TITLE

AUTO FLIGHT - IS&S STANDBY DISPLAY WITH AUTOTHROTTLE SOFTWARE UPDATE: RELEASE 8.1

EFFECTIVITY

MODEL	SERIAL NUMBERS
B200GT	BY-393 thru BY-464
B200CGT	BZ-3 thru BZ-9
B300	FL-1201, FL-1234 thru FL-1299, FL-1301 thru FL-1306
B300C	FM-98 thru FM-109

REASON

Innovative Solutions and Support Inc. has released Service Letter SL2220_1, which provides an update for the autothrottle software to version 8.1.

DESCRIPTION

This service document transmits Innovative Solutions and Support Inc. Service Letter SL2220_1. Refer to the Innovative Solutions and Support Inc. SL2220_1 for detailed information about the changes.

COMPLIANCE

INFORMATIONAL. This service document is for informational purposes only.

A service document published by Textron Aviation may be recorded as *completed* in an aircraft log only when the following requirements are satisfied:

1) The mechanic must complete all of the instructions in the service document, including the intent therein.

2) The mechanic must correctly use and install all applicable parts supplied with the service document kit. Only with written authorization from Textron Aviation can substitute parts or rebuilt parts be used to replace new parts.

3) The mechanic or airplane owner must use the technical data in the service document only as approved and published.

4) The mechanic or airplane owner must apply the information in the service document only to aircraft serial numbers identified in the *Effectivity* section of the document.

5) The mechanic or airplane owner must use maintenance practices that are identified as acceptable standard practices in the aviation industry and governmental regulations.

No individual or corporate organization other than Textron Aviation is authorized to make or apply any changes to a Textron Aviation-issued service document or flight manual supplement without prior written consent from Textron Aviation.

Textron Aviation is not responsible for the quality of maintenance performed to comply with this document, unless the maintenance is accomplished at a Textron Aviation-owned Service Center.

CONSUMABLE MATERIAL

No specialized consumable materials are required to complete this service document.

TOOLING

Refer to the Innovative Solutions and Support Inc Service Letter SL2220_1, Tooling, for tooling information.

REFERENCES

Innovative Solutions and Support Inc Service Letter SL2220_1 (latest revision)

PUBLICATIONS AFFECTED

None

ACCOMPLISHMENT INSTRUCTIONS

1. Review the attached Innovative Solutions and Support Inc Service Letter SL2220_1.

2. Make an entry in the airplane logbook that states compliance and method of compliance with this service document.

    NOTE: Textron Aviation recommends that compliance with all service documents is reported to a maintenance tracking system provider.
    •   Complete a record of compliance. (Maintenance Transaction Report, Log Book Entry, or other record of compliance.)
    •   Put a copy of the completed record of compliance in the airplane logbook.
    •   Send a copy of the completed record of compliance to the maintenance tracking system provider used.

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CAGE CODE: 0EUW0

SERVICE LETTER

I.   IS&S STANDBY DISPLAY WITH AUTOTHROTTLE SOFTWARE UPDATE: RELEASE 8.1

   A.   IS&S is releasing updated software for the IS&S ThrustSense® Standby Display System installed in King Air B200 and B300 aircraft equipped with Proline-Fusion avionics. This software updates previously provided Software Release 8, which provided operational improvements to increase usability and support additional functionality.

II.   PLANNING INFORMATION

   WARNING: FAILURE TO CORRECTLY IMPLEMENT ANY INSTRUCTION GIVEN HERE, AS AMENDED FROM TIME TO TIME BY INNOVATIVE SOLUTIONS & SUPPORT, MAY ENDANGER HEALTH OR SAFETY.

   A.   EFFECTIVITY

      1.   This software update is applicable to the following components:

         a.   Standby Display with Autothrottle System - B300 series, 9K-88129-25

         b.   Standby Display with Autothrottle System - B200 series, 9K-88129-23

         c.   Standby Display Unit (SDU), 9D-84180-7

         d.   Remote Standby Controller (RSC), 9B-84181-7

         e.   Installation Configuration Module (ICM), 9B-13964

      2.   This Service Letter is not mandatory but is a <u>recommended</u> modification.

      3.   This Service Letter (SL2220_1) supersedes Service Letter SL2210, dated September 20, 2022.

   B.   REASON

      1.   Software Release 8.1 provides the following improvements:

   Note: Please make sure AFMS and Pilot's Guide have been reviewed for changes affecting the ThrustSense Autothrottle operation.

