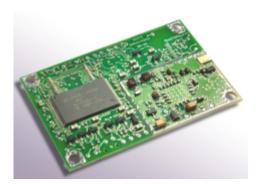
M12+ TIMING ONCORE™ RECEIVER



Key Features of the M12+ Timing Oncore

- 3 Volt operation
- 12 Channel simultaneous operation
- Fully calibrated to UTC at USNO
- Performance using clock granularity message
 2nS 1 Sigma average
 6nS 6 Sigma average
- Performance not using clock granularity message
 < 10nS 1 Sigma average
 < 20nS 6 Sigma average
- 185mW Power consumption
- Small 40 * 60 * 10 mm form factor
- 200 Seconds typical cold start TTFF
- 50 Seconds typical warm start TTFF
- 2/5 Seconds typical hot start TTFF
- <1s internal reacquisition
- Position hold mode for improved accuracy
- Automatic site survey for position hold
- Advanced T-RAIM features
- Antenna current sense detection

There's only one name for quality and performance in GPS technology.



MOTOROLA intelligence everywhere^{*}

THE CORRECT CHOICE TOWARDS PROVIDING CARRIER-GRADE TIMING RELIABILITY

The M12+ Timing Oncore is the newest member of the successful Oncore family, built on Motorola's strong legacy and experience in this specialized market.

Reliable timing

The M12+ Timing Oncore represents Motorola's continued commitment to the GPS accurate timing market. Developed specifically for timing applications, the M12+ Timing Oncore receiver reflects Motorola's high standard for performance in timing and frequency stabilization.

Advanced T-RAIM features

Utilizing Motorola's Time RAIM (receiver autonomous integrity monitoring) algorithm, the M12+ Timing Oncore helps ensure the validity and reliability of GPS measurements.

Highly accurate

Extensive testing of the M12+ Timing Oncore at the internationally recognized USNO laboratory confirms a high level of performance as indicated by the 6 Sigma timing averages. A complete test report is available on request.

Clock granularity message

Using the M12+ Timing Oncore's clock granularity software output, the 1 PPS output can be resolved to within nanoseconds of UTC time immediately, reducing noise and accelerating host clock disciplining process.

Motorola Matching Oncore Timing2000 Antenna

- 25dB Active Antenna
- 5 Volt operation
- 26mA typical current consumption
- High strength direct mount
- <1.5dB typical noise figure
- 40dB minimum filtering at ± 50MHz



M12+ Timing Oncore Receiver Technical Specifications



From Motorola, the leader in GPS technology

The Oncore family of GPS receivers demonstrates Motorola's quest for product and service excellence, and is further evidenced by our QS-9000 certification and Six Sigma quality achievements. Understand Motorola's reliability, responsive support and long-term commitment and you understand why Oncore is the receiver of choice. *After all, it's not where you are, it's where you're going.*

GENERAL	Receiver Architecture	12 channel
CHARACTERISTICS		L1 1575.42 MHz
		C/A code (1.023 MHz chip rate) Code plus carrier tracking (carrier aided tracking)
	Trading Conshilts	
PERFORMANCE	Tracking Capability	12 simultaneous satellite vehicles
PERFORMANCE	Dynamics	Velocity: 1000 knots (515 m/s) > 1000 knots (515 m/s); at altitudes < 60,000 ft.(18,000m)
CHARACTERISTICS		Acceleration: 4g
		Jerk: 5 m/s ³
		Vibration: 7.7G per Military Standard 810E
	Acquisition Time	200s TTFF-cold (with current almanac, position, time and ephemeri
	(Time To First Fix, TTFF)	50s TTFF-warm (with current almanac, position, and time) 25s TTFF-hot (No stored information)
	(Tested at -30 to +85°C)	< 1.0s internal reacquisition (typical)
	Positioning Accuracy	100 meters 2dRMS with SA as per DoD specification
		Less than 25 m SEP without SA
	Timing Accuracy	Performance using clock granularity message*
	(1 Pulse per second	< 2nS 1 Sigma average
	or, 100 PPS) Position hold mode active	< 6nS 6 Sigma average
	Position noid mode active	Performance not using clock granularity message* < 10nS 1 Sigma average
		< 20nS 6 Sigma average
	Antenna Requirements	Active antenna module powered by receiver module
		18dB to 36dB external antenna gain measured at input to receiv
		3 V or 5 V Antenna power provided via header connector
	Datum	WGS-84 Default One user definable datum
SERIAL	Output Messages	Latitude, longitude, height, velocity, heading, time
COMMUNICATION	output messages	Motorola binary protocol at 9600 baud
		Software selectable output rate (continuous or poll)
		TTL interface (0 to 3 V)
ELECTRICAL	Power Requirements	2.85 to 3.15 Vdc; 50 mVp-p ripple (max)
CHARACTERISTICS	"Keep-Alive" BATT Power	External 2.2 Vdc to 3.2 Vdc, 5 uA typical @ 2.7 Vdc @ 25°C
	Power Consumption	<185mW @ 3 V without antenna
PHYSICAL	Dimensions	40.0 x 60.0 x 10.0 mm (1.57 x 2.36 x 0.39 in.)
CHARACTERISTICS	Weight	Receiver 25 g (0.9 oz.) Active Antenna Module < 40 g
	Connectors	Data/power: 10 pin (2 x 5) unshrouded header on 0.050 in.
	connectors	centers (available in right angle or straight configuration)
		RF: right angle MMCX (subminiature snap-on)
	Antenna to Receiver	Single coaxial cable
	Interconnection	Antenna sense circuit
ENVIRONMENTAL	Operating Temperature	-40°C to +85°C
CHARACTERISTICS	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	
	Stanuaru Fedlures	Motorola Binary Protocol Position hold with automatic site survey
		Clock Granularity Error Message
		T-RAIM (Timing Receiver Autonomous
		Integrity Monitoring)
	Optional Features	Lithium battery backup
NOTE	All specifications typical and	quoted at 25°C unless otherwise specified

*USNO test report available on request.





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For further information visit www.motorola.com/gps or contact the following:

Motorola GPS USA +1 602 659 8084

Motorola GPS EMEA + 44 1256 488 465

Americas - Synergy Systems LLC (Value Added Reseller) San Diego, CA, +1 858 566-0666, www.synergy-gps.com

Central & Eastern Europe - Avnet BFI UK +44 1908 326342 www.bfi.avnet.com/qps

South Africa - Avnet Kopp SA +27 11 444 2333 www.avnetkopp.co.za

Motorola China Electronics Ltd., Beijing, China +86 10 656 42165

Motorola Korea, Inc., Seoul, Korea +822 3466 5580

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