

AscenKorea Inc.

GPS 620

Data sheet

Revision: V2.0



This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.

AscenKorea Inc.

Rm. 1401, 14F, Partners Tower Gasandigital 1Ro 83, Geumcheon-gu, Seoul, Korea  
Tel: +82 1544 3818 Fax: +82 02 6499 2940 [www.AscenKorea.com](http://www.AscenKorea.com) /[sales@ascen.co.kr](mailto:sales@ascen.co.kr)

copyright © AscenKorea Inc. All right reserved



## Version History

<b>Title:</b>	AscenKorea GPS620 Datasheet		
<b>Subtitle:</b>	GPS Module		
<b>Doc Type:</b>	Datasheet		
<b>Revision</b>	<b>Date</b>	<b>Author</b>	<b>Description</b>
V2.0	2016/12/27	Kevin	Release

This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.

AscenKorea Inc.

Rm. 1401, 14F, Partners Tower Gasandigital 1Ro 83, Geumcheon-gu, Seoul, Korea  
Tel: +82 1544 3818 Fax: +82 02 6499 2940 [www.AscenKorea.com](http://www.AscenKorea.com) /[sales@ascen.co.kr](mailto:sales@ascen.co.kr)

copyright © AscenKorea Inc. All right reserved



## Table of Contents

<b>1. Features</b> .....	<b>4</b>
1.1 Block diagram.....	5
<b>2. Specification</b> .....	<b>6</b>
2.1 Dimensions.....	6
2.2 Pin Function .....	6
2.3 Electrical Characteristics .....	7
2.4 GNSS Performance .....	8
<b>3. NMEA Protocol</b> .....	<b>9</b>
<b>4. Contact</b> .....	<b>21</b>

This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.

AscenKorea Inc.

Rm. 1401, 14F, Partners Tower Gasandigital 1Ro 83, Geumcheon-gu, Seoul, Korea  
Tel: +82 1544 3818 Fax: +82 02 6499 2940 [www.AscenKorea.com](http://www.AscenKorea.com) /[sales@ascen.co.kr](mailto:sales@ascen.co.kr)

copyright © AscenKorea Inc. All right reserved



## 1. Features

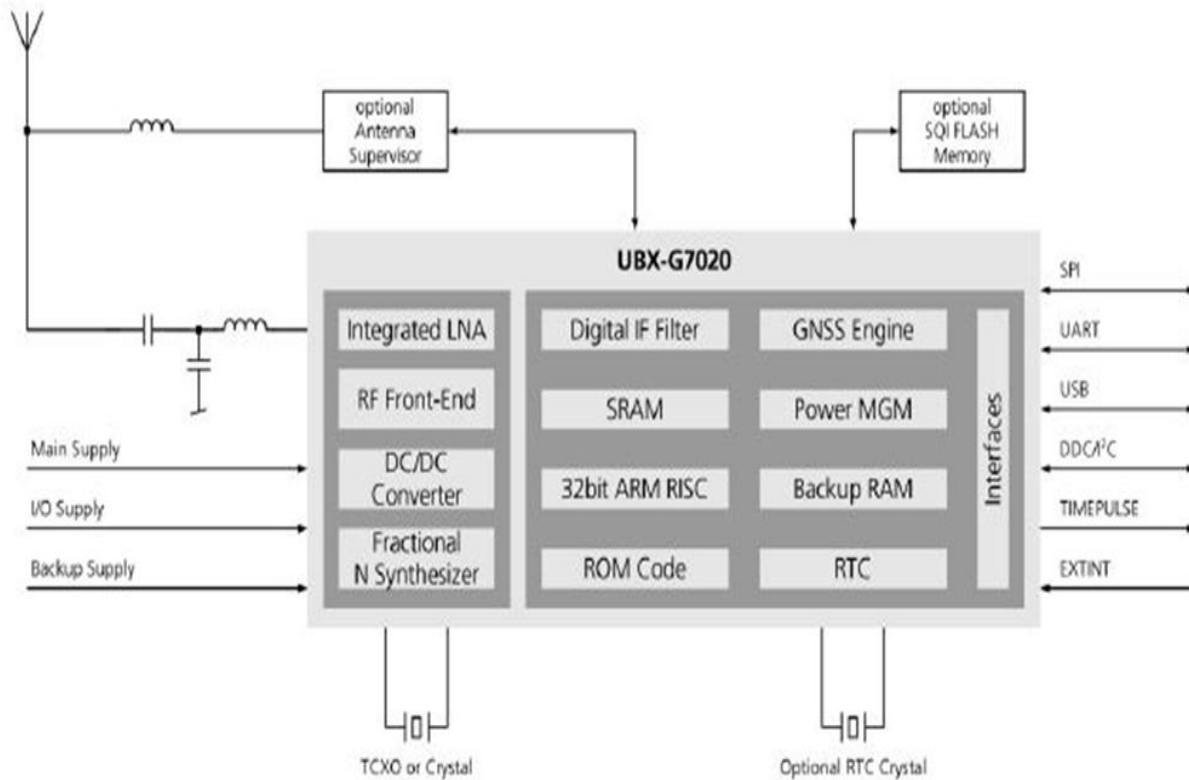
- ◆ Over 2 million effective correlators
- ◆ Down to 1' s acquisition time
- ◆ Cold start acquisition sensitivity of -148 dBm and -162 dBm tracking sensitivity
- ◆ Up to 10 Hz navigation update rate in multi-GNSS mode and up to 18 Hz in GPS-only mode
- ◆ Supports GPS, QZSS and SBAS (WAAS, EGNOS, MSAS) reception and ready for Galileo
- ◆ Supports u-blox AssistNow Online / AssistNow Offline A-GPS services and OMA SUPL compliant
- ◆ Supports u-blox AssistNow Autonomous (no connectivity required)
- ◆ Supports data logging
- ◆ Green (RoHS compliant and no antimony or halogenated flame retardants)