- Change to activate Autothrottle Takeoff mode by advancing power levers.
- Changes automatic transition from Takeoff into Climb mode at 400ft AGL.

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- Supports the ability to manually select Climb mode.
- Reduced ITT limit supported in Autothrottle Climb mode.
- Added annunciation to indicate Autothrottle initialization progress.
- Added support for autothrottle Mach Speed mode (requires Feature Activation).
- Added menu item to enable/disable display of DME information.
- B300 Takeoff Torque determined by single POH table.
- Improved visibility of Autothrottle protection mode annunciations.
- Improved autothrottle control logic to prevent potential oscillations. (Release 8.1 specific)
- Improved attitude gyro alignment logic.
- Increased Autothrottle Disengage button activation time to 200ms or greater of button press to eliminate nuisance Autothrottle disengages due to accidentally hitting the disengage button while hands are on throttle levers.

C. DESCRIPTION

1. The table below identifies the software versions addressed by this Service Letter.

Table 1   Software Versions (Release 8.1)

LRU	CSCI	DESCRIPTION	COMMENT
SDU	7H-13905-15A	SDU OFP	Updated (8.1)
	7H-13904-13	SDU Service	Updated (8.0)
	7H-09847-07	SDU Bootstrap	No change
RSC	7H-13908-07	RSC OFP	Updated (8.0)
	7H-13907-07	RSC Service	Updated (8.0)
	7H-13226-03	RSC Bootstrap	No change
ICM	7H-13982-XX	Config File	Aircraft dependent (8.0)

NOTE: This software update also requires an update to the (ICM) configuration module file. The required CONFIG FILE part number is dependent on the installation aircraft features.

2. The following table identifies the latest Configuration Files that are also addressed by this Service Letter.

Table 2   ICM Configuration Revisions (release 8, no change for the patch)

ICM P/N	CONFIG FILE	DESCRIPTION
9B-13964-300	7H-13982-3H	King Air B300 series, PT6A-60A, 15000 lb MTOW, AFM 434-590169-0003
9B-13964-301	7H-13982-5D	King Air B300 series, PT6A-60A, 16500 lb MTOW, AFM 434-590170-0003
9B-13964-304	7H-13982-7C	King Air B300 series, PT6A-67A, 16500 lb MTOW, AFM 434-590170-0003, AFMS 130-590031-501

ICM P/N	CONFIG FILE	DESCRIPTION
9B-13964-306	7H-13982-9C	King Air B300 series, PT6A-60A, 16500 lb MTOW, AFM 434-590170-0003, AFMS 130-590031-0681 for Kit 130-4050 (Extended Nose)
9B-13964-200	7H-13982-11F	King Air B200 series, PT6A-52, 12500 lb MTOW, AFM 434-590168-0003
9B-13964-202	7H-13982-13D	King Air B200 series, PT6A-52, 12500 lb MTOW, AFM 434-590168-003, AFMS AFMS-B250-1 for STC SA02131SE (BLR Ultimate Performance Package)
9B-13964-305	7H-13982-15B	King Air B300 series, PT6A-67A, 17500 lb MTOW, AFM 434-590170-0003, AFMS 130-590031-501 and 130-590031-531, (Extended Range)
9B-13964-302	7H-13982-17B	King Air B300 series, PT6A-60A, 17500 lb MTOW, AFM 434-590170-0003, AFMS 130-590031-0643
9B-13964-203	7H-13982-19B	King Air B200 series, PT6A-52, 13420 lb MTOW, AFMS AFM-006-4 for STC SA11103SC (Centex Halo 250)
9B-13964-204	7H-13982-21C	King Air B200 series, PT6A-52, 14000 lb MTOW, AFMS AFM-006-4HFG for High Flotation Landing Gear STC SA11103SC (Centex Halo 275)
9B-13964-307	7H-13982-23B	King Air B300 series, PT6A-60A, 16310 lb MTOW, AFMS 339-024-AFMS_B300 for STC SA03025CH (Weather Modification)
9B-13964-308	7H-13982-25A	King Air B300 series, PT6A-60A, 15000 lb MTOW, AFM 434-590169-0003, AFMS 14-350-106 for STC SA02559SE (Raisbeck 5-Blade Propellers)
9B-13964-205	7H-13982-27A	King Air B200 series, PT6A-52, 12500 lb MTOW, AFM 434-590168-0003, AFMS AFMS-B250-2 for STC SA02131SE (BLR Ultimate Performance Package), AFMS 11-B200GT-116 for multiple Raisbeck STCs (EPIC Platinum Package)

Note: Please contact IS&S if your respective ICM P/N is not listed or if the description does not match your aircraft configuration.

