EverMore EB-A803-P is a high sensitivity, low power, SMD type GPS Module, This product is based on Atmel chipset in 16 channel GPS receiver's solution. The GPS module receiver will track up to 16 satellites at a time while providing fast time-to-first-fix and 1Hz navigation updates. It is far reaching capability meets the sensitivity & accuracy requirements of car navigation as well as other location-based applications, such as Personal Tracking system. PND, Handheld Device system.

Features:

- **Pin to Pin compatible ublox TIM-4H**
- **ublox-Atmel Chipset 16 Channels all in view tracking**
- **Ultra Low Power Consumption 39 mA**
- **High Sensitivity -158dBm**
- **DGPS : WAAS /EGNOS/MSAS**
- **Support NMEA-0183 at 9600bps baud rate**
- **Customized and configurable serial I/O architecture**
- **Support 4 Hz position update rate capability (using on-board EEPROM)**
- **Support power saving modes**
- **Support 1 PPS**
- **Support 1 USB & 1 UART Port**
- **Lead Free , RoHS Compliant**

Applications:

- Land/Marine Navigation
- Telematics
- Fleet Management
- Asset Tracking
- Timing Reference

Specification:

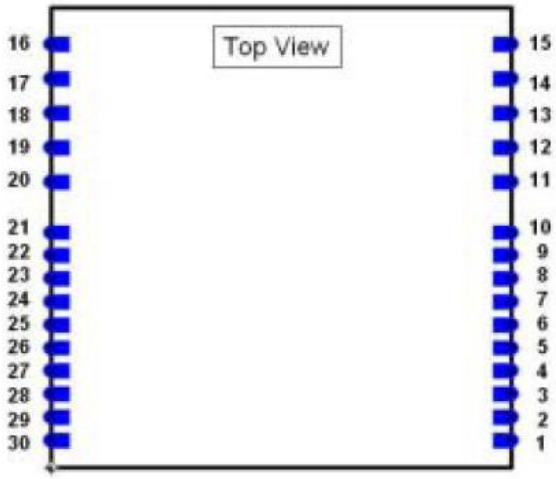
Features	Description
General	L1 1575.42MHz, C/A code, 16-channel all in view tracking
Sensitivity	-158 dBm (typical)
Update Rate	1 Hz
Accuracy	Position: <15m(95%) without S/A Velocity: 0.1 m/sec without S/A Time: ± 100ns synchronized to UTC time
Acquisition	Cold start: 34 sec average Warm start: 33 sec average Hot start : 3.5 sec average
Dynamics	Altitude : 18,000m/ Max Velocity: 515 m/s Acceleration: 4g Max
Reacquisition Time	0.1 second
WAAS Accuracy	3 m CEP Velocity : 0.05m/sec
Datum	WGS-84
Protocol	NMEA-0183 V2.3 Baud rate: 9600 ,8-None-1 UBX (ublox proprietary), RTCM
NMEA Message	Default : GGA, GSA, GSV, RMC,GLL,VTG
Primary Power	3.3VDC ± 0.1Vp-p ripple
Power Consumption	39 mA
Backup Current	5 uA typical
Serial Port	UART , USB
Operation Temperature	-40°C to +85 °C
Storg Temperature	-45°C to +90°C
Operating Humidity	5% to 90% non-condensing
Interface	28 pin SMD Package / LVTTL level output
Dimension	25.4x25.4x2.76mm