### Applications:

- ✓ Asset tracking
- ✓ Health and fitness
- ✓ Cellular handset
- ✓ Tablet computers
- ✓ Other location-aware consumer devices



## 1.1 Block diagram



This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.

**AscenKorea Inc.**

Rm. 1401, 14F, Partners Tower Gasandigital 1Ro 83, Geumcheon-gu, Seoul, Korea  
Tel: +82 1544 3818 Fax: +82 02 6499 2940 [www.AscenKorea.com](http://www.AscenKorea.com) /[sales@ascen.co.kr](mailto:sales@ascen.co.kr)

copyright © AscenKorea Inc. All right reserved



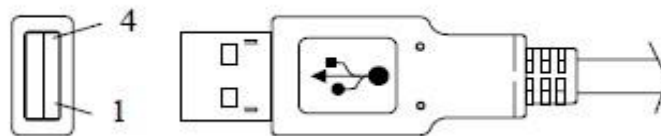
## 2. Specifications

### 2.1 Dimensions



<b>Dimension</b>	45(L)*45(W)*13.5(H)mm
<b>Cable Length</b>	2m

### 2.2 Pin Function



No.	Name	Functions	Descriptions
1	VCC	I	Main Power Input
2	TX	I/O	Differential data signals
3	RX	I/O	Differential data signals
4	GND	I	Ground

This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.

AscenKorea Inc.

Rm. 1401, 14F, Partners Tower Gasandigital 1Ro 83, Geumcheon-gu, Seoul, Korea  
Tel: +82 1544 3818 Fax: +82 02 6499 2940 [www.AscenKorea.com](http://www.AscenKorea.com) /[sales@ascen.co.kr](mailto:sales@ascen.co.kr)

copyright © AscenKorea Inc. All right reserved

## 2.3 Electrical Characteristics

### ◆ Absolute Maximum Ratings

Parameter	Min	Max	Unit
DC Supply Voltage(VCC)	-0.5	6.0	V
I/O pin voltage	-0.5	3.6	V
RF input power	-	15	dBm
Storage Temperature	-40	85	°C

### ◆ Recommended Operating Conditions

Parameter	Min	Typ	Max	Unit
Main Supply Voltage (VCC)	3.3	5	5.5	V
Operating Temperature	-40	-	+85	°C

### ◆ Current Usage

Parameter	Min	Typ	Max	Unit
Peak acquisition current	-	104	-	mA
Average acquisition current	-	42	-	mA
Average tracking current	-	32	-	mA
Backup current	-	37	-	uA

### ◆ I/O Port

A USB interface, which is compatible to USB version 2.0 FS (Full Speed, 12 Mbit/s)

