US Department of Transportation
Federal Aviation Administration

MAJOR REPAIR AND ALTERATION
(Airframe, Powerplant, Propeller, or Appliance)

Form Approved OMB No. 2120-0020 11/30/2007

Electronic Tracking Number

For FAA Use Only

INSTRUCTIONS: Print or type all entries. See Title 14 CFR §43.9, Part 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. §44701). Failure to report can result in a civil penalty for each such violation. (49 U.S.C. §46301(a))

1. Aircraft

Nationality and Registration Mark	Serial No.
N8831M	TD-574
Make	**Model** / **Series**
Beech	D95 /

2. Owner

Name *(As shown on registration certificate)*	Address *(As shown on registration certificate)*
Robert McMeekin R Jr	Address 7435 Arrowood RD City Bethesda State MD Zip 20817 Country USA

3. For FAA Use Only

4. Type		5. Unit Identification			
Repair	Alteration	Unit	Make	Model	Serial No.
☐	☑	AIRFRAME	———	*(As described in Item 1 above)*	———
☐	☐	POWERPLANT			
☐	☐	PROPELLER			
☐	☐	APPLIANCE	Type / Manufacturer		

6. Conformity Statement

A. Agency's Name and Address

Name SMART Avionics Inc
Address 186 Airport Road
City Marietta State PA
Zip 17547 Country USA

B. Kind of Agency

- ☐ U. S. Certificated Mechanic / ☐ Manufacturer
- ☐ Foreign Certificated Mechanic
- ☑ Certificated Repair Station
- ☐ Certificated Maintenance Organization

C. Certificate No. ZV8R725X

D. I certify that the repair and/or alteration made to the unit(s) identified in item 5 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Extended range fuel per 14 CFR Part 43 App. B ☐

Signature/Date of Authorized Individual

Benjamin M Travis Bym Mz 7/10/23

7. Approval for Return to Service

Pursuant to the authority given persons specified below, the unit identified in item 5 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is ☑ Approved ☐ Rejected

BY

- ☐ FAA Flt. Standards Inspector
- ☐ FAA Designee
- ☑ Repair Station
- ☐ Manufacturer
- ☐ Maintenance Organization
- ☐ Inspection Authorization
- ☐ Persons Approved by Canadian Department of Transport
- Other *(Specify)*

Certificate or Designation No. ZV8R725X

Signature/Date of Authorized Individual

Benjamin M Travis Bym Mz 7/10/23

FAA Form 337 (10-06)

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished
(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

N8831M	7/10/23
Nationality and Registration Mark	Date

Genesys 3100 Aotopilot Installation

Removed System 60-1 AP Control, Roll Computer and Pitch Computer.

Installed Genesys System 3100 Autopilot Computer Control in pilot instrument panel. Fabricated new wiring harness using mil spec wire M22579 wire and milspec M27500 shielded wire in accordance with Genesys installation instructions ST-964-II-0001 rev 3. System was interfaced to existing pitch servo, existing trim servo, existing yaw servo and existing roll servo. System was interfaced to the Aspen EFD 1000 Max Instrument system for Attitude information, Airdata information and navigation information.

System installation approved by Genesys STC SA09755DS.

System was ground tested and performed as specified with no adverse effects to other aircraft systems.

All workmanship was accomplished in accordance with the guidelines of AC 43.13-1B chapters 7 sections 2, 4 chapter 10 section 1, chapter 11 sections 1 thru 12 &chapter 12 sections 1, 2 and AC43.13-2B chapters 1 section 100, chapter 2 sections 203, 207,209 and chapter 3 sections 304,306,307,308 and 310.

Electrical load does not exceed 80% of aircraft electrical system capacity.

The aircraft weight and balance and the equipment list were updated to reflect this change.

See attached ICA for instructions for continued airworthiness.

☑ Additional Sheets Are Attached

S-TEC

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Instructions for Continued Airworthiness

for the

S-TEC 01326 Digital Flight Control System

installed in

Textron Aviation Inc. Models 95, B95, B95A, D95A, E95, 95-55, 95-A55, 95-B55, 95-B55A, 95-B55B, 95-C55, 95-C55A, D55, D55A, E55, E55A, 56TC, A56TC, 58, 58A, 58P, 58PA, 58TC and 58TCA

Report No: ST-964-ICA-0001

Revision: A
5/19/21

REVISION PAGE

REV	DESCRIPTION	RELEASED BY	DATE
-	Initial Release	S. Joseph	8/21/19
A	Revised to update section 2.0, Table 2:LRU parts list, Section 6, IMU Leveling procedure and Section 10.0 Weight and Balance	S. Joseph	5/19/21

TABLE OF CONTENTS

1.0 INTRODUCTION

WARNING: Means a maintenance procedure, practice, condition, etc. that could result in personal injury or loss of life.

CAUTION: Means a maintenance procedure, practice, condition, etc. that could result in damage or destruction of equipment.

NOTE: Means a maintenance procedure, practice, condition, etc., or a statement which needs to be highlighted.

GENERAL ADVISORIES

NOTE: These instructions are intended for use by personnel familiar with standard aircraft avionics practices and methods of maintenance. If you do not have prior experience with or knowledge of avionics systems, do not attempt the following instructions. S-TEC Corporation will not be held liable for damaged items resulting from improper handling and maintenance.

WARNING: Service personnel are to obey standard safety precautions, such as wearing safety glasses, to prevent personal injury while installing or doing maintenance on this unit.

WARNING: This autopilot system exhibits a high degree of functional reliability. Nevertheless, users must know that it is not practical to monitor for all conceivable system failures and, however unlikely, it is possible that erroneous operation could occur without a fault indication. The pilot has the responsibility to find such an occurrence by means of cross-checks with redundant or correlated data available in the cockpit.

CAUTION: Remove all power to the autopilot unit before disconnecting or removing it. Disconnecting the unit with power connected may cause voltage transients that can damage the unit.

NOTE: Superseded Documents: The information, procedures, requirements, and limitations contained in these Instructions for Continued Airworthiness for this type design change supersede the information, procedures, requirements and limitations contained in the aircraft's maintenance manual when the type design change is installed on the Type Certificate Holder's aircraft.

1.1 PURPOSE

The purpose of these Instructions for Continued Airworthiness is to provide the line maintenance technician with the information necessary to ensure the continued airworthiness of the S-TEC 01326 Digital Flight Control System (hereafter referred to as System 01326) when installed in Textron Aviation Inc. Models 95, B95, B95A, D95A, E95, 95-55, 95-A55, 95-B55, 95-B55A, 95-B55B, 95-C55, 95-C55A, D55, D55A, E55, E55A, 56TC, A56TC, 58, 58A, 58P, 58PA, 58TC and 58TCA.

1.2 EFFECTIVITY

This ICA is effective to all Textron Aviation Inc. Models 95, B95, B95A, D95A, E95, 95-55, 95-A55, 95-B55, 95-B55A, 95-B55B, 95-C55, 95-C55A, D55, D55A, E55, E55A, 56TC, A56TC, 58, 58A, 58P, 58PA, 58TC and 58TCA when modified by the installation of a System 01326.

NOTE: This maintenance plan is designed to meet the required Instructions for Continued Airworthiness (14 CFR 23.1529), for aircraft equipped with the System 01326. This plan must be placed into the aircraft operator's Aircraft Maintenance Manual and incorporated into the operator's scheduled maintenance program.

1.3 REFERENCE DOCUMENTS

This document forms a part of the overall aircraft continued airworthiness requirements and is to be used in conjunction with the following documents, as applicable, reference Appendix A.

DOCUMENT NUMBER	TITLE
87325	Pilot's Operating Guide and Reference
ST-964-MDL-0001 (latest revision)	Master Data List
ST-964-II-0001	Installation Instructions
05166 (latest revision)	Procedure, Clutch Torque Adjustment
10243 (latest revision)	W/D 01326 DFCS
10244 (latest revision)	Wiring Interface System 01326
10245 (latest revision)	W/D 01326 DFCS
10246 (latest revision)	Wiring Interface System 01326
7647 (latest revision)	Installation, Roll Servo
7658 (latest revision)	Installation, Control Wheel Switches
76106 (latest revision)	Installation, Trim Servo
76157 (latest revision)	Installation, Pitch Servo
76174 (latest revision)	Installation, Roll Servo
76175 (latest revision)	Installation, Pitch Servo
76176 (latest revision)	Installation, Trim Servo
76178 (latest revision)	Installation, Yaw Servo
76193 (latest revision)	Installation, Control Wheel Switches
76289 (latest revision)	Installation, Oxygen Line
76364 (latest revision)	Installation, Trim Servo
76365 (latest revision)	Installation, Yaw Servo
76487 (latest revision)	Installation, Trim Servo
76823 (latest revision)	Installation, Trim Servo
761080 (latest revision)	Installation, Yaw Servo
761575 (latest revision)	Installation, 01326 Computer
761657 (latest revision)	Installation, Yaw Servo
761658 (latest revision)	Wire Routing 01326 DFCS

Table 1: Reference Documents

NOTE

It is the responsibility of the Maintenance Technician to verify with the Vendor that the Data being used is the latest revision.

1.4 APPLICABLE REGULATIONS

14 CFR 21.50 Instructions for Continued Airworthiness and manufacturer's maintenance manuals having airworthiness limitations sections.

14 CFR 23.1529 Instructions for Continued Airworthiness.

14 CFR 43.16 Airworthiness Limitations.

14 CFR 91.403 General Maintenance, Preventative Maintenance, and Alterations.

2.0 SYSTEM DESCRIPTION

(Including control and operation information)

The System 01326, a digital three-axis attitude-based Digital Flight Control System (DFCS), is designed for installation in aircraft equipped with a dual or single Air Data and Attitude Heading Reference System (ADAHRS) and/or DFCS computer internal sensors. The System provides roll, pitch and yaw modes along with an integral autotrim feature. The System 01326 includes a straight and level recovery feature as well as envelope protection/alerting features. The system utilizes the ADAHRS for attitude reference. The system utilizes sensors internal to the Computer/Programmer to support its monitoring (cross comparison) of the basic attitude information or to provide the attitude data. These sensors provide a continuous comparison of the attitude information to ensure integrity of the attitude source. The DFCS system accepts digital or analog navigation inputs from various sources such as an EFIS or navigation radios and a heading system.

The **Programmer/Computer** provides a means to engage the autopilot, select modes of system operation and to annunciate system modes and status. The Programmer/Computer consists of two sections: roll and pitch. The roll section accepts steering inputs from the navigation radios and the ADAHRS or internal sensors and uses this information to drive the **Roll Servo**. The pitch section receives signal inputs from the Primary Flight Displays and ADAHRS or internal sensors, and uses this information to drive the **Pitch Servo**. Yaw axis stabilization is provided by drive commands to a remote mounted **Yaw Servo**

Elevator Trim is automatically controlled by the **Trim Servo**, which also provides trim annunciation.

