

# Product Summary

# ZED-F9P



## u-blox F9 high precision GNSS module



Standard



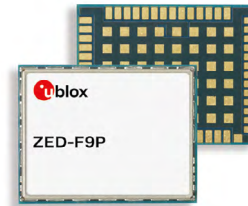
Professional



Automotive

### Multi-band receiver delivers centimeter-level accuracy in seconds

- Concurrent reception of GPS, GLONASS, Galileo and BeiDou
- Multi-band RTK with fast convergence times and reliable performance
- High update rate for highly dynamic applications
- Centimeter accuracy in a small and energy-efficient module
- Easy integration of RTK for fast time-to-market



17.0 × 22.0 × 2.4 mm

### Product description

The ZED-F9P positioning module features the new u-blox F9 receiver platform, which provides multi-band GNSS to high volume industrial applications in a compact form factor.

ZED-F9P is a multi-band GNSS module with integrated u-blox multi-band RTK technology for centimeter-level accuracy. The module enables precise navigation and automation of moving industrial machinery by means of a small, surface mounted module.

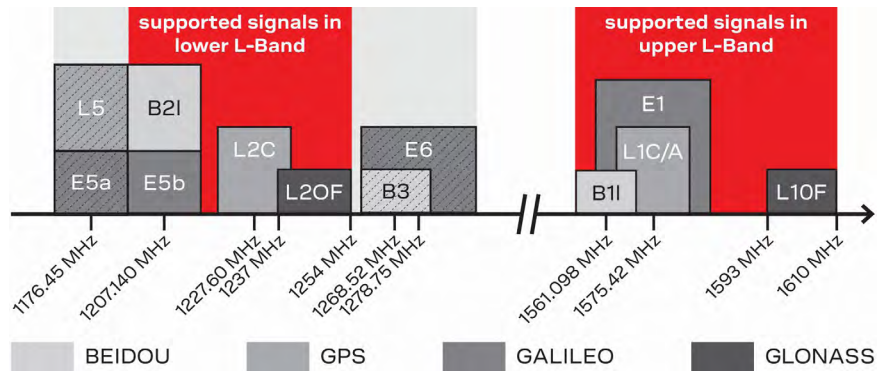
The ZED-F9P module is designed for easy integration and low design-in costs with minimal e-BOM. It is well-suited for mass market adoption, thanks to its small package size, light weight, and small power consumption.

ZED-F9P ensures the security of positioning and navigation information by using secure interfaces and advanced jamming and spoofing detection technologies.

ZED-F9P offers support for a range of correction services allowing each application to optimize performance according to the application's individual need. ZED-F9P comes with built-in support for standard RTCM

corrections, supporting centimeter-level navigation from local base stations or from virtual reference stations (VRS) in a Network RTK setup. The module can be upgraded to support future SSR-type correction services suitable for mass market penetration.

u-blox modules are manufactured in ISO/TS 16949 certified sites and are fully tested on a system level. Qualification tests are performed as stipulated in the ISO16750 standard: "Road vehicles – Environmental conditions and testing for electrical and electronic equipment".



### Product selector

Model	Category	GNSS	Supply	Interfaces	Features	Grade
ZED-F9P	<ul style="list-style-type: none"> <li>Standard Precision GNSS</li> <li>High Precision GNSS</li> <li>Dead Reckoning</li> <li>Timing</li> </ul>	<ul style="list-style-type: none"> <li>GPS/QZSS</li> <li>GLONASS</li> <li>Galileo</li> <li>BeiDou</li> </ul>	<ul style="list-style-type: none"> <li>Number of concurrent GNSS: 4</li> <li>Supply Voltage: 2.7 V – 3.6 V</li> </ul>	<ul style="list-style-type: none"> <li>UART</li> <li>SPI</li> <li>DDC (i<sup>2</sup>C compliant)</li> </ul>	<ul style="list-style-type: none"> <li>Programmable (flash)</li> <li>RTK base station</li> <li>Carrier phase output</li> <li>Additional SAW</li> <li>Timepulse</li> </ul>	<ul style="list-style-type: none"> <li>Standard</li> <li>Professional</li> <li>Automotive</li> </ul>



## Features

Receiver type	184-channel u-blox F9 engine GPS L1C/A L2C, GLO L1OF L2OF, GAL E1B/C E5b, BDS B1I B2I, QZSS L1C/A L2C	
Nav. update rate	RTK	up to 20 Hz <sup>1</sup>
Position accuracy <sup>2</sup>	Standalone	2.0 m CEP
	RTK	0.02 m + 1 ppm CEP
Convergence time <sup>2</sup>	RTK	< 10 sec
Acquisition	Cold starts	26 s
	Aided starts	2 s
	Reacquisition	1 s
Assistance	AssistNow Online OMA SUPL & 3GPP compliant	
Oscillator	TCXO	
RTC crystal	Built-In	
Anti-jamming	Active CW detection and removal Onboard band pass filter	
Anti-spoofing	Advanced anti-spoofing algorithms	
Memory	Flash	
Supported antennas	Active	

- 1 The highest navigation rate can limit the number of supported constellations  
 2 Depends on atmospheric conditions, baseline length, GNSS antenna, multipath conditions, satellite visibility, and geometry

## Interfaces

Serial interfaces	2 UART 1 SPI 1 DDC (I <sup>2</sup> C compliant)	
Digital I/O	Configurable timepulse	
Timepulse	Configurable: 0.25 Hz to 10 MHz	
Protocols	NMEA, UBX binary, RTCM version 3.3	

## Electrical data

Supply voltage	2.7 V to 3.6 V	
Power consumption	68 mA @ 3.0 V (continuous)	
Backup supply	1.65 V to 3.6 V	

## Further information

For contact information, see [www.u-blox.com/contact-us](http://www.u-blox.com/contact-us).  
 For more product details and ordering information, see the [product data sheet](#).

## Package

24-pin LGA (Land Grid Array)  
 17 x 22 x 2.4 mm

## 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)	
ETSI-RED compliant	
Qualification according to ISO 16750	
Manufactured and fully tested in ISO/TS 16949 certified production sites	
High vibration and shock resistance	

## Support products

u-blox support products provide reference design, and allow efficient integration and evaluation of u-blox positioning technology.

## Product variants

ZED-F9P	u-blox F9 high precision GNSS module with rover and base functionality
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