

SoftSpot FOX

Real-Time Software GNSS Receiver



SYNTONY
GNSS

Locate & Be Located

For industries relying on terrestrial navigation, robust and reliable GNSS solutions are critical to ensuring operational success. Whether deployed in urban, rural, or industrial environments, these systems must overcome challenges such as interference, signal disruption, and harsh operating conditions.

FOX is designed specifically for terrestrial operations, excelling in environments with up to 50 dB interference. It addresses challenges like multipath, jamming, and spoofing, ensuring dependable GNSS

data even in demanding conditions. Its rugged design guarantees consistent performance, making it a reliable choice for ground-based applications.

With FOX, organizations gain access to a robust navigation solution that meets the needs of challenging terrestrial operations, offering resilience and accuracy where it matters most.

Extensive options

- ✓ Embedded GNSS Receiver
- ✓ 1 or 2 RF stages for mono or bi-frequency
- ✓ High performance GNSS reception
- ✓ Robust to vibration
- ✓ Operating temperature from -40 to +85°C
- ✓ Full Post-delivery upgradability:
 - Functional, Performance or option upgrade
 - Compatibility enhance
- ✓ ADC 12 bits I/Q
- ✓ From 25 to 50 MHz sampling rate
- ✓ From pure L1C/A up to Multi-GNSS
- ✓ Mono or multi-frequency
- ✓ Important: Independent acquisition for all signals, allowing L5-only acquisition when L1 is not available or jammed

FOX hardware platform is based on the following design choices:

- AD9361 RF stage
- Xilinx ZU3EG
- Ruggedized design able to withstand most of the usual conditions (ground, UAV, aircraft, etc)
- Anti-jamming/Anti-Spoofing
- In option: Ethernet connectivity

FOX receiver embeds the SDR GNSS receiver called SoftSpot which:

- Performs the cold and warm acquisition independently for each signal, constellation and frequency
- Computes the correlators
- Makes the tracking independently for all signals also
- Computes the pseudo ranges
- Computes the PVT (Position, Velocity, Time) taking into account the signals that are in visibility

The acquisition, tracking and PVT being done independently on all signals, there is no need for the receiver to acquire GPS L1C/A to be able to compute a PVT, whereas most of the existing chipsets on the market have this drawback.



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Specifications

Software

Signals

GPS	L1C/A, L5 (data & pilot)
GALILEO	E1B & C, E5A
GLONASS, BEIDOU, IRNSS, SBAS, GBAS, QZSS	on demand

Performance

Channels	Up to 84
RF input bands	1 or 2
TTFF Cold Start	See table hereafter
Restart Fix (warm)	Typ. <10 sec (<3 sec with IMU)
ADC	12 bits
Antenna	Active antenna (powered by coax), typ. 5V DC
PVT update rate	1 or 10Hz. Can be more if required

Real Time Accuracy @95% (m)

L1C/A	21.5
L1C/A, E1	11.5
L1C/A, E1, E5a	3.94
L1C/A, E1, L5, E5a	2.48

TTFF (s)

L1C/A	38
E1	39
E5a	66
L5	42

Post-treatment Accuracy @95% (m)

L1C/A	1.33
L1C/A, E1	0.44
L1C/A, E1, E5a	0.28
L1C/A, E1, L5, E5a	0.20

Hardware

RF Input

Frequency Bands	1100MHz to 1610MHz
RF Bandwidth (each band)	20MHz

Connectors

Antenna	1 SMA
Power Supply	5V Jack 2.1
UART	Sub-D 15 pin
1 PPS signal	Can be available on Sub-D

Physical dimensions and characteristics

Overall (box)	80 mm x 90 mm x 32 mm
Weight	~0.320 Kg
Storage Temperature	From -40 to +85°C
Operating Temperature	From -35 to +60°C
Consumption	6W nominal 8W at startup

Antijamming capabilities

Pulsed	58dB J/S
CW or FMCW	50dB J/S in State 5
Narrow band jammer (Version A)	J/S 32dB (State 5), 41dB (State 3)
Wide band jammer (Version A)	J/S 44dB (State 5), 56dB (State 3)
Narrow band jammer (Version B)	J/S 53dB (State 5), 58dB (State 3)
Wide band jammer (Version B)	J/S 43dB (State 5), 55dB (State 3)

Miscellaneous

Licenses

Exportation outside Europe	Requires an export license when delivered either with unlimited speed or antijamming algorithms
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Options

Version A	Standard antijamming capabilities
Version B	High antijamming capabilities
Basic version	L1C/A
GPS-GALILEO mono-frequency	L1C/A, E1
GPS L1, GALILEO bi-frequency	L1C/A, E1, E5a
GPS-GALILEO bi-frequency	L1C/A, E1, L5, E5a
Limited speed	Speed <600m/s
Unlimited Speed and altitude	Speed >=600m/s

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