Modes of Operation

Roll Axis Control

- **Autopilot (AP) Mode**: Engages roll servo
- **Flight Director (FD) Mode**: Laterally drives steering command bars (if applicable)
- **Roll Attitude (ROLL) Mode**: Holds roll attitude
- **Heading (HDG) Mode**: Turns onto a selected heading and hold it
- **Navigation (NAV) Mode**: Intercepts and tracks a VOR course
- **Approach (APR) Mode**: Intercepts and tracks a LOC front course or GPS approach inbound
- **Reverse (REV) Mode**: Intercepts and tracks a LOC back course (BC) inbound or track a LOC front course outbound
- **Control Wheel Steering (CWS) Mode**: Captures and holds new roll attitude, pitch attitude, indicated airspeed, vertical speed, or altitude
- **GPS Steering (GPSS) Mode**: Laterally steers along a flight plan course defined by GPS/FMS
- **GPS Lateral Navigation (GPSL) Mode**: Laterally steers along an approach course defined by GPS/FMS approach
- **Level (LVL) Mode**: Returns A/C to wings level attitude from any condition
- **Go-Around (GA) Mode**: Disengages AP and/or engages FD in ROLL wings-level mode

Pitch Axis Control

- **Autopilot (AP) Mode**: Engages pitch servo
- **Flight Director (FD) Mode**: Vertically drives steering command bars (if applicable)
- **Pitch Attitude (PITCH) Mode**: Holds pitch attitude
- **Indicated Airspeed (IAS) Mode**: Holds indicated airspeed
- **Vertical Speed (VS) Mode**: Holds vertical speed
- **Altitude Hold (ALT HOLD) Mode**: Holds altitude
- **Glideslope (GS) Mode**: Intercepts and tracks glideslope
- **GPS Vertical Navigation (GPSV) Mode**: Vertically steers along a glidepath defined by a GPS/FMS approach
- **Enroute Vertical Navigation (VNAV) Mode**: (Optional) Provides guidance from a top-of-descent (TOD) point to a target altitude specified by an enroute VNAV descent profile on a compatible navigator. This feature differs from that of vertically guided instrument approaches such as LPV and/or LNAV/VNAV.
- **Level (LVL) Mode**: Returns A/C to a fixed pitch up attitude from any condition
- **Go-Around Mode (GA) Mode**: Disengages AP and/or engages FD (if applicable) in PITCH hold mode with a preset nose-up command
- **Automatic Trim Mode**: Automatically drives trim servo(s), as required.

Yaw Axis Control

- **Yaw Damper (YD) Mode:** Dampens excessive adverse yaw and coordinates turns (if installed)

System 01326 (equipment locations)

- The 01326 computer is installed in the instrument panel, reference Appendix A, Drawing 761575 (latest revision).

- The roll servo is installed under the aircraft floor area just aft of the fwd main spar between F.S. 159.17 and F.S. 174.40. Remove the floor access panels in this area to gain access to this area, reference Appendix A, Drawings 76174 and 76289 (latest revisions).

- Alternate installation, the roll servo is installed just forward of and adjacent to the rear wing spar center section and to the left side of the aircraft. Remove the floor access panels in this area to gain access to this area, reference Appendix A, Drawing 7647 (latest revision).

- The pitch servo is installed between Fuselage Station 207.0 and 233.50 and attached to the lower fuselage stringer flanges. Remove the access panel on the aft cabin bulkhead to gain access to this area, reference Appendix A, Drawings 76157 or 76175 (latest revisions).

- The trim servo is installed just forward of the bulkhead at F.S. 207.00 on the left side of aircraft centerline. Remove the aft cabin bulkhead close out panel to gain access to this area, reference Appendix A, Drawings 76364 or 76487 (latest revisions).

- Alternate installation, the trim servo is installed in the aft fuselage section aft of F.S. 233.00 on the support channel assembly. Remove the aft cabin bulkhead close out panel to gain access to this area, reference Appendix A, Drawings 76176 or 76823 (latest revisions).

- Or, the trim servo is installed just aft of and adjacent to Fuselage Station 207.00. Remove the aft cabin close out panel to gain access to this area, reference Appendix A, Drawing 76106 (latest revision).

- The yaw servo is installed left of aircraft centerline just forward of bulkhead F.S. 179.00. Remove the closeout panel aft of the baggage compartment to gain access to this area, reference Appendix A, Drawing 761080 (latest revision).

- Alternate installation, the yaw servo is installed in the tail cone area approximately 13" aft of the bulkhead at F.S. 179.00 on the right hand side of the aircraft. Remove the aft cabin bulkhead cover panel to gain access to this area, reference Appendix A, Drawing 76365 (latest revision).

- Or, the yaw servo is installed just aft of and adjacent to the partial bulkhead at F.S. 185.0. Remove the access panel on the aft cabin bulkhead and the baggage compartment floor to gain access to this area, reference Appendix A, Drawing 76178 (latest revision).

- The control wheel switches are installed in the grip of the pilot's control wheel, reference Appendix A, Drawings 7658 and 76193 (latest revisions).

- Wiring of the System 01326 is accomplished in accordance with information provided on W/D 01326 DFCS or W/D Interface 01326 System reference Appendix A, Drawings 10243, 10244, 10245 and 10246 (latest revisions).

- Approximate wire routing of the autopilot system is shown on Wire Routing 01326 DFCS, reference Appendix A, Drawing 761658 (latest revision).

System Line Replaceable Components

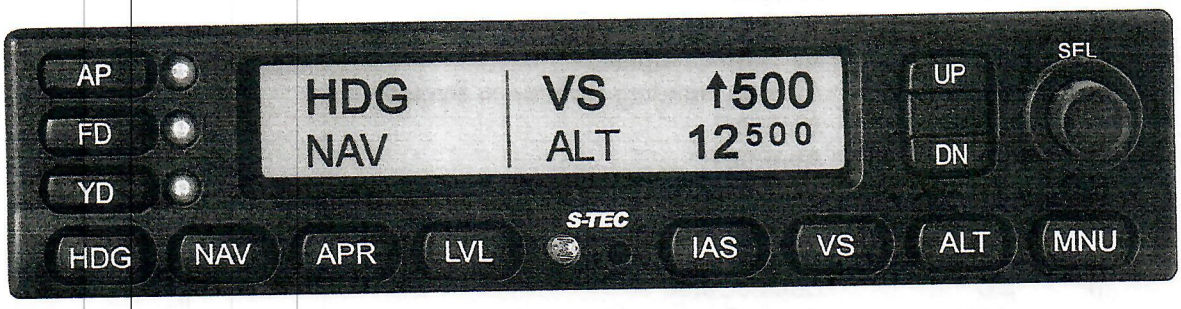
The System 01326 consists of the following components:

P/N	Name	TSO
01326-01-02-000	3100 DFCS	C198
01326-04-02-000	3100 DFCS	C198
01326-05-02-000	3100 DFCS	C198
01326-06-02-000	3100 DFCS	C198
01326-07-02-000	3100 DFCS	C198
01326-08-02-000	3100 DFCS	C198
0106-R9	Roll Servo (28V)	C9c
0108-P4	Pitch Servo (28V)	C9c
0106-Y10	Yaw Servo (28V)	C9c
0106-T2	Trim Servo (28V)	C9c

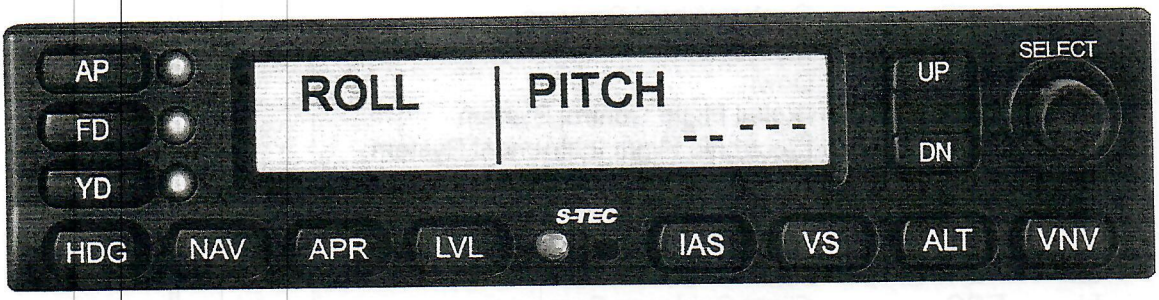
Table 2: LRU Parts List

CONTROL AND OPERATION INFORMATION

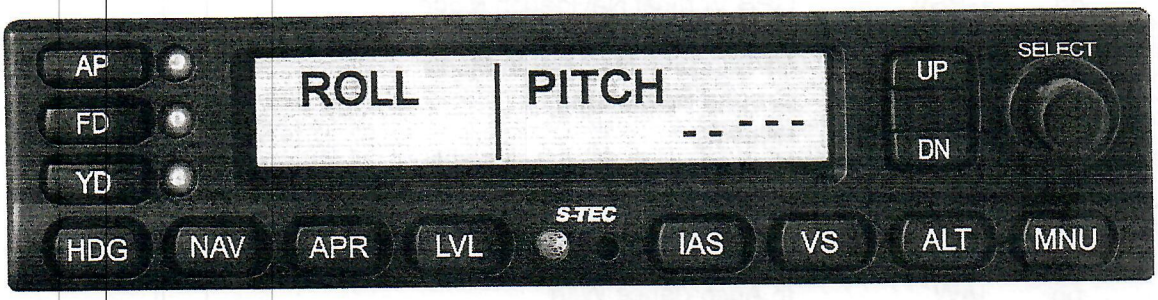
All system pilot control functions are from the instrument panel mounted Digital Flight Control System (as shown) and adjacent on-off and half-bank switches.



Programmer/Computer -01/-04



Programmer/Computer -05/-06



Programmer/Computer -07/-08

NOTE: For detail controls, annunciation, operation refer to the Pilot's Operating Guide and Reference P/N 87325.

2.1 ACRONYMS

a.	AC	Advisory Circular
b.	ADI	Attitude Director Indicator
c.	AFMS	Airplane Flight Manual Supplement
d.	ALT	Altitude
e.	ADAHRS	Air Data Attitude Heading Reference System
f.	ADC	Air Data Computer
g.	AHRS	Attitude Heading Reference System
h.	A/P	Autopilot
i.	APR	Approach
j.	ALT HOLD	Altitude Hold
k.	ATC	Air Traffic Control
l.	ATT	Attitude
m.	BC	Back Course
n.	CAN	Controller Area Network
o.	CFR	Code of Federal Regulations
p.	COM	Communications Port
q.	COMP. POT.	Compensator Potentiometer
r.	CRC	Cyclic Redundancy Code
s.	CWS	Control Wheel Steering
t.	DISC	Disconnect
u.	DN	Down
v.	DFCS	Digital Flight Control System
w.	EFIS	Electronic Flight Instrument System
x.	F.S.	Fuselage Station
y.	FAA	Federal Aviation Administration
z.	FAR	Federal Aviation Regulations
aa.	FD	Flight Director
bb.	FGC	Flight Guidance Computer
cc.	GA	Go-Around
dd.	GS	Glideslope
ee.	GPS	Global Positioning System
ff.	GPS/FMS	Global Positioning System/Flight Management System
gg.	GPSV	GPS Vertical Navigation Mode
hh.	GPSS	GPS Steering Mode
ii.	GPSL	GPS Lateral Navigation Mode
jj.	G.P.U.	Ground Power Unit
kk.	HDG	Heading
ll.	HIRF	High Intensity Radiated Fields
mm.	HR	Hour
nn.	HSI	Horizontal Situation Indicator
oo.	IAS	Indicated Air Speed
pp.	IAW	In Accordance With
qq.	ICA	Instructions for Continued Airworthiness
rr.	IMU	Inertial Measurement Unit
ss.	IN	Inches
tt.	LBS	Pounds
uu.	LOC	Localizer
vv.	LRU	Line Replaceable Unit
ww.	LVL	Level
xx.	NAV	Navigation
yy.	PC	Personal Computer
zz.	P/N	Part number
aaa.	PFD	Primary Flight Display
bbb.	REF	Reference

ccc.	REV	Reverse
ddd.	SEC	Second(s)
eee.	STC	Supplemental Type Certificate
fff.	TRIM INTR	Trim Interrupt
ggg.	USB	Universal Serial Bus
hhh.	VS	Vertical Speed
iii.	V	Volt
jjj.	VDC	Volts Direct Current
kkk.	VOR	Very High Frequency Omni-directional Radio Range
lll.	W/D	Wiring Diagram
mmm.	YD	Yaw Damper

3.0 MAINTENANCE INSTRUCTIONS

Servicing of the System 01326 is "On-Condition" but should be checked during any Continuous Inspection Program.

