ADVANCED Panel System – Advanced Control Module Installation Manual

LIMITED WARRANTY / AGREEMENT

Advanced Flight Systems Inc. (“AFS”) warrants its aircraft monitoring system instrument and system components to be free from defects in materials and workmanship for a period of one year commencing on the date of the first flight of the instrument or one year after the invoice date, whichever comes first. AFS will repair or replace any instrument or system components under the terms of this Warranty provided the item is returned to AFS prepaid.

This Warranty shall not apply to any unit or component that has been repaired or altered by any person other than AFS, or that has been subjected to misuse, abuse, accident, incorrect wiring, or improper or unprofessional installation by any person. THIS WARRANTY DOES NOT COVER ANY REIMBURSEMENT FOR ANYONE'S TIME FOR INSTALLATION, REMOVAL, ASSEMBLY OR REPAIR. AFS reserves the right to determine the reason or cause for warranty repair.

1. This Warranty does not extend to any engine, machine, aircraft, boat, vehicle or any other device to which the AFS monitoring system may be connected, attached, or used with in any way.

2. THE REMEDIES AVAILABLE TO THE PURCHASER ARE LIMITED TO REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE OF THE PRODUCT, AT THE SOLE DISCRETION OF AFS. CONSEQUENTIAL DAMAGES, SUCH AS DAMAGE TO THE ENGINE OR AIRCRAFT, ARE NOT COVERED, AND ARE EXCLUDED. DAMAGES FOR PHYSICAL INJURY TO PERSON OR PROPERTY ARE NOT COVERED, AND ARE EXCLUDED.

3. AFS is not liable for expenses incurred by the customer or installer due to AFS updates, modifications, improvements, upgrades, changes, notices or alterations to the product.

4. The pilot must understand the operation of this product before flying the aircraft. Do not allow anyone to operate the aircraft that does not understand the operation of the monitoring system. Keep the operating manual in the aircraft at all times.

5. AFS is not responsible for shipping charges or damages incurred during shipment.

6. No one is authorized to assume any other or additional liability for AFS in connection with the sale of AFS products.

7. IF YOU DO NOT AGREE TO ACCEPT THE TERMS OF THIS WARRANTY, YOU MAY RETURN THE PRODUCT FOR A FULL REFUND. IF YOU DO NOT AGREE TO ACCEPT THE TERMS OF THIS WARRANTY, DO NOT INSTALL THE PRODUCT.

8. This warranty is made only to the original purchaser and is not transferable. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OR OBLIGATIONS, EXPRESS OR IMPLIED, ORAL OR WRITTEN. AFS EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE PURCHASER AGREES THAT IN NO EVENT SHALL AFS BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING DAMAGES TO THE ENGINE OR AIRCRAFT, LOST PROFITS, LOSS OF USE, OR OTHER ECONOMIC LOSS. EXCEPT AS EXPRESSLY PROVIDED HEREIN, AFS DISCLAIMS ALL OTHER LIABILITY TO THE PURCHASER OR ANY OTHER PERSON IN CONNECTION WITH THE USE OR PERFORMANCE OF AFS' PRODUCTS, INCLUDING BUT NOT LIMITED TO STRICT PRODUCTS LIABILITY IN TORT.

IMPORTANT PRE-INSTALLATION NOTICE

Before installing the monitoring system, READ THE LIMITED WARRANTY / AGREEMENT. There is information in the Limited Warranty / Agreement that may alter your decision to install this product. IF YOU DO NOT ACCEPT THE TERMS OF THE LIMITED WARRANTY / AGREEMENT DO NOT INSTALL THE PRODUCT. The product may be returned for a refund if you do not accept the terms of the Limited Warranty / Agreement.

Before starting the installation, make sure that your planned installation will not interfere with the operation of any controls. The installer should use current aircraft standards and practices to install this product. Refer to AC 43.13-2A, *Acceptable Methods, Techniques, and Practices - Aircraft Alterations* and AC 43.13-1B, *Acceptable Methods, Techniques, and Practices--Aircraft Inspection and Repair*.

