

2008 RECEIVER SURVEY

Now in its 16th year, the annual *GPS World* Receiver Survey provides the longest-running, most comprehensive database of GPS equipment available in one place.

With information provided by 55 manufacturers on 493 receivers, the survey assembles data on all the most important

equipment features. Manufacturers are listed alphabetically. **Footnotes** and **Abbreviations** on pages 56 supply additional information to guide you through the survey.

We have made every effort to present an accurate listing of receiver information, but *GPS World* cannot be held

responsible for the accuracy of information supplied by the companies or the performance of any equipment listed. In some cases, data had to be abbreviated or truncated to fit the space available. Contact the manufacturers directly with questions about specific units.

To be listed in the 2009 GPS Receiver Survey, e-mail GPS World at infogpsworld@gpsworld.com.

Manufacturer	Model	Channels/ Tracking Mode	Signal Tracked	Max No. Satellites Tracked	User Environment and Application ²	Size (W X H X D)	Wt.	Position Accuracy ³	Time (ns)	Pos. Fix Update with Rate (sec.)	Cold Start ⁴	Warm Start ⁵	Reacqui- sition ⁶	No. of Ports	Port Type	Baud Rate	Operating Temp. (°C)	Power Source	Power Consumption (watts)	Antenna Type ⁷	Description or Comments
ALK Technologies, Inc. www.alk.com	BU-353-USB	20 channels, all-in-view	BU-353-USB	20	NA	2.08 Inch Diameter	1.9oz	3meters	1US sync to US	1 sec	<42 s	<38 s	<0.1 s	1	USB	9600	-40 to 85	4.5V ~ 6.5V DC input	80mA	Built-in	
Atmel www.atmel.com	ANTARIS 4 chipset, ATR0601 RF, ATR0621, ATR0622, ATR0625 baseband chips, ATR0610 LNA, ATR0635	16 par.	L1, C/A code, DGPS, WAAS / EGNOS	16	CDGHLNOPTV2	RF 4x4 mm, baseband 8x8, LNA 1.6x2, Green	na	2.5 / <2m / na / na CEP	50 ns (RMS)	4	34 s	33 s	< 1s	3	serial, USB 2.0, SPI	4,800-115,200 bps	-40 to +85	ext / int	0.06	E (passive & active)	Low NF, low power, eval kit avail, automotive grade
BAE Systems Rokar Intl. www.rokar.com	GPS SpaceNav BP GPS NT4RLG GPS GPS SWIFT-NT NAVPOD NT NavComp HNR-10 GH-C GPS GH-L GPS	2 x 12 par. 12 par. 12 par. 12 par. 12 par. 4 x 12 par. 12 par. 12 par. 12 par.	L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code	all in view all in view all in view all in view all in view all in view all in view all in view all in view	S1 ADLNO2 ADLNO2 ADN1 ADNOR1 ADNOR1 ADNOT2 ADNP2 ADNP2	2.49 x 4.33 x 8.11 in 4.72 x 0.63 x 4.82 in 4.72 x 0.63 x 4.82 in 3.72x2.52x10.37m 3.72 x 1.20 x 7.00 in 5.60 x 2.70 x 6.61in 4.80x0.75x3.66in 2.5 in diameter 2.3 in diameter	1.4 kg 105 g 110 g 1.1 kg 580 g 1.7 kg 150 g 25 g 40 g	10-15 m / na / nr na / na / 15 m na / na / 15 m 2-5 m / na / nr 2-5 m / na / nr 10-15 m / na / nr 10-15 m / na / nr 4-7 m / na / nr 4-7 m / na / nr	