3.1 ANNUAL INSPECTION

Refer to Section 3.3.

3.2 SPECIAL INSPECTION

This section is not applicable.

3.3 REPAIR

Servicing of the System 01326 is "On-Condition" but should be checked during any Continuous Inspection Program (100 hr inspection / annual inspection) at a minimum.

Requirements under 91.411 and 91.413 are unchanged by the System 01326 installation reference FAR Part 43, Appendix E, Altimeter System Test and Inspection, FAR Part 43, Appendix F, ATC Transponder Tests and Inspections.

Autopilot servicing and/or maintenance are on-condition; however, the following inspections shall occur during the 100 Hr Inspection or Annual Inspection Program at a minimum. These inspections include:

a. Checking component installations against this document Appendix A, 7647, 7658, 76106, 76157, 76174, 76175, 76176, 76178, 76193, 76289, 76364, 76365, 76487, 76823, 761080, 761575 and 761657 (latest revisions).
b. Unless otherwise specified, mechanical fasteners shall be inspected for proper installation in accordance with AC 43.13-1B, Change 1, Chapter 7, Paragraphs 7-37, 7-41, 7-50, 7-64, 7-66, 7-87, 7-102, 7-103, 7-104 and 7-124, as applicable.
c. Inspect servo bridle cables and their attachments to the control cables for proper tension, frayed cables, proper runoff on the pulleys and corrosion.
d. **Pitch Servo** - Inspect installation of the mounting brackets, associated hardware and support structures for wear, cracking, corrosion and security. Verify bridle cable tension is 15 $\pm$ 2 lbs. and cable clamp nuts and bolts are set at 55 in-lbs. of torque. If the cable tension needs to be increased, loosen one end of the bridle cable at the cable clamps and tension the cable to within the above noted range. Torque the cable clamps to 55 in-lbs. Operate the elevator controls through their full range of travel and verify there is no chaffing or binding caused by this installation, reference Appendix A, Drawings 76157 or 76175 (latest revisions).
e. **Roll Servo** - Inspect installation of the mounting brackets, associated hardware and support structures for wear, cracking, corrosion and security. Verify bridle cable tension is 15 $\pm$ 2 lbs. and cable clamp nuts and bolts are set at 55 in-lbs. of torque. If the cable tension needs to be increased, loosen one end of the bridle cable at the cable clamps and tension the cable to within the above noted range. Torque the cable clamps to 55 in-lbs. Operate the aileron controls through their full range of travel and verify there is no chaffing or binding caused by this installation, reference Appendix A, Drawings 7647 or 76174 (latest revisions).

f. **Yaw Servo** - Inspect installation of the mounting brackets, associated hardware and support structures for wear, cracking, corrosion and security. Verify bridle cable tension is 15 ± 2 lbs. and cable clamp nuts and bolts are set at 55 in-lbs. of torque. If the cable tension needs to be increased, loosen one end of the bridle cable at the cable clamps and tension the cable to within the above noted range. Torque the cable clamps to 55 in-lbs. Operate the rudder controls through their full range of travel and verify there is no chaffing or binding caused by this installation, reference Appendix A, Drawings 76178, 76365, 761080 or 761657 (latest revisions).

g. **Trim Servo** - Inspect the installation of the mounting brackets, associated hardware and support structures for wear, cracking, corrosion and security. Verify bridle cable tension is within the specifications as called out by the aircraft manufacturer and turnbarrel locking clips installed. If the cable tension needs to be increased, tension the cable to within the above noted range with the turnbarrel. Install locking clips after tightening. Operate the elevator trim controls through their full range of travel and verify there is no chaffing or binding caused by this installation, reference Appendix A, Drawings 76106, 76176, 76364, 76487 or 76823 (latest revisions).

h. Verify control surface rigging is in accordance with aircraft manufacturer's maintenance manual.

i. Inspect wiring and connectors for corrosion, damage, loose pins, broken shielding, frayed wiring, cracking.

NOTE: For replacement of any of the autopilot wiring, cables or associated components, reference the documents in Appendix A associated with the action performed.

4.0 TROUBLESHOOTING INFORMATION

After maintenance tests and basic troubleshooting guidelines are listed below.

SYSTEM OPERATIONAL CHECKOUT AFTER MAINTENANCE

NOTE

Full system voltage is required for this test, either by running the aircraft engine or by using a suitable G.P.U.

NOTE

During the ADAHRS initialization period the aircraft must not be moved for three minutes, minimum.

1. AVIONICS MASTER SWITCH ..... ON
2. A/P MASTER SWITCH ---------- ON
3. TRIM MASTER SWITCH ---------- ON

NOTE

For proper manual electric trim function, both the A/P Master Switch and Trim Master Switch must be on during the autopilot self test.

4. Autopilot Self Test ---------- COMPLETE
5. ADAHRS INITIALIZATION ---------- COMPLETE
   ("A/P READY" is displayed)

NOTE

If the autopilot system fails to initialize it will annunciate "A/P FAIL" and not allow any mode to function.

NOTE

The below tests should be conducted with the control wheel held neutral to prevent the weight of the elevator from making a constant command for pitch trim while the ground test is being performed. As the tests are conducted, allow the autopilot to move the wheel while supporting it in the pitch axis.

6. A/P BUTTON ---------- PRESS
   (A/P, FD indicators illuminate and servos engage. Roll and Pitch annunciate. Steering bars appear on PFD or ADI with Flight Director bars)

7. PFD/HSI HDG BUG ---------- CENTER HDG BUG

8. PRESS HDG (on AP) ---------- ENGAGE

9. HDG BUG ---------- MOVE HDG BUG LEFT AND RIGHT
   (Aileron control and Steering bars should follow HDG bug)

10. IAS BUTTON ---------- PRESS
    (IAS indicates "115", Steering bar moves down and pitch control moves slowly in (forward))

11. ROCKER SWITCH ---------- PRESS AND HOLD UP
    (IAS number increases)

12. ROCKER SWITCH ---------- PRESS AND HOLD DN BUTTON
    (IAS number decreases)

13. VS BUTTON ---------- Press-VS
    (Indicates "0")

14. ROCKER SWITCH ---------- PRESS UP BUTTON UNTIL +500 IS DISPLAYED
    (Steering Bar moves up and pitch control moves slowly aft- pilot may have to assist a heavy stick)

15. ROCKER SWITCH ---------- PRESS DN BUTTON UNTIL -500 IS DISPLAYED
    (Steering bar moves down and pitch control moves slowly in (forward))

16. ALT BUTTON ---------- PRESS
    (ALT HOLD is displayed)

17. PITCH CONTROL ---------- SLOWLY PULL AFT
    (Autotrim runs nose down after 3 sec. and "Trim" is displayed. After 8 seconds "Trim-In-Motion" voice annunciated)

18. PITCH CONTROL ---------- SLOWLY PUSH FORWARD
    (Autotrim runs nose up after 3 sec. and "Trim" is displayed. After 8 seconds "Trim-In-Motion" voice annunciated)

19. PFD ALTIMETER ---------- SET ALTITUDE TO FIELD ELEVATION

20. VS MODE ---------- SELECT

21. ALTITUDE SELECTOR KNOBS (on AP) --SELECT AN ALTITUDE 200' BELOW FIELD ELEVATION

22. BARO KNOB (on PFD)----------SLOWLY REDUCE ALTITUDE
(Match altitude that selected on the A/P altitude selector. A/P should display "Altitude Hold" when the two altitudes match.)

23. CWS BUTTON ---------- PRESS AND HOLD
(Pitch and Roll servos disengage and controls are free. CWS annunciator is displayed)

24. CWS BUTTON ---------- RELEASE CWS BUTTON
(Servos reengage)

25. AP DISC/TRIM INTR button----------PRESS/HOLD
(All A/P modes and FD disconnect followed by aural tone and voice annunciation)

26. GO AROUND BUTTON----------PRESS
(FD mode illuminates. Roll and Pitch annunciate and pitch steering bar moves to 8° up position

NOTE

It is difficult to test the autopilot NAV and APR functions during a preflight test without a NAV signal generator; therefore, these modes may be left for in-flight evaluation.

MANUAL ELECTRIC TRIM TEST

1. TRIM MASTER SWITCH ----------VERIFY ON

2. PITCH TRIM SWITCH ----------MOVE FORWARD
(Trim should run nose down)

3. PITCH TRIM SWITCH---------- MOVE AFT
(Trim should run nose up)

4. AP DISC/TRIM INTR button---------- PRESS AND HOLD WHILE TRIM IS RUNNING
(Trim motion should stop)

5. AP DISC/TRIM INTR button ----------RELEASE
(Trim motion should resume)

NOTE

If either the manual electric trim or Autotrim fails any portion of the preflight test, turn the Trim Master switch off. DO NOT USE THE ELECTRIC TRIM UNTIL THE FAULT IS CORRECTED. With Trim Master switch off, the autopilot trim UP/DN or TRIM indicators and audio warning are activated. If the electric trim fails, or has an in-flight power failure, the system automatically reverts to an out-of-trim annunciation and audio warning. Should this occur, turn the Trim Master switch off, and revert to manual aircraft trim until the fault is corrected.

AUTOPILOT OVERRIDE TEST

With the autopilot engaged, grasp the control wheel and slowly overpower the roll and pitch servos to ensure proper clutch action. Also, overpower the rudder servo. Control movements should be smooth. If any unusual noise or feel occurs, inspect the servo installation and repair as needed.

Press the control wheel mounted A/P disconnect switch. The A/P will disconnect immediately and an audible warning tone will be heard for approximately six seconds.

CAUTION:

DO NOT OPERATE THE AIRCRAFT UNTIL ANY ABNORMAL OR UNUSUAL CONDITIONS ARE RESOLVED.

NOTE

BEFORE FLIGHT, VERIFY THAT THE AUTOPILOT IS DISENGAGED AND ALL TRIM SYSTEMS ARE SET FOR TAKEOFF.

NOTE

This completes pre-flight procedures. Before flight, verify that the autopilot, including yaw damper, is disengaged and that all trim systems are set for take-off.

Operation of the autopilot is described in FAA Approved Flight Manual Supplement ST-964-AFMS-0001. Specialized controls, annunciations, operation and interpretation are covered in the AFMS and in S-TEC Pilot's Operating Guide and Reference P/N 87325, which supplements the approved AFMS.

Only approved S-TEC dealers holding the appropriate FAA certification and using S-TEC Dealer Maintenance Manuals and S-TEC Special Tools may service the items in the System 01326. The System 01326 has Failure Annunciations to identify the system and/or sub-system that has failed.

