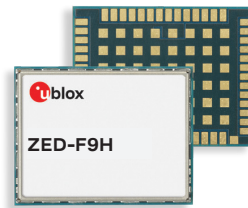Product summary

ZED-F9H module

u-blox F9 high precision GNSS module

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u-blox F9 module designed for heading applications

- Precise heading information to all types of vehicles
- Suitable for UAV, trucks, heavy vehicles and antenna alignment applications
- Heading accuracy independent of vehicle motion and calibration

17.0 × 22.0 × 2.4 mm

u-blox

ZED-F9H

Product description

The ZED-F9H module is designed to provide the best possible heading information to applications where precise attitude is of greatest importance.

The ZED-F9H acts as an accompanying module, and requires a ZED-F9P module to be mounted on the same vehicle. In this setup, ZED-F9P provides the precise GNSS position, and at the same time acts as a moving base to the ZED-F9H module, which in turn outputs the precise attitude information.

As the heading information is based on GNSS it does not require pre-calibration, thus ensuring easy production, integration and operation. The precise heading information is always available, even in stand-still situations.

ZED-F9H is designed to lower the system cost for a heading application and comes with minimal e-BOM. Thanks to its small package size, light weight, and low power consumption it is well-suited for mass market adoption.

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".

	ZED-F9H
Grade	
Automotive	
Professional	•
Standard	
GNSS	
GPS + QZSS / SBAS	•
GLONASS	•
Galileo	•
BeiDou	•
Number of concurrent GNSS	4
Multi-band	•
Interfaces	
UART	2
USB	1
SPI	1
DDC (I2C compliant)	1
Features	
Programmable (flash)	•
Data logging	•
Carrier phase output	
Additional SAW	•
RTC crystal	•
Oscillator	T
RTK rover	
RTK base station	
Timepulse	1
Power supply	
2.7 V – 3.6 V	•

T = TCXO

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ZED-F9H module

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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	
Heading accuracy [1]	0.4 degrees	
Heading update rate [2]	Up to 10 Hz	
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
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 50%, measured with 1 m baseline and patch antennas with good ground planes
2 The highest navigation rate can limit the number of supported constellations

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
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

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. See product documentation for more details.

Product variants

ZED-F9H	u-blox F9 precision heading GNSS module

Further information

For contact information, see www.u-blox.com / contact-us.

For more product details and ordering information, see the product data sheet.