INS RS232 Protocol

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Binary Output Packet Summary

This document provides an overview of the custom binary output packet that is currently selected.

Packet Summary

Configuration Register Binary Output Register #1 (closed) (Register 75)

Output Ports	Serial1
Output Rate	100 Hz
Output Rate Divisor	8
Header Size	6
Payload Size	36
Total Packet Size	44
Bandwidth Usage	44 kbit/s
Variable Length	No

Active Outputs in Binary Packet

Below is a list of the outputs that are active in this binary packet.

Bit Offset	Group 3 - Imu	Group 6 - Ins
0		
1		
2		
3		VelBody
4		
5		
6		
7		
8		
9	Accel	
10	AngularRate	

How to Configure Output

To configure the selected output, you would send the following command to the sensor.

`$VNWRG,1,8,24,0600,0008*202F`

Packet Header Definition

Below is an overview of the header for this custom binary output packet.

Header

Field	Sync	Group	Group 3 Fields		Group 6 Fields	
Byte Offset	0	1	2	3	4	5
Byte Value (Hex)	0xFA	0x24	0x00	0x06	0x08	0x00
Type	u8	u8	u16		u16	
Value	0xFA	0x24	0x0600		0x0008	

Packet Payload Definition

Below is an overview of the outputs present in the packet payload.

Output: Imu - Accel

Description:

The compensated acceleration measured in units of m/s^2, and given in the body frame. This measurement is compensated by the static calibration (individual factory calibration stored in flash), the user compensation, and the dynamic bias compensation from the onboard INS Kalman filter.

Acceleration

	Acc X	Acc Y	Acc Z
Byte Offset	0	4	8
Type	float	float	float
Byte Size	4	4	4

Measurement Fields:

Offset	Name	Format	Unit	Description
0	Acc X	float	m/s^2	Accelerometer body-frame x-axis.
4	Acc Y	float	m/s^2	Accelerometer body-frame y-axis.
8	Acc Z	float	m/s^2	Accelerometer body-frame z-axis.

Output: Imu - AngularRate

Description:

The compensated angular rate measured in units of rad/s, and given in the body frame. This measurement is compensated by the static calibration (individual factor calibration stored in flash), the user compensation, and the dynamic bias compensation from the onboard INS Kalman filter.

Angular Rate

	Gyro X	Gyro Y	Gyro Z
Byte	Offset	0	4
Type	float	float float	
Byte Size	4	4	4

Measurement Fields:

Offset	Name	Format	Unit	Description
0	Gyro X	float	rad/s	Angular rate body-frame x-axis.
4	Gyro Y	float	rad/s	Angular rate body-frame y-axis.

Offset	Name	Format	Unit	Description
8	Gyro Z	float	rad/s	Angular rate body-frame z-axis.

Output: Ins - VelBody

Description:

The estimated velocity in the body frame, given in m/s.

Vel Body

	Vel X	Vel Y	Vel Z
Byte Offset	0	4	8
Type	float	float	float
Byte Size	4	4	4

Measurement Fields:

Offset	Name	Format	Unit	Description
0	Vel X	float	m/s	Velocity in body-frame x-axis.
4	Vel Y	float	m/s	Velocity in body-frame y-axis.
8	Vel Z	float	m/s	Velocity in body-frame z-axis.