

SoftSpot Mini Receiver

Real-Time Software GNSS Receiver



Locate & be Located

Whether your business' domain is **Aeronautics, Space, Automotive, Rail, IoT, or similar**, you are facing the need for performance, increased precision, versatility, and cost-effectiveness.

This is why Syntony has created SoftSpot, the only Real-Time Software GNSS Receiver on the market, designed to be easily adaptable to your application: depending on the configuration, it can be perfect for urban canyon, for use in high dynamic flight, and even in space.

SoftSpot can either be delivered as simple software running on your hardware, on a PC platform, or together with a Syntony hardware platform, which is called SoftSpot MiniReceiver.

SoftSpot MiniReceiver hardware includes a 2 frequency RF stage (typically L1 and L5), a SoC processor, and provides raw data through different types of interfaces (serial, USB, etc.).

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:
 - Fonctional & Performance improvement
 - Compatibility enhance
- ✓ ADC 2 bits I/Q
- ✓ 25MHz sampling rate
- ✓ From pure L1C/A up to Multi-GNSS
- ✓ Mono or multi-frequency
- ✓ Includes accelerometer & pressure sensors
- ✓ Important: Independant acquisition for all signals, allowing L5-only acquisition when L1 is not available or jammed

SoftSpot software:

- Performs the cold and warm acquisition independently for each signal
- Computes the correlators
- Makes the tracking
- Computes the pseudo ranges
- Computes the PVT (Position, Velocity, Time)

A Dedicated Pack is available for Laboratory configurations, it comes with a PC (delivered and configured), together with an "Off-The-Shelves" RF Stage for direct use of SoftSpot on the PC. The software is identical to what will be inside the final product, making it easy to integrate, adapt and test.

Software Defined Radio solution makes the difference:

- Versatile, upgradeable, adaptable to customer's requirement
- Allows improving functioning even after having been set in service
- Software can run on customer's board



SoftSpot MiniReceiver

Specifications

Software

Signals

| | |
|------------------------|--------------------------|
| GPS | L1C/A, L5 (data & pilot) |
| GALILEO | E1B&C, E5a |
| GLONASS | Available on demand |
| BEIDOU | Available on demand |
| SBAS, GBAS, DGPS, QZSS | Available on demand |

Performance

| | |
|--------------------|--|
| Channels | Up to 48 (4*12) |
| RF Input Channels | 1 or 2 |
| TTF Cold Start | See table below |
| Restart Fix (warm) | Typ. <10sec (<3sec with IMU) |
| Trajectories | Static (reference station), on earth (subsonic or supersonic, LEO, GEO, launchers) |
| Antenna | Active antenna (powered by coax), typ. 3,3V DC |
| PVT update rate | 1 or 10Hz, can be more if required |

Real Time Accuracy @95%

| | Ground (m) | LEO (m) |
|--------------------|------------|---------|
| L1C/A | 21.5 | 5.52 |
| L1C/A, E1 | 11.5 | 2.50 |
| L1C/A, E1, E5a | 3.94 | 2.24 |
| L1C/A, E1, L5, E5a | 2.48 | 2.16 |

TTF (independant)

| | Ground (s) | LEO (s) |
|-------|------------|---------|
| L1C/A | 38 | 42 |
| E1 | 39 | 72 |
| E5a | 66 | 93 |
| L5 | 42 | 71 |

Post-treatment Accuracy @95%

| | Ground (m) | LEO (m) |
|--------------------|------------|---------|
| L1C/A | 1.33 | 1.33 |
| L1C/A, E1 | 0.44 | 0.44 |
| L1C/A, E1, E5a | 0.28 | 0.28 |
| L1C/A, E1, L5, E5a | 0.20 | 0.20 |

Hardware

RF Input

| | |
|-----------------|--------------------|
| Frequency Range | 1100MHz to 1610MHz |
| RF Bandwidth | 20MHz |

Connectors

| | |
|--------------|--------------------------------|
| Antenna | SMA |
| Power Supply | 5V Jack 2.1 |
| UART | SUB D 15 pin |
| USB | USB type C (USB3) or micro USB |
| 1PPS Signal | Can be available on SUB D |

Other Sensors

| | |
|----------|--|
| IMU | 3D accelerometer & 3D gyroscope : ASM330LHH |
| Pressure | MPL3115A2 |

Physical dimensions and characteristics

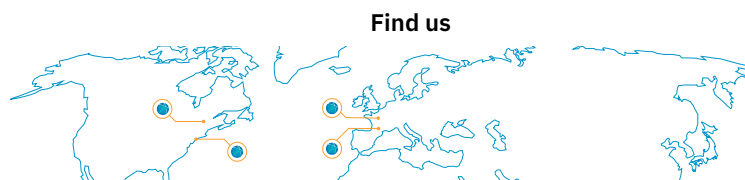
| | |
|-----------------------|--|
| Board Dimensions | 7cm*5cm*1.6cm |
| Overall (box) | Can be adapted to customers' needs and constraints |
| Consumption | Up to 5W depending on signals used Space trajectory: when functioning in fractionated mode, the average consumption can be less than 1W over a LEO orbit |
| Operating Temperature | From -40 to +85°C |

Misc

| | |
|----------------------------|--|
| Exportation Outside Europe | Can be delivered free of exportation license (<600m/s) or with unlimited speed (needs a license) |
|----------------------------|--|

Options

| | |
|------------------------------|--|
| 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 |
| IMU | Use of Accelerometer and pressure to extrapolate the position in GNSS-denied environments, and minimize reacquisition time |
| Ground | Speed <100m/s |
| Aero | Speed <600m/s |
| Space | Speed >=600m/s |



TOULOUSE - PARIS - NEW YORK - MONTREAL

More info on
[syntony-gnss.com](https://www.syntony-gnss.com)