SFX4

GNSS SDR Receiver Platform

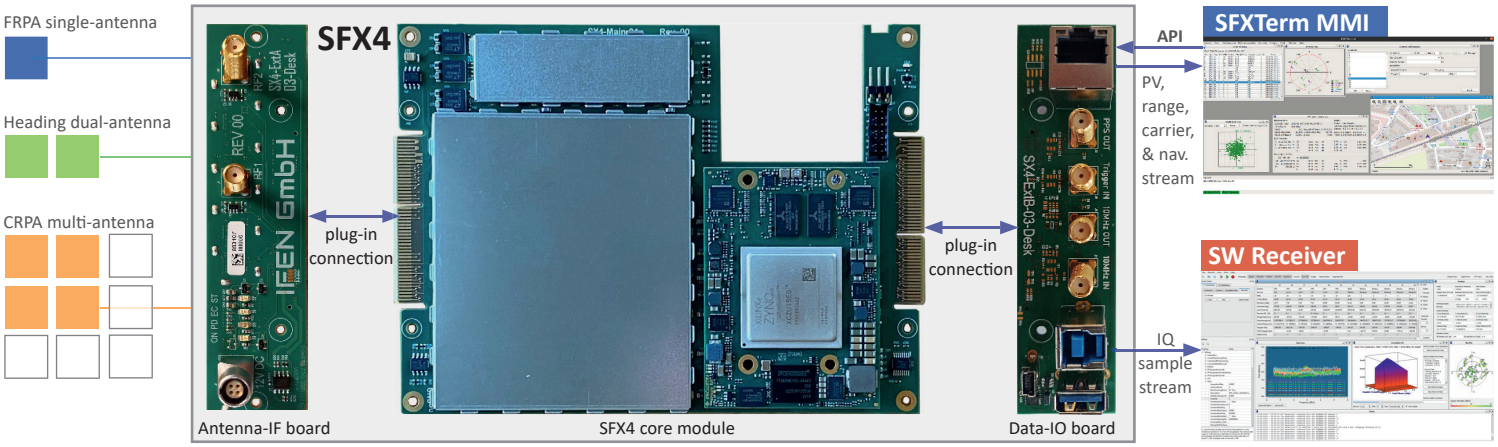
2025

New Highlights

- Galileo 2nd Generation E1 Quasi-Pilot signals
- Phase synchronous signal processing for heading determination
- I/Q signal samples output streaming

SFX4 SDR Modular Receiver Platform

The SFX4 is a modular SDR GNSS receiver MPSOC platform, designed for high performance, scalability and flexibility. The SFX4 module hosts the signal conditioning & processing, but also the different PVT processing solutions. The RF Antenna-Interface (IF) can be adapted to different antenna solutions (FRPA, CRPA). The Data Flex-IO boards can be easily customized to fit different data interface needs. The remote SFX4 terminal MMI software allows remote configuration, monitoring and analysis through a complete API. The streamed IQ samples can be processed in a separate software receiver.



Specification

Flexible Antenna-IF Board

Baseline board
- 2 x sma RF inputs
- Active antenna support: 5V/150 mA
- 1st LNA per chain for low receiver noise
- 12 VDC power supply interface

Antenna-IO options
- Other RF connector types: TNC, N-type
- 1, 2 or 4 RF-in connectors
- Up to 8+ RF-in connectors (beamforming, by combining several SFX4 boards)

Signal routing options
- Configurable signal splitters
- Configurable signal combiners
- Routing of single or dual antenna inputs to different SX4 RF-chains

Signal amplifiers options
- Optional dual-stage LNA (for low CN0)
- By-passable LNA (for high CN0)

Signal frequency conversion options
- Custom signal down-converters (e.g. from Ka-band to L-band)
- Custom signal up-converters (e.g. from L-band to Ka-band)

Power options
- ADC power supply option
- 12 - 36 VDC power supply option

SFX4 Core Module

Signal processing board
- 4 RF chains simultaneously with 50 MHz RF bandwidth each
- 1.1 to 2.5 GHz (all L- and S-band) frequency support
- 11-bit ADC with custom ceramic RF-filter
- Plug-in MPSoC (FPGA & ARM) for scalable processing power

GNSS signal options
- Galileo-1G E1, E5ab (AltBOC), E6 (HAS SL1)
- Galileo-2G E1, E5ab, E6
- GPS L1CA & L1C, L2C & L2P, L5
- BeiDou B1I & B1C, B2I & B2a
- GLONASS L1, L2
- NavIC L5, S
- QZSS L1, L2, L5
- SBAS L1 (and L5 tracking only)

Acquisition and tracking capability and configurability
- Standard Tong acquisition, but also fast acquisition unit (FAU)
- 60 (standard) up to 300 (next. gen. MPSoC) tracking channels
- Full channel configurability (PLL/DLL order, loop bandwidth, integration time, multi-correlator..)
- Interference dectection & mitigation (notch filter & pulse blanking)

Measurement performance
- Code accuracy: < 2 ... 20 cm (depending on CN0)
- Carrier accuracy: < 1.5 mm

PVT capabilities and performance
- PVT modes: WLSQ, SBAS, DGNSS, PPP (including HAS SL1)
- PVT update rate: 0.02 - 20 Hz (up to 100 Hz with IMU)
- TTFF: 60 s(cold), 30 s(warm), 10 s(hot), 2 s (re-acquisition) typical
- Operational limits: < 600 m/s velocity, < 18.000 m height

Outputs at all levels
- IQ samples, IQ correlator values
- Measurements in IFEN binary & ASCII, RTCM and RINEX
- PVT solution in IFEN binary & ASCII and NMEA

Flexible Data-IO Board

Baseline board
- 1 x 1 GB Ethernet
- 2 x USB 3.0, 1 x RS-232
- 10-MHz in, 10-MHz out
- 1-pps-out, trigger-in

Communication options
- Additional Ethernet ports
- SFP+ or QSPF28 ports
- CAN bus
- USB 2.0

Signaling options
- 10-MHz out
- Trigger-in
- Synchronisation to combine multiple SFX4 boards (e.g. for beamforming)

Wireless communication options
- WLAN & Bluetooth
- LTE & 5G

Sensors options
- MEMS IMUs
- Barometer
- Magnetic field sensor
- Temperature

Clock options
- TCXO or OCXO clocks

Applications

Test & Measurement (T&M)
- Galileo 2G Test User Receiver Non-PRS
- Galileo 2G Legacy Payload Test Receiver
- Galileo 1G In-Orbit Test

Mobile Applications
- Agriculture & Forestry
- Maritime & SAR

CORS & RFI Monitoring (C&M)
- Continuously Operating Reference Station
- Multi-Antenna RFI Detection and Localization Receiver

IFEN

Disclaimer:
All specifications subject to change without prior notice

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