PGN 61459 Slope Sensor Information

The Slope Sensor Information message shall provide a measurement of the vehicles pitch angle, a measurement of the vehicles roll angle, and a measurement of the vehicles pitch rate around the y-axis.

Vehicle axis system defined in SAE J670e, Vehicle Dynamics Terminology.

8.4.7 Vehicle Roll Angle – The angle between the vehicle y-axis and the ground plane.

8.4.9 Vehicle Pitch Angle – The angle between the vehicle x-axis and the ground plane.

Note 6

"Angular rotations are positive clockwise when looking in the positive direction of the axis about which rotation occurs."

The data within the message shall contain the measured pitch, roll, and pitch rate, figure of merits for the measurements, a compensated measurement indicator, and measurement latency for the sensor measurements.

Note 1) When this PGN is used to transmit information from a device not attached to the vehicle, the components frame of reference shall be used.

Note 2) The NAME of the source of the PGN shall to used to associate to the frame of reference. (e.g, Machine will report vehicle pitch and roll, blade control will report blade pitch and roll).

Transmission Repetition Rate:	10 ms
Data Length:	8
Extended Data Page:	0
Data Page:	0
PDU Format:	240
PDU Specific:	19 PGN Supporting Information: See Appendix D - PGN 61459
Default Priority:	3
Parameter Group Number:	61459 (0x00F013)

Start Position	Length	Parameter Name	SPN
1	2 bytes	Pitch Angle	3318
3	2 bytes	Roll Angle	3319
5	2 bytes	Pitch Rate	3322
7.1	2 bits	Pitch Angle Figure of Merit	3323
7.3	2 bits	Roll Angle Figure of Merit	3324
7.5	2 bits	Pitch Rate Figure of Merit	3325
7.7	2 bits	Pitch and Roll Compensated	3326
8	1 byte	Roll and Pitch Measurement Latency	3327

SPN 3316 Fifth Wheel Slider Lock Indicator

Indicates to vehicle operator that the fifth wheel slider is in position and locked.

00 Not Locked

01 Locked

10 Error

11 Not Available

Data Length:	2 bits	
Resolution:	4 states/2 bit, 0 offset	
Data Range:	0 to 3	Operational Range: same as data range
Type:	Measured	
Supporting Information:		
PGN reference:	64942	

SPN 3317 Fifth Wheel Roll Warning Indicator

Indicates to the vehicle operator that the roll moment has exceeded a preset limit.

00 Limit not exceeded

01 Limit exceeded

10 error

11 Not Available

Data Length:	2 bits	
Resolution:	4 states/2 bit, 0 offset	
Data Range:	0 to 3	Operational Range: same as data range
Type:	Status	
Supporting Information:		
PGN reference:	61458	

SPN 3318 Pitch Angle

The angle between the vehicle x-axis and the ground plane.

Data Length:	2 bytes	
Resolution:	0.002 deg/bit, -64 offset	
Data Range:	-64 to 64.51 deg	Operational Range: same as data range
Type:	Measured	
Supporting Information:		
PGN reference:	61459	

Roll Angle

between the vehicle y-axis and the ground plane.

2 bytes
0.002 deg/bit, -64 offset
-64 to 64.51 deg Operational Range: same as data range
Measured
information:
61459

Pitch Rate

is the rate of change of the pitch angle over time, where the pitch angle vector is in the direction of travel of the

2 bytes
0.002 deg/sec per bit, -64 deg/sec offset
-64 to 64.51 deg/sec Operational Range: same as data range
Measured
information:
61459

Pitch Angle Figure of Merit

ment for pitch angle measurement.

0 Pitch angle fully functional. Data is within sensor specification.
1 Pitch angle degraded. Data is suspect due to environmental conditions.
2 Error
3 Not available

2 bits
4 states/2 bit, 0 offset
0 to 3 Operational Range: same as data range
Status
information:
61459

SPN 3324 Roll Angle Figure of Merit

Figure of merit for roll angle measurement.

Bit 4 Bit 3

0 0 Roll angle fully functional. Data is within sensor specification.

0 1 Roll angle degraded. Data is suspect due to environmental conditions.

1 0 Error

1 1 Not available

Data Length: 2 bits
Resolution: 4 states/2 bit, 0 offset
Data Range: 0 to 3 Operational Range: same as data range
Type: Status
Supporting Information:
PGN reference: 61459

SPN 3325 Pitch Rate Figure of Merit

Figure of merit for the pitch rate measurement.

Bit 6 Bit 5

0 0 Pitch rate fully functional. Data is within sensor specification.

0 1 Pitch rate degraded. Data is suspect due to environmental conditions.

1 0 Error

1 1 Not available

Data Length: 2 bits
Resolution: 4 states/2 bit, 0 offset
Data Range: 0 to 3 Operational Range: same as data range
Type: Status
Supporting Information:
PGN reference: 61459

Pitch and Roll Compensated

mode for the pitch and roll measurements. Compensation is the use of multiple sensors together to the output of pitch and roll measurements.

Compensation Off
Compensation On
Error
Not Available

2 bits
4 states/2 bit, 0 offset
0 to 3 Operational Range: same as data range
Status
Information:
61459

Roll and Pitch Measurement Latency

measurement latency of the measurement. NOTE: This is only the sensor latency and does not include latencies that might exist because of the CAN Bus or overall system implementation.

the time from sensor readings to the queuing of the message data for CAN transmission.

1 byte
0.5 ms/bit, 0 offset
0 to 125 ms Operational Range: same as data range
Measured
information:
61459

Blade Rotation Angle

rotation angle measurement around the yaw (z-axis).

2 bytes
1/128 deg/bit, -200 deg offset
-200 to 301.99 deg Operational Range: same as data range
Measured
information:
61460