System 01326 Troubleshooting Guide	
Symptom	Action
Failure to initialize: AP FAIL: (system does not allow any mode to function). NOTE: Primary System Failure If a primary system fails, the system will disconnect and annunciate all failures and disallow all modes.	a) Reset Autopilot Computer Circuit Breaker. b) Check Autopilot wiring harness IAW Drawing 10243, 10244, 10245 or 10246. Repair if required. c) Replace Autopilot Computer/Programmer. d) Reset A/P Master and Trim Master, allow system to initialize and perform self-test. e) Verify Servo connectors are connected and secure.
Failure to initialize: ATT FAIL: NOTE: Sub-System Failure The system will annunciate a failed input Attitude Reference Failure If, during the normal operation of the autopilot, the ADAHRS reverts to initialization mode, the system will disconnect all modes and annunciate the disconnect, then annunciate "ADAHRS INITIALIZING" as well. If the ADAHRS fails, the system will annunciate "ATT FAIL" and will not allow any mode of the autopilot to function.	a) Reset PFD/ADC/AHRS Circuit Breakers (Allow to initialize). b) Turn OFF then ON Autopilot Computer. c) Check PFD, ADC and AHRS wiring IAW Drawing 10243, 10244, 10245 or 10246. Repair if required. d) Ensure that all PFD, ADC and AHRS connectors are securely fastened. e) Check PFD, ADC and AHRS circuit breakers. f) Check AHRS alignment. g) Replace PFD/AHRS unit if found bad. h) Check Autopilot wiring harness IAW Drawing 10243, 10244, 10245 or 10246. Repair if required. i) Ensure that all Autopilot connectors are securely fastened. j) Replace Autopilot Computer.
A/P Pitch Axis Problems: Aircraft porpoising.	a) Check cable system friction. b) Check Cable tension, Aircraft and Bridle cables. c) Verify clutch settings. d) Check start-up voltage. e) Test pitot-static system for leaks.
A/P Roll Axis Problems: a) Aircraft wing rock b) Heading offset	a) Check cable system friction. b) Check Cable tension, Aircraft and Bridle cables. c) Verify clutch settings. d) Check start-up voltage. e) Check AHRS Alignment. f) Check heading system wiring.
A/P Trim Problems a) Trim does not drive from trim switch.	a) Check circuit breaker and trim master on. b) Check A/P Disconnect/Trim Interrupt wiring. Verify power 28 VDC at P1 34 at A/P Computer. c) Check Autopilot wiring harness IAW Drawing 10243, 10244, 10245 or 10246. Repair if required. d) Check Servo startup voltage. e) Verify servo clutch settings. f) Inspect Pitch Trim servo chain and verify tension. g) Check trim switch at control wheel. h) Replace A/P Computer.

Table 3: System 01326 Troubleshooting Guide

5.0 REMOVAL AND REPLACEMENT INFORMATION

5.1 GENERAL INSTRUCTIONS (if applicable)

Wire Separation

Whenever it becomes necessary to repair or replace a wire or group of wires, maintain the same wire separation that was used to install the system. Any wire added to or removed from the aircraft should satisfy separation requirements and wiring standards, in accordance with FAA Advisory Circular AC 43.13-1B, Chapter 11, Section 8, Paragraphs 11-96 (w), (z) and (dd).

Wire Routing

Whenever it becomes necessary to repair or replace a wire or group of wires, maintain the same wire routing that was used to install the system. Wires should be routed using proper bend radii, drip loops and slack to allow for easy access for maintenance repairs and inspection. Route wires in such a manner that it does not violate any regulatory safety requirements. (Ref: AC 43.13-1B, Chapter 11, Sections 8, Paragraphs 11-96 (b), (q-y) and (aa-gg) and Section 9).

Securing Wire Bundles

Whenever it becomes necessary to repair or replace a wire or group of wires, clamps of the proper size, type, and material should be used. Secure repaired or replaced wiring in the same manner that it was installed in the aircraft. (Ref: AC 43.13-1B, Chapter 11, Section 8, Paragraphs 11-96 (a-p) and Sections 9 and 11).

Wire Termination

Whenever it becomes necessary to terminate wires, care should be taken to ensure enough slack in wiring for proper servicing, repair, and fit. When stripping wires for termination, be sure not to nick or cut strands of wire. Check that proper crimping tools are used, and insure they are set to the proper setting for a correct crimp. Utilize the correct size terminals and/or splices according to wire gauge when crimping. If soldering is necessary, be sure a cold solder joint does not exist and that shrink tube of the proper size is installed over the wire and connection point.

NOTE: It is expected that the skilled technicians performing the inspections, tests, and troubleshooting of the System 01326 will adhere to the safety practices and operational procedures given in the basic aircraft manufacturers Maintenance Manuals.

All components can be removed with common tools and practices. Installation of components required for this alteration must be in accordance with the approved data for the System 01326. **Ensure aircraft power, and AVIONICS master switches are in the off position.**

5.2 REMOVAL – 01326 COMPUTER

- Reference Appendix A, Drawing 761575 (latest revision) to remove the Programmer/ Computer.
- Using a 3/32 Allen wrench, loosen the Allen screw in the bottom center of the Programmer/ Computer faceplate.
- Carefully pull the Programmer/Computer straight out of the tray.

5.3 INSTALLATION – 01326 COMPUTER

- Reference Appendix A, Drawing 761575 (latest revision) to install the Programmer/Computer.
- Carefully slide the Programmer/Computer straight into the tray.
- Using a 3/32 Allen wrench, tighten the Allen screw in the bottom center of the Programmer/Computer faceplate.

- Verify electrical bonding – The Programmer/Computer Tray must be electrically bonded to the airframe for Electromagnetic compatibility, HIRF and Lightning protection. Electrical bonding is accomplished through the mechanical mounting points of the equipment. Clean and alodine the bonding surface of the equipment and the airframe no more than 6 hours prior to installation. After installing the Programmer/Computer Tray, measure the resistance in milliohms between the equipment chassis and adjacent airframe structure. Verify that the resistance is 2.5 milliohms or less. If the resistance is greater than 2.5 milliohms, clean and re-alodine the bonding surfaces, re-install the equipment and repeat the milliohm resistance measurement.
- See Section 4 for after maintenance checkout procedures.
- See Section 6 for IMU leveling process.

5.4 REMOVAL – ROLL SERVO

- Reference Appendix A, Drawings 7647 or 76174 (latest revisions) to remove the roll servo.
- Remove the electrical connector.
- Install protective caps over the electrical connectors.
- Remove and retain the two cable clamps used to secure the bridle cable to the existing aileron cables.
- Remove and retain the required nuts, washers and bolts per the drawing used to secure the roll servo to the brackets.
- Remove and retain roll servo with bridle cable attached.
- Removal complete.

5.5 INSTALLATION – ROLL SERVO

- Reference Appendix A, Drawings 7647 or 76174 (latest revisions) to install the roll servo.
- Position roll servo (with attached bridle cable) on brackets and attach with retained nuts, washers and bolts required per the drawing.
- With aileron controls in neutral position, check the position of the bridle cable center ball and wrap bridle cable around capstan and attach ends of bridle cable to the aileron cable with the two retained cable clamps as stated in the drawing. Adjust bridle cable tension to 15±2 lbs. and torque cable clamp bolts to 55±5 in. lbs.
- Remove the protective caps from the electrical connectors.
- Install the electrical connector.
- See Section 4 for after maintenance checkout procedures.

5.6 REMOVAL – PITCH SERVO

- Reference Appendix A, Drawings 76157 or 76175 (latest revisions) to remove the pitch servo.
- Remove the electrical connector.
- Install protective caps over the electrical connectors.
- Remove and retain the two cable clamps used to secure the bridle cable to the existing elevator cables.
- Remove and retain the required nuts, washers and bolts per the drawing used to secure the pitch servo to the brackets.
- Remove and retain pitch servo with bridle cable attached.
- Removal complete

5.7 INSTALLATION – PITCH SERVO

- Reference Appendix A, Drawings 76157 or 76175 (latest revisions) to install the pitch servo.
- Position pitch servo (with attached bridle cable) on brackets and attach with retained nuts, washers and bolts required per the drawing.
- With elevator controls in full down position, check the position of the bridle cable center ball and wrap bridle cable around capstan and attach ends of bridle cable to the elevator cable with the two retained cable clamps as stated in the drawing. Adjust bridle cable tension to 15±2 lbs. and torque cable clamp bolts to 55±5 in. lbs.
- Remove the protective caps from the electrical connectors.
- Install the electrical connector.
- See Section 4 for after maintenance checkout procedures.

5.8 REMOVAL – YAW SERVO

- Reference Appendix A, Drawings 76178, 76365, 761080 or 761657 (latest revisions) to remove the yaw servo.
- Remove the electrical connector.
- Install protective caps over the electrical connectors.
- Remove and retain the two cable clamps used to secure the bridle cable to the existing rudder cables.
- Remove and retain the required washers, nuts and bolts per the drawing used to secure the yaw servo to the brackets.
- Remove and retain yaw servo and attached bridle cable.
- Removal complete

5.9 INSTALLATION – YAW SERVO

- Reference Appendix A, Drawings 76178, 76365, 761080 or 761657 (latest revisions) to install the yaw servo.
- Position yaw servo (with attached bridle cable) on the brackets and attach with retained washers, nuts and bolts per the drawing.
- With rudder controls in neutral position, check the position of the bridle cable center ball and wrap bridle cable around capstan and attach ends of bridle cable to the rudder cable with the two retained cable clamps as stated in the drawing. Adjust bridle cable tension to 15±2 lbs. and torque cable clamp bolts to 55±5 in. lbs.
- Remove the protective caps from the electrical connectors.
- Install the electrical connector.
- See Section 4 for after maintenance checkout procedures.

5.10 REMOVAL – TRIM SERVO

- Reference Appendix A, Drawings 76106, 76176, 76364, 76487 or 76823 (latest revisions) to remove the trim servo.
- Remove the electrical connector.
- Install protective caps over the electrical connectors.
- Remove and retain the required screws and standoffs from the idler pulley mounting plate.
- Loosen turnbuckles in the trim cable and remove bridle cable extension from around the idler pulley.
- Remove and retain the bolt, nut, washers used to secure the idler pulley buildup to bracket and servo. Remove and retain the idler pulley buildup hardware.
- Remove and retain the required nuts, washers and bolts per the drawing used to secure the trim servo to the brackets.
- Remove and retain the trim servo with bridle cable attached.
- Removal complete.

5.11 INSTALLATION – TRIM SERVO

- Reference Appendix A, Drawings 76106, 76176, 76364, 76487 or 76823 (latest revisions)to install the Trim Servo.
- Position trim servo (with bridle cable extension attached) onto brackets and attach using retained nuts, bolts and washers required per the drawing.
- Install hardware for idler pulley buildup and secure using retained bolt, nut and washers.
- Attach bridle cable extension to existing trim cable by connecting the turnbuckles to the lower trim cable.
- Pull left trim cable forward to trim servo and route bridle cable extension around idler pulley.
- Adjust trim system cable tension and trim tab travels to within the tolerance specified by the aircraft manufacturer and safety wire turnbuckles.
- Install the retained standoffs and screws onto the idler pulley buildup.
- Remove the protective caps from the electrical connectors.
- Install the electrical connector.
- See Section 4 for after maintenance checkout procedures.

5.12 WIRING DIAGRAMS

Reference Appendix A, Drawings 10243, 10244, 10245 and 10246 (latest revisions) for system integration and wiring information

6.0 IMU LEVELING PROCEDURE

6.1 ASSUMPTIONS

- The FGC is loaded with main processor application software version 1.3 or later, configuration file and calibration file.

6.2 REQUIRED EQUIPMENT

1) Laptop with available USB port running Windows 7 (32 or 64 bit) or later OS installed.
   - Administrator rights may be required
2) V1_3 ApCfgBuilder.exe Utility downloaded from the dealer section of the web page
   - https://genesys-aerosystems.com/dealer-section/autopilot-documents
3) CAN-USB adapter.