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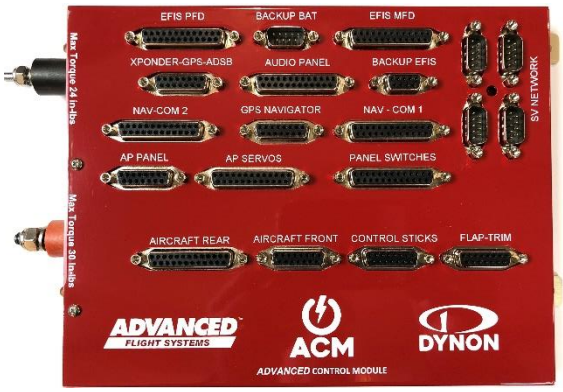
MANUAL REVISION HISTORY

REVISION	DATE	DESCRIPTION
1.0	12/31/2014	Original Release
2.0	4/9/2015	Updates
2.4	11/5/2015	IFD540 Configuration, Crimpers
2.5	12/23/2015	Updates
2.7	10/11/2016	SV EMS
3.0	12/16/2016	RV-14 Data, ACM Torque
4.0	9/1/2017	ACM-ECB
4.4	1/2/2018	Updated RV-14 Canopy and Harness Drawings
4.5	2/21/2018	Updated test procedure and CHT setup
4.6	2/23/2018	Updated IFR/VFR Testing
4.7	3/8/2018	Added Serial Port to plug chart
4.8	3/12/2018	Updated Install Checklist and Flap Testing
5.0	3/23/2018	Updated for ACM-ECB
5.1	4/6/2018	Added ACM-ECB Switch Settings
5.2	7/3/2018	Added Harness Drawing Section
5.3	2/1/2018	Added Panel Switch Operation Section
6.0	2/8/2018	Added ACM-ECB and Switch Operation, Harness Drawings

Overview

The Advanced Quick Panel system is based on our Advanced Control Module "ACM". The ACM is available in two different versions, fused or electronic circuit breaker. The fused version uses lighted ATO style fuses for circuit protection. The electronic circuit breaker "ECB" version has internal circuit current monitoring and will shut off a circuit if the current is too high. With the ACM-ECB you can monitor the current of each circuit and reset any tripped circuits from the EFIS. The ACM is the main power distribution center for the aircrafts electrical system. The avionics, headsets, aircraft lights, autopilot servos, trim servos, flap motor, control sticks and panel switches all get connected to the ACM. Using the ACM with its plug and play features vastly simplifies an aircraft's wiring and troubleshooting. The ACM also makes future upgrades extremely easy. Want to add an IFR Navigator in the future? No problem, just plug it into the ACM NAV-COM and GPS NAVIGATOR plugs. The complicated and time consuming (Audio Panel, GPS RS-232 data, NAV ARINC data and GPS ARINC) wiring is already done.

The ACM must never be used to power anything critical to Engine operation, including: Electronic Ignition, Electronic Fuel Injection or high pressure main electric fuel pumps.



ACM module with Electronic Circuit Breakers

ACM module with Fuses

ACM Features

- **27 dedicated channels of circuit protection including**: PFD, MFD, BACKUP EFIS, TRANSPONDER-ADSB, COM 1, NAV 1, COM 2, NAV 2, GPS NAVIGATOR, AUDIO PANEL, CABIN LIGHTS, DEFROST, ALTERNATOR, AUX POWER, STARTER, BOOST PUMP, PITOT HEAT, LEFT LANDING LIGHT, RIGHT LANDING LIGHT, NAV LIGHTS, STROBE LIGHTS, TRIM MOTORS, AP SERVOS, FLAP MOTOR.

  ACM-ECB ONLY: BACKUP ALTERNATOR, TAXI LIGHTS, SPARE POWER CIRCUIT, CABIN LIGHT SWITCH
- **Built in SV-ARINC module**
- **Multi Step Flap Positioning System**
- **Wig-Wag Lighting Circuit (airspeed controlled)**
- **Panel Dimmer**
- **Trim Controller (must have SV-AP-PANEL)**
- **SV Network Hub (4 Port + AP Servos)**
- **Panel Switch Interface with support for switch lights**
- **Control Stick Interface**

ACM Panel Switch Operation

The ACM can be used with either our standard switch modules using a 25 pin ribbon cable or custom switches wired to the ACM ***PANEL SWITCHES*** DSUB-25 pin connector. The operation of the panel switches should be the same for either a Skyview or AF-5000 equipped panel.

