



## OEMV® QUICK REFERENCE GUIDE

### NovAtel Format Commands

Command	Syntax and Example Input(s)	ID	Tag	Description
ADJUST1PPS	<code>adjust1pps mode [period] [offset]</code> <code>adjust1pps mark</code>	429	V123	Adjust receiver clock or transfer time between receivers
ANTENNA-MODEL	<code>antennamodel name SN setupID</code> <code>type [L1 offset] [L1 var] [L2 offset]</code> <code>[L2 var]</code> <code>antennamodel 702gg</code> <code>nae07070025 3 user</code>	841	V123	Enter or change a rover antenna model, see also the command: BASEANTENNAMODEL
ANTENNA-POWER	<code>antennapower flag</code> <code>antennapower on</code>	98	V23	Enable/disable power from receiver's internal power source to the low-noise amplifier of an active antenna

Command	Syntax and Example Input(s)	ID	Tag	Description
ASSIGN	assign channel [state] prn [Doppler [window]] assignall glol112 auto  <i>(sv channel 11 is acquiring satellite prn 28 at an offset of 250 hz only)</i>  <i>(prn 1 to 32 for gps channels, 38 to 61 for glonass, and 120 to 138 for sbas)</i>	27	V123	Aids in initial acquisition of a satellite by allowing you to override the automatic satellite/channel assignment reacquisition processes
ASSIGNALL	assignall [system] [state] prn [Doppler [window]] assignall gps1112 28 -250 0  <i>(L1 and I2 dedicated sv channels trying to acquire satellite prn 28 at -250 hz)</i>	28	V123	This command works the same way as ASSIGN except that it affects a group of SV channels

Command	Syntax and Example Input(s)	ID	Tag	Description
ASSIGN-LBAND	assignlband mode freq baud assignlband cdgps 1547547 4800 <i>or</i> assignlband omnistar 1536782 1200	729	V3_HP V13_VBS V13_CDGPS	The receiver searches for a specified L-Band satellite at a specified frequency with a specified baud rate
AUTH	auth [state] part1 part2 part3 part4 part5 model [date] auth add 1234 5678 9abc def0 1234 oemv1112 990131	49	V123	Add or remove authorization codes from the receiver
BASE-ANTENNA-MODEL	baseantennamodel name SN setupID type [L1 offset] [L1 var] [L2 offset] [L2 var] baseantennamodel nvh05410007 1 user	870	V123	Enter or change a base antenna model. For the rover, see the ANTENNAMODEL command
CDGPS-TIMEOUT	cdgps mode [delay] cdgpstimeout set 60  <i>(the auto default is 120 s)</i>	850	V13_CDGPS	Set amount of time receiver remains in CDGPS position if it stops receiving CDGPS

Command	Syntax and Example Input(s)	ID	Tag	Description
CLOCK-ADJUST	clockadjust switch clockadjust disable	15	V123	Enable receiver clock steering. See also <i>externalclock</i> note.
CLOCK-CALIBRATE	clockcalibrate mode [period] [width] [slope] [bandwidth] clockcalibrate auto	430	V123	Adjust the control parameters of the clock steering loop
CLOCK-OFFSET	clockoffset offset clockoffset -15	596	V123	Remove a delay in the PPS output
CNOUPDATE	cnupdate rate cnupdate 20hz	849	V123	C/No update rate and resolution
COM	com [port] bps [parity [databits [stopbits [handshake [echo[break]]]]]] com com1 57600 n 8 1 n off on	4	V123	Configure the receiver asynchronous serial port drivers
COM-CONTROL	comcontrol port signal control comcontrol com2 rts default	431	V123	Control the hardware control lines of the RS232 ports

Command	Syntax and Example Input(s)	ID	Tag	Description
CSMOOTH	<code>csmooth L1time [L2time]</code> <code>csmooth 500</code>	269	V123	Set carrier smoothing on code measurements
DATUM	<code>datum datum</code> <code>datum csrs</code>	160	V123	Select a datum
DGPSEPH- DELAY	<code>dgpsephemdelay delay</code> <code>dgpsephemdelay 120</code>	142	V123_ DGPS	Set base station ephemeris delay
DGPSTIME- OUT	<code>dgpstimeout delay</code> <code>dgpstimeout 60</code>	127	V123_ DGPS	Set rover station max. age of pseudorange differential data
DGPSTXID	<code>dgpstxid type ID</code> <code>dgpstxid rtcn 2</code> <code>dgpstxid cmr 30</code> <code>dgpstxid cmr "any"</code> <code>dgpstxid rtca d036</code> <code>dgpstxid rtcnv3 2050</code>	144	V123_ DGPS	Set station ID value for the receiver when it is transmitting corrections

Command	Syntax and Example Input(s)	ID	Tag	Description
DIFFCODE-BIAS-CONTROL	diffcodebiascontrol switch diffcodebiascontrol disable  <i>(enable by default)</i>	913	V123	Enable/disable the differential code biases applied to the L1/L2 ionospheric corrections
DYNAMICS	dynamics dynamics dynamics foot	258	V123	Adjust receiver to match environment
ECUTOFF	ecutoff angle ecutoff 10.0	50	V123	Set elevation cut-off angle for satellites
EXTERNAL-CLOCK	externalclock clocktype [freq] [h <sub>0</sub> [h <sub>-1</sub> [h <sub>-2</sub> ]]] externalclock tcxo 5mhz  <i>(use this command before clockadjust)</i>	230	V23	Allow operation with an optional external oscillator. If using with clockadjust, see note.
FIX	fix type [param1 [param2 [param3]]] fix height 4.567	44	V123	Fix parameters such as height or position

Command	Syntax and Example Input(s)	ID	Tag	Description
FIXPOS-DATUM	fixposdatum datum [lat [lon [height]]] fixposdatum user 51.11633810554 -114.03839550586 1048.2343	761	V123	Set position by referencing parameters through a specified datum
FORCE-GPSL2CODE	forcegpsl2code L2type forcegpsl2code p <i>(only to evaluate L2C; not in solution)</i>	796	V23_L2C	Force receiver to track L2 P or L2C code (see note on L2C)
FREQUENCY-OUT	frequencyout [switch] [pulsewidth] [period] frequencyout enable 2 4 <i>(to generate a 50% duty cycle 10 mhz square wave)</i>	232	V123	Set output pulse train available on the VARF pin (variable frequency)
FRESET	freset [target] freset command	20	V123	Clear data which is stored in non-volatile memory

Command	Syntax and Example Input(s)	ID	Tag	Description
GGA-QUALITY	ggaquality [#entries] [pos type1] [qual1] [pos type2] [qual2]... ggaquality 2 waas 2 narrow_float 3	691	V123_NMEA	Customize NMEA GPWGA GPS quality indicator
GLO-CSMOOTH	glocsmooth L1time [L2time] glocsmooth 200	830	V1G23_G	Carrier smoothing for GLONASS channels
GLO-ECUTOFF	gloecutoff angle gloecutoff 15.0	735	V1G23_G	Set elevation cut-off angle for tracked GLONASS satellites
HDTOUTTHR ESHOLD	hdtoutthreshold thres hdtoutthreshold thres	1062	V123_ALI GN	Control the NMEA GPHDT log output
HPSEED	hpseed reset lat lon hgt lat $\sigma$ lon $\sigma$ hgt $\sigma$ datum undulation hpseed restore	782	V3_HP	Specify initial position for OmniSTAR HP/XP



