

# ZED-F9P module

## u-blox F9 high precision GNSS module

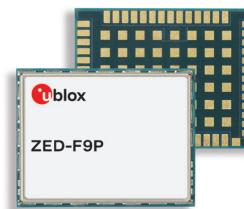


### Multi-band receiver delivers centimeter-level accuracy in seconds

- 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 x 22.0 x 2.4 mm



ZED-F9P

ZED-F9P	
<b>Grade</b>	Automotive
Professional	•
Standard	•
<b>GNSS</b>	•
GPS + QZSS / SBAS	•
GLONASS	•
Galileo	•
BeiDou	•
Number of concurrent GNSS	4
Multi-band	•
<b>Interfaces</b>	•
UART	2
USB	1
SPI	1
DDC (I2C compliant)	1
<b>Features</b>	•
Programmable (flash)	•
Data logging	•
Carrier phase output	•
Additional SAW	•
RTC crystal	•
Oscillator	T
RTK rover	•
RTK base station	•
Moving base	•
Survey-in and fixed mode	•
Timepulse	1
<b>Power supply</b>	•
2.7 V – 3.6 V	•

T = TCXO

**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 L1S L2C, SBAS L1C/A	
Nav. update rate	RTK	up to 20 Hz <sup>1</sup>
Position accuracy <sup>2</sup>	RTK	0.01 m + 1 ppm CEP
Convergence time <sup>2</sup>	RTK	< 10 sec
Acquisition	Cold starts	24 s
	Aided starts	2 s
	Reacquisition	2 s
Sensitivity	Tracking & Nav.	-167 dBm
	Cold starts	-148 dBm
	Hot starts	-157 dBm
	Reacquisition	-160 dBm
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	
Moving base	For attitude sensing and heading applications	
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 USB 1 DDC (I2C compliant)
Digital I/O	Configurable timepulse EXTINT input for wakeup RTK fix status GEOFENCE status
Timepulse	Configurable: 0.25 Hz to 10 MHz
Protocols	NMEA, UBX binary, RTCM version 3.3

**Package**

54-pin LGA (Land Grid Array) 17 x 22 x 2.4 mm
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**Environmental data, quality & reliability**

Operating temp.	-40 °C to +85 °C
Storage temp.	-40 °C to +85 °C
RoHS compliant (2015/863/EU)	
Green (halogen-free)	
EU Radio Equipment Directive compliant 2014/53/EU	
Qualification according to ISO 16750	
Manufactured and fully tested in ISO/TS 16949 certified production sites	
High vibration and shock resistance	

**Electrical data**

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

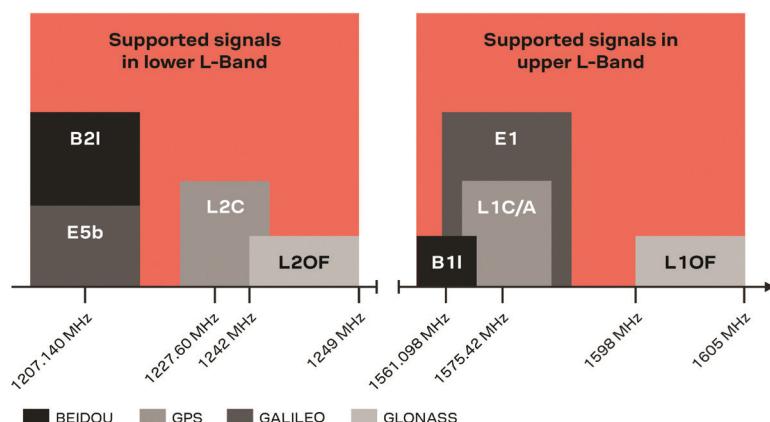
**Support products**

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

C099-F9P	u-blox ZED-F9P application board, with ODIN-W2 for connectivity. Includes multi-band antenna (ANN-MB). One board per package.
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**Product variants**

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

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