M.2 GNSS MOSAIC CARD

High-precision GNSS module featuring advanced anti-jamming and spoofing protection

ANAVS

Advanced Navigation Solutions

Application

The **ANavS M.2 MOSAIC GNSS Receiver Cards** are part of the ANavS Smart Module family, designed for integration into industrial PCs and development boards. The M.2 MOSAIC Receivers provide a high-rate, precise GNSS solution for both position and attitude.

With a compact **M.2 3030 Key-E form factor** and support for multi-constellation, multi-frequency GNSS tracking, the ANavS M.2 MOSAIC Cards are suitable for a wide range of applications. , including:

- Drones
- Automotive
- Railway
- Survey and Mapping
- Automation

The versatility of the **ANavS M.2 MOSAIC Cards** makes this receiver family a powerful and comprehensive solution for OEMs requiring a reliable and accurate GNSS system.

Technology

The ANavS M.2 MOSAIC Cards use advanced GNSS tracking with support for Galileo, GPS, GLONASS, and BeiDou, ensuring comprehensive multi-constellation and multi-frequency coverage.

Featuring high-rate RTK technology (up to 100 Hz), the receivers enable precise real-time positioning. The ANavS M.2 MOSAIC family of modules is designed for seamless integration with external IMUs, enhancing the stability and reliability of the positioning solution in demanding applications.

Advanced technology inside: **AIM+, LOCK+, APME+, IONO+**

System configuration

The M.2 MOSAIC GNSS Receiver Card features a modular design compatible with M.2 Key-E slots on various industrial and embedded systems. It supports both USB and UART interfaces for data communication and can be configured for single- or dual-antenna setups. The system is compatible with standard GNSS software tools, and configuration is easily performed via a web interface – simplifying setup and management without requiring additional software.

M.2 MOSAIC Product Family

X5 70.40.0.61.0.0	H 70.40.0.62.0.0	T 70.40.0.63.0.0
Base module	Heading version with two antenna connectors	Timing version with 1 antenna and optional Oscillator input

Technical Specifications

MOSAIC PERFORMANCE

Accurate RTK Positioning [1] (1σ)

Horizontal accuracy	0.006 m ± 1 ppm
Vertical accuracy	0.010 m ± 1 ppm

Accurate Attitude [1,2] (1σ)

1m antenna spacing
- Roll and Pitch   0.25°
- True Heading   0.15°

5m antenna spacing
- Roll and Pitch   0.05°
- True Heading   0.03°

Velocity Accuracy   0.03 m/s RMS

Maximum update rate:

Measurements	100 Hz
Standalone, SBAS, DGPS + attitude[2]	
	100Hz (50Hz[2])
RTK + attitude[2]	100Hz (20Hz[2])
Latency	<10ms

[1] Depends on Environment and used GNSS-Antenna
[2] with MOSAIC-H

ELECTRICAL SPECIFICATIONS

Input voltage	3.3 VDC +/-5%
Power consumption	0.6 W typ, 1.1 W max
Antenna pre-amplification range	15-50 dB
Antenna bias voltage	5 V Build-in current limit (150 mA)

COAXIAL CONNECTORS

	Mosaic-X5	Mosaic-H	Mosaic-T
IN 1	GNSS Antenna	GNSS Antenna 1	GNSS Antenna
IN 2	Not Connected	GNSS Antenna 2	10MHz. clock in

PHYSICAL & ENVIRONMENTAL

Package	Compatible with M.2 Key E
Size	31 x 42.8 mm
Clearance:	4.17 mm top, 1.20 mm bottom
Antenna connector type	MMCX socket
Environmental Operating temp.:	-40 to 85° C
Storage temp.:	-55 to 85° C
Humidity	5%
	95% (non-condensing)
Certification	RoHS, WEEE, CE
Driver	Supplied Septentrio

PROTOCOLS

Septentrio Binary Format (SBF)
NMEA 0183, v2.3, v3.03, V4.0
RINEX v2.x, v3.x
RTCM v2.x, v3.x (MSM included)
CMR v2.0 (out/in), CMR+ (input only)

GNSS FEATURES

GNSS Constellations
- Galileo, GPS, Beidou, Glonass
- SBAS (EGNOS, WAAS, GAGAN)