Command	Syntax and Example Input(s)	ID	Tag	Description
HPSTATIC-INIT	hpstaticinit switch hpstaticinit enable  <i>(if hp/xp detects that the receiver is stationary, it can converge more quickly)</i>	780	V3_HP	Static initialization of OmniSTAR HP/XP
IONOCONDITION	ionocondition mode ionocondition quiet	1215	V123	Set ionospheric condition
INTERFACE-MODE	interfacemode [port] rxtype txtype [responses] interfacemode com1 rtca novatel on	3	V123	Specify what type of data a particular port on the receiver can transmit and receive
LOCALIZED-CORRECTIONDATUM	localizedcorrectiondatum type localizedcorrectiondatum nad83	947	V123	Set a local datum before using localized wide area corrections

Command	Syntax and Example Input(s)	ID	Tag	Description
LOCKOUT	lockout prn lockout 8  <i>(prn 1 to 32 for gps channels, 38 to 61 for glonass, and 120 to 138 for sbas)</i>	137	V123	Prevent receiver from using a satellite by de-weighting its range in the solution
LOG	log [port] message [trigger [period[offset [hold]]]] log com1 bestposa ontime 7 2.5 hold	1	V123	Log data using several different methods of triggering the log events
MAGVAR	magvar type [correction [stddev]] magvar correction 15 0	180	V123	Navigate in agreement with magnetic compass bearings
MARK-CONTROL	markcontrol signal switch [polarity] [timebias [timeguard]] markcontrol mark1 enable negative 50 100	614	V123	Control processing of mark 1 (MK1I) and mark 2 (MK2I) inputs

Command	Syntax and Example Input(s)	ID	Tag	Description
MODEL	model model model rt2w	22	V123	Switch receiver models previously added with the AUTH command
MOVING-BASE-STATION	movingbasestation switch movingbasestation enable	763	V123_ RT20 V23_RT2	Set ability to use a moving base station position
NMEA-TALKER	nmeatalker ID nmeatalker gp	861	V123	Set NMEA talker ID: gp (GPS only) or auto (GPS, GLO or inertial) <sup>a</sup>
NVM-RESTORE	nvmrestore nvmrestore	197	V123	Restore non-volatile memory (NVM)
PDPFILTER	pdpfilter switch pdpfilter enable  (see <i>Configurations in om-20000093 r8</i> )	424	V123	Enable pseudorange /delta phase (PDP) filter (normal or <b>GLIDE</b> )
PDPMODE	pdpmode mode dynamics pdpmode relative dynamic	970	V123	Select the PDP mode: normal or relative ( <b>GLIDE</b> )

Command	Syntax and Example Input(s)	ID	Tag	Description
POSAVE	posave [state] maxt [maxhstd [maxvstd]] posave 24 1 2	173	V123_ DGPS	Implement base station position averaging
POS-TIMEOUT	postimeout sec postimeout 1200	612	V123	Set the time out value for the position calculation(s)
PPS-CONTROL	ppscontrol switch [polarity] [rate] [pulse width] ppscontrol enable positive 0.05 25000	613	V123	Control polarity, rate and adjustable pulse width of PPS output
PSRDIFF-SOURCE	psrdiffsource type ID rtksource rtkm any psrdiffsource rtkm any sbascontrol enable auto  <i>(to enable rtk and psrdiff from rtkm, with an sbas fall-back)</i>	493	V123_ DGPS	Identify from which base station to accept differential corrections  <i>(see also rtksource)</i>

Command	Syntax and Example Input(s)	ID	Tag	Description
PSR-VELOCITY-TYPE	psrvelocitytype [source] psrvelocitytype doppler	950	V123	Set Doppler source for velocities determined by pseudorange filter
RESET	reset [delay] reset 120	18	V123	Perform a hardware reset
RTK-ANTENNA	rtkantenna posref pcv rtkantenna arp enable	858	V123_ RT20 V23_RT2	Use L1PC or ARP and enable/disable phase centre (PC) modelling
RTK-COMMAND	rtkcommand action rtkcommand use_defaults	97	V123_ RT20 V23_RT2	Reset RTK filter and clear any set RTK parameters
RTK-DYNAMICS	rtkdynamics mode rtkdynamics dynamic	183	V123_ RT20 V23_RT2	Specify how receiver looks at the data: static, auto, or dynamic
RTK-NETWORK	rtknetwork mode [network#] rtknetwork imax  (see <a href="#">application note 041 on website</a> )	951	V123_ RT20 V23_RT2	Set RTK network mode for a specific network. See also RTCM22/24.

Command	Syntax and Example Input(s)	ID	Tag	Description
RTKQUALITY-LEVEL	<pre>rtkqualitylevel mode rtkqualitylevel extra_safe</pre>	844	V23_RT2	Choose a quality mode
RTK-SOURCE	<pre>rtksource type ID rtksource rtkm any</pre> <p><i>(to enable rtk and psrdiff from rtkm, with an sbas fall-back)</i></p>	494	V123_RT20 V23_RT2 V3_HP	Identify from which base station to accept RTK corrections  <i>(rtksource: rtkm &amp; rtkmV3 psrdiffsource: rtkm only)</i>
RTKSV-ENTRIES	<pre>rtksventries number rtksventries 7</pre> <p><i>(this command only works with rtcaobs and rtcaobs2)</i></p>	92	V123_RT20 V23_RT2 V3_HP	Set # of satellites transmitted in RTK corrections from a base receiver (24 max.)
RTKTIMEOUT	<pre>rtktimeout delay rtktimeout 20</pre>	910	V123_RT20 V23_RT2 V3_HP	Set the maximum age of RTK data accepted
SATCUTOFF	<pre>satcutoff[enable]numberofsats satcutoff enable 20</pre>	935	V123	Limit the number of satellites tracked

Command	Syntax and Example Input(s)	ID	Tag	Description
SAVECONFIG	saveconfig  <i>(in cdu, ensure you have all windows, other than the console window, closed before using this command)</i>	19	V123	Save present configuration in NVM
SBAS-CONTROL	sbascontrol keyword [system] [prn] [testmode] sbascontrol enable waas 0 zerototwo	652	V123_SBAS	Set handling of SBAS corrections
SEND	send port data send com1 "log com1 rtcaobs ontime 5"	177	V123	Send ASCII printable data from a COMUSB port to a specified port
SENDHEX	sendhex port length data sendhex com1 6 143ab5910d0a	178	V123	Send non-printable characters expressed as hexadecimal pairs
SETAPPROX-POS	setapproxpos lat lon height setapproxpos 51.116 -114.038 0	377	V123	Set an approximate latitude, longitude, and height in the receiver

Command	Syntax and Example Input(s)	ID	Tag	Description
SETAPPROX-TIME	setapproxtime week sec	102	V123	Set an approximate time in the receiver
SET-BESTPOS-CRITERIA	setbestposcriteria type delay setbestposcriteria pos2d 5	839	V123	Set criteria for the BESTPOS log
SETDIFF-CODEBIASES	setdiffcodebiases [bias_type] [array of 40 biases (ns)] setdiffcodebiases gps_c1p1 -0.472 -0.006 -0.482 1.154 -1.153 0.250 -1.319 -0.535 0.119 -1.945 0.522 1.425 1.489 0.090 0.0 -0.727 1.361 -0.416 -2.066 -1.347 -0.380 0.543 0.414 -0.172 0.394 0.923 -0.422 -0.326 0.481 1.937 1.753 -1.088 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	687	V123	Set the differential code biases being applied to the L1/L2 ionospheric corrections  See also the DIFF-CODEBIASCONTROL command