CAN-USB-COM

CAN-USB-COM-FD-ISO

Note: To purchase the latest model of the CAN-USB adapter, please contact Genesys Aerosystems Sales at Sales@genesys-aerosystems.com or by calling toll free 1-800-872-7832.

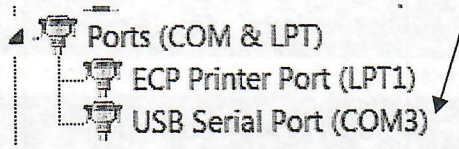
4) Digital protractor
5) Aircraft External Power Supply

6.3 ASSIGN COM PORT

It is important to know which PC COM port has been assigned to the USB-CAN device in order to point the software utilities to the correct port.

- Connect the USB-CAN converter to the computer. You may need to wait for the computer to install the new device.
- Use the PC Device Manager to find out which COM port has been assigned to the USB-CAN device
- Navigate to START->CONTROL PANEL->DEVICE MANAGER

- Expand "Ports (COM & LPT)" and note the USB Serial Port COM# number assigned



- Download and Install the Tera Term utility from an available website source

6.4 ESTABLISH PC TO CAN-USB CONNECTION

If this is a new USB-CAN converter unit and has not been previously used on a 01326 installation/setup, then you will need to carry out the following steps. Otherwise, skip to section 6.5 to establish the CAN-USB to 01326 connection.

NOTE

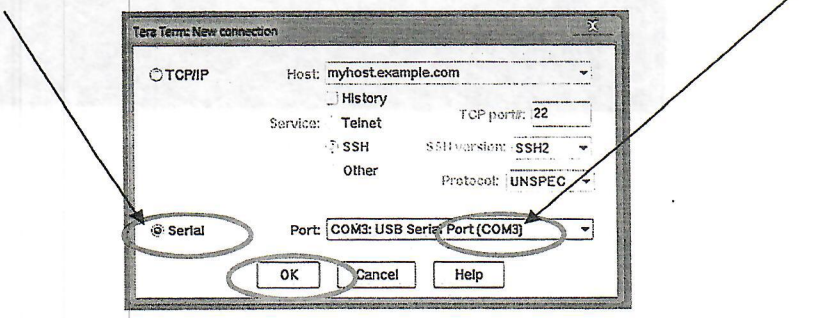
This section only needs to be done once with a new USB-CAN Converter.

6.4.1 PC TO CONVERTER CONNECTION (P/N CAN-USB-COM ONLY)

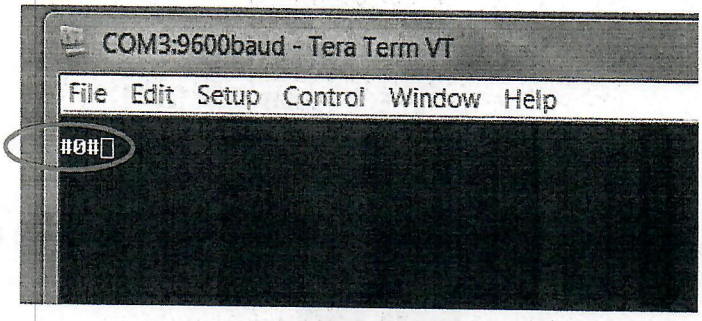
1) Connect the USB-CAN converter to the PC
   a. The PWR light should illuminate.

2) Launch the Teraterm utility

3) Select the Serial option in the "New Connection" window and select the USB port recorded in Step-3 and press OK

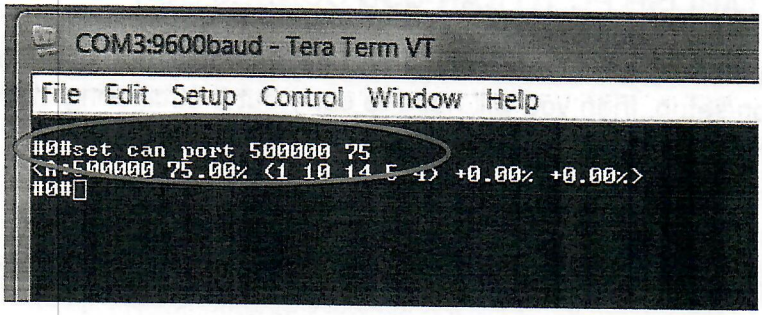


4) Press and **hold ~3 seconds** the programming button on the USB-CAN device (located next to the cable) until "#0#" is displayed in the upper LH corner of the command prompt.

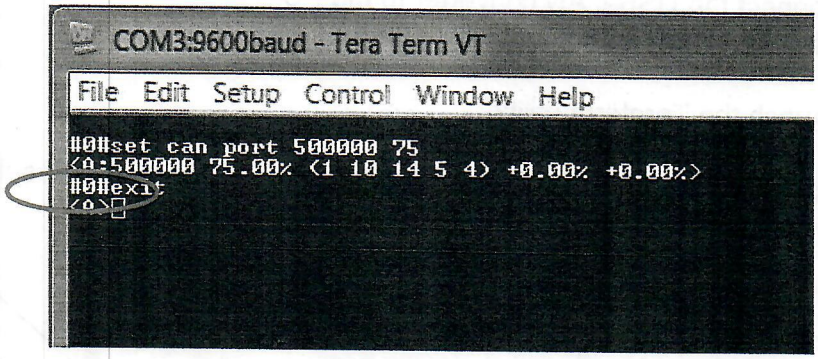


5) Enter the command "set can port 500000 75" and press enter on the PC Keyboard.

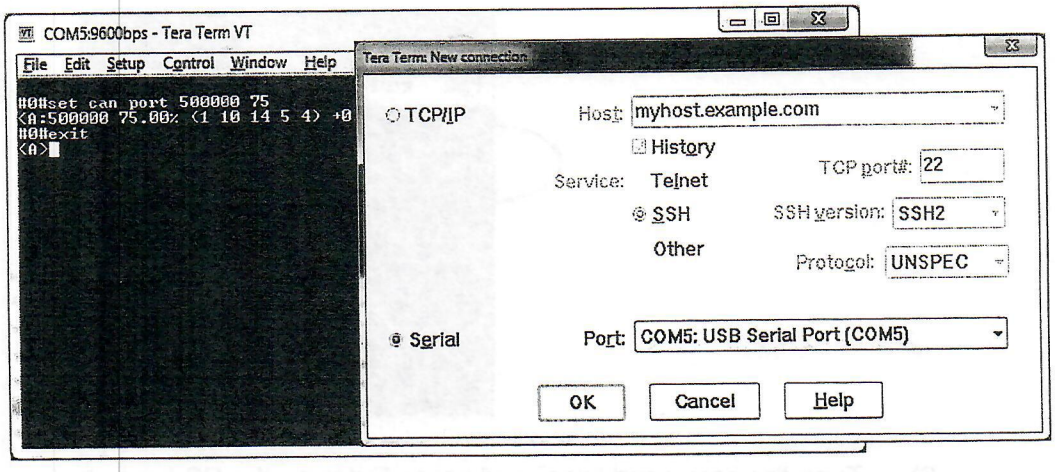
a. Some text should be displayed to verify the baud rate has been setup successfully.



6) Enter the command "exit" and press enter on the PC Keyboard



7) Close Teraterm

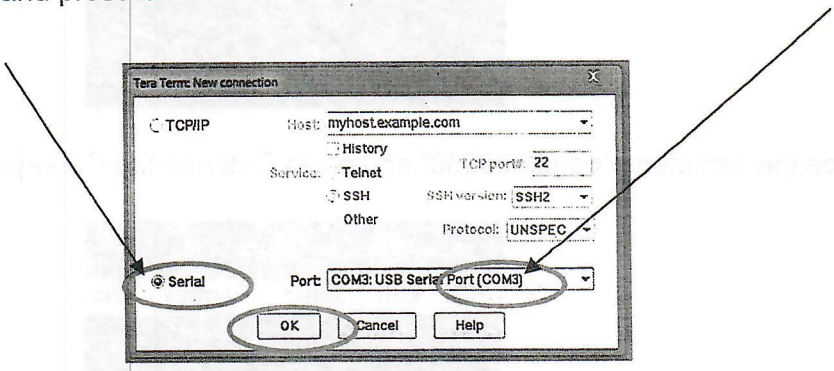


6.4.2 PC TO CONVERTER CONNECTION (P/N CAN-USB-COM-FD-ISO ONLY)

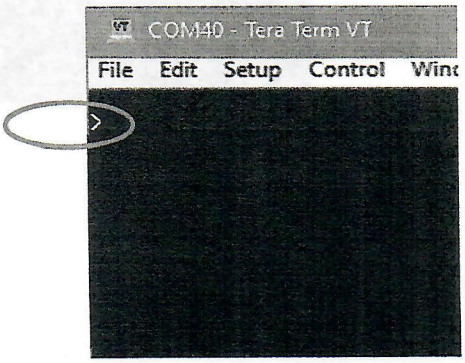
1) Connect the USB-CAN converter to the PC
   a. The PWR light should illuminate.

2) Launch the Teraterm utility

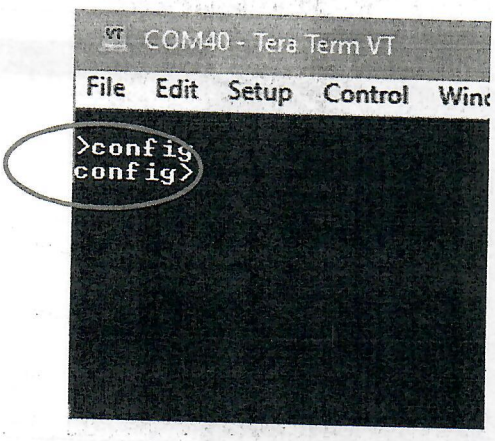
3) Select the Serial option in the "New Connection" window and select the USB port recorded in Step-3 and press OK



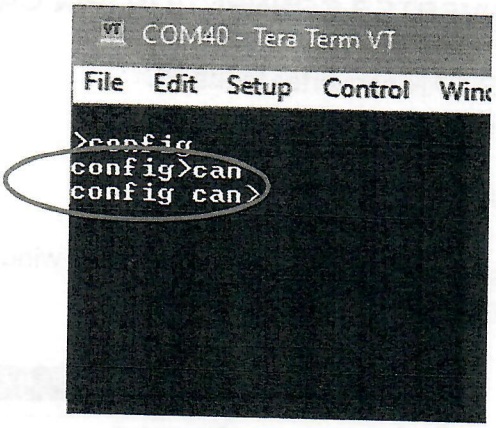
4) Press and **release** the programming button on the USB-CAN device (located next to the cable) to obtain the programming prompt



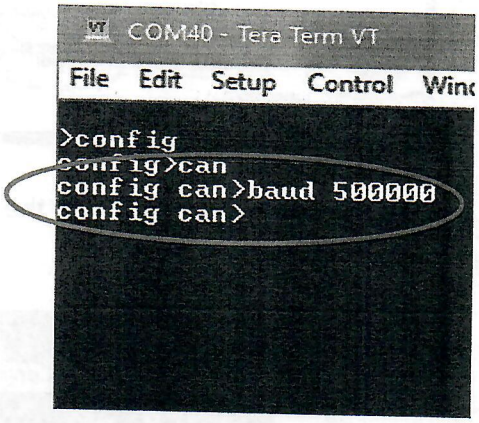
5) Type the command "config" and press Enter on the PC keyboard



