

# Datasheet

## EDGE Locate

**Part No:**  
EL20

### Description:

High Precision GNSS Solution

### Ordering Information:

**EL20A** – TxWireless EDGE Locate - cmLevel Positioning Module (With USB to PMOD interface)

**EL20B** – TxWireless EDGE Locate - cmLevel Positioning Module (Module Only)

### Features:

- High-end RTK receiver
- Integrated and validated multi-band antenna.
- Integrated u-blox ZedF9P multi-band GNSS Receiver
- Concurrent reception of GPS, GLONASS, Galileo and BeiDou.
- Advanced anti-spoofing and anti-jamming.
- PMOD compatible and easy to integrate into third-party hardware.
- Pre-certified and validated electronics
- Easy integration with EDGE Connect for full cellular connectivity.
- REACH & RoHS Compliant






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## Introduction

The TxWireless™ EDGE Locate system on module (SoM) is a high-precision GNSS platform for both large-scale and niche navigation and autonomous applications in an off-the-shelf, compact form factor.

The TxWireless EDGE Locate GNSS L1/L2/E5b combines the antenna, RF electronics, and receiver technology in a single package delivering reliable, high-accuracy positioning. Enterprises can quickly and effectively build IoT devices with cm-level positioning technology, without having to invest in costly and lengthy RF design, integration, and testing processes. Integrating the antenna and the GNSS receiver into one package eliminates the need for long RF cabling, allowing simple UART or USB cables to be used for interfacing to the device.

## Key Benefits

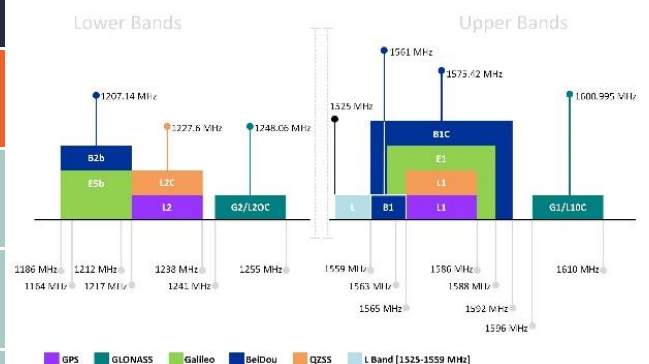
 <p><b>Centimeter level positioning</b> Integrated multiband u-blox ZED-F9P module with RTK to enable centimeter level positioning.</p>	 <p><b>Maximize RF Performance</b> Integrated Taoglas antenna to maximize RF performance.</p>	
 <p><b>Ready Out of the Box</b> Fast time to market, with an accurate navigation solution ready to use out of the box.</p>	 <p><b>Integrate in Your Design</b> Small form factor for ease of integration into your design.</p>	 <p><b>Rapid Prototyping</b> Standard UART Interface with optional USB interface available for rapid prototyping.</p>

## Specifications

<b>Model Name</b>	EL20
<b>GNSS Module</b>	u-blox ZED-F9P
<b>Antenna</b>	Taoglas AGPSF.36G Embedded Active Dual-band GNSS L1/L2 Stacked Patch Antenna
<b>GNSS Constellations</b>	GPS/QZSS (L1/L2) + GLONASS (G1/G3) + GALILEO (E1/E5b + BeiDou(B1/B2b))

Number of Channels	184
TTFF	<60s / Warm start <10s
Interface	SPI/UART via PMOD header Geofence output pin Power control pin (default On)
Operation Temperature	GPS/QZSS (L1/L2) + GLONASS (G1/G3) + GALILEO (E1/E5b + BeiDou(B1/B2b)
Weight	40g
Input Voltage	5.0v
Position accuracy	Up to 0.01m + 1 ppm CEP (RTK) Up to 0.05m (without RTK)
Nav update rate	Up to 20
Hz Acquisition Sensitivity	-129dBm
Tracking Sensitivity	-147dBm

GNSS Electrical				
Frequency (MHz)	1227.6	1561	1575.4	1602
Group Delay (ns)	25.6	50.4	42.4	44.5
PCO (cm)	0.6	0.5	0.6	1.1
PCV (cm)	4.5	1.4	2	3