Command	Syntax and Example Input(s)	ID	Tag	Description
SETIONO-TYPE	setionotype model setionotype klobuchar	711	V123	Set the ionospheric model for the receiver
SETNAV	setnav from-lat from-lon to-lat to-lon track offset from-point to-point setnav 51.1516 -114.16263 51.16263 -114.1516 -125.23 from to	162	V123	Enter a set of navigation waypoints
SETRTCM16	setrtcm16 text setrtcm16 "base station will shut down in 1 hour"	131	V123_ DGPS	Transfer ACCII text from a base to a rover
SETRTCM36	setrtcm36 extdtext setrtcm36 "quick \d166\d146\d174\d144\d140"	880	V1G23_ G	Enter ASCII text that includes Cyrillic or Russian characters. Eg.: "Quick ШТОРМ"
SETRTCMR-XVERSION	setrtcmrxversion setrtcmrxversion v23	1216	V1G13_ G	Set the RTCM standard input expected

Command	Syntax and Example Input(s)	ID	Tag	Description
STATUS-CONFIG	statusconfig type word mask statusconfig set status 0028a51d	95	V123	Configure status mask fields in the RXSTATUSEVENT log
TUNNEL-ESCAPE	tunnelescape [switch] [length] [esc seq] tunnelescape enable 8	962	V123	Specify the #hexbytes (1 to 8) and the hex pairs escape sequence to break out of an established tunnel
UNASSIGN	unassign channel unassign 11	29	V123	Cancel a previously issued ASSIGN command
UNASSIGN-ALL	unassignall [system] unassignall gps11	30	V123	Cancel previous ASSIGN commands for all SV channels
UNDULATION	undulation option [separation] undulation user -5.5999999 <i>or</i> undulation table	214	V123	Enter a specific geoidal undulation value or use the internal table of geoidal undulations

Command	Syntax and Example Input(s)	ID	Tag	Description
UNLOCKOUT	unlockout prn unlockout 8  <i>(prn 1 to 32 for gps channels, 38 to 61 for glonass, and 120 to 138 for sbas)</i>	138	V123	Reinstate a previously locked out satellite
UNLOCKOUT-ALL	unlockoutall unlockoutall	139	V123	Reinstate all previously locked out satellites
UNLOG	unlog [port] datatype unlog com1 bestposa	36	V123	Remove a specific log request from system
UNLOGALL	unlogall [port] unlogall com2	38	V123	Disable all logs on the specified port only
USERDATUM	userdatum semimajor flattening dx dy dz rx ry rz scale userdatum 6378206.400 294.97869820000 -12.0000 147.0000 192.0000 0.0000 0.0000 0.0000 0.000000000	78	V123	Enter customized ellipsoidal datum parameters

Command	Syntax and Example Input(s)	ID	Tag	Description
USEREXP-DATUM	<pre> userexpdatum semimajor flattening dx dy dz rx ry rz scale xvel yvel zvel xrvel yrvel zrvel scalev refdate userexpdatum 6378137.000 298.25722356280 0.000000000 0.000000000 0.000000000 0.000000000 0.000000000 0.000000000 0.000000000 0.000000000 0.000000000 0.000000000 0.0000 0.000000000 0.000000000 0.000000000 0.000000000 </pre>	783	V123	Enter customized ellipsoidal expanded datum parameters
UTMZONE	<pre> utmzone command parameter utmzone set 10 </pre>	749	V123	Set UTM persistence, zone #, or meridian
WAAS-ECUTOFF	<pre> waasecutoff angle waasecutoff -2 </pre>	505	V123_ SBAS	Set SBAS satellites' elevation cut-off angle

Command	Syntax and Example Input(s)	ID	Tag	Description
WAAS-TIMEOUT	<pre>waastimeout set [delay] waastimeout set 100</pre> <p><i>(the auto default is 180 s)</i></p>	851	V123_ SBAS	Set amount of time receiver remains in an SBAS position if it stops receiving SBAS

- a. Inertial only applies when using an inertial navigation system such as NovAtel's SPAN products. Please visit our website at [www.novatel.com](http://www.novatel.com) for more information.

### NovAtel Format Logs

Log	Description and fields after header	ID	Tag	Input Example
ALMANAC	<pre>Current GPS almanac info #msgs, prn, week, seconds, ecc, <math>\omega</math>, <math>\omega_0</math>, <math>\omega</math>, mo, afo, afl, n, a, inc-angle, sv config, hlth-prn, hlth-alm, antspf, next prn...</pre>	73	V123	log almanaca onchanged

Log	Description and fields after header	ID	Tag	Input Example
AVEPOS	Position averaging lat, lon, ht, lat $\sigma$ , lon $\sigma$ , hgt $\sigma$ , posave, ave time, samples	172	V123	log aveposa onchanged
BESTPOS	Position data sol status, pos type, lat, lon, hgt, undulation, datum id#, lat $\sigma$ , lon $\sigma$ , hgt $\sigma$ , stn id, diff_age, sol_age, #SV, #solnSV, #ggl1, #ggl112, rsrvd, ext sol stat, rsrvd, sig mask	42	V123	log bestposa ontime 1

Log	Description and fields after header	ID	Tag	Input Example
BESTUTM	Best available UTM data sol status, pos type, z#, zletter, northing, easting, hgt, undulation, datum id#, n $\sigma$ , e $\sigma$ , hgt $\sigma$ , stn id, diff_age, sol_age, #SV, #solnSV, #ggl1, #ggl112, rsrvd, ext sol stat, rsrvd, sig mask	726	V123	log bestutma ontime 1
BESTVEL	Velocity data sol status, vel type, latency, age, hor spd, trk gnd, vert spd, rsrvd	99	V123	log bestvela ontime 1

Log	Description and fields after header	ID	Tag	Input Example
BESTXYZ	Cartesian coord pos p-solstat, p-type, p-x, p-y, p-z, p-x $\sigma$ , p-y $\sigma$ , p-z $\sigma$ , v-solstat, v-type, v-x, v-y, v-z, v-x $\sigma$ , v-y $\sigma$ , v-z $\sigma$ , stnid, v-latency, diff_age, sol_age, #SV, #solnSV, #gg11, #gg1112, rsrvd, ext sol stat, rsrvd, sig mask	241	V123	log bestxyza ontime 1
BSLNXYZ	RTK XYZ baseline solstat, p-type, p-x, p-y, p-z, p-x $\sigma$ , p-y $\sigma$ , p-z $\sigma$ , stnid, #SV, #solnSV, #gg11, #gg1112, rsrvd, ext sol stat, rsrvd, sig mask	686	V23_RT2 V3_HP	log bslnxyza onchanged  <i>(only trust this log if            the solstat field is            narrow_int or L1_int            for L1 RTK models)</i>



Log	Description and fields after header	ID	Tag	Input Example
CLOCK-MODEL	Clock model matrices clockstat, reject, noiset, updatet, params[1x3], covdata[3x3], rangebias, rangebiasrate, change	16	V123	log clockmodela ontime 1
CLOCK-STEERING	Clock steering status source, steeringstate, period, pulsewidth, bandwidth, slope, offset, driftrate	26	V123	log clocksteeringa onchanged
CMRDESC	Base station description info	310	V123_ RT20 V23_RT2	log cmrdesc ontime 10 5
CMRGLOB-OBS	CMR Type 3 GLONASS observations	882	V1G23_G	log cmrglobs ontime 10
CMROBS	Base station satellite observation info	103	V123_ RT20 V23_RT2	log cmrobs ontime 2