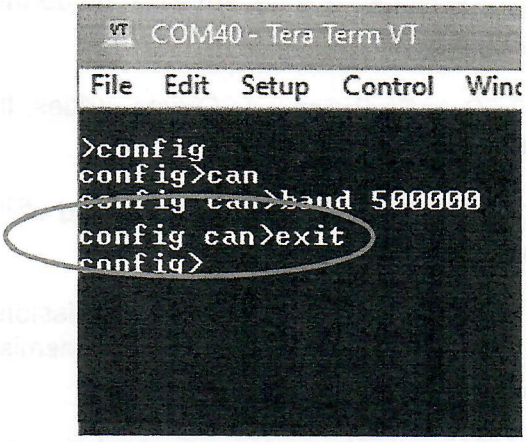
6) Type the command "can" and press Enter on the PC keyboard



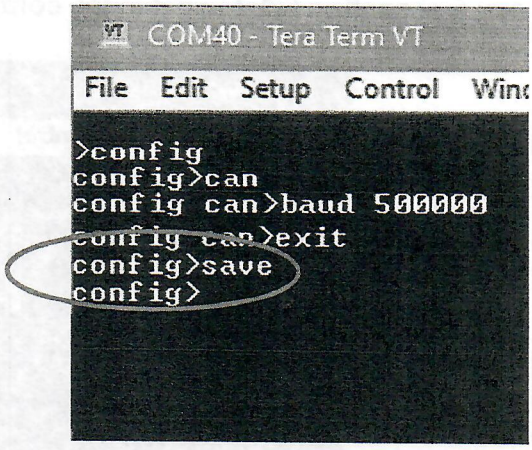
7) Type the command "baud 500000" and press Enter on the PC keyboard



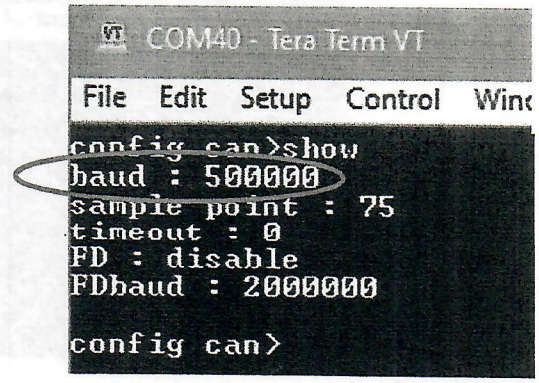
8) Type the command "exit" and press Enter on the PC keyboard



9) Type the command "save" and press Enter on the PC keyboard



Note: To confirm the baud rate setting, from the **config>** prompt, type "can" and press Enter then type "show" and press Enter on the PC keyboard. Type "exit" and press Enter on the PC keyboard to return to the **config>** prompt.



The **CAN-USB-COM-FD-ISO** Converter is now ready for use.

6.4.3 Changing the CAN Transition MODE in the converter

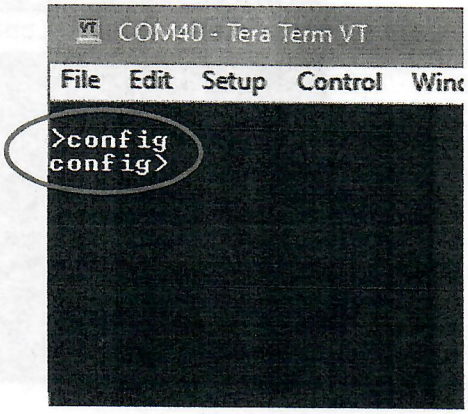
Note: This CAN-USB converter's transmission mode must be set to correctly operate with the S-TEC utility in use.

- For the S-TEC ApCfgBuiler & TSOVista utilities, the transmission mode must be set to **"normal"**
- For the S-TEC FieldAppLoader software load utility, the transmission mode must be set to **"one-shot"**

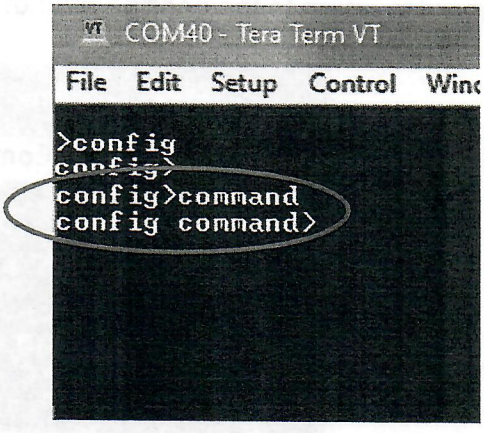
It is anticipated the converter will have the transmission mode established to **"normal"** as received from S-TEC or GridConnect. The transmission mode can be confirmed or changed via the following procedure.

Note: It is not necessary to reset the converter's baud rate when alternating between normal and one-shot transmission modes.

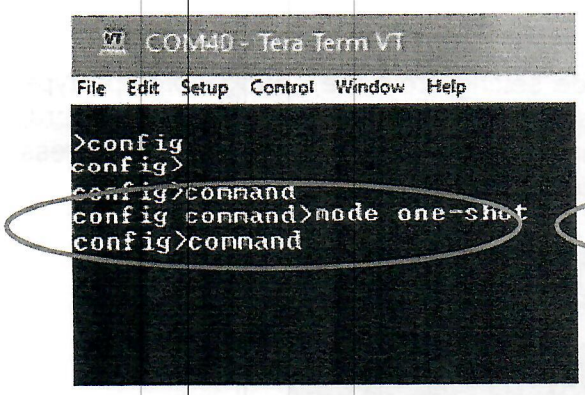
1) Follow steps 1 thru 5 of **section 6.4.2** to get to the **config>** prompt of the Tera Term utility,

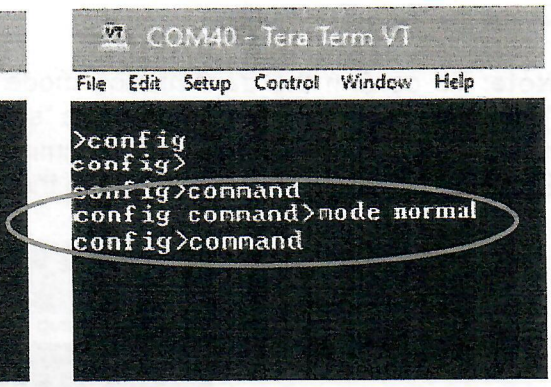


2) Type the command "command" and press Enter on the PC keyboard

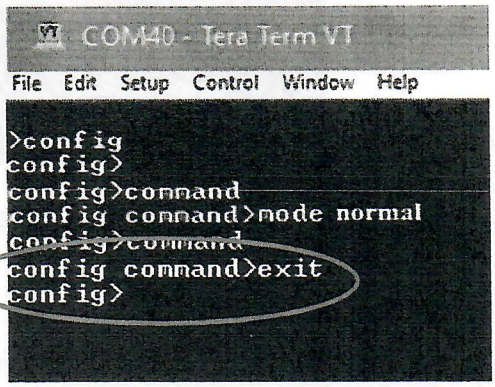


3) Type the command **"mode one-shot"** OR **"mode normal"** as required and press Enter on the PC keyboard

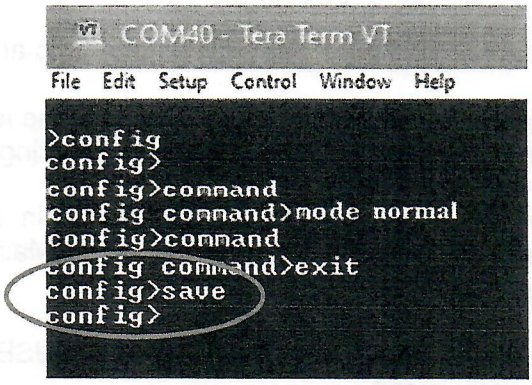




4) Type the command "exit" and press Enter on the PC keyboard

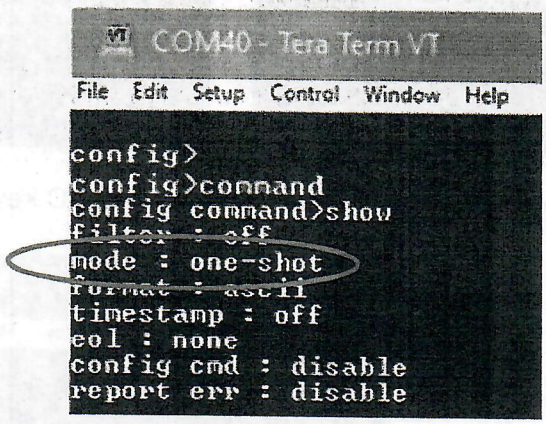


5) Type the command "save" and press Enter on the PC keyboard



6) Close the Tera Term utility

Note: To confirm the transmission mode setting, from the **config>** prompt, type "command" and press Enter then type "show" and press Enter on the PC keyboard; reference Figure 20 for current transmission mode setting. Type "exit" and press Enter on the PC keyboard to return to the **config>** prompt.



6.5 ESTABLISH CAN-USB TO 01326 CONNECTION

NORMAL PROCEDURE:

1) If this is a new USB-CAN adapter unit and has not been used previously with a 01326 installation/setup, then the PC to CAN-USB connection will need to be setup first. Refer to section 6.4 "Establish PC to CAN-USB Connection" and go to the section applicable for the adapter you are currently using.

2) With the laptop on, plug the CAN-USB adapter into an available USB port.

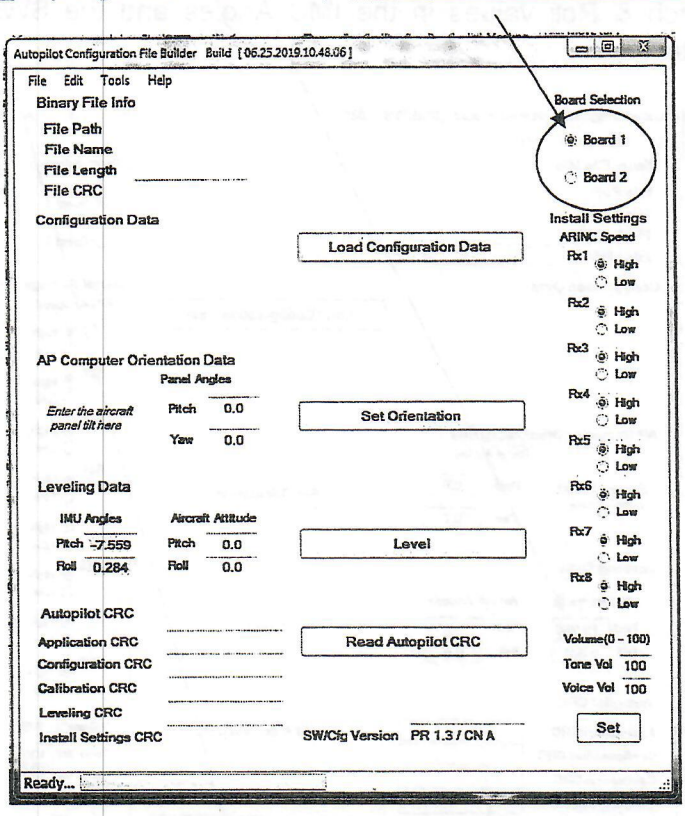
   a. The adapter must be connected directly to the laptop. A USB extension cable should not be used and will cause difficulty establishing communication with the 3100

   b. The CAN-USB adapter must be plugged in to the USB port on the laptop and initialized prior to connecting to the 3100 Maintenance port. Failure to do so will result in abnormal behavior of the laptop

3) Connect the 9 pin D-Sub connector of the CAN-USB adapter to the Internal Maintenance port (CAN 2) of the 3100.

   a. If needed, use a 9 circuit "pin-to-pin" extension cable. The cable must not be a crossover or null modem type.