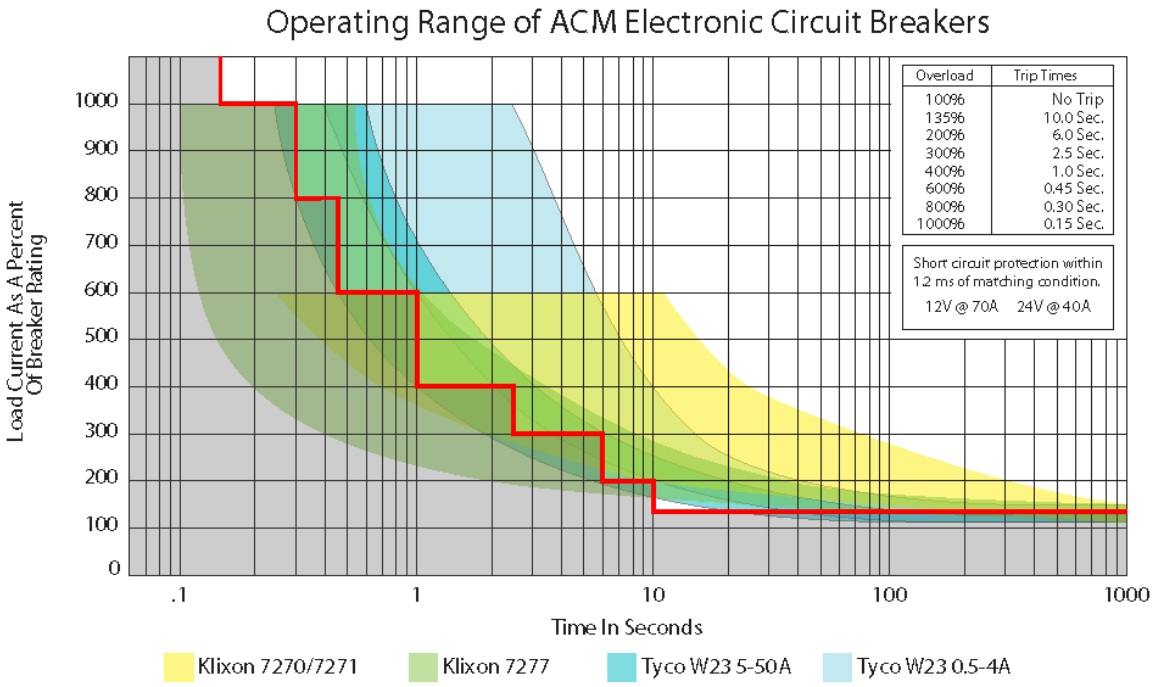
CAUTION: Do not fly the aircraft until you review and completely understand the proper use of each panel switch.

MASTER	Turns on the Aircraft Master relay providing power to the ACM Main Power Input Red Post, this will turn on the EFIS PFD. This switch does not connect to an ACM Input.
ALT	Signal to ACM to turn on the Alternator Field Power. ***You should never turn ON the ALT switch with the MASTER switch OFF***
AVIONICS	Signal to ACM to turn on the Avionics Bus in the ACM (EFIS MFD, Com1, Com2, Nav1, Nav2, Transponder, ADSB, Audio Panel)
AUTOPILOT	Signal to ACM to turn on the Autopilot Servo power. ***This switch must be ON before the Master Switch is turned on***. We recommend that this switch be left in the ON position and only turned off if you need to turn OFF power to the Autopilot Servos.
BOOST PUMP	Signal to ACM to turn on the Electric Boost Pump
STROBE /	Signal to ACM to turn on the STOBE and NAV Lights
NAV	Signal to ACM to turn on the NAV Lights only, No Strobe. This is normally used when flying in the clouds.
LAND LT /	Signal to ACM to turn on the Left and Right Landing Lights
PULSE	Signal to ACM to alternate the Left and Right Landing Lights "wig-wag mode" when above the configured airspeed. The pulse airspeed is set in the **SET** > **CAL** > 21. **Electrical Configuration** menu.
PITOT	Signal to ACM to turn on the Pitot Heat
DEFROST	Signal to ACM to turn on the Defrost fans
FLAPS	Optional panel switch to run the flaps up and down. Many installations will only have a flap switch on the control stick.