Log	Description and fields after header	ID	Tag	Input Example
CMRREF	Base station position info	105	V123_ RT20 V23_RT2	log cmrref ontime 10
CMRPLUS	CMR+ output message	717	V123_ RT20 V23_RT2	log cmrplus ontime 1
COM- CONFIG	Current COM port config #ports, port, baud, parity, databits, stopbits, handshake, echo, breaks, rxtype, txtype, response	317	V123	log comconfiga once
DIFFCODE- BIASES	Differential code biases being used #bias_sets, bias_type, [array of 40 biases (ns)], next array ...	914	V123	log diffcodebiases once
EXTRXHW- LEVELS	Extended receiver hardware levels sytem v, minos v, l-band v, 15 v, rsvrd, rsvrd, rsvrd, rsvrd, rsvrd, rsvrd	843	V3_G	log extrxhwlevels ontime 60

Log	Description and fields after header	ID	Tag	Input Example
GLMLA	GLONASS almanac data \$glmla, #alm, alm#, slot, N, hlth & freq, ecc, ΔTdot, ω, τ <sub>16msb</sub> , ΔT, tλ, λ, Δi, τ <sub>12lsb</sub> , t	859	V1G23_G & NMEA	log glmla onchanged
GLO- ALMANAC	Decoded GLONASS almanac #recs, week, time <sup>a</sup> , slot, freq, sat type, health, tlambda n, lambda n, delta i, ecc, arg perigee, delta t, delta td, tau, next message...	718	V1G23_G	log gloalmanaca onchanged
GLOCLOCK	GLONASS clock information rsrvd, rsrvd, rsrvd, sat type, n4, tau gps, na, tau_c, b1, b2, kp	719	V1G23_G	log gloclocka ontime 1

<b>Log</b>	<b>Description and fields after header</b>	<b>ID</b>	<b>Tag</b>	<b>Input Example</b>
GLO-EPHEMERIS	GLONASS ephemeris data sloto, freqo, sat type, rsrvd, e week, e time, t offset, Nt, rsrvd, rsrvd, issue, health, posx, posy, posz, velx, vely, velz, ls accx, ls accy, ls accz, tau_n, delta_tau_n, gamma, tk, p, ft, age, flags	723	V1G23_G	log gloephemerisa onchanged
GLORAW-ALM	Raw GLONASS almanac week, time <sup>a</sup> , #recs, string, rsrvd, next rec...	720	V1G23_G	log glorawalma onchanged
GLORAW-EPHEM	Raw GLONASS ephemeris data sloto, freqo, sigchan, week, time <sup>a</sup> , #recs, string, rsrvd, next rec...	792	V1G23_G	log glorawephema onchanged

Log	Description and fields after header	ID	Tag	Input Example
GLORAW-FRAME	Raw GLONASS frame data frame#, sloto, freqo, week, time <sup>a</sup> , frame decode, sigchan, #recs, string, rsrvd, next rec...	721	V1G23_G	log glorawframea onchanged
GLORAW-STRING	Raw GLONASS string data slot, freq, string, rsrvd	722	V1G23_G	log glorawstringa onchanged
GPALM	Almanac data \$gpalm, #msgs, msg#, prn, gps wk, sv health, ecc, alm ref time, incl angle, omegadot, rt axis, omega, long asc node, m <sub>0</sub> , a <sub>f0</sub> , a <sub>f1</sub> , next msg...	217	V123_ NMEA	log gpalm onchanged

Log	Description and fields after header	ID	Tag	Input Example
GPGGA	GPS fix data and undulation \$gpgga, utc, lat, lat dir, lon, lon dir, gps qual, #sats, hdop, alt, alt units, undulation, undulation units, age, stn id	218	V123_ NMEA	log gpgga ontime 1
GPGGA- LONG	Fix data and undulation with extra precision \$gpgga, utc, lat, lat dir, lon, lon dir, gps qual, #sats, hdop, alt, alt units, undulation, undulation units, age, stn id	521	V123_ NMEA	log gpggalong ontime 1

Log	Description and fields after header	ID	Tag	Input Example
GPGGARTK	GPS fix data with extra precision \$gpgga, utc, lat, lat dir, lon, lon dir, gps qual, #sats, hdop, alt, alt units, rsrvd, rsrvd, age, stn id	259	V123_ NMEA	log gpggartk ontime 1
GPGLL <sup>b</sup>	Geographic position - lat/lon \$gpgll, lat, lat dir, lon, lon dir, utc, data status, mode ind	219	V123_ NMEA	log gppll ontime 1
GPGRS <sup>b</sup>	GPS range residuals for each satellite \$gpgrs, utc, mode, prn, prn, prn, prn, prn, prn, prn, prn, prn, prn, prn, prn	220	V123_ NMEA	log gpgrs ontime 1
GPGSA <sup>b</sup>	GPS DOP and active satellites \$gpgsa, mode man/auto, mode 123, prn, prn, prn, prn, prn, prn, prn, prn, prn, prn, prn, prn, pdop, hdop, vdop	221	V123_ NMEA	log gpgsa ontime 1

Log	Description and fields after header	ID	Tag	Input Example
GPGST <sup>b</sup>	Pseudorange measurement noise stats \$gpgst, utc, rms, smjr std, smnr std, orientation, lat std, lon std, alt std	222	V123_NMEA	log gpgst ontime 1
GPGSV <sup>b</sup>	GPS satellites in view \$gpgsv, #msgs, msg#, #sats, prn, elev, azimuth, snr, next sat...	223	V123_NMEA	log gpgsv ontime 1
GPHDT	Actual vessel heading in ° True (north) \$gphdt, heading, true	1045	V123_ALIGN	log gphdt onchanged 1
GPRMB <sup>b</sup>	Generic navigation info \$gprmb, data status, xtrack, dir, origin id, dest id, dest lat, lat dir, dest lon, lon dir, range, bearing, vel, arr status, mode ind	224	V123_NMEA	log gprmb ontime 1



Log	Description and fields after header	ID	Tag	Input Example
GPRMC <sup>b</sup>	GPS specific info \$gprmc, utc, pos status, lat, lat dir, lon, lon dir, speed kn, track true, date, mag var, mag var dir, mode ind	225	V123_ NMEA	log gprmc ontime 1
GPSEPHEM	GPS ephemeris data prn, tow, health, iode1, iode2, week, z week, toe, a, dn, m0, ecc, w, cuc, cus, crc, crs, cic, cis, i <sub>0</sub> , i <sup>0</sup> , w <sub>0</sub> , ω̇, iodc, toc, tgd, af0, af1, af2, as, n, ura	7	V123	log gpsephema onchanged

Log	Description and fields after header	ID	Tag	Input Example
GPVTG <sup>b</sup>	Track made good and ground speed \$gpvtg, track true, t ind, track made good, m track ind, speed kn, n speed ind, speed km, k speed ind, mode ind	226	V123_ NMEA	log gpvtg ontime 1
GPZDA	UTC time and date \$gpzda, utc, day, month, year, rsvrd, rsvrd	227	V123_ NMEA	log gpzda ontime 1
HEADING	Heading information sol stat, pos type, length, heading, pitch, rsvrd, hdg std dev, ptch std dev, stn id, #SV, #solnSV, #obs, #multi, rsvrd, extnd sol stat, rsvrd, sig mask	971	V123_ <b>ALIGN</b>	log headinga onchanged

