M.2 G5 GNSS CARDS

High-precision GNSS module family

Advanced Navigation Solutions

The **ANavS M.2 G5 GNSS Cards** are part of the ANavS Smart Module family, designed to bring highest precision and reliable GNSS into industrial PCs and development boards to provide best in class positioning, attitude and timing information.

The **M.2 MOSAIC G5 SMART** comes with a small form factor (M.2 key A+E), ideal for direct integration in existing systems.

The **M.2 MOSAIC G5 PRO** (Key B and E) is ideal for demanding applications and brings high-quality MMCX connectors with 5V LNA voltage and additional signals.

Advanced GNSS+ technologies: **Different levels of AIM+, LOCK+, APME+, IONO+, RAIM+**

GNSS FEATURES

789 hardware channels for simultaneous tracking of all visible supported satellite signals:

- GPS: L1C/A,L1C, L2C, L2PY, L5
- GLONASS: L1CA, L2CA, L2P, L3CDMA
- Beidou: B1I,B1C,B2a, B2I, B2b, B3I
- Galileo: E1, E5a, E5b, E5 AltBoc (P6 and P8 only), E6
- QZSS: L1C/A, L1 C/B, L2C, L5, L6 (P6 and P8 only)
- On module L-band (P6 and P8 only)

GNSS Heading (not on P3)

Galileo High Accuracy Service HAS (P6 and P8 only for now)

Galileo OSNMA

Full raw measurement data (not on P3H)

4 or 5-constellations RTK (rover)

MOSAIC-G5 PERFORMANCE

Accurate RTK Positioning[1] (1σ)	
Horizontal accuracy	6 mm ± 0.5 ppm
Vertical accuracy	10 mm ± 1 ppm
Initialization time	7 s
Other positioning modes horizontal accuracy[1] (1σ)	
Standalone	1.2 m
SBAS (P6 only)	0.6 m
DGNSS	0.4 m
HAS (P6 and P8)	0.1 m
Accurate Attitude[1] (not on P3)	
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	
P3	20 Hz
P6 and P8 with attitude	50 Hz
P6 and P8 with no attitude	100 Hz
Position	
P3, P3H	20 Hz
P6 and P8 with attitude	50 Hz
P6 and P8 with no attitude	100 Hz
Latency	<10ms
Time precision	
PPS resolution	1.4 ns
Event accuracy	<3 ns
Time to first fix	
Cold start	< 35 s
Warm start	< 10 s
Re-acquisition	1 s

[1] Depends on Environment and used GNSS-Antenna



M2_Mosaic-G5-Smart



M2_Mosaic-G5-Pro

I/O

Interfaces
USB device (2.0, HS up to 480Mbps)
Configurable PPS via u.Fl
UART (PRO Key E only)
GPIO (user programmable, PRO Key E only)
Configurable PPS via M.2 (PRO Key E only)

Protocols
Septentrio Binary Format (SBF)
NMEA 0183, v2.3, v3.03, V4.0
RTCM v3.x (P3 and P3H only, MSM included)
Authenticated in- and output through DTLS (P8 only)

The official Septentrio Mosaic-G5 driver can be used

PHYSICAL & ENVIRONMENTAL

SMART

Package	Compatible with M.2 Key A+E
Size	22 x 30 mm
GNSS / PPS connector	u.Fl Jack

PRO Key B and E

Package	Compatible with M.2 Key B+E
Size	30 x 42 mm
GNSS connector	MMCX Jack
PPS connector	u.Fl Jack

Operating temp.	-40 to 85° C
Storage temp.	-55 to 85° C
Humidity	5% - 95% (non-condensing)
Certification	RoHS, WEEE, CE

ELECTRICAL SPECIFICATIONS

Input voltage	3.3 V +/-5%
Power consumption	0.4-0.6 W typ, 0.9 W max
Antenna pre-amplification range	15-50 dB (P3) 15-35 dB (P3H, P6)
Antenna bias voltage	3.3 V (SMART) 5.0 V (PRO Key B and E) Built-in current limit (150 mA)

M.2 G5 PRODUCT FAMILY

Variants	SMART	PRO
Mosaic-G5 P3	73.40.0.65.0.0	70.40.0.65.0.0
Mosaic-G5 P3H	73.40.0.66.0.0	70.40.0.66.0.0
Mosaic-G5 P6	73.40.0.67.0.0	70.40.0.67.0.0
Mosaic-G5 P8	73.40.0.68.0.0	70.40.0.68.0.0

RELATED PRODUCTS

M.2 X5/H/T GNSS Cards
70.40.0.6x.0.0

M.2 GNSS cards with the Mosaic-X5 (61), Mosaic-H (62) or Mosaic-T (63) chipset. Ideal for high resilient navigation



M.2 Epson IMU card
70.40.0.00.x.0

M.2 IMU card, available in different Epson FOG performance IMU variants



M.2 to USB-C Adapter
71.40.0.00.0.0

Adapter from M.2 Key-E cards to USB Type C. Compatible with all ANavS M.2 cards



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