ACM-ECB Electronic Circuit Breaker Operation

The ACM-ECB is a solid-state system that replaces traditional buss bars, thermal circuit breakers, fuses and mechanical relays. The electronic circuit breaker is a solid-state circuit that monitors and reports the current for each circuit to an attached EFIS. If the current in the circuit exceeds the trip setting the ACM-ECB will turn off the circuit and report it on the EFIS screen. The tripped ECB can then be reset from the EFIS > ELECTRICAL menu. The current tripped state is preserved over a Master Relay power cycle for all channels other than the PFD EFIS circuit. All the circuits can be monitored from the EFIS Electrical page giving you far more information than a traditional circuit breaker or fuse.

CAUTION: Do not fly the aircraft until you review and completely understand the proper use of the EFIS Electrical Circuit Breaker Page.



The red line indicates the trip level of the ACM-ECB Channel

AF-5000 Electrical Page

Total ACM-ECB Current AMPs being used

ACM-ECB Input Voltage

ACM-ECB Status

Landing Light Mode

A **Green Bar** indicates the circuit is turned ON. The current Circuit Amperage being used is displayed to the right of the circuit name.

A **Red Bar** indicates the circuit is Tripped and turned OFF.

The bottom of the page displays the circuit information for the highlighted circuit:

- **Circuit Name**
- **Rating in AMPS**
- **Controlling Switch**
- **Status**

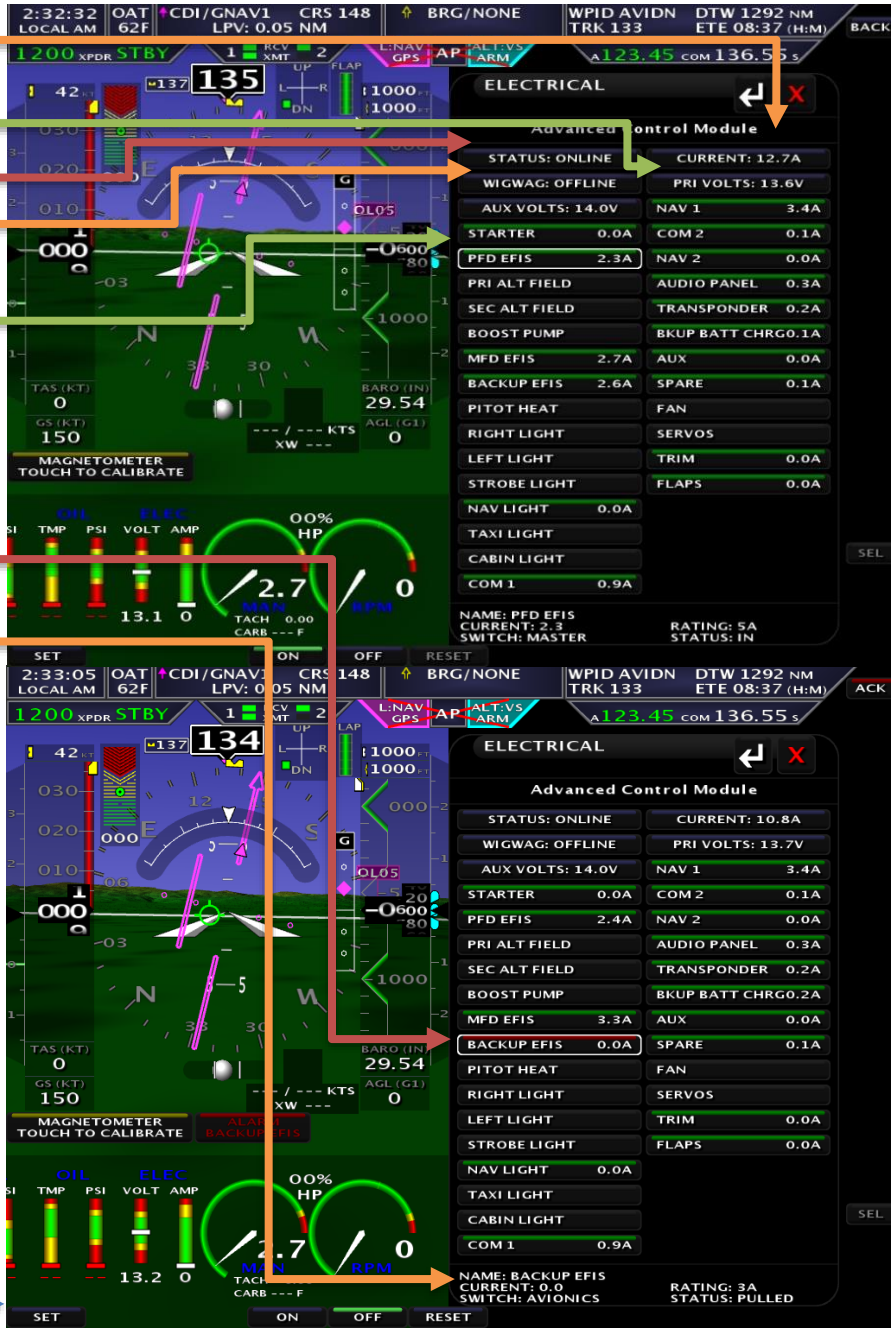
Highlighted Circuit Control Buttons

[SET] Lets you change the circuit breaker size

[ON] Turn ON the Circuit, Ignores the switch position

[OFF] Trip the Circuit, must be RESET before you can turn it back ON

[RESET] Reset the Circuit Breaker



The FLAPS circuit also has buttons that enable you to move the flaps UP and DOWN independent of the control stick or panel FLAP switch. You should verify proper flap direction from this page before programming the flap positions. If the flaps are backwards you can reverse the polarity from the EFIS CAL Flap Menu. ***If the panel or stick flap control buttons are backwards you will need to swap the button wiring.***