Log	Description and fields after header	ID	Tag	Input Example
IONUTC	Ionospheric/UTC info a0, a1, a2, a3, b0, b1, b2, b3, utcwn, tot, a0, a1, wnlsf, dn, deltat ls, deltat lsf, rsvrd	8	V123	log ionutca onchanged
LBANDINFO	L-Band configuration info freq, baud, id, rsvrd, osn, vbssub, vbsexpwk, vbsexps, hpsub, hpexp week, hpexps, hpsub, mode	730	V13_VBS V3_HP V13_ CDGPS	log lbandinfoa ontime 1
LBANDSTAT	L-Band status info freq, c/n <sub>0</sub> , locktime, rsvrd, tracking, vbsstat, #bytes, #gooddgps, #baddata, rsvrd, hpstat2, #byteshp, hpstat, rsvrd	731	V13_VBS V3_HP V13_ CDGPS	log lbandstata ontime 1

Log	Description and fields after header	ID	Tag	Input Example
LOGLIST	A list of system logs #logs, port, message, message type, rsvrd, trigger, period, offset, hold, next log...	5	V123	log loglista once
MARKPOS MARK2POS	Position at mark (1 or 2) in event solstat, postype, lat, lon, hgt, undulation, datumid#, lat $\sigma$ , lon $\sigma$ , hgt $\sigma$ , stnid, diffage, solage, #SV, #solnSV, #ggl1, #ggl112, rsvrd, ext sol stat, rsvrd, sig mask	181 615	V123	log markposa onnew log mark2posa onnew
MARKTIME MARK2TIME	Time of mark (1 or 2) input event week, s, offset, offsetstd, utcoffset, status	231 616	V123	log marktimea onnew log mark2timea onnew

Log	Description and fields after header	ID	Tag	Input Example
MASTERPOS	Master position with the <b>ALIGN</b> feature solstat, postype, lat, lon, hgt, undulation, datumid#, lat $\sigma$ , lon $\sigma$ , hgt $\sigma$ , stnid, rsrvd,rsrvd #SVs, #solnSVs, #obs, #multi, rsrvd	1051	V123_ALI GN	log masterposa onchanged
MATCHED- POS	Time matched RTK pos solstat, postype, lat, lon, hgt, undulation, datumid#, lat $\sigma$ , lon $\sigma$ , hgt $\sigma$ , stnid, rsrvd, rsrvd, #SV, #solnSV, #ggl1, #ggl1l2, rsrvd, ext sol stat, rsrvd, sig mask	96	V123_ RT20 V12_RT2 V3_HP	log matchedposa onchanged

Log	Description and fields after header	ID	Tag	Input Example
MATCHED-XYZ	Time matched RTK Cartesian pos p-solstat, postype, p-x, p-y, p-z, p-x $\sigma$ , p-y $\sigma$ , p-z $\sigma$ , stnid, #SV, #solnSV, #gg11, #gg1112, rsrvd, ext sol stat, rsrvd, sig mask	242	V123_ RT20 V23_RT2 V3_HP	log matchedxyza onchanged
NAVIGATE	Navigation waypoint status solstat, ptype, vtype, navtype, dist, bearing, atrack, xtrack, eta wk, eta s	161	V123	log navigatea ontime 1
OMNIHPPOS	OmniSTAR XP or HP pos data solstat, postype, lat, lon, hgt, undltn, datumid#, lat $\sigma$ , lon $\sigma$ , hgt $\sigma$ , stnid, diff age, sol age, #SV, #solnSV, #gg11, #gg1112, rsrvd, ext sol stat, rsrvd, sig mask	495	V3_HP	log omnihpposa ontime 1

Log	Description and fields after header	ID	Tag	Input Example
OMNIVIS	OmniSTAR satellite visibility list valid?, #recs, link id, app flag, sat name, app week, app sec, freq, bit rate, service id, ellip dist, global elev, next rec...	860	V3_HP V13_VBS	log omnivisa ontime 1
PASSAUX PASSCOMn (n=1,2,3) PASSUSBn (n=1,2,3)	Port pass-through logs to redirect data #bytes, data, next byte...	690 233- 235 607- 609	V123	log passauxa <i>or</i> log passcom3a <i>or</i> log passusb2a onchanged
PASSXCOMn (n=1,2)	Virtual pass-through logs redirect data <i>as passaux above</i>	405- 406	V123	log passxcom1 onchanged

Log	Description and fields after header	ID	Tag	Input Example
PDPPOS	Output PDP filter position sol stat, pos type, lat, lon, hgt, undulation, datum id#, lat $\sigma$ , lon $\sigma$ , hgt $\sigma$ , stn id, diff_age, sol_age, #sats, #sats soln, rsvrd, rsvrd, rsrvd, rsvrd, rsvrd, rsvrd	469	V123	log pdpposa ontime 1
PDPVEL	Output PDP filter velocity sol stat, vel type, latency, age, hor spd, trk gnd, height, rsvrd	470	V123	log pdpvela ontime 1



Log	Description and fields after header	ID	Tag	Input Example
PDPXYZ	PDP Cartesian position and velocity p-sol stat, pos type, p-x, p-y, p-z, p-x $\sigma$ , p-y $\sigma$ , p-z $\sigma$ , v-sol stat, vel type, v-x, v-y, v-z, v-x $\sigma$ , v-y $\sigma$ , v-z $\sigma$ , stn id, v-latency, diff_age, sol_age, #sats, #sats soln, rsvrd, rsvrd, rsvrd, rsvrd, rsvrd, rsvrd	471	V123	log pdpxyza ontime 1
PORTSTATS	Port stats #ports, port, rx chars, tx chars, acc rx chars, dropped chars, interrupts, breaks, par err, fram err, overruns, next port...	72	V123	log portstatsa once

Log	Description and fields after header	ID	Tag	Input Example
PSRDOP	DOPs of current SVs gdop, pdop, hdop, htdop, tdop, cutoff, #prns, prn, next prn...	174	V123	log psrdopa onchanged
PSRPOS	Pseudorange position solstat, postype, lat, lon, hgt, undltn, datumid#, lat $\sigma$ , lon $\sigma$ , hgt $\sigma$ , stnid, diff age, sol age, #SV, #solnSV, #gg11, #gg1112, rsrvd, ext sol stat, rsrvd, sig mask	47	V123	log psrposa ontime 1
PSRTIME	Time offsets from pseudorange filter #recs, system, offset, offset stdv, next prn...	881	V123	log psrtimea ontime 1
PSRVEL	Pseudorange velocity solstat, vtype, latency, age, horspd, trkgnd, vertspd, rsrvd	100	V123	log psrvela ontime 1

Log	Description and fields after header	ID	Tag	Input Example
PSRXYZ	Pseudorange Cartesian position p-solstat, postype, p-x, p-y, p-z, p-x $\sigma$ , p-y $\sigma$ , p-z $\sigma$ , v-solstat, v-type, v-x, v-y, v-z, v-x $\sigma$ , v-y $\sigma$ , v-z $\sigma$ , stnid, v-latency, diff age, sol age, #SV, #solnSV, rsvrd, rsrvd, rsvrd, ext sol stat, rsvrd, sigmask	243	V123	log psrxyza ontime 1
RANGE	Satellite range info #obs, prn/slot <sup>c</sup> , glofreq, psr, psr std, adr, adr std, dopp, c/no, locktime, ch-tr-status, next obs...	43	V123	log rangea ontime 30
RANGECMP	Compressed RANGE log #obs, 1st range record, next obs...	140	V123	log rangecmpa ontime 10