Parameter	Min	Typ	Max	Unit
Low level input voltage	0	-	0.8	V
High level input voltage	2.0	-	3.1	V
Low level output voltage	-	-	0.3	V
High level output voltage	2.8	-	-	V



## 2.4 GNSS Performance

Parameter	Specification
Receiver type	56-channel u-blox 7 engine GPS L1C/A, SBAS L1C/A, QZSS L1C/A Galileo E1B/C (Ready to support Galileo E1B/C when available) Maximum update rate 10Hz Maximum Altitude < 50,000m Velocity < 500m/s Dynamics < 4g NMEA protocol is supported via USB interface
Time-To-First-Fix(@-130dBm)	Hot start <1s Warm start <28s Cold start <29s
Sensitivity	Tracking & Navigation -162dBm Reacquisition -160dBm Cold Start -148dBm Warm Start -148dBm Hot Start -156dBm
Horizontal positioning accuracy (CEP, 50%, 24 hours static, -130 dBm, > 6 SVs )	Autonomous <2.5m SBAS <2.0m
Accuracy of time pulse signal	RMS 30ns 99% 60ns
Velocity accuracy(50% @ 30m/s)	Speed <0.1m/s Heading <0.5°

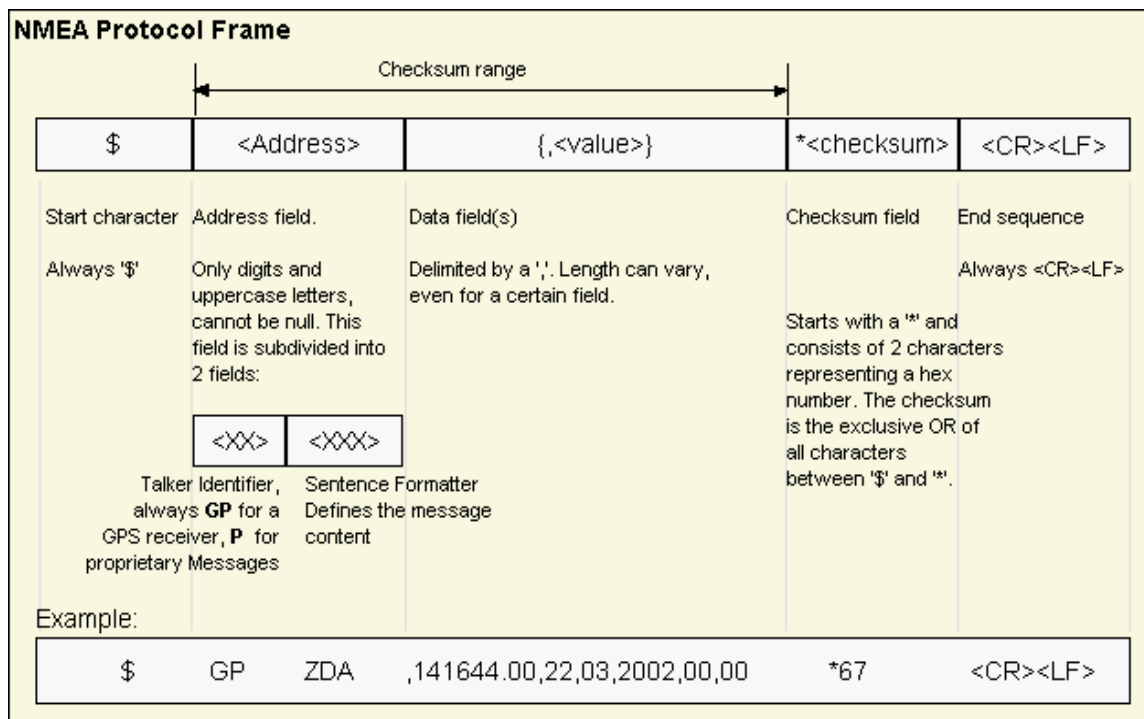
This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.



### 3. NMEA Protocol

#### Protocol Overview

NMEA messages sent by the GNSS receiver are based on NMEA 0183 Version 2.3. The following picture shows the structure of a NMEA protocol message.



For further information on the NMEA Standard please refer to NMEA 0183 Standard for Interfacing Marine Electronic Devices, Version 2.30, March 1, 1998. See <http://www.nmea.org/> for ordering instructions.

