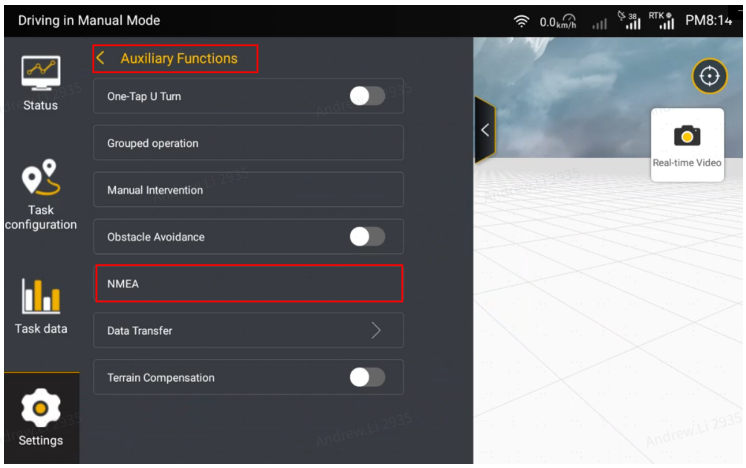
# NMEA Introduction Document

## Ⅰ.NMEA Functions Introduction

Turn on the NMEA function to transmit the GPS information received by the automatic navigation device to other electronic devices.

**Functional Location：**

Setting-> Accessibility->NMEA

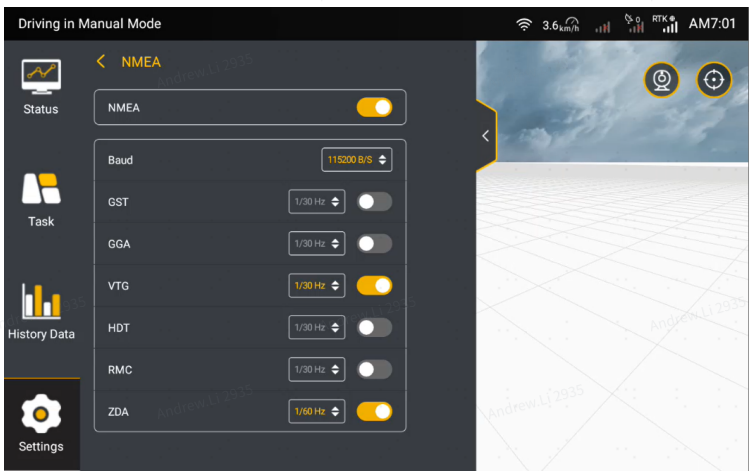



**The following three points should be confirmed before use:**

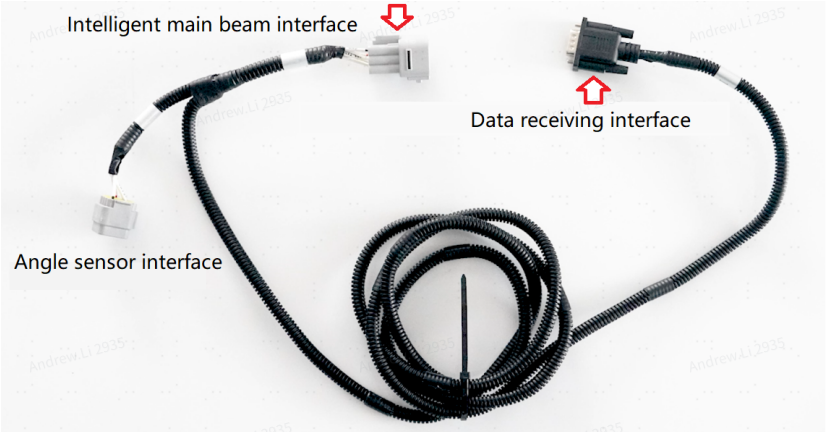
1) Baud rate is correct.

2) All formats to be exported have been enabled.

3) The export frequency is set correctly for each format.




## Ⅱ.Wire Harness Introduction




## III. Export Settings

Baud rate：

1）Unit is bit per second（B/S）；

2）Optional baud rate：2400 B/S、4800 B/S、9600 B/S、14400 B/S、19200 B/S、38400 B/S、57600 B/S、115200 B/S；

3）The default is 115200 B/S；

- Information Type：

| Number | Type | Description | Biggest Frame Length |
|---|---|---|---|
| 1 | **GGA（GNGGA)** | GPS/ Beidou location information. | 72 |
| 2 | **VTG(GNVTG)** | Ground speed information. | 34 |
| 3 | **GST(GPGST)** | GPS pseudorange noise statistics, including the standard deviation information of three-dimensional coordinates. | - |
| 4 | **HDT（GPHDT）** | Output azimuth angle, with true north as reference. | - |
| 5 | RMC(GPRMC) | Recommended positioning information | 70 |
| 6 | ZDA | | - |

| | | | |
|---|---|---|---|
| | | Time and date information | |

- Optional output frequency: 1/60 Hz, 1/30 Hz, 1/10 Hz, 1/5 Hz, 1 Hz, 2 Hz, 5 Hz and 10 Hz
- Detailed description of output information types：