Log	Description and fields after header	ID	Tag	Input Example
RANGE-GPSL1	L1 version of RANGE log #obs, prn, rsvrd, psr, psr std, adr, adr std, dopp, c/no, locktime, ch-tr-status, next obs...	631	V123	log rangegpsl1a ontime 30
RAWALM	Raw almanac refweek, refsecs, #subframes, svid, data, next subframe...	74	V123	log rawalma onchanged
RAWEPHEM	Raw ephemeris prn, refweek, refsecs, subframe1, subframe2, subframe3	41	V123	log rawephema onchanged
RAWGPS-SUBFRAME	Raw subframe data decode#, prn, subfr id, data, chan	25	V123	log rawgpssubframea onnew
RAWGPS-WORD	Raw navigation word prn, nav word	407	V123	log rawgpsworda onnew

Log	Description and fields after header	ID	Tag	Input Example
RAWLBAND-FRAME	Raw L-Band frame data frame#, channelcode, data	732	V13_CDGPS	log rawlbandframea onnew
RAWLBAND-PACKET	Raw L-Band data packet #recs, data	733	V13_VBS V3_HP	log rawlbandpacketa onnew
RAWWAAS-FRAME	Raw SBAS frame data decode#, prn, waas msg id, data, chan	287	V123_SBAS	log rawwaasframea onnew
REFSTATION	Ref. station pos and health status, x, y, z, health, stn type, stn id	175	V123_RT20 V3_RT2	log refstationa onchanged
ROVERPOS	Rover position with the <b>ALIGN</b> feature solstat, postype, lat, lon, hgt, undulation, datumid#, lat $\sigma$ , lon $\sigma$ , hgt $\sigma$ , stnid, rsrvd,rsrvd #SVs, #solnSVs, #obs, #multi, rsrvd	1052	V123_ALI GN	log roverposa onchanged

Log	Description and fields after header	ID	Tag	Input Example
RTCA1	Type 1 differential GPS corrections	10	V123_ DGPS	log com2 rtca1 ontime 10 3
RTCAEPHEM	Type 7 ephemeris information	347	V123_ DGPS	log com2 rtcaephem ontime 10 7
RTCAOBS	Type 7 base station observations	6	V123_ RT20 V23_RT2	log com2 rtcaobs ontime 2
RTCAOBS2	Type 7 base station observations 2 <i>(to send both rtcaobs2 and rtcaobs, ensure you send rtcaobs2 first)</i>	805	V123_ RT20 V23_RT2	log com2 rtcaobs2 ontime 2
RTCAREF	Type 7 base station parameters	11	V123_ RT20 V23_RT2	log com2 rtcaref ontime 10
RTCM1	Type 1 differential GPS corrections	107	V123_ DGPS	log rtc1 ontime 10 3
RTCM3	Type 3 base station parameters	117	V123_ RT20 V23_RT2	log rtc3 ontime 10

Log	Description and fields after header	ID	Tag	Input Example
RTCM9	Type 9 partial differential corrections	275	V23_ DGPS	log rtc9 ontime 10
RTCM15	Type 15 ionospheric corrections	307	V123_ DGPS	log rtc15 ontime 10
RTCM16	Type16 special message	129	V123_ DGPS	log rtc16 once
RTCM16T	Type16T special message	131	V123_ DGPS	log rtc16t
RTCM1819	Type18 and Type 19 raw measurements	260	V123_ RT20 V23_RT2	log rtc1819 ontime 2
RTCM2021	Type 20 and Type 21 measurement corrections	370	V123_ RT20 V23_RT2	log rtc2021 ontime 10
RTCM22	Type 22 extended base parameters	118	V123_ RT20 V23_RT2	log rtc22 ontime 10
RTCM23	Type 23 antenna type definition record	665	V123_ RT20 V23_RT2	log rtc23 ontime 5

Log	Description and fields after header	ID	Tag	Input Example
RTCM24	Type 24 Antenna Reference Point (ARP) parameters	667	V123_ RT20 V23_RT2	log rtc24 ontime 5
RTCM31	Type 31 GLONASS differential corrections	864	V1G23_G & V123_ RT20 V23_RT2	log rtc31 ontime 2
RTCM32	Type 32 GLONASS base station parameters	873	V1G23_G & V123_ RT20 V23_RT2	log rtc32 ontime 2
RTCM36	Type 36 special message	875	V1G23_G	log rtc36 once
RTCM36T	Type 36T special message	877	V1G23_G	log rtc36t once
RTCM59	Type 59N-0	116	V123_ RT20 V23_RT2	log rtc59 ontime 10
RTCM59GLO	Proprietary GLONASS differential	903	V1G23_G & V123_ DGPS	log rtc59glo ontime 2



Log	Description and fields after header	ID	Tag	Input Example
RTCM-CDGPS1	Localized CDGPS corrections in RTCM1	954	V13_CDGPS	log rtcxcdgps1 ontime 10
RTCM-CDGPS9	CDGPS corrections in RTCM9	955	V13_CDGPS	log rtcxcdgps9 ontime 10
RTCMOMNI1	RTCM1 from OmniSTAR VBS	957	V13_VBS	log rtcmonmni1 onchanged
RTCM1001	L1-Only GPS RTK Observables	772	V123_RT20 V23_RT2	log rtc1001 ontime 10 3
RTCM1002	Extended L1 GPS RTK Observables	774	V123_RT20 V23_RT2	log rtc1002 ontime 7
RTCM1003	L1/L2 GPS RTK Observables	776	V123_RT20 V23_RT2	log rtc1003 ontime 7
RTCM1004	Extended L1/L2 GPS RTK Observables	770	V123_RT20 V23_RT2	log rtc1004 ontime 7

<b>Log</b>	<b>Description and fields after header</b>	<b>ID</b>	<b>Tag</b>	<b>Input Example</b>
RTCM1005	RTK Base Station ARP	765	V123_ RT20 V23_RT2	log rtc1005 ontime 3
RTCM1006	RTK Base ARP & Antenna Height	768	V123_ RT20 V23_RT2	log rtc1006 ontime 3
RTCM1007	Extended Antenna Descriptor & Setup	852	V123_ RT20 V23_RT2	log rtc1007 ontime 10
RTCM1008	Extended Antenna Reference Station Description & Serial Number	854	V123_ RT20 V23_RT2	log rtc1008 ontime 10
RTCM1009	L1-Only GLONASS RTK	885	V123_ RT20 V23_RT2	log rtc1009 ontime 3
RTCM1010	Extended L1-Only GLONASS RTK	887	V123_ RT20 V23_RT2	log rtc1010 ontime 3
RTCM1011	GLONASS L1/L2 RTK	889	V123_ RT20 V23_RT2	log rtc1011 ontime 3

Log	Description and fields after header	ID	Tag	Input Example
RTCM1012	Extended GLONASS L1/L2 RTK	891	V123_ RT20 V23_RT2	log rtc1012 ontime 3
RTCM1019	GPS Ephemeris	893	V123_ RT20 V23_RT2	log rtc1019 ontime 3
RTCM1020	GLONASS Ephemeris	895	V123_ RT20 V23_RT2	log rtc1020 ontime 3
RTCM1033	Receiver and antenna descriptors	1097	V123_ RT20 V23_RT2	log rtc1033 ontime 3

Log	Description and fields after header	ID	Tag	Input Example
RTKDATA	RTK specific info sol status, pos type, rtk info, #SV, #solnSV, #gg11, #gg1112, rsvrd, ext sol stat, rsvrd, sig mask, search state, #lane, [c: 3x3], $\Delta x$ , $\Delta y$ , $\Delta z$ , $x\sigma$ , $y\sigma$ , $z\sigma$ , ref prn, #svs, prn/slot <sup>c</sup> , ambiguity type, residual, next sv...	215	V123_ RT20 V23_RT2	log rtkdata onchanged
RTKDOP	Values from the RTK fast filter gdop, pdop, hdop, htdop, tdop, elev mask, #sats, sats	952	V123_ RT20 V23_RT2	log rtkdopa ontime 10