D. APPROVAL

1. This Service Letter provides software updates that fall under the FAA category of TSO Minor Change and STC Major Change.

E. MANPOWER

1. Modification will require 1.0 hour with the unit on aircraft. See Section G. for equipment required.

F. MATERIAL COST and AVAILABILITY

1. Software available from IS&S at a cost of $0.00

2. Optional Mach Mode Feature Activation (IS&S order number: 9K-14504-1) – *not required for OEM installations*

3. Balance of warranty is not affected.

G. TOOLING

1. A Windows PC equipped with an RS-485 interface and the IS&S Service Tool, Software 7P-13938-05 or higher, is required to perform the data loading process.

2. Data Loader adapter: Textron part number PR00145715. The adapter harness is intended for use with a StarTech ICUSB422 USB to RS-485 converter. Other 2-wire RS-485 interfaces may be used but may not work correctly. Adapters must be self-procured. See PR00145715 Diagram for the pin assignment of the maintenance connector used for data loading.

3. Follow the details outlined in this Service Bulletin, as well as those outlined in the IS&S Operations and Installation Manual, 1D-88129.

H. WEIGHT AND BALANCE DATA

1. Not applicable

I. ELECTRICAL LOAD DATA

1. Not applicable

J. REFERENCES

1. IS&S Operation and Installation Manual, 1D-88129, rev 21

K. OTHER PUBLICATIONS AFFECTED

1. Pilot's Guide ThrustSense™ Standby with Autothrottle, 1D-13793, rev 10

2. Aircraft Flight Manual Supplement, 1D-13792 Rev.4

3. Instructions for Continued Airworthiness, 1D-13791 Rev.5

CAUTION:

Read this entire Service Letter before beginning the software loading procedures. Strict compliance with the instructions given will ensure successful completion of this software upgrade.

III. ACCOMPLISHMENT INSTRUCTIONS

Data load IS&S Standby Display with Autothrottle System in accordance with IS&S Operation and Installation manual 1D-88129 Appendix B, or by following the procedure below.

A. Software Update Procedures:

1. Attach ground power for use in the data loading procedure to conserve battery power.

2. Connect the test PC to the maintenance port via RS-485. Open the Service Tool 7P-13938 and select the connected COM port in the "Select PC Com Port" field

3. Turn on the **STBY DISP** switch to start the Standby Display and within 30 seconds, press MENU and use the knob to select the "**SERV MODE…**" option. Press the knob to confirm service mode entry

4. When prompted on the SDU, cycle power by turning the **STBY DISP** switch; OFF and ON.

5. Within 30 seconds of startup, use the (PC) Service Tool to send a "**Service Request**" to the RSC. The RSC will automatically enter service mode. (Note, the "Check RSC Comm" function can be used to verify the RSC is in service mode)

6. On the SDU, use the knob to highlight the "**Dataload**" option and press it. Then highlight "**Firmware"** and press the knob to prepare the SDU to receive data.

7. On the PC running the Service Tool, left click the "**Select Software**" button and select the .uImage to load from the files listed. If multiple images are going to be loaded, they may all be selected at this time.

8. On the PC, press the "**Dataload Software**" button once the desired software has been selected.

9. Select the desired software to load and press "**Transmit**". A progress bar will fill as the software is being loaded.

10. Continue until each required software image has been selected and transmitted and "**Complete**" is indicated.

11. Turn off the Standby Display by setting the **STBY DISP** switch to OFF.

12. Verify the loaded software versions by following the procedures in Section IV.

B. Configuration File Update Procedure:

1. Connect the test PC to the maintenance port via RS-485. Open the Service Tool 7P-13938 and select the connected COM port in the "Select PC Com Port" field

2. Power cycle the RSC by switching ESIS Power OFF, then back ON

3. Within 30 seconds of startup, use the (PC) Service Tool to send a "**Service Request**" to the RSC. The RSC will automatically enter service mode. (Note, the "Check RSC Comm" function can be used to verify the RSC is in service mode)

4. In the Service Tool, left click the "**Write ICM Data**" button then the "**Load ICM Record"** button and select the desired config file (.bin) to load.