[DOWN] Move Flaps down

[UP] Move Flaps up

Dynon Skyview Electrical Page

Total ACM-ECB Current AMPs being used

ACM-ECB Input Voltage

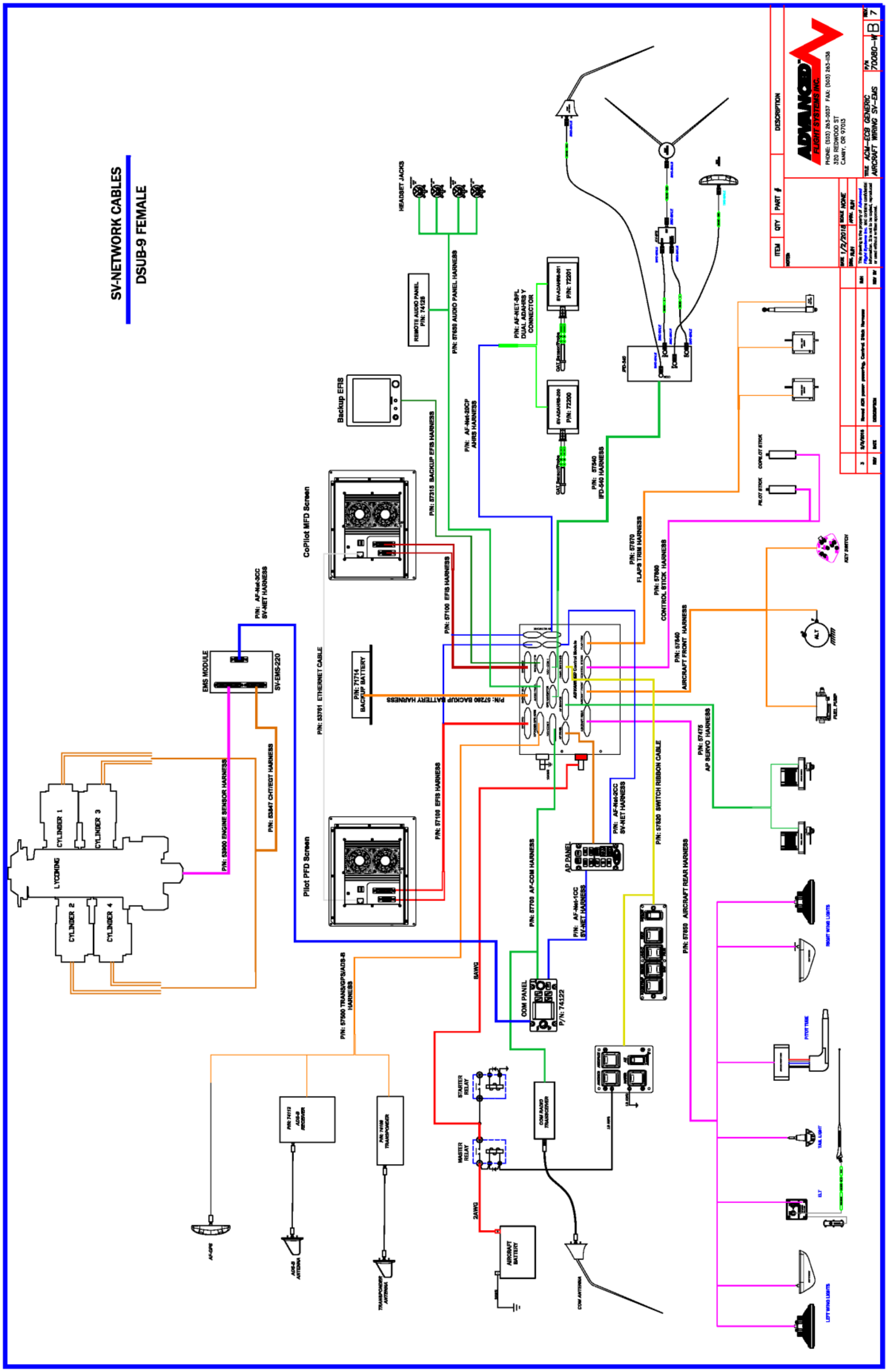
A **Green Bar** indicates the circuit is turned ON. The current Circuit Amperage