Log	Description and fields after header	ID	Tag	Input Example
RTKPOS	RTK low latency pos data sol status, pos type, lat, lon, hgt, undulation, datum id#, lat $\sigma$ , lon $\sigma$ , hgt $\sigma$ , stn id, diff age, sol age, #SV, #solnSV, #ggl1, #ggl112, rsrvd, ext sol stat, rsrvd, sig mask	141	V123_ RT20 V23_RT2	log rtkposa ontime 1
RTKVEL	RTK velocity sol status, vel type, latency, age, hor spd, track over gnd, vert spd, rsrvd	216	V123_ RT20 V23_RT2	log rtkvela ontime 1

Log	Description and fields after header	ID	Tag	Input Example
RTKXYZ	RTK Cartesian coord pos pos sol status, pos type, p-x, p-y, p-z, p-x $\sigma$ , p-y $\sigma$ , p-z $\sigma$ , vel sol status, v-x, v-y, v-z, v-x $\sigma$ , v-y $\sigma$ , v-z $\sigma$ , stn id, v latency, diff age, sol age, #SV, #solnSV, #gg11, #gg112, rsrvd, ext sol stat, rsrvd, sig mask	244	V123_ RT20 V23_RT2	log rtkxyza ontime 1
RXCONFIG	Receiver config status embedded header, embedded msg, embedded crc, next embedded command...	128	V123	log rxconfiga once
RXHW-LEVELS	Receiver hardware levels temp, ant current, core v, supply v, rf v, internal lna v, gpai, rsrvd, rsrvd, lna v	195	V3	log rxhwlevelsa ontime 60

Log	Description and fields after header	ID	Tag	Input Example
RXSTATUS	<b>Self-test status</b> error, #stats, rxstat, rxstat pri, rxstat set, rxstat clear, aux1stat, aux1stat pri, aux1stat set, aux1stat clear, aux2stat, aux2stat pri, aux2stat set, aux2stat clear, aux3stat, aux3stat pri, aux3stat set, aux3stat clear, next stat...	93	V123	log rxstatusa onchanged
RXSTATUS- EVENT	<b>Status event indicator</b> status, bit pos, event, descrip	94	V123	log rxstatuseventa onchanged

Log	Description and fields after header	ID	Tag	Input Example
SATVIS	Satellite visibility satellite visibility?, complete gps almanac?, #sats, prn/slot <sup>c</sup> , glofreq, health, elev, az, true dop, apparent dop, next sat...	48	V123	log satvisa ontime 60
SATXYZ	ECEF satellite Cartesian pos rsrvd, #sats, prn/slot <sup>c</sup> , x, y, z, clk corr, iono corr, tropo corr, rsrvd, rsrvd, next sat...	270	V123	log satxyza ontime 1
TIME	Receiver time information clock status, offset, offset std, utc offset, utc year, utc month, utc day, utc hour, utc min, utc ms, utc status	101	V123	log timea ontime 1



<b>Log</b>	<b>Description and fields after header</b>	<b>ID</b>	<b>Tag</b>	<b>Input Example</b>
TIMESYNC	Synchronize receiver times week, ms, time status	492	V123	log timesynca ontime 1
TRACKSTAT	Satellite tracking status sol status, pos type, ecutoff, #chans, prn/slot <sup>c</sup> , glofreq, ch-tr-status, psr, dop, cno, locktime, psr res, reject code, psr weight, next chan...	83	V123	log trackstata ontime 1
VALID-MODELS	Receiver model/expiry date #mods, model, expyear, expmonth, expday, next mod...	206	V123	log validmodelsa once

Log	Description and fields after header	ID	Tag	Input Example
VERSION	Receiver version numbers #components, type, model, psn, hw version, sw version, boot version, compile date, compile time, next component...	37	V123	log versiona once
WAAS0	Which PRN to remove from solution prn	290	V123_ SBAS	log waas0a onchanged
WAAS1	PRN mask assignment prn, mask, iodp	291	V123_ SBAS	log waas1a onchanged
WAAS2	Fast corrections slots 0-12 prn, iodf, iodp, prc0, prc1, prc2, prc3, prc4, prc5, prc6, prc7, prc8, prc9, prc10, prc11, prc12, udre0, udrel1, udre2, udre3, udre4, udre5, udre6, udre7, udre8, udre9, udre10, udre11, udrel2	296	V123_ SBAS	log waas2a onchanged

Log	Description and fields after header	ID	Tag	Input Example
WAAS3	<b>Fast corrections slots 13-25</b> prn, iodf, iodp, prc13, prc14, prc15, prc16, prc17, prc18, prc19, prc20, prc21, prc22, prc23, prc24, prc25, udre13, udre14, udre15, udre16, udre17, udre18, udre19, udre20, udre21, udre22, udre23, udre24, udre25	301	V123_ SBAS	log waas3a onchanged
WAAS4	<b>Fast corrections slots 26-38</b> prn, iodf, iodp, prc26, prc27, prc28, prc29, prc30, prc31, prc32, prc33, prc34, prc35, prc36, prc37, prc38, udre26, udre27, udre28, udre29, udre30, udre31, udre32, udre33, udre34, udre35, udre36, udre37, udre38	302	V123_ SBAS	log waas4a onchanged

Log	Description and fields after header	ID	Tag	Input Example
WAAS5	Fast corrections slots 39-50 prn, iodf, iodp, prc39, prc40, prc41, prc42, prc43, prc44, prc45, prc46, prc47, prc48, prc49, prc50, prc21, udre39, udre40, udre41, udre42, udre43, udre44, udre45, udre46, udre47, udre48, udre49, udre50, udre51 (do not use)	303	V123_ SBAS	log waas5a onchanged

Log	Description and fields after header	ID	Tag	Input Example
WAAS6	Integrity message prn,iodf2,iodf3,iodf4,iodf5, udre0,udre1,udre2,udre3, udre4,udre5,udre6,udre7, udre8,udre9,udre10,udre11, udre12,udre13,udre14,udre15, udre16,udre17,udre18,udre19, udre20,udre21,udre22,udre23, udre24,udre25,udre26,udre27, udre28,udre29,udre30,udre31, udre32,udre33,udre34,udre35, udre36,udre37,udre38,udre39, udre40,udre41,udre42,udre43, udre44,udre45,udre46,udre47, udre48,udre49,udre50, udre51 (invalid)	304	V123_ SBAS	log waas6a onchanged

Log	Description and fields after header	ID	Tag	Input Example
WAAS7	Fast correction degradation prn, latency, iodp, spare bits, ai(0), ai(1), ai(2), ai(3), ai(4), ai(5), ai(6), ai(7), ai(8), ai(9), ai(10), ai(11), ai(12), ai(13), ai(14), ai(15), ai(16), ai(17), ai(18), ai(19), ai(20), ai(21), ai(22), ai(23), ai(24), ai(25), ai(26), ai(27), ai(28), ai(29), ai(30), ai(31), ai(32), ai(33), ai(34), ai(35), ai(36), ai(37), ai(38), ai(39), ai(40), ai(41), ai(42), ai(43), ai(44), ai(45), ai(46), ai(47), ai(48), ai(49), ai(50), ai(51) (invalid, do not use)	305	V123_ SBAS	log waas7a onchanged