150 300 300 300 300 300 40 300 300	1 1 1 1 1 10 1 1 1	<8 min <2min <2min <2min <2min <2min <2min <2min <2min	<50 s 20 s 2-5 s 30 s 30 s 20s 20s 13 s 6 s	2-5 s 2-5 s 2-5 s 5 s 5 s 5 s 5 s 3 s 3 s	4 1,1 1,1 1,1 1,1 1,1 2 2	RS-422 RS-422, RS-232 RS-422, RS-232 RS-232, RS-422 RS-232, RS-422 RS-422, RS-232 RS-422, RS-232 TTL TTL	9600-38,400 9,600-38,400 9,600-38,400 300-19,200 300-38,400 9,600-115,200 115,200 9,600-115,200 9,600-115,200	-25 to +60 -40 to +85 -40 to +85 -40 to +71 -40 to +71 -40 to +71 -40 to +85 -40 to +85 -40 to +85	ext / int ext ext ext / int ext / int ext ext ext ext / int	5.5 3.75 3.75 6 4.5 14 4.5 1 3	patch (E) patch (E) patch (E) patch (E) patch (E) 4X patch (E) patch (E) nr nr	For LEO satellites Smart munitions Inertial system integration Satellite launchers, missiles ACMI GPS + navigation computer 10-MHz in, 2x1PPS out Smart munitions Smart munitions
Broadcom www.broadcom.com	BCM4750 (Barracuda)	24	GPS L1, SBAS	24	NHC2	3.6x3.6x0.6 mm	< 1g	2m/1m/NA/NA (CEP)	50	0.5	30s	30s	1s	3	I2C, SPI, UART	Up to 1/32 of refer- ence clock	-30 to +85	1.5-3.6 V	13 mW	NA	Single-chip, single-die baseband and RF tuner
CMC Electronics www.cmcelectronics.ca	GNSSA CMA-4024 & 4124 GNSSU Mk-II, CMA-3024 GLSSU, CMA-5024	24 par. narrow correlator 24 par. narrow correlator 24 par. narrow correlator	GPS/WAAS L1 C/A code, 4 WAAS + 20 GPS GPS L1 C/A code, 24 GPS GPS/WAAS L1 C/A code, 4 WAAS + 20 GPS	24 24 24	ADLMRSV2 ADLMRSV1 ADLMRSV1	10.2 x 1.4 x 16.82 cm 21.6 x 6.6 x 24.1 cm 21.6 x 6.6 x 24.1 cm	0.5 lb 5.6 lb 5.6 lb	~10 m / LAAS: <0.5 m ~10 m /LAAS: <0.5 m ~10 m /LAAS: <0.5 m	<<50 ns <<50 ns <<50 ns	10 Hz PVT, 1 Hz ARINC 10 Hz PVT, 1 Hz ARINC 10 Hz PVT, 1 Hz ARINC plus LPV and GLS LOC/GS	<<75 s <<75 s <<75 s	<20 s <20 s <20 s	<1 s <1 s <1 s	4 1 1	9 I/P, 5 O/P ARINC H/L, 2 RS-232, 2 R-422 1Mbps 8 I/P, 3 O/P ARINC H/L, 1 RS-232 8 I/P, 3 O/P ARINC H/L, 1 RS-232; precision approach connector	1 Mbps serial 100 Kbps ARINC 100 Kbps ARINC 100 Kbps ARINC	-55 to +80 -55 to +80 -55 to +80	ext ext ext	10W 14W 16 W	Active, RTCA DO-228 Change 1 compliant Active, RTCA DO-228 Change 1 compliant Active, RTCA DO-228 Change 1 compliant	OEM GPS card ARINC-743 compliant sensor ARINC-743 compliant sensor with full SBAS LPV interface, growth to GBAS
CSR www.csr.com	CSR E5000	10	L1 C/A	10	H, N, V, 2	sw baseband	na	10 m / nr / nr / nr	1 Hz		<35s	<34s	<4 s	na	na	na		ext	N/A	ER	Software GPS Baseband
