

External Sensor Fusion (ESF) Status Information

GADN/ANNA Series with u-blox NEO-M8L, ZED-F9R

V1.0

Nov 5, 2020



ANNA-FxxLx

Full-sized mPCIe



ANNA-F9xRx Series

M.2 2242 B key



GADN-FxxLx Series

Full-sized mPCIe

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Important User Information

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Antzer Tech In-Vehicle Module User Manual

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Change History

Version	Date	Author	Description
1.0	2020/11/5	Vincent Cheng	First version release

1. Command for the Sensors Information (UBX-ESF-STATUS (0x10 0x10))

Please use the command to enable sensors information output from the GNSS module: **B5 62 10 10 00 00 20 70**

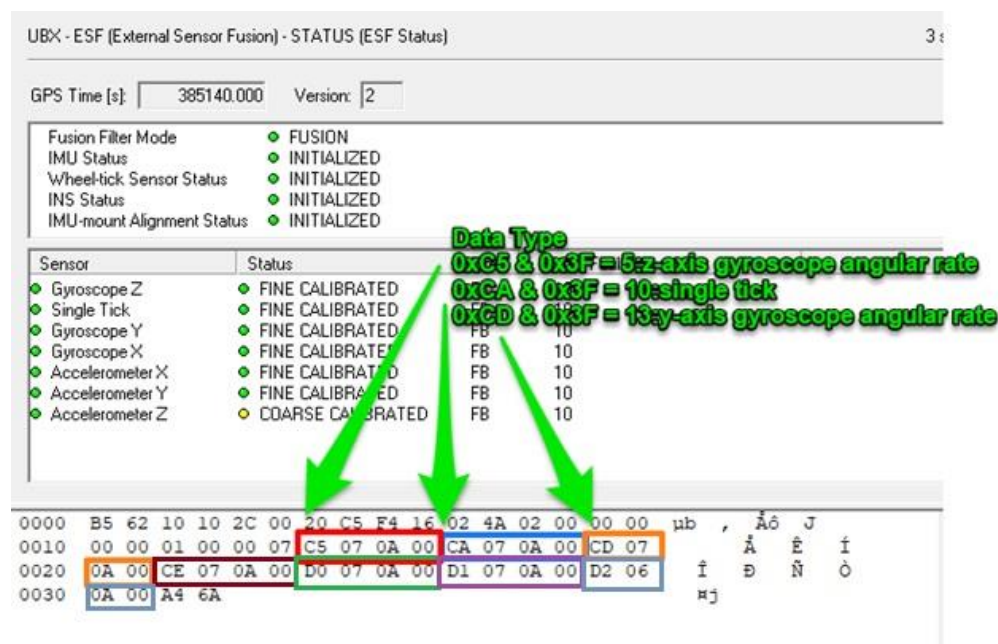
◆ GADN / ANNA-FG Series

- Serial port for GNSS module: Standard COM Port / ttyUSB1
- The baud rate for factory setting is 115200 bps (NEO-M8L module default: 9600 bps)

◆ ANNA-F9 High Precision Series

- Serial port for GNSS module: Enhanced COM Port / ttyUSB0
- The baud rate for factory setting is 921600 bps (ZED-F9R module default: 38400 bps)

2. Sensors Information from the GNSS Module



UBX - ESF (External Sensor Fusion) - STATUS (ESF Status) 3:

GPS Time [s]: 385140.000 Version: 2

Sensor	Status
Fusion Filter Mode	● FUSION
IMU Status	● INITIALIZED
Wheel-tick Sensor Status	● INITIALIZED
INS Status	● INITIALIZED
IMU-mount Alignment Status	● INITIALIZED
Gyroscope Z	● FINE CALIBRATED
Single Tick	● FINE CALIBRATED
Gyroscope Y	● FINE CALIBRATED
Gyroscope X	● FINE CALIBRATED
Accelerometer X	● FINE CALIBRATED
Accelerometer Y	● FINE CALIBRATED
Accelerometer Z	● FINE CALIBRATED
	● COARSE CALIBRATED

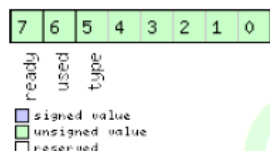
Data Type
 0xC5 & 0x3F = 5: z-axis gyroscope angular rate
 0xCA & 0x3F = 10: single tick
 0xCD & 0x3F = 13: y-axis gyroscope angular rate

