Service Bulletin Number 1XXX.XX.( )-34-3060

Introduction of Software Control Number 801.5/901.5 in the UNS-1E, -1C+, -1Esp, -1Csp+, -1F, -1D+, -1L and -1K+ Flight/Multi-Mission Management Systems

1. Planning Information

NOTE: The software described in this Service Bulletin may be installed only by Universal Avionics Systems Corporation or a facility specifically authorized by Universal Avionics Systems Corporation. SCN (Software Control Number) 801.5/901.5 was developed from the previously certified SCN 801.4/901.4.

NOTE: If after installation of this software, a SOFTWARE CONFIG MISMATCH message is generated, it will be necessary to reconfigure the FMS Configuration Module using configuration worksheets from the previous SCN installation. If the SCN displayed on CONFIG page 2/2 does not match this new software, reconfigure in accordance with the FMS Configuration Manual, Report No. 34-60-26, using configuration worksheets from the previous SCN installation.

Refer to “Store Final Configuration” in the Configuration Module Programming Procedures. It is recommended that, when reconfiguring for the new software, you enter the number after the decimal point as an X. Future decimal point software changes will not require reconfiguration if the X is used.

NOTE: Prior to upgrading FMS software, it is highly recommended that the existing configuration be known and recorded. The configuration worksheets originally used to configure the FMS are the best source of this information. Lacking access to these worksheets, the configuration can be obtained from the FMS itself before removal from the aircraft. This is accomplished by accessing the MAINT 1/1 Page, selecting CONFIG and actually looking at each configuration page and writing it down. This will greatly facilitate reconfiguring after an FMS software upgrade.
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SERVICE BULLETIN

A. Effectivity/Compatibility

<table>
<thead>
<tr>
<th>LRU</th>
<th>Part Number</th>
<th>Boot SCN</th>
<th>Aux SCN</th>
<th>ARINC SCN</th>
<th>Analog SCN</th>
<th>ASCB-A SCN</th>
<th>GPS SCN</th>
<th>GNSS SCN</th>
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B. Compliance

Installation of SCN 801.5/901.5 is optional.

C. Description of Changes

The following enhancements were completed in SCN 801.5/901.5:

VNAV

1. Corrected condition reported in Alert Service Bulletin 1XXX.00.00-34-3054 where VNAV would cause an unexpected pitch maneuver when an enroute to approach coupled VNAV transition occurred with auto-approach activation on certain approach conditions. System will now maintain enroute VNAV active until the Approach FAF waypoint is sequenced, after auto-approach activation. This will prevent unexpected pitch commands and allow seamless enroute to approach VNAV transitions when the enroute and approach vertical paths connect.

2. Modified software to improve enroute to approach VNAV transitions especially for “T” type approaches. Widened the check for maximum allowable path deviation at approach activation between the enroute and approach path from 100 feet to 175 feet and corrected the along track vertical calculation for the turns.
3. For approaches with a holding pattern course reversed, the FMS will now correctly execute a VTO when sequencing onto the final approach when exiting the hold. This was working correctly for the first approach but did not function correctly when executing a missed approach and flying the approach a second time.

4. Modified software to prevent VNAV from disengaging when DTO is selected while slightly below the altitude constraint. If there is a manual leg change such as a DTO, VNAV will check if the altitude is 200 feet below the vertical waypoint altitude. If so, a level path is created above the aircraft and VNAV will provide guidance to the path. If current altitude at the time of DTO is greater than 200 feet from the VNAV path, VNAV will disconnect.

5. VNAV incorrectly remained active with an altitude discontinuity between the Hold exit and FAF altitudes. Modified software so that VNAV disconnects if there is discontinuity between the Hold exit and FAF altitudes.

6. After pressing PROCEED in a hold, it is possible to enter a Target VS and activate VNAV. This should not be allowed until the hold has been exited. Modified software to inhibit Target VS entry and VNAV activation while in a hold. Holding descents are allowed only if the entry and exit altitudes are entered prior to entering the hold. Refer to operator’s manual for more information.

7. Vertical Speed Required (VSR) and groundspeed (GS) did not correctly display dashes with the loss of the ADC sensor. Modified the software so that VSR calculations are inhibited and CDU display of VSR and GS is displayed as (----) when the system altitude input is invalid (loss of ADC sensor).

8. TGT VS went invalid when the last vertical waypoint in the flight plan was the vertical TO and approach activates either manually or automatically. Modified software so that the VNAV plan loads with the approach vertical plan, with a target FPA from the approach database.

9. A positive VSR was displayed when the FMS was 100 feet above the vertical TO waypoint. When VTO is selected, the VSR on the VTO page is negative. Modified software so that the displayed VSR is always negative when above the VTO waypoint.

10. Erroneous time and distance to TOD was displayed when a holding pattern was in the flight plan. Modified software so that hold legs were not skipped for overlapping waypoints and corrected the calculation of initial path angle correcting the display of Time and Distance to TOD.
11. When performing a VTO to a Hold entry waypoint, the FMS was able to command a climb to the path which was above. Modified software to prevent climb during a VTO to Hold operation.

**Flight Plan**

12. The presence of a floating waypoint followed by a “NO LINK” in the guidance leg set removes the flight plan from DHC-8 EFIS. Modified software to correctly display IF leg at all times except when it is the destination airport with an approach.

**Miscellaneous**

13. Added three output labels to the UNS HS429 Output bus to provide a more precise altitude used by Vision-1: Labels 102 (Vertical Dilution of Precision), 076 (MLS Altitude) and 370 (WGS-84 Height) from GPS, GPIRS, GNSS or GLS sensors. Label 102 is remapped to label 002.

14. The software routine that displays GPS Altitude (label 076) on the GWS data page was not functioning correctly. The software was changed to correctly compute and display GPS altitude.

15. Roll steering fail conditions were incorrectly triggered under certain conditions with specific leg type combinations. Modified software to correct erroneous roll steering failure reports while ensuring that a roll steering fail condition is detected correctly.

16. For Special Missions FMS versions modified the software to add the capability for the operator to completely erase the flight plan, mission and pilot data from FMS memory. This is accomplished using a configurable discrete input.

17. Updated the Date displayed on the copyright page to display 2003 after power up.
D. Approval

Conforms to FAA TSO C115b and TSO C129a.
DO-178B S/W Level C.

E. Material, Cost and Availability

(1) Universal Avionics will not be responsible for labor or other costs involved in removal and replacement of the unit. Universal Avionics will pay the cost of return shipping if the unit is still under warranty. Prior to shipping the unit, contact our Product Support Department for pricing, scheduling and shipping details.

(2) Available from: Universal Avionics Systems Corporation
3260 E. Universal Way
Tucson, AZ 85706
Ph: (520) 573-7627
Fax: (520) 295-2384

F. Weight and Balance

No change.