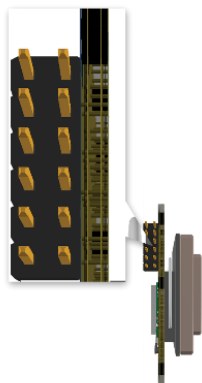
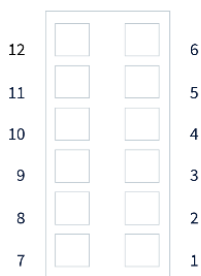
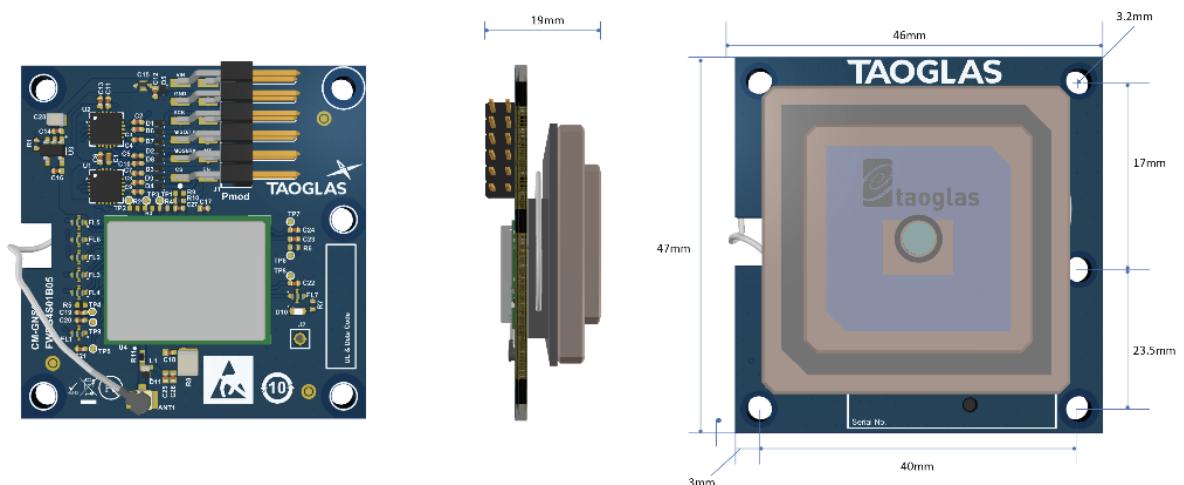
## Power Consumption

Symbol	Parameter	Conditions	GPS+GLO+GAL+BDS	GPS	Unit
IPEAK	Peak current	Acquisition	130	120	mA
$I_{VCC}^{10}$	VCC current	Acquisition	90	75	mA
$I_{VCC}^{10}$	VCC current	Tracking	85	68	mA

Low Power Mode: 1.4 mA to achieve a warm start. VCC/VIN Range - 3.3-5.5V.

For more information, please refer to the U-blox ZED-F9P datasheets.

## Mechanical Specifications



Pin	Name	Description
1	CS	SPI Chip select
2	MOSI	SPI input / UART_TXD
3	MISO	SPI output / UART_RXD
4	SCK	SPI clock
5, 11	0VDC	GND
6, 12	VIN	3.3V Min / 5.0V Typical / 5.5V Max
7	EN	Power enable, Active high (Internally Pulled up)
8	INT	GNSS module external interrupt, unused
9	TXR	SPI Module TX ready
10	GEO	Geolence status from GNSS module

## Field Test

TxWireless have tested the EL20 in Static and Dynamic environments to verify the performance of the unit.

Field tests were performed in static surroundings in a roof-top open-sky test station for at least 6 hours.

Open-Sky Roof Top testing – Static

<b>Receiver</b>	u-blox ZED-F9P
<b>Correction services</b>	u-blox PointPerfect PPP-RTK
<b>Characteristics</b>	<ul style="list-style-type: none"> <li>- Multi-band GNSS: 184-channel GPS L1/L2, GLONASS: G1/G2, Galileo: E1/E5a, BeiDou: B1/B2b, QZSS: L1/L2C</li> <li>- Multi-band RTK with fast convergence times and reliable performance</li> <li>- Nv. Update rate RTK up to 20 Hz</li> </ul>

### 2D Accuracy Table

Test Condition	Correction service	CEP (50%)	DRMS (68%)	2DRMS (95-98.2%)	TTFF (sec)
EDGE Locate Board	PPP-RTK DISABLED	54.2 cm	64.97 cm	129.93 cm	15
	PPP-RTK ENABLED	11.15 cm	13.38 cm	26.75 cm	

Additionally dynamic testing was performed on e-mobility vehicles in various urban settings over a number of separate trials. A detailed report on this test is available on request.

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