The NMEA standard allows for proprietary, manufacturer-specific messages to be added. These shall be marked with a manufacturer mnemonic. The mnemonic assigned to u-blox is UBX and is used for all non-standard messages. These proprietary NMEA messages therefore have the address field set to PUBX. The first data field in a PUBX message identifies the message number with two digits.

This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.



## NMEA Protocol Configuration

The NMEA protocol on u-blox receivers can be configured to the need of customer applications using CFG-NMEA. There are two NMEA standards supported. The default NMEA version is 2.3. Alternatively version 2.1 can be enabled (for details on how this affects the output refer to section Position Fix Flags in NMEA Mode). The NMEA standard differentiates between GPS, GLONASS, and combined GNSS receivers using a two-letter message identifier, the 'Talker ID'. Depending upon device model and system configuration, the u-blox receiver could output messages using any one of these Talker IDs.

By default, receivers configured to support GPS, SBAS and QZSS use the 'GP' Talker ID, receivers configured to support GLONASS use the 'GL' Talker Id, and receivers configured for any other GNSS or any other combinations of GNSS use the 'GN' Talker ID

NMEA defines a satellite numbering system for GPS, SBAS, and GLONASS. Satellite numbers for other GNSS can be configured using CFG-NMEA. Unknown satellite numbers are always reported as a null NMEA field (i.e. an empty string)

The NMEA specification indicates that the GGA message is GPS specific. However, u-blox receivers support the output of a GGA message for each of the Talker IDs.



### NMEA filtering flags

Parameter	Description
Position filtering	Enable to permit positions from failed or invalid fixes to be reported (with the "V" status flag to indicate that the data is not valid).
Valid position filtering	Enable to permit positions from invalid fixes to be reported (with the "V" status flag to indicate that the data in not valid).
Time filtering	Enable to permit the receiver's best knowledge of time to be output, even though it might be wrong.
Data filtering	Enable to permit the receiver's best knowledge of time to be output, even though it might be wrong.
GPS-only filtering	Enable to restrict output to only report GPS satellites.
Track filtering	Enable to permit course over ground (COG) to be reported even when it would otherwise be frozen.

### NMEA flags

Parameter	Description
Compatibility Mode	Some older NMEA applications expect the NMEA output to be formatted in a specific way, for example, they will only work if the latitude and longitude have exactly four digits behind the decimal point. u-blox receivers offer a compatibility mode to support these legacy applications
Consideration Mode	u-blox receivers use a sophisticated signal quality detection scheme, in order to produce the best possible position output. This algorithm considers all SV measurements, and may eventually decide to only use a subset thereof, if it improves the overall position accuracy. If Consideration mode is enabled, all satellites, which were considered for navigation, are communicated as being used for the position determination. If Consideration Mode is disabled, only those satellites which after the consideration step remained in the position output are marked as being used.

This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.

AscenKorea Inc.

Rm. 1401, 14F, Partners Tower Gasandigital 1Ro 83, Geumcheon-gu, Seoul, Korea  
 Tel: +82 1544 3818 Fax: +82 02 6499 2940 [www.AscenKorea.com](http://www.AscenKorea.com) /[sales@ascen.co.kr](mailto:sales@ascen.co.kr)

copyright © AscenKorea Inc. All right reserved

**Extended configuration**

Option	Description
GNSS to filter	Filters satellites based on their GNSS
Satellites numbering	This field configures the display of satellites that do not have an NMEA-defined value. Note: this does not apply to satellites with an unknown ID.
Main Talker ID	By default the main Talker ID (i.e. the Talker ID used for all messages other than GSV) is determined by the GNSS assignment of the receiver's channels (see UBX-CFG-GNSS). This field enables the main Talker ID to be overridden.
GSV Talker ID	By default the Talker ID for GSV messages is GNSS specific (as defined by NMEA). This field enables the GSV Talker ID to be overridden.