being used is displayed to the right of the circuit name.

A **Yellow Bar** indicates the circuit is Tripped and turned OFF.

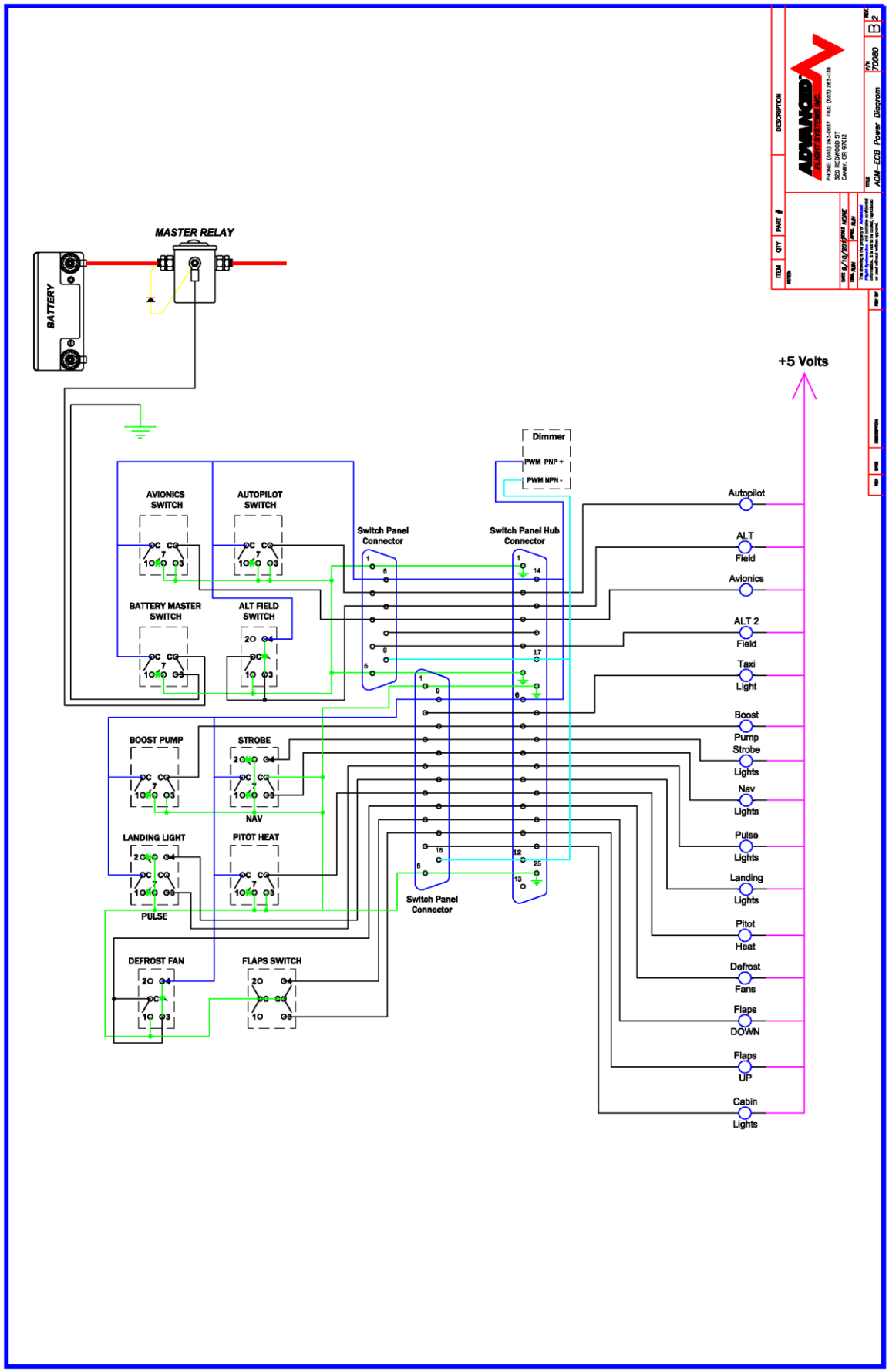
To Reset the Tripped circuit, use the right knob cursor to select and then press the knob.