5. Click "**Transmit Config File**" and wait for a confirmation message from the Service Tool.

6. Verify the loaded ICM version by following the procedures in Section IV.

C. Mach Mode Feature Activation (Requires Activation Key)

1. Power cycle the RSC and SDU by switching ESIS Power OFF, then back ON

2. Within 30 seconds, select the "**SERV MODE**" menu item, and press the knob to "**confirm**" Service Mode.

3. Power cycle the SDU by switching ESIS Power OFF, then back ON

4. Note the air data serial part number ("AirData:") located above the software part numbers window. This number is required by IS&S to generate the activation key for the Mach Mode.

5. Contact IS&S and obtain the required (alphanumeric) activation key

6. Select "**Feature Act**" from the Service Menu to access the Feature Activation page

7. Use the SDU knob to select "**Key Entry**"

8. Use the SDU knob to enter each digit of the activation key

   (a) Rotate the knob to adjust the value of each digit ('0' – '9', 'A' – 'F')

   (b) Press the knob to advance to the next digit

   (c) Press the A/T PWR button to move back to the previous digit

10. When the last digit has been entered, verify that the Activation Key was accepted by display of "Mach Mode Activated"

11. Press the **MENU** button to exit the Feature Activation page

12. Restart the RSC and SDU into Normal mode by switching the ESIS Power OFF, then back ON

13. Press the MENU button and select "**FEATURES…**" to verify that MACH mode is selected ON

IV. FUNCTIONAL TEST INSTRUCTIONS

1. Turn the **STBY DISP** switch to ON to start the Standby Display.

2. On the SDU, press the MENU button and use the knob to select the "**PART NUMBERS**" screen.

3. Scroll through the part numbers by rotating the knob and confirm that the software loaded on the system matches the software referenced in Section II.

4. Record the displayed software versions below:

Table 1   Software Part Numbers

SOFTWARE DESCRIPTION	DISPLAYED VERSION
SDU OFP	
SDU SERVICE	
SDU BOOT	
RSC OFP	
RSC SERVICE	
RSC BOOT	
CONFIG	

5. Cycle power to the Standby Display by turning the **STBY DISP** switch OFF then ON.

6. After the SDU has restarted, press the MENU button and use the knob to select "**SERV MODE…**" and confirm service mode entry.

7. Cycle the **STBY DISP** switch OFF then ON to restart the SDU in service mode.

8. Press and rotate the SDU knob to highlight the "**Fric**" field.

9. Press the knob again to start the Friction Test

10. Perform the Autothrottle Friction test and verify satisfactory performance of the power control lever movement forward and backward throughout the test. Note the values displayed at the conclusion of the test and verify that the Slip values are less than 10000.

☐ Pass   ☐ Fail

Left FRIC Value _____   Right FRIC Value _____

Left SLIP Value _____   Right SLIP Value _____

11. Perform the Override Friction test and verify the force required to override the autothrottle is satisfactory.

☐ Pass   ☐ Fail

V.   MATERIAL INFORMATION

   A. Order Documents, Materials or Return LRUs to:

   Innovative Solutions & Support
   Customer Services
   720 Pennsylvania Drive
   Exton, PA 19341 USA
   Tel.: 610-646-9800 Fax: 610-646-0149

   ATTN: IS&S Product Support
          Customer Service
          Tel: 610-646-9800
          E-mail: issproductsup@innovative-ss.com

   B. Mach Mode Feature Activation (once 9K-14504-1 purchase has been processed)

   Innovative Solutions & Support
   Contact: Jason Zywalewski
   720 Pennsylvania Drive
   Exton, PA 19341 USA
   Tel.: 610-646-9800 ext.609 Business Hours: 8:00 am to 5:00 pm Eastern
   Email : jzywalewski@innovative-ss.com
   Note: Please make sure to have the air data serial number available prior to calling IS&S for the Mach mode feature activation. Instructions on how to obtain the air data serial number are covered under the Mach mode activation description within this document.