**Latitude and Longitude Format**

According to the NMEA Standard, Latitude and Longitude are output in the format Degrees, Minutes and (Decimal) Fractions of Minutes. To convert to Degrees and Fractions of Degrees, or Degrees, Minutes, Seconds and Fractions of seconds, the 'Minutes' and 'Fractional Minutes' parts need to be converted. In other words: If the GPS Receiver reports a Latitude of 4717.112671 North and Longitude of 00833.914843 East, this is Latitude 47 Degrees, 17.112671 Minutes, Longitude 8 Degrees, 33.914843 Minutes or Latitude 47 Degrees, 17 Minutes, 6.76026 Seconds, Longitude 8 Degrees, 33 Minutes, 54.89058 Seconds or Latitude 47.28521118 Degrees Longitude 8.56524738 Degrees.

This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.



## Position Fix Flags in NMEA

This section shows how u-blox implements the NMEA protocol and the conditions determining how flags are set.

### Flags in NMEA 2.3 and above

NMEA Message: Field	No position fix	GNSS fix, but user limits exceeded	Dead reckoning fix, but user limits exceeded	Dead reckoning fix	2D GNSS fix	3D GNSS fix	Combined GNSS/dead reckoning fix
GLL, RMC: status	V	V	V	A	A	A	A
	V=Data Invalid, A=Data Valid						
GGA: quality	0	0	6	6	1/2	1/2	1/2
	0=No Fix, 1=Autonomous GNSS Fix, 2=Differential GNSS Fix, 6=Estimated/Dead Reckoning Fix						
GSA: navMode	1	1	2	2	2	3	3
	1=No Fix, 2=2D Fix, 3=3D Fix						
GLL, RMC, VTG, GNS: posMode N	N	N	E	E	E	A/D	A/D
	N=No Fix, E=Estimated/Dead Reckoning Fix, A=Autonomous GNSS Fix, D=Differential GNSS Fix						

### Flags in NMEA 2.1 and below

The flags in NMEA 2.1 and below are the same as NMEA 2.3 and above but with the following differences: The posMode field is not output for GLL, RMC and VTG messages (each message has one field less). The GGA quality field is set to 1 (instead of 6) For both types of dead reckoning fix.

This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.

## Output of invalid/unknown data




By default the receiver will not output invalid data. In such cases, it will output empty fields. A valid position fix is reported as

follows: \$GPGLL,4717.11634,N,00833.91297,E,124923.00,A,A\*6E

An invalid position fix (but time valid) is reported as follows: \$GPGLL,,,,,124924.00,V,N\*42

If Time is unknown (e.g. during a cold-start): \$GPGLL,,,,,V,N\*64

Please note:

-  An exception from the above default are dead reckoning fixes, which are also output when invalid (user limits exceeded).
-  Output of invalid data marked with the 'Invalid/Valid' Flags can be enabled using the UBX protocol message CFG-NMEA.
-  Differing from the NMEA standard, u-blox reports valid dead reckoning fixes with user limits met (not exceeded) as valid (A) instead of invalid (V).

## NMEA Messages Overview

When configuring NMEA messages using the UBX protocol message [CFG-MSG](#), the Class/Ids shown in the table shall be used.

Page	Mnemonic	Cls/ID	Description
<b>NMEA Standard Messages</b>			<b>Standard Messages</b>
54	GGA	0xF0 0x00	Global positioning system fix data
55	GLL	0xF0 0x01	Latitude and longitude, with time of position fix and status
59	GSA	0xF0 0x02	GNSS DOP and Active Satellites
61	GSV	0xF0 0x03	GNSS Satellites in View
62	RMC	0xF0 0x04	Recommended Minimum data
64	VTG	0xF0 0x05	Course over ground and Ground speed

## Standard Messages

Standard Messages: i.e. Messages as defined in the NMEA Standard.

This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.

## GGA

### Global positioning system fix data

<b>Message</b>	GGA	
<b>Description</b>	Global Positioning System fix data	
<b>Firmware</b>	Supported on : * u-blox7 firmware version 1.00	
<b>Type</b>	Output Message	
<b>Comment</b>	The output of this message is dependent on the currently selected datum (default: WGS84) Time and position, together with GPS fixing related data (number of satellites in use, and the resulting HDOP, age of differential data if in use, etc.).	
<b>Message Info</b>	ID for CFG-MSG	Number of fields
	0xF0 0x00	17

Message Structure: \$xxGGA,time,lat,NS,long,EW,quality,numSV,HDOP,alt,M,sep,M,diffAge,diffStation\*cs<CR><LF>