Definition of Pin assignment

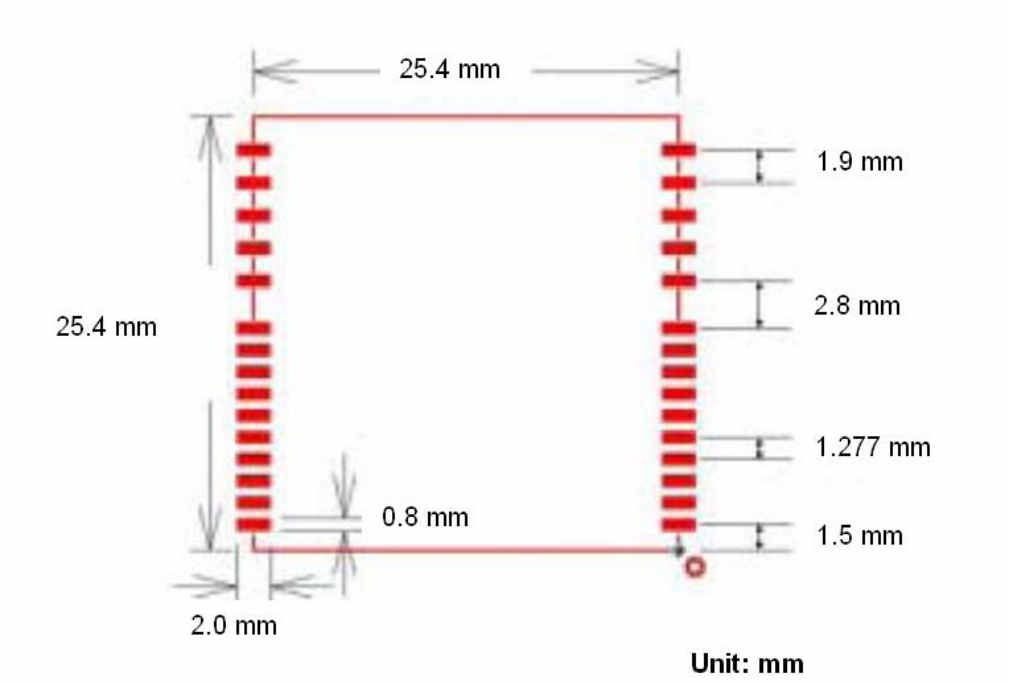
Pin#	Name	Type	Description
1	VCC	I	DC Supply Voltage Input DC +3.3V+-5%
2	GND	G	Digital Reference Ground
3	VDD18	O	Internal regulator output, 1.8V
4	RXA	I	Serial Port A, 5V > V_{IH} > 1.46V, V_{IL} < 0.41V
5	TXA	O	Serial Port A, V_{OH} > 2.8V, V_{OL} < 0.4V
6	TXB	O	Serial Port B, V_{OH} > 2.8V, V_{OL} < 0.4V
7	RXB	I	Serial Port B, 5V > V_{IH} > 1.46V, V_{IL} < 0.41V
8	GPSMODE12	I	GPSMODE12 configuration (reserved, keep floating)
9	RF_ON	O	Indicates power state of RF part, 3.3V
10	GND	G	Digital Reference Ground
11~15	GND_A	G	Analog Reference Ground
16	GND_A	G	Analog Reference Ground
17	RF_IN	I	GPS Signal Input, 50 ohm @1.57542GHz
18	GND_A	G	Analog Reference Ground
19	V_ANT_IN	I	Active Antenna Bias Voltage
20	VCC_RF	O	Supply Active Antenna Bias Voltage, 3.3VDC typical
21	V_BAT	I	Backup Voltage Supply, 1.5VDC~ 3.6VDC
22	NRESET	I	Reset, Active Low, V_{IL} < 0.41V
23	GPSMODE2	I	GPSMODE2 configuration (reserved, keep floating)
24	GPSMODE5	I	Serial I/O configuration (reserved, keep floating)
25	GPSMODE6	I	Serial I/O configuration (reserved, keep floating)
26	USB_DM	I/O	USB DM
27	USB_DP	I/O	USB DP
28	STATUS_LED	O	GPS Fix Status Indicator. When GPS is not fixed, it outputs low. When GPS is fixed, it outputs pulse. (see figure 1.), V_{OH} > 2.8V, V_{OL} < 0.4V
29	PPS	O	One Pulse Per Second, V_{OH} > 2.8V, V_{OL} < 0.4V
30	GND	G	Digital Reference Ground

Pin Assignment

Top View



Recommended Solder Pad Layout



NMEA Output Message

Table 1 NMEA-0183 Output Messages

NMEA Sentence	Description
GGA **(Default)**	Global positioning system fixed data
GLL **(Default)**	Geographic position - latitude/longitude
GSA **(Default)**	GNSS DOP and active satellites
GSV **(Default)**	GNSS satellites in view
RMC **(Default)**	Recommended minimum specific GNSS data
VTG **(Default)**	Course over ground and ground speed

GGA--- Global Positioning System Fixed Data

Table 2 contains the values for the following example:

$GPGGA,161229.487,3723.2475,N,12158.3416,W,1,07,1.0,9.0,M, , , ,0000*18

Table 2 GGA Data Format

Name	**Example**	**Units**	**Description**
Message ID	$GPGGA		GGA protocol header
UTC Position	161229.487		hhmmss.sss
Latitude	3723.2475		ddmm.mmmm
N/S Indicator	N		N=north or S=south
Longitude	12158.3416		dddmm.mmmm
E/W Indicator	W		E=east or W=west
Position Fix Indicator	1		See Table 3
Satellites Used	07		Range 0 to 12
HDOP	1.0		Horizontal Dilution of Precision
MSL Altitude	9.0	meters	
Units	M	meters	
Geoid Separation		meters	
Units	M	meters	
Age of Diff. Corr.		second	Null fields when DGPS is not used