Raw Data Stream (hex):
 0000 B5 62 10 10 2C 00 20 C5 F4 16 02 4A 02 00 00 00 ub , Åô J
 0010 00 00 01 00 00 07 C5 07 0A 00 CA 07 0A 00 CD 07 Å È Í
 0020 0A 00 CE 07 0A 00 D0 07 0A 00 D1 07 0A 00 D2 06 î ð Ñ Ò
 0030 0A 00 A4 6A mj

3. Data Type

Bitfield sensStatus1

This graphic explains the bits of `sensStatus1`



Name	Description
type	Sensor data type. See section Sensor data types in the Integration manual for details.
used	If set, sensor data is used for the current sensor fusion solution.
ready	If set, sensor is set up (configuration is available or not required) but not used for computing the current sensor fusion solution.

Definition of Data Types

Type	Description	Unit	Format of the 24 data bits
0	none, data field contains no data		
1..4	reserved		
5	z-axis gyroscope angular rate	deg/s * 2 ⁻¹²	signed

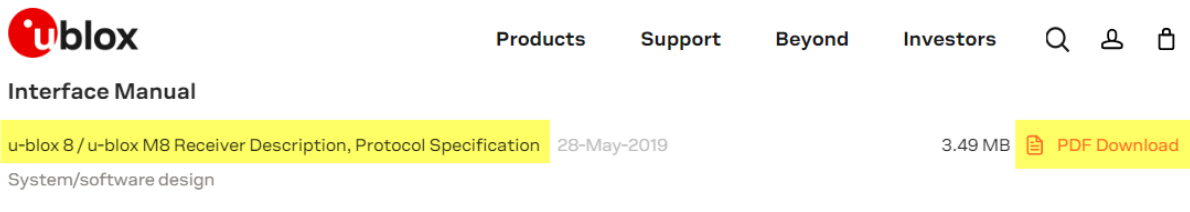
Type	Description
6	front-left wheel ticks
7	front-right wheel ticks
8	rear-left wheel ticks
9	rear-right wheel ticks
10	single tick (speed tick)
11	speed
12	gyroscope temperature
13	y-axis gyroscope angular rate
14	x-axis gyroscope angular rate
16	x-axis accelerometer specific force
17	y-axis accelerometer specific force
18	z-axis accelerometer specific force

4. References

For more detailed information about the sensors data output from ublox GNSS module, please refer to **UBX-ESF-STATUS (0x10 0x10)** in the documents below:

- u-blox8-M8_ReceiverDescrProtSpec_(UBX-13003221)_Public.pdf

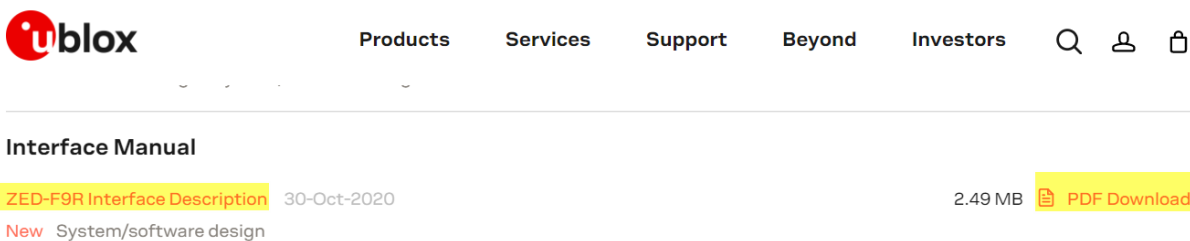
<https://www.u-blox.com/en/product/neo-m8-series#tab-documentation-resources>



The screenshot shows the u-blox website header with navigation links: Products, Support, Beyond, Investors, and search, user, and cart icons. Below the header, the 'Interface Manual' section is visible, featuring a document titled 'u-blox 8 / u-blox M8 Receiver Description, Protocol Specification' dated '28-May-2019' with a size of '3.49 MB' and a 'PDF Download' button. The document category is listed as 'System/software design'.

- ZED-F9R Interface Description

<https://www.u-blox.com/en/product/zed-f9r-module#tab-documentation-resources>



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