Example: \$GPGGA,092725.00,4717.11399,N,00833.91590,E,1,08,1.01,499.6,M,48.0,M,,\*5B

Field No.	Name	Unit	Format	Example	Description
0	xxGGA	-	string	\$GPGGA	GGA Message ID (xx = current Talker ID)
1	Time	-	hhmmss.ss	92725	UTC time
2	lat	-	ddmm. Mmmmm	4717.11399	Latitude (degrees & minutes), see <a href="#">format description</a>
3	ns	-	character	N	North/South indicator
4	long	-	dddmm. Mmmmm	833.9159	Longitude (degrees & minutes), see <a href="#">format description</a>
5	EW	-	character	E	East/West indicator
6	Quality	-	digit	1	Quality indicator for position fix, see table below and position fix flags description
7	numSV	-	numeric	08	Number of satellites used (range: 0-12)
8	HDOP	-	numeric	1.01	Horizontal Dilution of Precision
9	Alt	m	numeric	499.6	Altitude above mean sea level
10	uAlt	-	character	M	Altitude units: meters (fixed field)
11	sep	m	numeric	48	Geoid separation: difference between geoid and mean sea level
12	uSep	-	character	M	Separation units: meters (fixed field)
13	diffAge	s	numeric	-	Age of differential corrections (blank when DGPS is not used)
14	diffStation	-	numeric	-	ID of station providing differential corrections (blank when DGPS is not used)

This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.

AscenKorea Inc.

Rm. 1401, 14F, Partners Tower Gasandigital 1Ro 83, Geumcheon-gu, Seoul, Korea  
 Tel: +82 1544 3818 Fax: +82 02 6499 2940 www.AscenKorea.com /sales@ascen.co.kr  
 copyright © AscenKorea Inc. All right reserved

15	cs	-	hexadecimal	*5B	Checksum
16	<CR><LF>	-	character	-	Carriage return and line feed

**Table Quality Indicator**

Quality Indicator	Description, see also <a href="#">position fix flags description</a>
0	No Fix / Invalid
1	Standard GPS (2D/3D)
2	Differential GPS
6	Estimated (DR) Fix

**GLL**

**Latitude and longitude, with time of position fix and status**

<b>Message</b>	GLL	
<b>Description</b>	Latitude and longitude, with time of position fix and status	
<b>Firmware</b>	Supported on: * u-blox 7 firmware version 1.00	
<b>Type</b>	Output Message	
<b>Comment</b>	The output of this message is dependent on the currently selected datum (default: WGS84)	
<b>Message Info</b>	ID for CFG-MSG	Number of fields
	0xF0 0x01	(9) or (10)

Message Structure: \$xxGLL,lat,NS,long,EW,time,status,posMode\*cs <CR> <LF>

Example: \$GPGLL,4717.11364,N,00833.91565,E,092321.00,A,A\*60

Field No.	Name	Unit	Format	Example	Description
0	xxGLL	-	string	\$GPGLL	GLL Message ID (xx = current Talker ID)
1	lat	-	ddmm. Mmmmm	4717.11364	Latitude (degrees & minutes), see <a href="#">format description</a>
2	ns	-	character	N	North/South indicator
3	long	-	ddmm. Mmmmm	833.91565	Longitude (degrees & minutes), see <a href="#">format description</a>
4	EW	-	character	E	East/West indicator
5	time	-	hhmmss.ss	92321.00	UTC time
6	status	-	character	A	V = Data invalid or receiver warning, A = Data valid.
Start of optional block					
7	posMode	-	character	A	Positioning mode, see <a href="#">position fix flags description</a>
End of optional block					

This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.



8	cs	-	hexadecimal	*60	Checksum
9	<CR><LF>	-	character	-	Carriage return and line feed

## GSA

### GNSS DOP and Active Satellites

<b>Message</b>	GSA				
<b>Description</b>	GNSS DOP and Active Satellites				
<b>Firmware</b>	Supported on: * u-blox 7 firmware version 1.00				
<b>Type</b>	Output Message				
<b>Comment</b>	<p>The GPS receiver operating mode, satellites used for navigation, and DOP values.</p> <p>* If less than 12 SVs are used for navigation, the remaining fields are left empty. If more than 12 SVs are used for navigation, only the IDs of the first 12 are output.</p> <p>* The SV numbers (fields 'sv') are in the range of 1 to 32 for GPS satellites, and 33 to 64 for SBAS satellites (33 = SBAS PRN 120, 34 = SBAS PRN 121, and so on)</p>				
<b>Message Info</b>	ID for CFG-MSG		Number of fields		
	0xF0 0x02		20		