<b>Log</b>	<b>Description and fields after header</b>	<b>ID</b>	<b>Tag</b>	<b>Input Example</b>
WAAS9	GEO navigation message prn, iodn, t <sub>0</sub> , ura, x, y, z, xvel, yvel, zvel, xaccel, yaccel, zaccel, a <sub>fo</sub> , a <sub>f1</sub>	306	V123_ SBAS	log waas9a onchanged
WAAS10	Degradation factor prn, b <sub>rcc</sub> , c <sub>1tc_1sb</sub> , c <sub>1tc_v1</sub> , i <sub>1tc_v1</sub> , c <sub>1tc_v0</sub> , i <sub>1tc_v1</sub> , c <sub>geo_1sb</sub> , c <sub>geo_v</sub> , i <sub>geo</sub> , c <sub>er</sub> , c <sub>iono_step</sub> , i <sub>iono</sub> , c <sub>iono_ramp</sub> , rss <sub>udre</sub> , rss <sub>iono</sub> , spare bits	292	V123_ SBAS	log waas10a onchanged
WAAS12	SBAS network time & UTC prn, a <sub>1</sub> , a <sub>0</sub> , seconds, week, dtls, wnlsf, dn, dtlsf, utcid, gpstow, gpswn, glo ind, rsvrd	293	V123_ SBAS	log waas12a onchanged

Log	Description and fields after header	ID	Tag	Input Example
WAAS17	GEO almanac message prn, #entries, data id, entry prn, health, x, y, z, x vel, y vel, z vel, next entry..., t <sub>0</sub>	294	V123_ SBAS	log waas17a onchanged
WAAS18	IGP mask prn, #bands, band#, iodi, igp mask, spare bit	295	V123_ SBAS	log waas18a onchanged
WAAS24	Mixed fast/slow corrections prn, prc0, prc1, prc2, prc3, prc4, pcr5, udre0, udrel, udre2, udre3, udre4, udre5, iodp, block id, iodf, spare, vel, mask1, iodel, dx1, dy1, dz1, da <sup>f0</sup> , mask2, iode2, ddx, ddy, ddz, da <sup>f1</sup> , t <sub>0</sub> , iodp, corr spare	297	V123_ SBAS	log waas24a onchanged



Log	Description and fields after header	ID	Tag	Input Example
WAAS25	Long-term slow corrections source prn, 1st vel, 1st mask1, 1st iodel1, 1st dx1, 1st dy1, 1st dz1, 1st da <sup>f0</sup> , 1st mask2, 1st iode2, 1st ddx, 1st ddy, 1st ddz, 1st da <sup>f1</sup> , 1st t <sub>0</sub> , 1st iodp, 1st corr spare, 2nd vel, 2nd mask1, 2nd iodel1, 2nd dx1, 2nd dy1, 2nd dz1, 2nd da <sup>f0</sup> , 2nd mask2, 2nd iode2, 2nd ddx, 2nd ddy, 2nd ddz, 2nd da <sup>f1</sup> , 2nd t <sub>0</sub> , 2nd iodp, 2nd corr spare	298	V123_ SBAS	log waas25a onchanged

Log	Description and fields after header	ID	Tag	Input Example
WAAS26	iono-delay corrections prn, band#, block id, #pts, igp <sub>vde</sub> , givei, next pt..., iode, spare	299	V123_ SBAS	log waas26a onchanged
WAAS27	SBAS service message prn, iods, #messages, message#, priority code, dudre inside, #regs, lat1,lon1, lat2, lon2, shape,next reg..., t <sub>0</sub>	300	V123_ SBAS	log waas27a onchanged
WAAS32 (CDGPS)	Fast correction slots 0-10 prn,iodp,prc0,prc1,prc2, prc3,prc4,prc5,prc6,prc7, prc8,prc9,prc10,udre0,udre1, udre2,udre3,udre4,udre5, udre6,udre7,udre8,udre9, udre10	696	V13_ CDGPS	log waas32a onchanged

Log	Description and fields after header	ID	Tag	Input Example
WAAS33 (CDGPS)	Fast correction slots 11-21 prn, iodp, prc11, prc12, prc13, prc14, prc15, prc16, prc17, prc18, prc19, prc20, prc21, udre11, udre12, udre13, udre14, udre15, udre16, udre17, udre18, udre19, udre20, udre21	697	V13_ CDGPS	log waas33a onchanged
WAAS34 (CDGPS)	Fast correction slots 22-32 prn, iodp, prc22, prc23, prc24, prc25, prc26, prc27, prc28, prc29, prc30, prc31, prc32, udre22, udre23, udre24, udre25, udre26, udre27, udre28, udre29, udre30, udre31, udre32	698	V13_ CDGPS	log waas34a onchanged

Log	Description and fields after header	ID	Tag	Input Example
WAAS35 (CDGPS)	Fast correction slots 33-43 prn, iodp, prc33,prc34,prc35,prc36, prc37,prc38,prc39,prc40, prc41,prc42,prc43,udre33, udre34,udre35,udre36,udre37, udre38,udre39,udre40,udre41, udre42, udre43	699	V13_ CDGPS	log waas35a onchanged
WAAS45 (CDGPS)	Slow corrections prn, mask1, iode1, dx1, dy1, dz1, ddx, ddy, ddz, da <sup>f0</sup> 1, t <sub>0</sub> 1, mask2, iode2, dx1, dy1, dz1, ddx, ddy, ddz, da <sup>f0</sup> 2, t <sub>0</sub> 2, iodp	700	V13_ CDGPS	log waas45a onchanged
WAASCORR	SBAS range corrections use #sats,prn, iode, psr corr, corr stdv,next sat...	313	V123_ SBAS	log waascorra ontime 1

- a. GPS Time, in milliseconds (binary data) or seconds (ASCII data)
- b. If NMEATALKER is set to AUTO, the talker (the first 2 characters after the \$ in the log header) is set to GP (GPS satellites only), GL (GLONASS satellites only), or GN (both systems' satellites).
- c. PRN 1 to 32 for GPS channels, 38 to 61 for GLONASS, and 120 to 138 for SBAS

### Tag Meanings

V123	Features available on OEMV-1, OEMV-1G, OEMV-2 or OEMV-3-based products. If a feature is not available on a card, its number is omitted, for example, V23, V13 or V3.
V123_RT20	Features available only with receivers equipped with the RT-20 option
V23_RT2	Features available only with receivers equipped with the RT-2 option
V123_DGPS	Feature used when operating in differential mode
V123_NMEA	National Marine Electronics Association format
V123_SBAS	SBAS messages available when tracking an SBAS satellite (refer to <i>GNSS+: A Reference Guide</i> )
V3_HP	OmniSTAR high performance (HP) or extra performance (XP), and virtual base station (VBS) available with an OmniSTAR subscription (refer to <i>GNSS+: A Reference Guide</i> )
V13_VBS	OmniSTAR VBS available with an OmniSTAR subscription
V13_CDGPS	The free Canada-Wide Differential Global Positioning System (CDGPS) available without a subscription (refer to <i>GNSS+: A Reference Guide</i> )
V1G23_G	GLONASS positioning and RT-2 <b>LITE</b> available (refer to <i>GNSS+: A Reference Guide</i> )
V3_G	Available only on OEMV-3-based products with the GLONASS option
V23_L2C	Capable of receiving the L2C signal (refer to <i>GNSS+: A Reference Guide</i> )
<b>ALIGN</b>	Heading information available only on <b>ALIGN</b> -capable models

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