GNSS Const. Concurrent   All

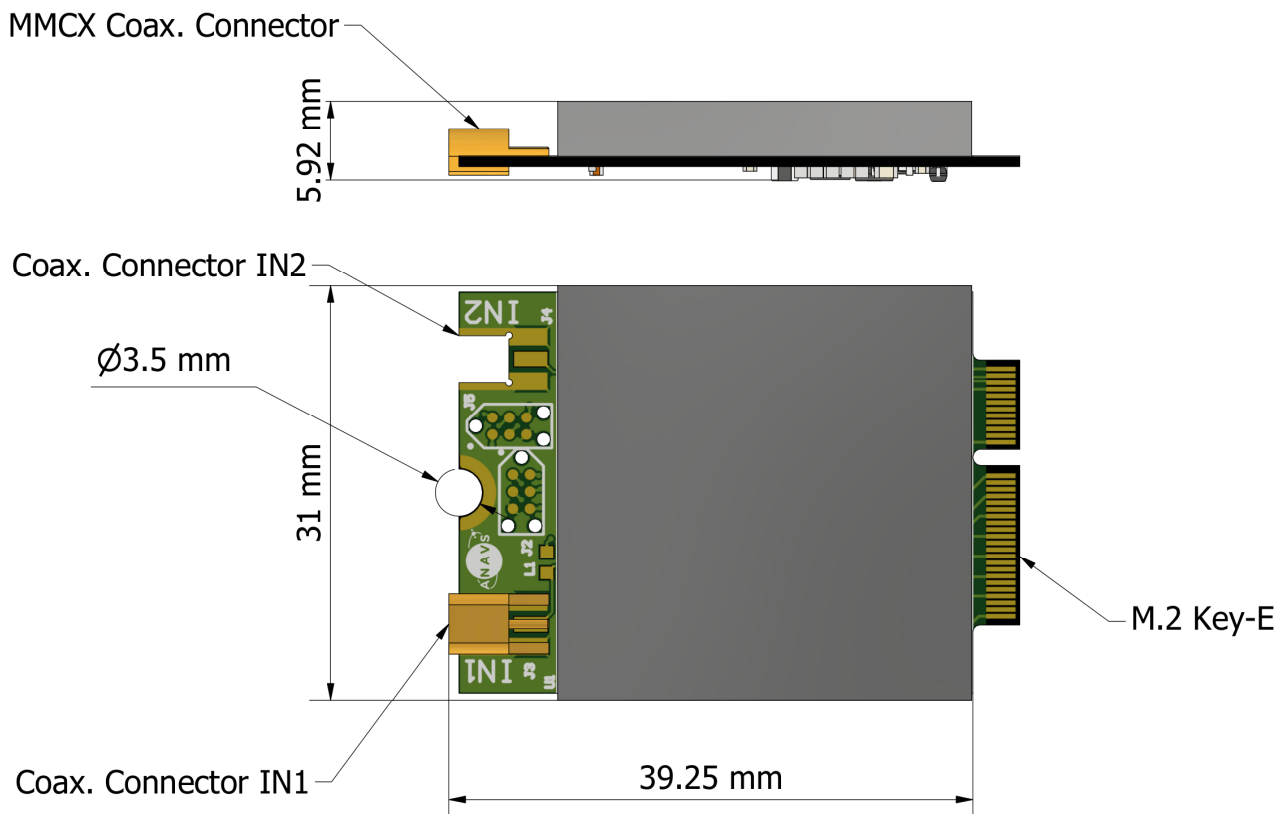**GNSS-Bands**
- GPS: L1C/A, L1C, L1PY, L2C, L2P, L5[3]
- GAL: E1, E5a[3], E5b, E5 AltBoc[3], E6[3]
- BDS: B1I, B1C, B2a, B2I, B3[3]
- GLO: L1CA, L2CA, L2P, L3[3]
- QZSS: L1C/A, L1C, L2C, L5[3], L6[3]

[3] with MOSAIC-X5 Chip

Technical Specifications

Dimensions

MMCX Coax. Connector

5.92 mm

Coax. Connector IN2

Ø3.5 mm

31 mm

Coax. Connector IN1

M.2 Key-E

39.25 mm

Related Products

**ANavS M.2 U-blox Card
70.40.0.71.0.0**

M.2 Key-E GNSS card based around the
U-blox F9 family of receivers

ANavS EMB

An ideal standalone GNSS solution for posi-
tioning or used as RTK base station

**ANavS M.2 to USB Type-C Adapter
71.40.0.00.0.0**

Adapter from M.2 Key-E to USB Type C.
Perfect for Prototyping