Message Structure: \$xxGSA,opMode,navMode{,sv},PDOP,HDOP,VDOP\*cs<CR><LF>

Example: \$GPGSA,A,3,23,29,07,08,09,18,26,28,,,,,1.94,1.18,1.54\*0D

Field no.	Name	Unit	Format	Example	Description
0	xxGSA	-	string	\$GPGSA	GSA Message ID
1	opMode	-	character	A	Operation mode, see first table below
2	navMode	-	digit	3	Navigation mode, see second table below and <a href="#">position fix flags description</a>
Start of repeated block (12 times)					
3 +1*N	sv	-	numeric	29	Satellite number
End of repeated block					
15	PDOP	-	numeric	1.94	Position dilution of precision
16	HDOP	-	numeric	1.18	Horizontal dilution of precision
17	VDOP	-	numeric	1.54	Vertical dilution of precision
18	cs	-	hexadecimal	*0D	Checksum
19	<CR><LF>	-	character	-	Carriage return and line feed

### Table Operation Mode

Operation Mode	Description
M	Manually set to operate in 2D or 3D mode
A	Automatically switching between 2D or 3D mode

This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.

AscenKorea Inc.

Rm. 1401, 14F, Partners Tower Gasandigital 1Ro 83, Geumcheon-gu, Seoul, Korea  
 Tel: +82 1544 3818 Fax: +82 02 6499 2940 [www.AscenKorea.com](http://www.AscenKorea.com) /[sales@ascen.co.kr](mailto:sales@ascen.co.kr)  
 copyright © AscenKorea Inc. All right reserved



### Table Navigation Mode

Navigation Mode	Description, see also <a href="#">position fix flags description</a>
1	Fix not available
2	2D Fix
3	3D Fix

## GSV

### GNSS Satellites in View

<b>Message</b>	GSV	
<b>Description</b>	GNSS Satellites in View	
<b>Firmware</b>	Supported on: * u-blox 7 firmware version 1.00	
<b>Type</b>	Output Message	
<b>Comment</b>	The number of satellites in view, together with each SV ID, elevation azimuth, and signal strength (C/No) value. Only four satellite details are transmitted in one message.	
<b>Message Info</b>	ID for CFG-MSG	Number of fields
	0xF0 0x03	7..16

Message Structure: \$xxGSV,numMsg,msgNum,numSV,{sv,elv,az,cno}\*cs<CR><LF>

Example: \$GPGSV,3,1,10,23,38,230,44,29,71,156,47,07,29,116,41,08,09,081,36\*7F,\$GPGSV,3,2,10,10,07,189,,05,05,220,,09,34,274,42,18,25,309,44\*72,\$GPGSV,3,3,10,26,82,187,47,28,43,056,46\*77

Field No.	Name	Unit	Format	Example	Description
0	xxGSV	-	string	\$GPGSV	GSV Message ID (xx = GSV Talker ID)
1	numMsg	-	digit	3	Number of messages, total number of GSV messages being output
2	msgNum	-	digit	1	Number of this message
3	numSV	-	numeric	10	Number of satellites in view
Start of repeated block (1..4 times)					
4 + 4*N	sv	-	numeric	23	Satellite ID
5 + 4*N	elvdegnumeric	deg		38	Elevation (range 0-90)
6 + 4*N	azdegnumeric	deg		230	Azimuth, (range 0-359)
7 + 4*N	cno	dBHz	numeric	44	Signal strength (C/N0, range 0-99), blank when not tracking
End of repeated block					

This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.



