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M.2 RTK GNSS Receiver

A+E-Key M.2 RTK Receiver with ZED-F9P-02B

Datasheet

M.2 RTK GNSS Receiver

A 3030 A+E-key M.2 featuring the u-blox ZED-F9P-02B, allowing for easy integration into autonomous, industrial, and IoT applications.

High precision location coordinates are easy to inject into your system with this small M.2 form-factor RTK GNSS receiver. For fast time to market and future-proofing your GNSS solution, all that is needed is an "A" or "E" key M.2 connector slot. When paired with a multi-band antenna, ~1 centimeter range positioning is achievable.

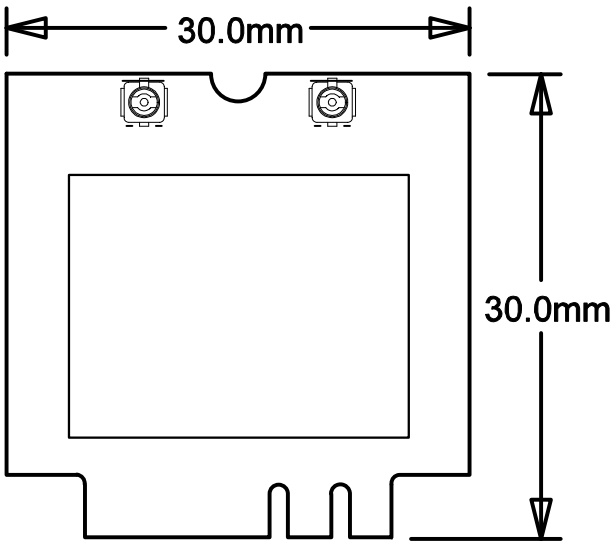
Features

- Made in the USA from globally sourced components.
- Ultra-Low noise on-board LDO for improved receiver immunity from system noise
- USB interface (USB 2.0 support)
- M.2 Module-controlled LED
- ZED's UART (1.8V) and I2C (3.3V) signals exposed at the M.2 Interface for additional connectivity options

Operating Conditions	
Ambient Temperature	-40°C - 85°C
+3.3V Current (MAX)	150 mA
Voltage Range (200mA)*	3.24V - 3.46V (+/- 2%)

Key Details	
Supported Interfaces	USB 2.0, I2C, CMOS (1.8V) UART
Antenna Port	u.FL
Timepulse Port	u.FL (CMOS TTL)
Supported GNSS Constellations	GPS (L1C/A,L2C), GLONASS (L1OF,L2OF), Galileo (E1-B/C, E5b), BeiDou (B1I, B2I), QZSS Satellites (when GPS is enabled)
Supported Protocols	UBX, NMEA 4.10, RTCM 3.3
Chipset	u-blox ZED-F9P-02B
Size and Weight	30mm x 30mm x 5mm, 3.8g

Size Diagram



Pin Definitions and Supported Pins

All pinouts in this section are written from the ZED point of view when referencing signal direction.

	Abbreviation	Definition
Pin Types	U	USB Signaling
	I	Input from module
	I/O	Bidirectional signaling
	O	Output to module

Pin#	M.2 Name	Type	Domain	Module Type
3	USB_D-	U		U
5	USB_D+	U		U
6	LED1#	I	3.3V	O
22	UART_TXD	O	1.8V	I
32	UART_RXD	I	1.8V	O
52	PERST#	O	3.3V	I
58	I2C_Data	I/O	3.3V	I
60	I2C_CLK	O	3.3V	I

Power Domain			Description	Min	Max	Unit
Level	1.8V	V_{IL}	Low-level Input		0.8	V
		V_{IH}	High-level Input	1.17		V
		V_{O}	Output Voltage (I_{OUT} < 2mA)	0	1.8	V
		$I_{OH/L}$	Output/Input Current		2	mA
	3.3V	V_{IL}	Low-level Input		.6	V
		V_{IH}	High-level Input	2.0		V
		V_{O}	Output Voltage (I_{OUT} < 2mA)v	0	3.3	V
		$I_{OH/L}$	Output/Input Current		2	mA

Reference Documents

The following documents are external reference documents and should be consulted when applicable:

- PCI Sig M.2 Electromechanical Specification Revision 5.1, Version 1.0 2023
- USB Specifications (www.usb.org)
- The I2C Specification, Version 2.1 January 2000, Philips Semiconductor (now NXP: www.nxp.com)
- u-blox ZED-F9P-02B high precision GNSS module (www.u-blox.com)

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