

M12M NAVIGATION ONCORE™ RECEIVER **Preliminary Specification**



- 12 Channel simultaneous operation
- < 15s typical Hot start TTFF
- < 40s typical Warm Start TTFF
- < 60s typical Cold Start TTFF
- < 1.0 s internal reacquisition
- Antenna Current sense detection
- Inverse/ DGPS support
- 155mW Power consumption @ 3V Operation

The M12M Navigation Oncore™ receiver is an intelligent 12 Channel GPS sensor intended to be used as a component in a precision positioning, navigation, or timing system. The M12M is capable of providing precise autonomous position, velocity, and time information instantly.

With the support for inverse differential GPS operation, M12M gives highly precise location accuracy.

Powerful Performance

Fastest Time To First Fix (TTFF) specifications in the industry with split second reacquisition times.

Extreme Precision

Using Inverse DGPS to achieve high accuracy, M12M is designed for applications that need precision location.

High Flexibility

Include RTCM differential GPS support, NMEA 0183 output, two communications ports, a user-controlled velocity filter, and an antenna sense circuit.

Low Power

At only 155 mW @ 3 V without antenna, 5 mAh cells, gives 2 weeks to 1 month of backup time for fast fix.

Technical Specifications

General Characteristics	Receiver Architecture	12 parallel channel L1 1575.42 MHz C/A code (1.023 MHz chip rate) Code plus carrier tracking (carrier aided tracking)
	Tracking Capability	12 simultaneous satellite vehicles
Performance Characteristics	Dynamics	Velocity: 1000 knots (515 m/s) > 1000 knots (515 m/s); at altitudes < 60,000 ft.(18000m) Acceleration: 4g Jerk: 5 m/s ³ Vibration: 7.7g per Military Standard 810E
	Acquisition Time (Time To First Fix, TTFF) (Tested at -40 to +85°C)	< 15 s typical TTFF-hot (with current almanac, position, time and ephemeris) < 40 s typical TTFF-warm (with current almanac, position, time) < 60 s typical TTFF-cold (No stored information) < 1.0 s internal reacquisition (typical)
	Positioning Accuracy	< 5 m, 1-sigma < 10 m, 2-sigma
	Timing Accuracy (1 Pulse Per Second, 1 PPS)	< 500 ns, 2-sigma
	Datum	WGS-84 default One user definable datum
Antenna	Antenna Requirements	Active antenna module powered by receiver module (80mA max) 10dB to 50dB external antenna gain measured at receiver input 3 Vdc or 5 Vdc antenna power provided via header connector
Serial Communication	Output Messages	Latitude, longitude, height, velocity, heading, time Motorola binary protocol at 9600 baud NMEA 0183 (GGA, GLL, GSA, GSV, RMC, VTG, ZDA) Software selectable output rate (continuous or poll) TTL interface (0 to 3 V) Second COM port for RTCM input
Electrical Characteristics	Power Requirements	2.8 to 3.3 Vdc; 50 mVp-p ripple (max)
	"Keep-Alive" BATT Power	External 2.2 Vdc to 3.2 Vdc, 5 uA typical @ 2.7 Vdc @ 25°C
	Power Consumption	155 mW @ 3 V without antenna
Physical Characteristics	Dimensions	40.0 x 60.0 x 13.0 mm (1.57 x 2.36 x 0.53 in.)
	Weight	Receiver 12.5 g
	Connectors	Data/power: 10 pin (2x5) unshrouded header on 0.050 in. centers (straight configuration) RF: right angle MMCX
	Antenna to Receiver Interconnection	Single coaxial cable (with power on center conductor to support active antenna) Antenna sense circuit
Environmental Characteristics	Operating Temperature	-40°C to +85°C
	Storage Temperature	-40°C to +105°C
	Humidity	95% over dry bulb range of +38°C to +85°C
	Altitude	18,000 m (60,000 ft.) maximum > 18,000 m (60,000 ft.) for velocities < 515 m/s (1000 knots)
Miscellaneous	Standard Features	Motorola DGPS corrections at 9600 baud on COM 1 RTCM SC-104 input Type 1 and Type 9 messages for DGPS at 2400, 4800 or 9600 baud on COM 2 Inverse DGPS support
	Optional Features	Lithium battery backup

Additional Information is available at www.ilotus.com.sg or by contacting i-lotus at the following:

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