Diff. Ref. Station ID	0000		
Checksum	*18		
<CR> <LF>			End of message termination

Table 3 Position Fix Indicator

Value	Description
0	Fix not available or invalid
1	GPS SPS Mode, fix valid
2	Differential GPS, SPS Mode, fix valid
3	GPS PPS Mode, fix valid

GLL--- Geographic Position – Latitude/Longitude

Table 4 contains the values for the following example:

$GPGLL,3723.2475,N,12158.3416,W,161229.487,A*2C

Table 4 GLL Data Format

Name	Example	Units	Description
Message ID	$GPGLL		GLL protocol header
Latitude	3723.2475		ddmm.mmmm
N/S Indicator	N		N=north or S=south
Longitude	12158.3416		dddmm.mmmm
E/W Indicator	W		E=east or W=west
UTC Position	161229.487		hhmmss.sss
Status	A		A=data valid or V=data not valid
Checksum	*2C		
<CR> <LF>			End of message termination

GSA---GNSS DOP and Active Satellites

Table 5 contains the values for the following example:

$GPGSA,A,3,07,02,26,27,09,04,15, , , , , ,1.8,1.0,1.5*33

Table 5 GSA Data Format

Name	Example	Units	Description
Message ID	$GPGSA		GSA protocol header
Mode 1	A		See Table 7
Mode 2	3		See Table 6
Satellite Used in solution	07		Sv on Channel 1
Satellite Used in solution	02		Sv on Channel 2
Satellite Used			Sv on Channel 12
PDOP	1.8		Position Dilution of Precision
HDOP	1.0		Horizontal Dilution of Precision
VDOP	1.5		Vertical Dilution of Precision
Checksum	*33		
<CR> <LF>			End of message termination

Table 6 Mode 2

Value	Description
1	Fix not available
2	2D
3	3D

Table 7 Mode 1

Value	Description
M	Manual- forced to operate in 2D or 3D mode
A	Automatic-allowed to automatically switch 2D/3D

GSV---GNSS Satellites in View

Table 8 contains the values for the following example:

$GPGSV,2,1,07,07,79,048,42,02,51,062,43,26,36,256,42,27,27,138,42*71

$GPGSV,2,2,07,09,23,313,42,04,19,159,41,15,12,041,42*41

Table 8 GSV Data Format

Name	Example	Units	Description
Message ID	$GPGSV		GSV protocol header
Number of Messages[1]	2		Range 1 to 3
Message Number[1]	1		Range 1 to 3
Satellites in View	07		
Satellite ID	07		Channel 1 (Range 1 to 32)
Elevation	79	Degrees	
Azimuth	048	Degrees	Channel 1 (Maximum 90)
SNR (C/No)	42	DBHz	Channel 1 (True, Range 0 to 359)
Satellite ID	27		Range 0 to 99, null when not tracking
Elevation	27	Degrees	Channel 4 (Range 1 to 32)
Azimuth	138	Degrees	Channel 4 (Maximum 90)
SNR (C/No)	42	DBHz	Channel 4 (True, Range 0 to 359)
Checksum	*71		Range 0 to 99, null when not tracking
<CR> <LF>			End of message termination

1. Depending on the number of satellites tracked multiple messages of GSV data may be required.

RMC---Recommended Minimum Specific GNSS Data

Table 9 contains the values for the following example:

$GPRMC,161229.487,A,3723.2475,N,12158.3416,W,0.13,309.62,120598, ,*10

Table 9 RMC Data Format

Name	Example	Units	Description
Message ID	$GPRMC		RMC protocol header
UTC Position	161229.487		hhmmss.sss

Status	A		A=data valid or V=data not valid
Latitude	3723.2475		ddmm.mmmm
N/S Indicator	N		N=north or S=south
Longitude	12158.3416		dddmm.mmmm
E/W Indicator	W		E=east or W=west
Speed Over Ground	0.13	knots	
Course Over Ground	309.62	degrees	True
Date	120598		ddmmyy
Magnetic Variation		degrees	E=east or W=west (Not shown)
Checksum	*10		
<CR> <LF>			End of message termination

VTG---Course Over Ground and Ground Speed

Table 10 contains the values for the following example:

$GPVTG,309.62,T, ,M,0.13,N,0.2,K*6E

Table 10 VTG Data Format

Name	Example	Units	Description
Message ID	$GPVTG		VTG protocol header
Course	309.62	degrees	Measured heading
Reference	T		True
Course		degrees	Measured heading
Reference	M		Magnetic
Speed	0.13	knots	Measured horizontal speed
Units	N		Knots
Speed	0.2	km/hr	Measured horizontal speed
Units	K		Kilometer per hour
Checksum	*6E		
<CR> <LF>			End of message termination