DataGrid, Inc. www.datagridinc.com	Monitor Mk1 "Crane" Mk2 Toughman Mk3 "Chameleon" DGRx (OEM) DGRx-GNSS (OEM)	12 12 12 28 28 28 28	L1, C/A, SBAS, DGPS L1, C/A-code and CP, SBAS L1, C/A-code and CP, SBAS, DGPS L1 full cycle CP, C/A-code, L2 full cycle CP, P2 or L2C code, SBAS L1 full cycle CP, C/A-code, L2 full cycle CP, P2 or L2C code, SBAS, GLONASS L1 option L1 full cycle CP, C/A-code, L2 full cycle CP, P2 or L2C code, SBAS L1 full cycle CP, C/A-code (GPS, GLONASS), L2 full cycle CP, P2 or L2C code, SBAS	12 12 12 14 14 14 14	GLMNPV1 GLMNPV1 GLMNOPV1 GLMNOVR1 GLMNOVRT1 AHGLMOVRT2 AHGLMOVRT2	20 x 8.5 x 3.5 cm 20 x 8.5 x 3.5 cm 20 x 8.5 x 3.5 cm 20 x 8.5 x 3.5 cm 27 x 8.5 x 3.5 cm 90 x 60 x 12 mm 90 x 60 x 12 mm	500 g 600 g 600 g 600 g 750 g 32 g 32 g	<5m/1.5m/na/na <5m/na/na/3cm <5m/1m/na/3cm 1.5m/1m/2 cm/1 cm 1.5m/1m/2 cm/1 cm 1.5m/1m/2 cm/1 cm	250 50 nr 40 40 40 40	1 1, 1/5 1, 1/5 1, 1/2, 1/5, 1/10 1, 1/2, 1/5, 1/10 1, 1/2, 1/5, 1/10, 1/20	<150 s <120 s <60 s <40 s <40 s <40 s <40 s	45 s 45 s 35 s 36 s 36 s 36 s 36 s	1s <1 s <1 s <1 s <1 s <1 s <1 s	1 1, 1, 1 1, 1, 1 1, 1, 1 2, 1, 1, 1 2 2	Serial Serial, A/D, USB, Bluetooth Serial, A/D, USB, Bluetooth Serial, A/D, USB, Bluetooth Serial, A/D, USB, Bluetooth Serial Serial	1,200-115,200 bps 1,200-115,200 bps 1,200-115,200 bps 1,200-115,200 bps 1,200-115,200 bps 1,200-115,200 bps 1,200-115,200 bps	-30 to +70 -30 to +70 -30 to +70 -30 to +70 -30 to +70 -30 to +70 -30 to +70	ext., int opt. int., ext. int., ext. int., ext. int., ext. ext. ext.	0.8 1.5 2 2.2 3.2 1.5 1.5	L1 (E), (L1/Beacon optional) L1 (E) L1 (E), (L1/Beacon optional) L1/L2 (E) L1/L2 (E) L1/L2 (E) L1/L2 GNSS (E)	GPS receiver with DGPS, WR GPS L1 carrierphase and data collection. WR GPS L1 carrierphase and data collection. WR GPS L1/L2 carrierphase and data collection. WR RTK, VRS, Precision post-processing, Precision GIS, WR Based on easy-to-upgrade/modify FPGA design as above
eRide, Inc. www.eride.com	High Sensitivity GPS/AGPS OPUS One Chipset High Sensitivity GPS/AGPS OPUS III Chipset High Sensitivity GPS/AGPS OPUS One MiniRide Module High Sensitivity GPS/AGPS OPUS One CompactRide Module High Sensitivity GPS/AGPS OPUS III ezRide module High Sensitivity GPS/AGPS OPUS III ezRide-22 module High Sensitivity GPS/AGPS OPUS III ezRide-25 module High Sensitivity GPS/AGPS OPUS III NanoRide module	32 Acquisition 8 Tracking 32 Acq., 12 Track., 2 SBAS 32 Acquisition 8 Tracking 32 Acq., 12 Track., 2 SBAS 32 Acq., 12 Track., 2 SBAS 32 Acq., 12 Track., 2 SBAS 32 Acq., 12 Track., 2 SBAS 32 Acq., 12 Track., 2 SBAS	L1, C/A L1, C/A L1, C/A L1, C/A L1, C/A L1, C/A L1, C/A L1, C/A	8 12 8 8 12 12 12 12	C, G, H, L, M, N C, G, H, L, M, N C, G, H, L, M, N C, G, H, L, M, N C, G, H, L, M, N C, G, H, L, M, N C, G, H, L, M, N C, G, H, L, M, N	Opus One ASIC: 7 x 7 x 0.8 mm Opus III ASIC: 7 x 7 x 0.8 mm MiniRide GPS Module: 9.1 x 10.9 x 1.4 mm CompactRide GPS Module: 13x18.5x2.5 mm ezRide GPS Module: 25 x 25 x 3 mm ezRide-22 GPS Module: 22x22x3 mm ezRide-25 GPS Module: 25.4x25.4x3 mm NanoRide GPS Module: 6.7x8.7x1.4 mm		Typ 2 - 25 m Typ 2 - 15 m Typ 2 - 25 m Typ 2 - 25 m Typ 2 - 15 m Typ 2 - 15 m Typ 2 - 15 m Typ 2 - 15 m	20 20 20 20 20 20 20 20	1 1 1 1 1 1 1 1	Typ 25 -40 s Typ 20 -35 s Typ 25 -40 s Typ 20 -30 s Typ 20 -35 s Typ 20 -35 s Typ 20 -35 s Typ 20 -35 s	Typ 20 -30 s Typ 20 -30 s Typ 20 -30 s Typ 20 -30 s Typ 20 -30 s	Typ 3 s 1 s Typ 3 s 1 s Typ 1 s 1 s Typ 1 s 1 s	1 1 1 1 1 1 1 1	UART UART UART UART UART UART UART UART	57600 57600 57600 57600 57600 57600 57600 57600	-40°C to +85°C -40°C to +85°C -40°C to +85°C -40°C to +85°C -40°C to +85°C -40°C to +85°C -40°C to +85°C -40°C to +85°C	ext. ext. ext. ext. ext. ext. ext. ext.	Outdoor 110 mW Indoor 165 mW Outdoor 75 mW Indoor 120 mW Outdoor 110 mW Indoor 165 mW Outdoor 135 mW Indoor 180 mW Outdoor 200 mW Indoor 350 mW Outdoor 125 mW Indoor 185 mW Outdoor 200 mW Indoor 350 mW Outdoor 200 mW Indoor 120 mW	RHCP or passive linear RHCP or passive linear RHCP or passive linear RHCP or passive linear RHCP or passive linear RHCP or passive linear RHCP or passive linear RHCP or passive linear	High tracking and acquisition sensitivity (-157 dBm) High sensitivity receiver (-161 dBm) designed for mobile High tracking and acquisition sensitivity (-157 dBm) High tracking and acquisition sensitivity (-157 dBm), low power High-sensitivity module (-161 dBm), compact size High-sensitivity (-161 dBm) GPS/AGPS module for auto apps Complete GPS/AGPS module (-161 dBm) including ARM7 High-sensitivity module (-161 dBm); compact for mobile
Falcom www.falcomusa.com	JP13-S JP15-T NAVI-KT NAVI-S NAVI-B NAVI-B-H STEPP-II XF-55/56-AVL STEPP-III Bolero FSA01	20 par. 12 par. 12 par. 12 par. 12 par. 12 par. 12 par. 12 par. 20 par. 20 par. 20 par.	L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code L1 only, C/A-code	20 12 12 12 12 12 12 12 20 20 20	ACHMTR2 ACHMTR2 CMNT1 CMNT1 CMNT1 CMNT1 CHMVT1 ACMNPV1 ACHMONPV2 ACMNPV1 ACMNPV1 ACDSHLMNPRV2	24.6 x 15.7 x 3 mm 25.4 x 25.4 x 3 mm 85 x 59 x 25 mm 52 (Q) x 20 mm 52 (Q) x 20 mm 52 (Q) x 20 mm 52 (Q) x 20 mm 55 x 80 x 35 mm 35 x 53 x 5.1 mm 55 x 80 x 25mm 85 x 56 x 20 mm 50.8 x 14.8 x 13.2 mm	1.6 g 2.5 g 70 g 67.8 g 67.8 g 67.8 g 67.8 g 80 g 12 g 90 g 90g 11g	10 m/45 m/1 10 m/45 m/1 10 m/45 m/1 10 m/45 m/1 10 m/45 m/1 10 m/45 m/1 10 m/45 m/1 10 m/45 m/1 10 m/45 m/1	1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000	<42 s <35 s <45 s <45 s <45 s <45 s <45 s <45 s <45 s <35 s <42s <45 s	<35 s <35 s <35 s <35 s <35 s <35 s <35 s <35 s <35 s <35 s <35 s <35 s	100 ms 100 ms 100 ms 100 ms 100 ms 100 ms 100 ms 100 ms 100 ms 100 ms 100 ms 100 ms	2 2 1 1 1 1 1 1 2/4 1 1 1	RS-232 RS-232 Bluetooth RS-232 Bluetooth Bluetooth Bluetooth RS-232 RS-232 RS-232 Bluetooth/IEEE 802.15.4 RS-232	38400 4,800/38400 1200-115200 38400 1200-115200 1200-115200 9600/57600 1200-115200 4800/9600 1200-115200 4800 to 115200 38400	-40 to +85 -40 to +85 