In Flight Emergencies

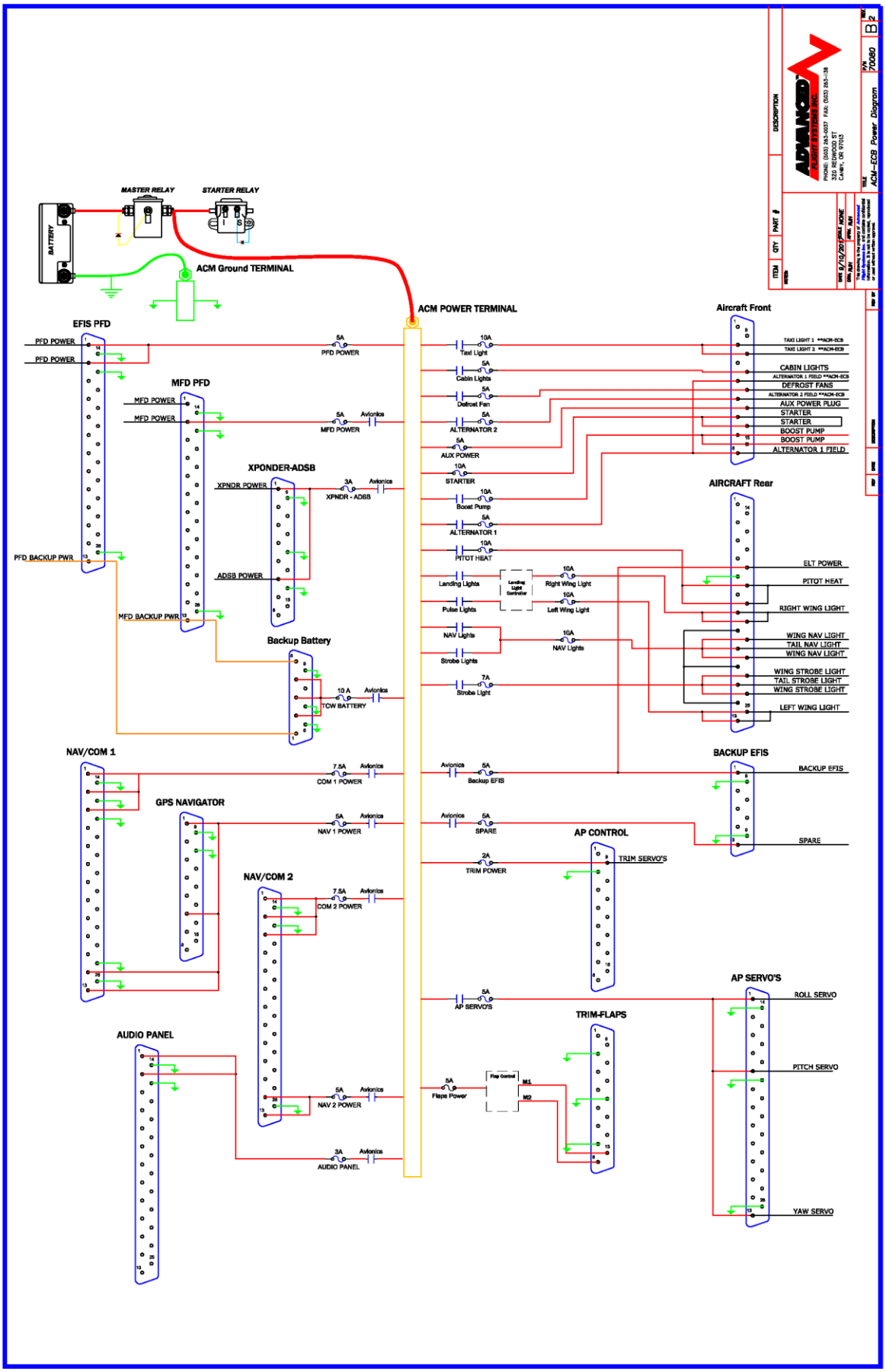
Tripped Circuit Breaker	Advanced Flight Systems does not recommend RESET-ing a circuit breaker in flight. If a circuit breaker trips you should trouble shoot the overcurrent problem after landing.
Electrical Smoke	Turn **OFF** the **ALT** and **Master** switches (Red Switches), Turn OFF all the remaining panel switches. The PFD and MFD EFIS along with the attached Dynon GPS should continue to operate from the backup battery. When the electrical smoke stops you can if necessary, turn **ON** the **MASTER** Switch followed by individual critical circuits from the EFIS Electrical Page. ***If you detect smoke after turning on a circuit, you should immediately turn it back OFF***
Failed Switch	On an AF-5000 you can turn on individual circuits from the EFIS Electrical Page, Skyview does not have this capability