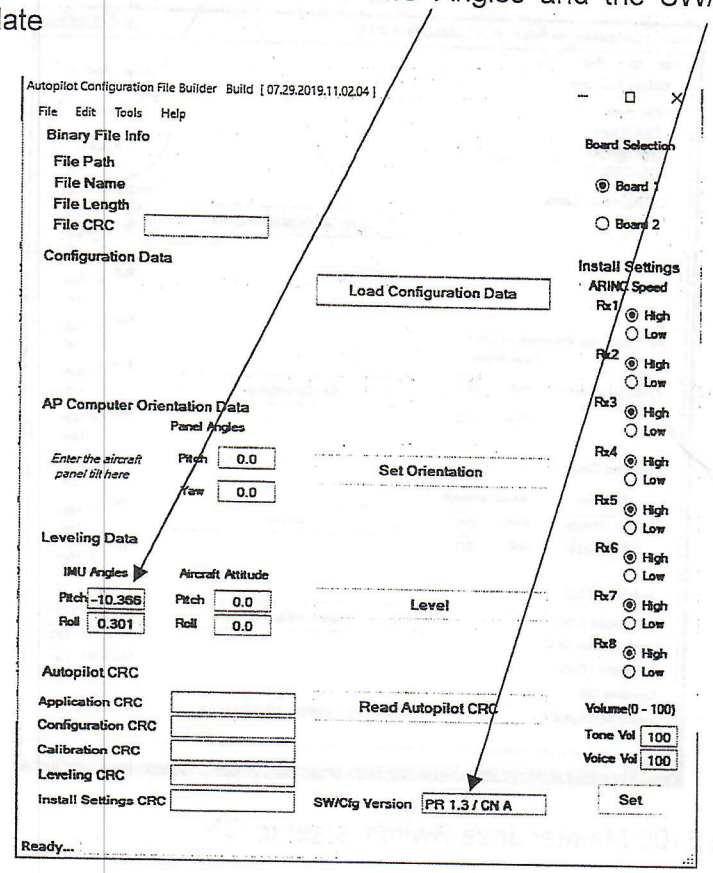
4) Open the V1_3ApCfgBuilder.exe utility. Ensure board 1 is selected



5) Ensure the 3100 Maintenance Switch is set to ON

6) Power on the 3100 system with both the AP Master and TRIM Master switches and wait several seconds

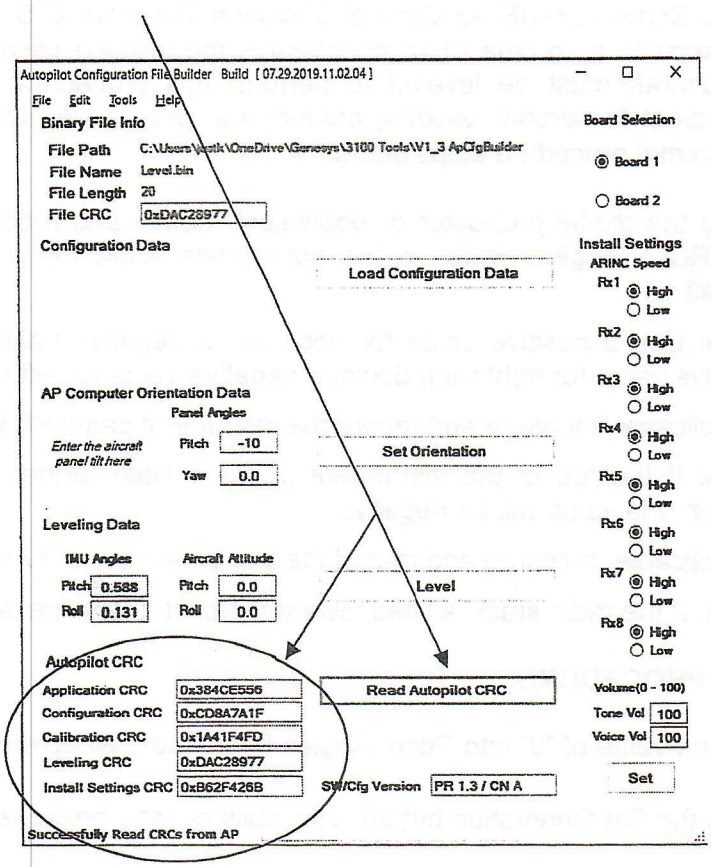
a. The Pitch & Roll values in the IMU Angles and the SW/Cfg Version box should populate



b. If the IMU angles remain 0.0 but the SW/Cfg Version box populates, ensure the CAN-USB adapter is connected to the Internal (CAN 2) maintenance port.

7) Click the Read Autopilot CRC button

a. The bottom of the window should display the message "Successfully Read CRCs from AP", and the Autopilot CRC boxes should populate. Allow up to 30 seconds to process.



b. If the message "Failed to Read Autopilot CRCs" is displayed, troubleshoot the laptop to CAN-USB to 3100 CAN port connections and ensure the Maintenance Switch is in the ON position

The installation setup must be completed, and the 3100 status at AP READY prior to continuing with the leveling procedure. Refer to Section 6.6 and Report No: 87338 for Install Settings and configuration.

If AP FAIL or ATTITUDE FAIL are displayed, identify and correct any installation issues prior to proceeding. If it is determined that a faulty servo is root cause of an AP FAIL, it is safe to proceed with the IMU calibration procedure.

NOTE: Ensure the pitot and static systems are vented to ambient air pressure during the leveling and calibration process. Failure to do so may result in a bad calibration data.

NOTE: For a 3100 systems with yaw damper (IE "Dual Board"), the calibration must be completed on one board at a time. Selecting the alternate board during the process may result in a bad calibration data.

6.6 LEVELING PROCEDURE

PREPARATION:

It is not necessary to level the aircraft to accomplish this procedure.

Note: Some non-US versions of Microsoft Windows O.S. change the decimal (.) character to a comma (,) which corrupts the leveling calibration. In these cases, the aircraft must be leveled to perform this procedure. Refer to the AMM or equivalent for aircraft levelling procedures. Use whole numbers (no decimals) for the normal procedure steps below.

1) Using the digital protractor or equivalent, obtain and record the aircraft's current PITCH and ROLL angles. Refer to the appropriate AMM for leveling reference points on the aircraft

   Note: Use a positive value for nose up, a negative value for nose down; Use a positive value for right wing down, a negative value for left wing down

2) If applicable, measure and record the instrument panel PITCH angle

   Note: If the top of the instrument panel is tilted further from the pilot than the bottom, the value will be negative

3) If applicable, measure and record the instrument panel YAW angle

   Note: If the radio stack is tilted toward the pilot, the value is positive.

NORMAL PROCEDURE:

4) Enter a value of "0" into Panel Angles Pitch and Yaw boxes

5) Click the Set Orientation button. This nulls out any previous data stored in the 3100.

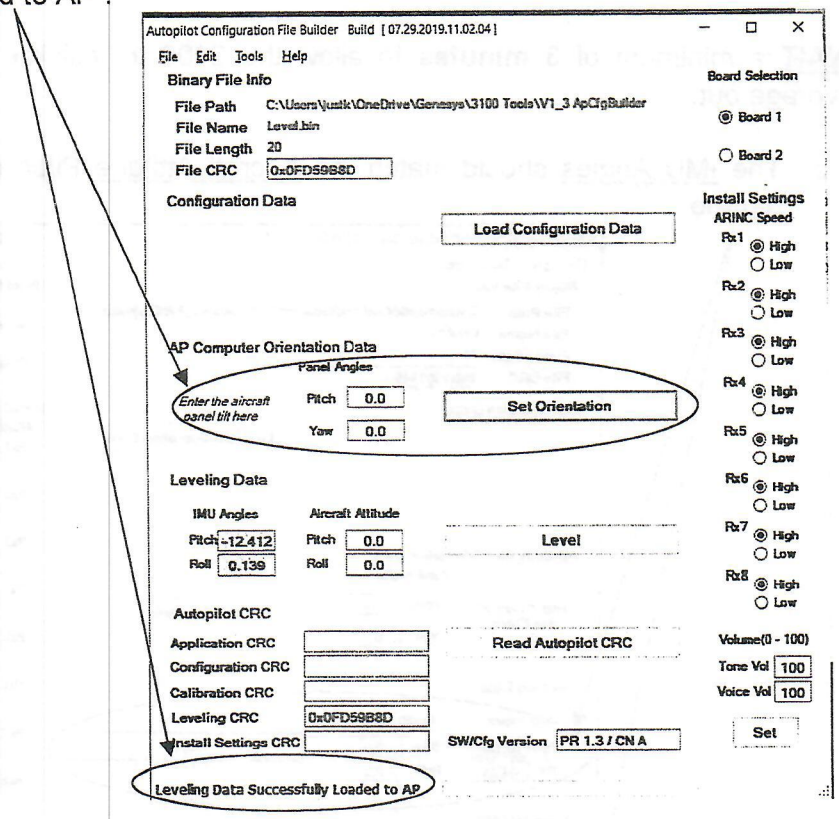
   a. The bottom of the window should display the message "Leveling Data Successfully Loaded to AP". Refer to figure in step 18a.

6) Enter the values determined during the preparation steps 2 & 3 into Panel Angles Pitch and Yaw boxes.

7) Click the Set Orientation button.

WAIT a minimum of **3 minutes** to allow the 3100 to initialize and the IMU values to average out

a. The bottom of the window should display the message "Leveling Data Successfully Loaded to AP".



b. If the message "Failed to Load Leveling Data to AP" is displayed, steps 7 thru 7 must be re-accomplished

8) Enter the aircraft's attitude values obtained in preparation step 1 into the Aircraft Attitude Pitch and Roll boxes.

Pitch: 0.9

Roll: 0.0

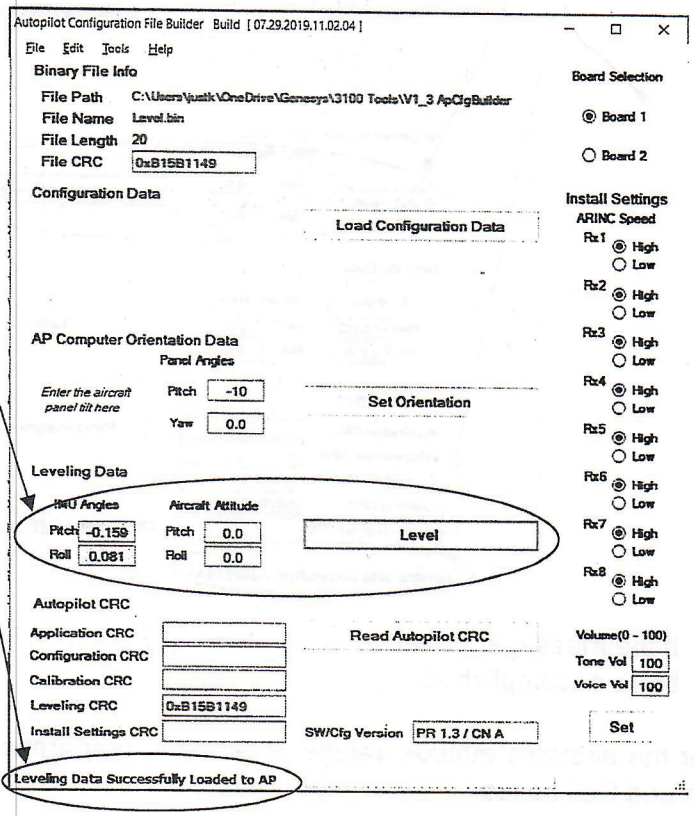
9) Click the Level button **once**

DO NOT click the Level button more than one time. Doing so may result in a failed calibration, and the 3100 entering an AP FAIL state

a. The bottom of the window should display the message "Leveling Data Successfully Loaded to AP"

WAIT a minimum of **3 minutes** to allow the 3100 to initialize and the IMU values to average out.

b. The IMU Angles should match the Aircraft Attitude Pitch and Roll values within 1 degree



c. If the message "Failed to Load Leveling Data to AP" is displayed, steps 8 & 9 must be re-accomplished

If the IMU Angles are not within the ≤1 tolerance, repeat step 4 thru 9. If the second attempt is unsuccessful, refer to the **Alternate Leveling Procedure**.