**GGA**

1、GGA function description：GPS/ Beidou location information；

2. Field parsing example：


（1）Data ID；

（2）UTC time；

（3）Degree and minute format (if the leading digit is insufficient, add 0)；

（4）Latitude N (north latitude) or S (south latitude)；

（5）Degree and minute format (if the leading digit is insufficient, add 0)；

（6）Longitude E (east longitude) or W (west longitude)；

（7）GPS status：0: Invalid solution; 1: Single point positioning solution; 2: Pseudo-range difference; 4: Fixed solution; 5: Floating solution；

（8）Number of satellites involved in positioning；

（9）HDOP level precision factor（0.5 - 99.9）；

（10）Altitude（-9999.9 - 99999.9）；

（11）Unit：M（meter）；

（12）The height of the earth ellipsoid relative to the geoid WGS84 level division；

（13）WGS84 level division unit：M（meter）；

（14）Differential time (the number of seconds since receiving the differential signal, it will be empty if it is not for differential positioning)；

（15）Differential station ID number 0000-1023 (If the leading digit is insufficient, add 0, if it is not for differential positioning, it will be empty)；

（16）Check value；

**VTG**

1、VTG function description：Output ground speed information；

2、Field parsing example：

$GPVTG,134.395,T,134.395,M,0.019,N,0.035,K,A*33

（1）Data ID；

（2）Ground heading, with true north as the reference datum，000~359°；

（3）True north indicator；

（4）Ground heading, with magnetic north as the reference datum，000~359°；

（5）Magnetic north indicator；

（6）Horizontal movement speed 000~999, unit: knot (nautical mile/h)；

（7）Unit, N means nautical mile per hour；

（8）Horizontal movement speed 000~999, unit: km/h；

（9）Unit, K means kilometers per hour；

（10）Positioning status: A-autonomous positioning; D-differential; E-estimation; M-manual input; N-data invalid.

（11）Check value；

**GST**

1、GST function description：GPS pseudorange noise statistics, including the standard deviation information of three-dimensional coordinates.

2、Field parsing example：

$ GPGST , 172814.0,0.006,0.023,0.020,273.6,0.023,0.020,0.031 * 6A

（1）Data ID;

（2） UTC time；

（3）The square root value of the standard deviation of the pseudorange used for navigation calculations；

（4）Standard deviation of semi-major axis of ellipsoid (unit: meter)；

（5）Standard deviation of semi-minor axis of ellipsoid (unit: meter)；

（6）The azimuth of the semi-major axis of the ellipsoid (unit: degree)；

（7）Standard latitude deviation (unit: meter)；

（8）Standard longitude deviation (unit: meter)；

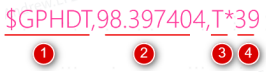
（9）Standard height deviation (unit: meter)；

（10）Check value；

**HDT**

1、HDT function description：Output azimuth angle, with true north as reference.

2、Field parsing example：




（1）Data ID；

（2）Azimuth angle, unit: degree；

（3）True north flag；

（4）Check value;

**RMC**

1、RMC function description：Recommended positioning information；

2、Field parsing example：


1) Data ID

2) UTC time in hhmmss.sss format

3) Status, A=positioned, V=not positioned

4) Latitude ddmm.mmmm, in degrees and minutes format (add 0 if the leading digit is insufficient)

5) Latitude N (north latitude) or S (south latitude)

6) Longitude dddmm.mmmm, in degrees and minutes format (if the leading digit is insufficient, add 0)

7) Longitude E (east longitude) or W (west longitude)

8) Ground rate (000.0~999.9 knots, the leading 0 will also be transmitted)

9) Ground heading (000.0~359.9 degrees, with true north as the reference datum, the front 0 will also be transmitted)

10) UTC date in DDMMYY format

11) Magnetic declination, (000-180) degrees (If the leading digit is insufficient, add 0)

12) Magnetic declination direction, E=East W=West

13) Mode indication (only NMEA0183 version 3.00 output, A=autonomous positioning, D=differential, E=estimation, N=invalid data)

14) Check value

**ZDA**

1、ZDA function description：Time and date information；

2、Field parsing example：

$GPZDA,235316.000,02,07,2011,00,00*51
❶ ❷ ❸ ❹ ❺ ❻ ❼

1. Data ID；
2. UTC time, hhmmss (hour, minute and second) format
3. UTC date, day
4. UTC date, month
5. UTC date, year
6. Time zone
7. Hexadecimal value