5.. 16	cs	-	hexadecimal	*7F	Checksum
6.. 16	<CR> <LF>	-	character	-	Carriage return and line feed

## RMC

### Recommended Minimum data

<b>Message</b>	RMC	
<b>Description</b>	Recommended Minimum data	
<b>Firmware</b>	Supported on: * u-blox 7 firmware version 1.00	
<b>Type</b>	Output Message	
<b>Comment</b>	The output of this message is dependent on the currently selected datum (default: WGS84) The recommended minimum sentence defined by NMEA for GNSS system data.	
<b>Message</b>	ID for CFG-MSG	Number of fields
<b>Info</b>	0xF0 0x04	15

Message Structure \$xxRMC,time,status,lat,NS,long,EW,spd,cog,date,mv,mvEW,posMode\*cs<CR><LF>

Example

\$GPRMC,083559.00,A,4717.11437,N,00833.91522,E,0.004,77.52,091202,,A\*57

Field no.	Name	Unit	Format	Example	Description
0	xxRMC	-	string	\$GPRMC	RMC Message ID (xx = current Talker ID)
1	time	-	hhmmss.ss	83559	UTC time
2	status	-	character	A	Status, V = Navigation receiver warning, A = Data valid, <a href="#">see position fix flags description</a>
3	lat	-	ddmm. Mmmmm	4717.11437	Latitude (degrees & minutes), <a href="#">see format description</a>
4	NS	-	character	N	North/South indicator
5	long	-	ddmm. Mmmmm	833.91522	Longitude (degrees & minutes), <a href="#">see format description</a>
6	EW	-	character	E	East/West indicator
7	Sog	knots	numeric	0.004	Speed over ground
8	cog	degrees	numeric	77.52	Course over ground
9	date	-	ddmmyy	91202	Date in day, month, year format
10	mv	degrees	numeric	-	Magnetic variation value (blank - not supported)
11	mvEW	-	character	-	Magnetic variation E/W indicator (blank - not supported)

This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.

AscenKorea Inc.

Rm. 1401, 14F, Partners Tower Gasandigital 1Ro 83, Geumcheon-gu, Seoul, Korea  
Tel: +82 1544 3818 Fax: +82 02 6499 2940 [www.AscenKorea.com](http://www.AscenKorea.com) /[sales@ascen.co.kr](mailto:sales@ascen.co.kr)  
copyright © AscenKorea Inc. All right reserved



12	posMode	-	character	-	Mode Indicator, see <a href="#">position fix flags description</a>
13	cs	-	hexadecimal	*57	Checksum
14	<CR><LF>	-	character	-	Carriage return and line feed

## VTG

### Course over ground and Ground speed

<b>Message</b>	VTG	
<b>Description</b>	Course over ground and Ground speed	
<b>Firmware</b>	Supported on: * u-blox 7 firmware version 1.00	
<b>Type</b>	Output Message	
<b>Comment</b>	Velocity is given as Course over Ground (COG) and Speed over Ground (SOG).	
<b>Message</b>	ID for CFG-MSG	Number of fields
<b>Info</b>	0xF0 0x05	12

Message Structure \$xxVTG,cogt,T,cogm,M,knots,N,kph,K,posMode\*cs<CR><LF>

Example \$GPVTG,77.52,T,,M,0.004,N,0.008,K,A\*06

Field no.	Name	Unit	Format	Example	Description
0	xxVTG	-	string	\$GPVTG	VTG Message ID (xx = current Talker ID)
1	cogt	degrees	numeric	77.52	Course over ground (true)
2	T	-	character	T	Fixed field: true
3	cogm	degrees	numeric	-	Course over ground (magnetic), not output
4	M	-	character	M	Fixed field: magnetic
5	knots	knots	numeric	0.004	Speed over ground
6	N	-	character	N	Fixed field: knots
7	kph	Km/h	numeric	0.008	Speed over ground
8	K	-	character	K	Fixed field: kilometers per hour
9	posMode	-	character	A	Mode Indicator, see <a href="#">position fix flags description</a>
10	cs	-	hexadecimal	*06	Checksum
11	<CR><LF>	-	character	-	Carriage return and line feed

This document is the exclusive property of AscenKorea Inc. and should not be distributed, reproduced, into any other format without prior permission of AscenKorea Inc. Specifications subject to change without prior notice.



## 4. Contact

---

### **AscenKorea Inc.**

**Address:** Rm. 1401, 14F, Partners Tower, Gasandigital 1Ro 83, Geumcheon-gu, Seoul, Korea

**Tel:** +82 2 1544 3818     **Fax:** +82 2 6499 2940

**Website:** [www.AscenKorea.com](http://www.AscenKorea.com)   **Sale & Support Email:** [sales@ascen.co.kr](mailto:sales@ascen.co.kr)