcs/reel

Available as samples and tape on reel

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