

<b>Classification</b>	DCON Utility Pro FAQ				<b>No.</b>	DCON_02_003
<b>Author</b>	Martin	<b>Version</b>	1.0.0	<b>Date</b>	2019/12/03	<b>Page</b> 1/2

## How to map GPS receiver module data to Google Map?

ICP DAS GPS modules (I-87211W, GPS-721 and GPS-721-MRTU) support the NMEA format. After DCON Utility Pro searches for the GPS module and enters the setting screen, you can see the GPS data on the GPS tab. The NMEA format and Google Map format have different values on both sides. As shown below. This article will explain how to map the GPS NMEA format data to Google Map.

	NMEA Format	For Google Map
Latitude	[N]02451.71	24.86183
Longitude	[E]12100.99	121.0165

GPS latitude and longitude units can be divided into degrees, minutes, and seconds. 1 degree = 60 minutes, 1 minute = 60 seconds.

N means north latitude (+); S means south latitude (-)

E means east longitude (+); W means west longitude (-)

**NMEA format latitude and longitude data is divided into the smallest units. The first three digits are degrees, and the last digits are decimal points.**

**The longitude and latitude coordinates on Google Map pages are in degrees.**

Therefore, to convert the latitude and longitude data in NMEA format to the latitude and longitude coordinates on the Google Map webpage, you only need to divide the value with a decimal point and divide it by 60 to degrees.

Example:

Latitude:[N] 02451.71 [N] means north latitude, 024 is 24 degrees, and 51.71 is minutes.

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Longitude:[E] 12100.99 [E] means east longitude, 121 is 121 degrees, and 00.99 is minutes.

### Convert to degree calculation:

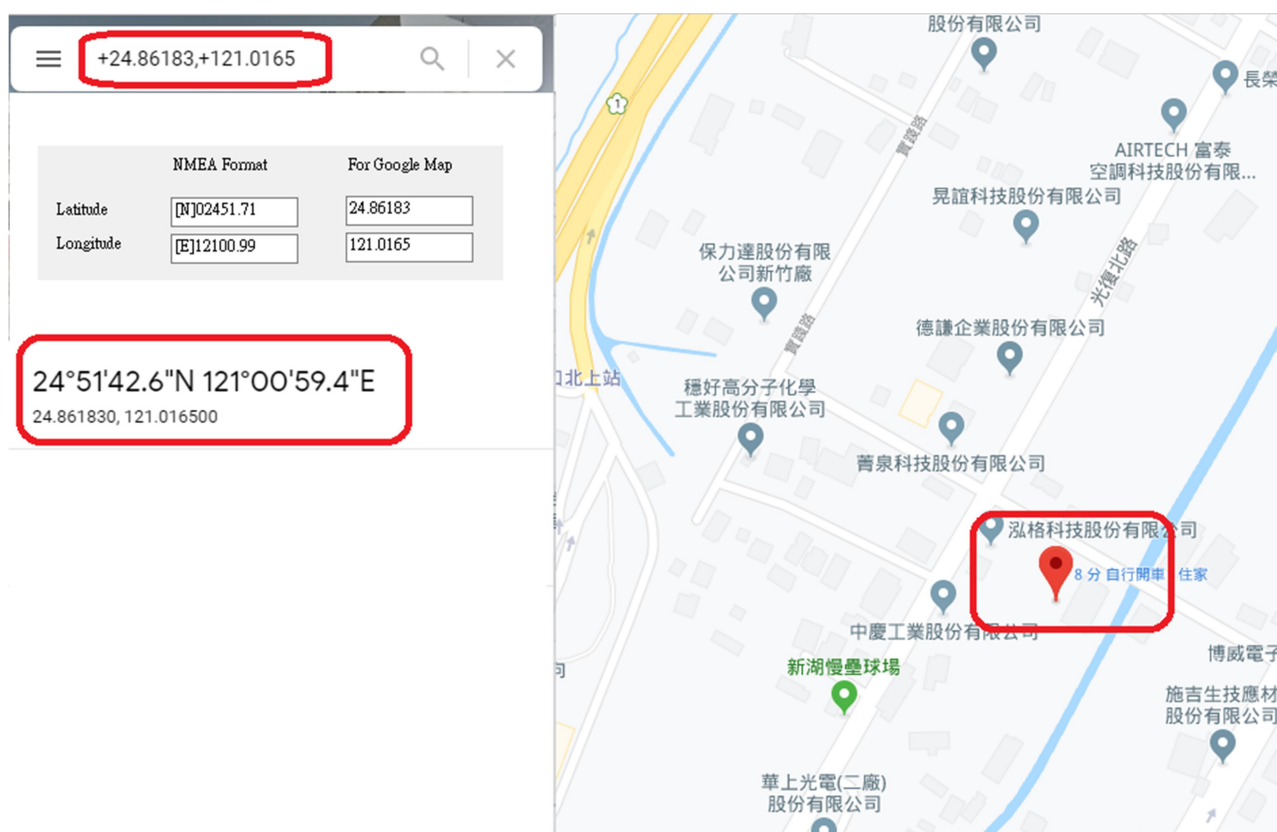
Latitude: [N] 02451.71 is 24 degrees north latitude and 51.71 minutes. Convert the points to degrees  
 $51.71 / 60 = 0.86183$ .

The actual Google Map corresponds to  $24 + 0.86183 = +24.86183$ .

Longitude: [E] 12100.99 is 121 degrees east long and 0.99 points. Convert the points to degrees  $0.99 / 60 = 0.0165$ .

The actual Google Map is  $121 + 0.0165 = +121.0165$ .

Combine the converted latitude and longitude data into + 24.86183, + 121.0165 and enter the field of Google Map to find the actual corresponding location.



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Note 1: Another data also be seen in Google Map

**24°51'42.6"N 121°00'59.4"E**

The minimum unit of this data is seconds. You can convert the decimal part of the minutes in NMEA format to seconds.

NMEA format

Latitude: [N] 02451.71 is 24 degrees north latitude and 51.71 minutes,  
0.71 minutes x 60 = 42.6 seconds,

It is equivalent to **24°51'42.6"N**

Longitude: [E] 12100.99 is 121 degrees east longitude and 00.99 minutes,  
00.99 minutes x 60 = 59.4 seconds,

It is equivalent to **121°00'59.4"E**