

Lodestar Firmware 3.07.00 Release Notes

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3.07.00.2139

Summary

This firmware release is based on the v3.04.00.1080 release and supports the following hardware/Systems:

- Lodestar / SPRINT
- Lodestar-Nav / SPRINT-Nav
- Gyro USBL (Optimised USBL)

This firmware is **NOT** supported on the following Hardware/Systems:

- DP INS
- Gyro Compatt 6(+)

The focus of this release is to support the following improvements in the LNav/LNavUTC output messages, Ethernet and to support latent USBL Observations.

34338 – LNav & LNavUTC output message improvements:

LNav/LNavUTC supports two modes of operation; Sensor Mode that populates the message with AHRS and sensor data, and Hybrid Mode that populates the message with aided INS solution. This includes new commands that control the quality level for transition between the two modes. See appendix for details.

34290 – Latent USBL Observations:

SPRINT now supports USBL position latency of 29 seconds. This is particularly useful when position aiding an AUV via a slow acoustic communication link. See user manual for details.

New Features/Fixes

PPR Number	Summary
34290	Ability to accept latent USBL Observations (SUSBL)
34338	LNav & LNavUTC output message improvements for sensor to Hybrid (INS) transition
34270	Accept Sound Velocity in mm/s
29700	General Ethernet improvements
34308	Improvements in INS DVL Time synchronisation
34336	Accept Sound Velocity from SV + Temp messages
34259	Support PSONLOBS message with UTC Time
34268	Accept aiding inputs which have future time stamps (of up to 1 second)
32990	Time synchronisation of 6G Instrument (AvTrak) to Lodestar
30057	Continue logging to SD when power is lost
33670	Depth and Velocity data lever arm & mounting angle compensation in LNav LNavUTC
33666	Support PSONPD with instrument time from another sensor
34412	INS KFDELAY restricted to a maximum of 5

Previous version history

3.04.00.1080

PPR Number	Summary
27586	Support 2 DVL inputs (primary used, secondary logged)
30568	Introduce identifier to product type (SYS INSTTYPE)
27115	Add instrument frame for IME and Vehicle relative mounting angles and lever arms
27937	Improvements to OK/NOT OK response to some commands
32678	Improvements of AHRS latitude compensation when using XPOS
17660	Improvement of GPS latitude compensation to AHRS
29577	OBST TTAG set if TOV is in the future when compared to TOA
31010	OBST TTAG set for XDepth and PSONPD if TSYS is not within acceptable SD limits
32114	Ability to change default gateway
32233	Store DVL power pass through is type is SPRINT-Nav or Lodestar-Nav
32505	Ability to configure latency for TOV pressure observations
32535	Subnet mask can be updated independently from the IP address
30721	Battery not ok flag disabled in BIST

3.03.01.1067

PPR Number	Summary
31079	Implement normalised residuals for Fusion 2
31666	Support sensor observations evaluation when sensor is not enabled for use

3.03.00.1057

PPR Number	Summary
14216	INS initialisation using LBL
30055	Auto shutdown default changed to 5 minutes
27934	Internal C2 port set to 485H as default
28970	UDP TX holdoff changed to 10ms
29493	Log wrapper removed from non-multiplexed ports
30511	SPRINT-Nav internal pressure output improvements
30870	Implement Fusion 2 SPRINT-Nav internal pressure

Software/Hardware Compatibility

Software/Hardware	Version
SPRINT	v 1.5.3 or later
Fusion 2	v 2.04.01.2115
Syrinx DVL	Rel 2 Rev J
Lodestar PC Utility	v 4.02.00.66
Ranger 2 / Marksman	v 6.04.01
Syrinx DVL	Rel2 Rev J
AvTrak	v 3.13.01.03

Installation Notes:

To update to 3.07.00.2139 firmware, connect using CP+E1 Serial port connected to Lodestar PC Utility software, Reset the unit to the default configuration (Reset to factory configuration), then update firmware. Please see user manual for detailed instructions.

Note: To upgrade hardware operating firmware versions 3.03.01 or below, an additional configuration file is required specific to the unit for successful update, please contact support for instructions.

Appendix A – LNav/ LNavUTC Output message

The LNav / LNavUTC messages in the v3.07 firmware support two output modes (Sensor and Hybrid) that populate message fields as shown in the data format table below.

Sensor Mode: Data populated from AHRS and raw sensors.

Hybrid Mode: Data populated by aided INS solution

Message Field	Source Information			
	Sensor Mode		Hybrid Mode	
	Source = AHRS	Source = INS	Source = AHRS	Source = INS
TOV	Lodestar Time System		Lodestar Time System	
Latitude	Not Available (0)		INS	
Longitude	Not Available (0)		INS	
Depth	Pressure Sensor		INS (see note)	
Altitude	DVL		DVL	
Roll	AHRS	AHRS	AHRS	INS (see note)
Pitch	AHRS	AHRS	AHRS	INS (see note)
Heading	AHRS	AHRS	AHRS	INS (see note)
vN	DVL		INS (see note)	
vE	DVL		INS (see note)	
vDwn	DVL		INS (see note)	
wFwd	IMU		IMU	
wStbd	IMU		IMU	
wDwn	IMU		IMU	
aFwd	IMU		IMU	
aStbd	IMU		IMU	
aDwn	IMU		IMU	
posMajor	Not Available (0)		INS	
posMinor	Not Available (0)		INS	
dirPMajor	Not Available (0)		INS	
stdDepth	Not Available (0)		INS	
StdLevN	Not Available (0)		INS	
stdLevE	Not Available (0)		INS	
stdHeading	Not Available (0)		INS	
DVL velocity quality / velMajor	DVL		INS	
velMinor	Not Available (0)		INS	
dirVMajor	Not Available (0)		INS	
velDown	Not Available (0)		INS	

Message Field	Source Information	
Status	N/A	N/A

Note:

Transition from sensor mode to hybrid mode is dependant on the depth standard deviation and the velocity standard deviation, default below:

- Depth standard deviation default threshold set to 0.25
- Velocity standard deviation threshold set to 0.15

These thresholds can be custom configured using the following command:

```
OP INSTHRESH <Depth standard deviation threshold> <Velocity standard deviation threshold>
```

E.g. OP INSTHRESH 0.25 0.15

For full description of the LNav / LNavUTC message, please refer to the latest user manual.

Contact Information

For further support please contact:

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