If the 3100 system has a Yaw Damper installed, select Board 2 in the top right corner of the tool and repeat steps 8 through 13 to calibrate the 2nd board.

Compare the IMU Angles for Pitch and Roll between Board 1 and Board 2 to ensure the values are within 1 degree of each other. If the values are not within the ≤1 tolerance, perform steps 10 through 15 on the Board with IMU Angles furthest away from current Aircraft Attitude.

ALTERNATE LEVELING PROCEDURE:

Based on the original factory IMU calibration of a board, the field calibration may not be within the ≤1 degree tolerance desired for optimum system performance. In such cases, an alternate levelling procedure may be more suitable. Use this alternate leveling procedure only for a board that won't calibrate within desired tolerance using the normal procedure.

1) Enter a value of "0" into Panel Angles Pitch box, and the Yaw value obtained in step 3 of the normal leveling procedure above.

2) Click the Set Orientation button

   a. The bottom of the window should display the message "Leveling Data Successfully Loaded to AP"

WAIT a minimum of **3 minutes** to allow the 3100 to initialize and the IMU values to average out

3) Calculate a PITCH Panel Angle value based on the following:

   a. PITCH panel orientation equals the IMU Angle less the Aircraft Attitude

Example: If the current IMU angle equals -9 degrees and actual aircraft attitude is +2 degrees (nose up), the calculated Pitch Panel Angle value will be **-11** (IE. -9-2 = -11).

4) Enter the calculated Pitch Panel Angle value from Step 3 into the Panel Angles Pitch field

5) Click the Set Orientation button

   a. The bottom of the window should display the message "Leveling Data Successfully Loaded to AP"

WAIT a minimum of **3 minutes** to allow the 3100 to initialize and the IMU values to average out

6) Enter the actual aircraft attitude values obtained in step 1 of the standard levelling procedure into the Aircraft Attitude Pitch and Roll fields

7) Click the Level button **once**

DO NOT click the Level button more than one time. Doing so may result in a failed calibration, and the 3100 entering an AP FAIL state

   a. The bottom of the window should display the message "Leveling Data Successfully Loaded to AP"

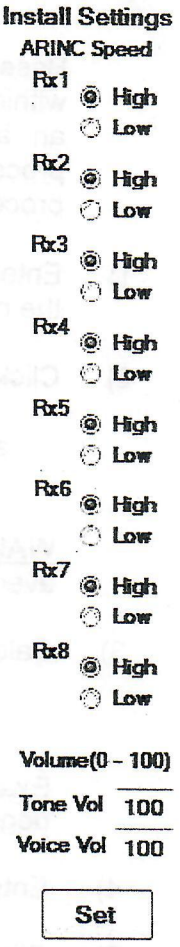
WAIT a minimum of **3 minutes** to allow the 3100 to initialize and the IMU values to average out

   b. The IMU angles should now match the values entered into the Aircraft Attitude Pitch and Roll fields within 1 degree.

6.7 CONFIGURATION AND VOLUME SETUP

The 01326 Rx ARINC port speeds MUST be setup correctly and match the speed of the ARINC transmitting device in order for the 01326 to pass the self-test. For guidance on the correct settings please refer to the relevant STC electrical wiring diagram notes.

1) Select the relevant ARINC speeds for each RX port. For unused ports the speed selection does not matter.
2) Set the Tone Volume between 0 – 100
3) Set the Voice Volume between 0 – 100
4) Click on the "Set" button to upload the configuration settings
5) If the autopilot is a dual board unit, these settings MUST be Set on the second board also. Select "Board 2" on the "Board Selection" tab and repeat steps 1 to 4



6.8 VERIFICATION

1) Ensure the Board Selection is set to Board 1
2) Click on "Read Autopilot CRC" and verify that the CRC fields populate.
3) If any fields are blank, repeat the applicable setup procedure and verify again.
4) For dual board systems:

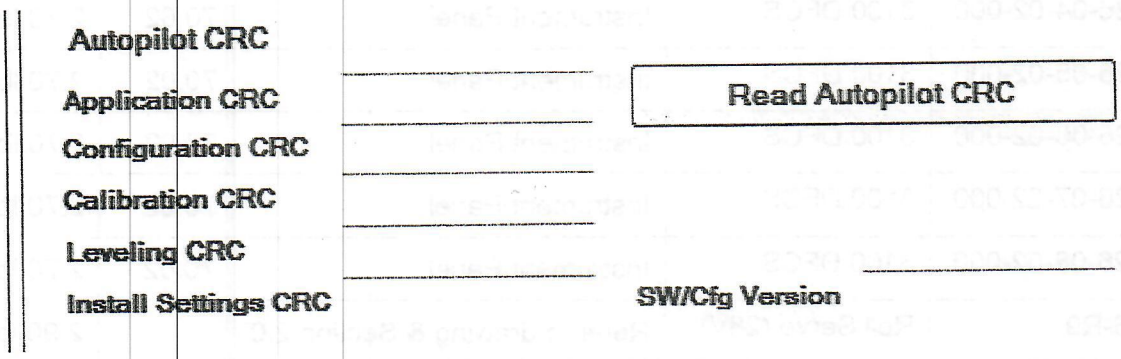
a. select Board 2 and repeat steps 1 – 3

b. Verify the Application CRC, Configuration CRC and Install settings CRC values are identical for both boards.

NOTE

The Calibration and leveling CRC's may differ since they are unique values to each board.

5) It is necessary to record all the CRC values for both boards.
6) Exit the V1_3ApCfgBuilder utility and power OFF the autopilot.
7) Place the Maintenance Switch back to the OFF position to ready the 01326 for flight use.



7.0 SPECIAL TOOLS NEEDED

A crimp tool and positioner/locator meeting MIL Specification M22520/1-01 is required to ensure consistent, reliable crimp contact connections for the rear d-sub connectors. These tools are available from ITT Cannon or other vendors:

ITT Cannon
666 E. Dyer Road
Santa Ana, CA 92705-5612

Phone (800) 854-3028
Fax (714) 557-4700

Insertion Tool:	ITT part#274-7048-000 (Desc. CIET-22D-KJ)
Crimp Tool (HD):	ITT part#995-0001-584 (Desc. M22520/2-01)
Locator Tool:	ITT part#995-0001-244 (Desc. TH25 TURRET HEAD)
Locator Tool (HD):	ITT part#995-0001-739 (Desc, M22520-2-06)
Locator Tool (HD):	ITT part#995-0001-734 (Desc. M22520-2-09)

S-TEC Special Tools (Reference Appendix A, Drawing 05166 (latest revision))

Clutch Adjustment Spanner	Part Number 6622-1	Drawing No. 6622 & 1
Clutch Adjustment Spanner	Part Number 66228-1	Drawing No. 66228 & 1

8.0 RECOMMENDED OVERHAUL PERIODS

No additional overhaul time limitations. Remove and repair on-condition.

9.0 AIRWORTHINESS LIMITATIONS

The Airworthiness Limitations Section is FAA approved and specifies maintenance required under §§ 43.16 and 91.403 of Title 14 of the Code of Federal Regulations unless an alternative program has been FAA approved.

There are no Airworthiness Limitations associated with this installation.

10.0 WEIGHT AND BALANCE

Component weights for the autopilot system are:

P/N	Name	Location	Station	Weight
01326-01-02-000	3100 DFCS	Instrument Panel	70.02	2.70 lbs.
01326-04-02-000	3100 DFCS	Instrument Panel	70.02	2.70 lbs.
01326-05-02-000	3100 DFCS	Instrument Panel	70.02	2.70 lbs.
01326-06-02-000	3100 DFCS	Instrument Panel	70.02	2.70 lbs.
01326-07-02-000	3100 DFCS	Instrument Panel	70.02	2.70 lbs.
01326-08-02-000	3100 DFCS	Instrument Panel	70.02	2.70 lbs.
0106-R9	Roll Servo (28V)	Refer to drawing & Section 2.0		2.90 lbs.
0108-P4	Pitch Servo (28V)	Refer to drawing & Section 2.0		2.90 lbs.
0106-Y10	Yaw Servo (28V)	Refer to drawing & Section 2.0		2.90 lbs.
0106-T2	Trim Servo (28V)	Refer to drawing & Section 2.0		2.90 lbs.

11.0 STRUCTURAL FASTENERS

Refer to Appendix A, Drawings 7647, 7658, 76106, 76157, 76174, 76175, 76176, 76178, 76193, 76289, 76364, 76365, 76487, 76823, 761080, 761575 and 761657 (latest revisions).

12.0 ANNUAL INSPECTIONS

Refer to Section 3.3.

13.0 STRUCTURAL INSPECTIONS

No structural inspections are required.

14.0 APPLICATION OF PROTECTIVE TREATMENTS

This section is not applicable.

15.0 COMMUTER CATEGORY (if applicable)

This section is not applicable.

16.0 REVISION AND DISTRIBUTION

The S-TEC Service Letter/Bulletin program will be utilized to inform aircraft operators of any changes to this ICA. Aircraft operators may contact S-TEC Corporation at 1-800-USA-STEC to verify that they have the latest revision of any of the documents included in this STC.

17.0 REFERENCE INSTALLATION DRAWINGS

Drawings:

05166 (latest revision)	Procedure, Clutch Torque Adjustment
10243 (latest revision)	W/D 01326 DFCS
10244 (latest revision)	Wiring Interface System 01326
10245 (latest revision)	W/D 01326 DFCS
10246 (latest revision)	Wiring Interface System 01326
7647 (latest revision)	Installation, Roll Servo
7658 (latest revision)	Installation, Control Wheel Switches
76106 (latest revision)	Installation, Trim Servo
76157 (latest revision)	Installation, Pitch Servo
76174 (latest revision)	Installation, Roll Servo
76175 (latest revision)	Installation, Pitch Servo
76176 (latest revision)	Installation, Trim Servo
76178 (latest revision)	Installation, Yaw Servo
76193 (latest revision)	Installation, Control Wheel Switches
76289 (latest revision)	Installation, Oxygen Line
76364 (latest revision)	Installation, Trim Servo
76365 (latest revision)	Installation, Yaw Servo
76487 (latest revision)	Installation, Trim Servo
76823 (latest revision)	Installation, Trim Servo
761080 (latest revision)	Installation, Yaw Servo
761575 (latest revision)	Installation, 01326 Computer
761657 (latest revision)	Installation, Yaw Servo
761658 (latest revision)	Wire Routing 01326 DFCS