0 to 45 -40 to +85 0 to 45 0 to 45 -40 to +85 -20 to +55 -30 to +80 -30 to +80 -20 to +70	ext ext int ext ext ext ext ext ext/int ext ext ext ext	<0.3 <0.2 <0.6 <0.4 <0.5 <0.5 <0.5 <3.1 <1.5 <3.6 <3.6 <1.5	passive/active (E) passive/active (E) active active active active active passive/active (ER) passive/active (ER) active active passive/active (E)	GPS module, SiRFstarIII chipset Drop-in to J-PTT but, low power GPS navigation equipment compact form, for fixed mounting int GPS & Bluetooth ant. NAVI-B w/data-logger functionality GSM/GPRS/GPS terminal Tri-band GSM/GPRS or GSM/GPRS/GPS module QUAD-band GSM/GPRS module Quad-band GSM/GPRS/GPS term. High-sensitivity, based on SiRFstar III - GSC3LTF chip (3.4 V) trickle power (1 sec)	
Fastrax www.fastrax.fi	JP18 Fastrax IT300 Fastrax IT310 Fastrax IT321 Fastrax UP300 Fastrax UC322 Fastrax IT03 Fastrax IT03-S	20 par. 20 par. 20 par. 20 par. 20 par. 20 par. 12 par. 12 par.	L1 only, C/A-code L1, C/A-code and CP L1, C/A-code and CP L1, C/A-code and CP L1, C/A-code and CP L1, C/A-code and CP L1, C/A-code and CP L1, C/A-code and CP	20 20 20 20 20 20 12 12	ACHMTR2 ACHLMNRTV2 ACHLMNRTV2 ACHLMNRTV2 ACHLMNRTV2 ACHLMNRTV2 ACHLMNRTV2 ACHLMNRTV2	11x11 x 1.7 mm 16 x 2.3 x 19 mm 13.1 x 15.9 x 2.3 mm 10.4 x 14 x 2.3 mm 19 x 27 x 7.2 mm 19 x 27 x 7.2 mm 22 x 2.8 x 23 mm 16 x 2.3 x 19 mm	0.5 gr 2 g 2 g 2 g 2 g 2 g 3 g 2 g	10 m/45 m/1 3m CEP/1.5mCEP/na/na as above as above as above as above as above as above	1000 20 20 20 20 20 20 20	1 1 1 1 1 1 1, user def to 8 Hz 1, user def to 8 Hz	<45 s 35 s 35 s 35 s 38 s 38 s 35 s 35 s	<35 s 33 s 33 s 33 s 33 s 33 s 33 s 33 s	100 ms <1 s <1 s <1 s <1 s <1 s <1 s <1 s	2 8, 2, 1 2, 1 3, 1, 1 1, 1 3, 1, 1 2, 2, 2, 2, 1, 1 17, 1, 2, 1, 1, 1	RS-232 GPIO, UART, 1PPS UART, T.SYNC GPIO, UART, 1PPS UART, 1PPS (o) GPIO, UART, PPS GPIO, SPI, UART, counters (i), clock (i), 1PPS (o), MMC GPIO, SPI, UART, counters (i), 1PPS (o), MMC	38400 4800,9600,57600 4800,9600,57600 4800,9600,57600 4800,9600,57600 4800,9600,57600 600-921,600 600-921,600	-20 to +70 -40 to +85 -40 to +85 -40 to +85 -40 to +85 -40 to +85 -40 to +85 -40 to +85	ext ext. ext. ext. ext. ext. ext. ext.	<0.148 110 mW at 3.0 V 110 mW at 3.0 V 90 mW at 3.0 V 120 mW at 3.3 V 90 mW at 3.3 V 95 mW at 2.7 V 95 mW at 2.7 V	passive/active (E) ext., active or passive ext., active or passive ext., active or passive int., passive patch w optional external ext antenna int., passive chip antenna ext., active or passive	GPS module, SiRFstar III iTrax Multi Platform compatible small, low power, SiRFstar III NMEA ROM (available Q1/2008) Sensitive patch antenna module w optional external antenna Sensitive chip antenna module Programmable with iSuite SDK, CR output iTrax MP receiver, CR output, programmable with iSuite SDK