1.1.2 Abbreviated ASCII

This message format is designed to make the entering and viewing of commands and logs by the user as simple as possible. The data is represented as simple ASCII characters separated by spaces or commas and arranged in an easy to understand fashion. There is also no 32-bit CRC for error detection because it is meant for viewing by the user.

Example Command:

```
log com1 loglist
```

Resultant Log:

```
<LOGLIST COM1 0 69.0 FINE 0 0.000 00240000 206d 0
<     4
<           COM1 RXSTATUSEVENTA ONNEW 0.000000 0.000000 NOHOLD
<           COM2 RXSTATUSEVENTA ONNEW 0.000000 0.000000 NOHOLD
<           COM3 RXSTATUSEVENTA ONNEW 0.000000 0.000000 NOHOLD
<           COM1 LOGLIST ONCE 0.000000 0.000000 NOHOLD
```

As you can see the array of 4 logs are offset from the left hand side and start with '<'.

1.1.3 Binary

Binary messages are meant strictly as a machine readable format. They are also ideal for applications where the amount of data being transmitted is fairly high. Because of the inherent compactness of binary as opposed to ASCII data, the messages are much smaller. This allows a larger amount of data to be transmitted and received by the receiver's communication ports. The structure of all Binary messages follows the general conventions as noted here:

1. Basic format of:

Header	3 Sync bytes plus 25 bytes of header information. The header length is variable as fields may be appended in the future. Always check the header length.
Data	variable
CRC	4 bytes

2. The 3 Sync bytes will always be:

Byte	Hex	Decimal
First	AA	170
Second	44	68
Third	12	18

3. The CRC is a 32-bit CRC (see *32-Bit CRC on Page 24* for the CRC algorithm) performed on all data including the header.
4. The header is in the format shown in *Table 4, Binary Message Header Structure on Page 17*.

Table 4: Binary Message Header Structure

Field #	Field Name	Field Type	Description	Binary Bytes	Binary Offset	Ignored on Input
1	Sync	Char	Hexadecimal 0xAA.	1	0	N
2	Sync	Char	Hexadecimal 0x44.	1	1	N
3	Sync	Char	Hexadecimal 0x12.	1	2	N
4	Header Lgth	Uchar	Length of the header.	1	3	N
5	Message ID	Ushort	This is the Message ID number of the log (see the log descriptions in *Table 44, OEM4 Family Logs in Order of their Message IDs* on *Page 151* for the Message ID values of individual logs).	2	4	N
6	Message Type	Char	Bits 0-4 = Reserved Bits 5-6 = Format 00 = Binary 01 = ASCII 10 = Abbreviated ASCII, NMEA 11 = Reserved Bit 7 = Response bit (see *Section 1.2, Page 20*) 0 = Original Message 1 = Response Message	1	6	N
7	Port Address	Uchar	See *Table 5 on Page 18* (decimal values greater than 16 may be used) (lower 8 bits only) [a]	1	7	N [b]
8	Message Length	Ushort	The length in bytes of the body of the message. This does not include the header nor the CRC.	2	8	N
9	Sequence	Ushort	This is used for multiple related logs. It is a number that counts down from N-1 to 0 where N is the number of related logs and 0 means it is the last one of the set. Most logs only come out one at a time in which case this number is 0.	2	10	N
10	Idle Time	Uchar	The time that the processor is idle in the last second between successive logs with the same Message ID. Take the time (0 - 200) and divide by two to give the percentage of time (0 - 100%).	1	12	Y
11	Time Status	Enum	Indicates the quality of the GPS time (see *Table 7, GPS Time Status on Page 21*).	1 [c]	13	N [d]
12	Week	Ushort	GPS week number.	2	14	N [d]
13	Milliseconds	GPSec	Milliseconds from the beginning of the GPS week.	4	16	N [d]
14	Receiver Status	Ulong	32 bits representing the status of various hardware and software components of the receiver between successive logs with the same Message ID (see *Table 81, Receiver Status on Page 303*)	4	20	Y
15	Reserved	Ushort	Reserved for internal use.	2	24	Y
16	Receiver S/W Version	Ushort	This is a value (0 - 65535) that represents the receiver software build number.	2	26	Y

a. The 8 bit size means that you will only see 0xA0 to 0xBF when the top bits are dropped from a port value greater than 8 bits. For example ASCII port USB1 will be seen as 0x5A in the binary output.
b. Recommended value is THISPORT (binary 192)
c. This ENUM is not 4 bytes long but, as indicated in the table, is only 1 byte.
d. These time fields are ignored if Field #11, Time Status, is invalid. In this case the current receiver time is used. The recommended values for the three time fields are 0, 0, 0.

3.4.4 BESTUTM Best Available UTM Data

This log contains the best available position computed by the receiver in UTM coordinates.

See also the UTMZONE command on *Pages 135* and the BESTPOS log on *Page 161*.

Message ID: **726**
Log Type: **Synch**

Field #	Field type	Data Description	Format	Binary Bytes	Binary Offset
1	header	Log header		H	0
2	sol status	Solution status, see *Table 48, Solution Status* on *Page 163*	Enum	4	H
3	pos type	Position type, see *Table 47, Position or Velocity Type* on *Page 162*	Enum	4	H+4
4	z#	Longitudinal zone number	Ulong	4	H+8
5	zletter	Latitudinal zone letter	Ulong	4	H+12
6	northing	Northing (m) where the origin is defined as the equator in the northern hemisphere and as a point 10000000 metres south of the equator in the southern hemisphere (that is, a 'false northing' of 10000000 m)	Double	8	H+16
7	easting	Easting (m) where the origin is 500000 m west of the central meridian of each longitudinal zone (that is, a 'false easting' of 500000 m)	Double	8	H+24
8	hgt	Height above mean sea level	Double	8	H+32
9	undulation	Undulation - the relationship between the geoid and the ellipsoid (m) of the chosen datum [a]	Float	4	H+40
10	datum id#	Datum ID number (see *Chapter 2, Table 20, Datum Transformation Parameters* on *Page 65*)	Enum	4	H+44
11	N σ	Northing standard deviation	Float	4	H+48
12	E σ	Easting standard deviation	Float	4	H+52
13	hgt σ	Height standard deviation	Float	4	H+56
14	stn id	Base station ID	Char[4]	4	H+60
15	diff_age	Differential age in seconds	Float	4	H+64
16	sol_age	Solution age in seconds	Float	4	H+68
17	#obs	Number of satellites tracked	Uchar	1	H+72
18	#GPSL1	Number of GPS L1 ranges used in computation	Uchar	1	H+73
19	#L1	Number of GPS L1 ranges above the RTK mask angle	Uchar	1	H+74
20	#L2	Number of GPS L2 ranges above the RTK mask angle	Uchar	1	H+75
21	Reserved		Uchar	1	H+76
22			Uchar	1	H+77
23			Uchar	1	H+78
24			Uchar	1	H+79
25	xxxx	32-bit CRC (ASCII and Binary only)	Hex	4	H+80
26	[CR][LF]	Sentence terminator (ASCII only)	-	-	-

a. When using a datum other than WGS84, the undulation value also includes the vertical shift due to differences between the datum in use and WGS84