SV-NETWORK CABLES
DSUB-9 FEMALE
Backup EFIS
CoPilot MFD Screen
Pilot PFD Screen
EMS MODULE
SV-EMS-220
LYCOMING
CYLINDER 1
CYLINDER 2
CYLINDER 3
CYLINDER 4
P/N: 53900 ENGINE SENSOR HARNESS
P/N: 53847 CHT/EGT HARNESS
P/N: AF-Net-3CC SV-NET HARNESS
P/N: 53761 ETHERNET CABLE
P/N: 57100 EFIS HARNESS
P/N: 57315 BACKUP EFIS HARNESS
P/N: 57650 AUDIO PANEL HARNESS
P/N: 57260 BACKUP BATTERY HARNESS
P/N: 71714 BACKUP BATTERY
P/N: 57700 AF-COM HARNESS
P/N: 57500 TRANS/GPS/ADS-B HARNESS
P/N: 57540 IFD-540 HARNESS
P/N: 57970 FLAPS TRIM HARNESS
P/N: 57860 CONTROL STICK HARNESS
P/N: 57840 AIRCRAFT FRONT HARNESS
P/N: 57475 AP SERVO HARNESS
P/N: 57820 SWITCH RIBBON CABLE
P/N: 57850 AIRCRAFT REAR HARNESS
P/N: AF-Net-2CC SV-NET HARNESS
P/N: AF-Net-1CC SV-NET HARNESS
AP PANEL
COM PANEL
P/N: 74122
HEADSET JACKS
P/N: 70080-W
7

ACM Panel Switch Wiring & Logic



ACM Power Diagram & Logic



Getting Started

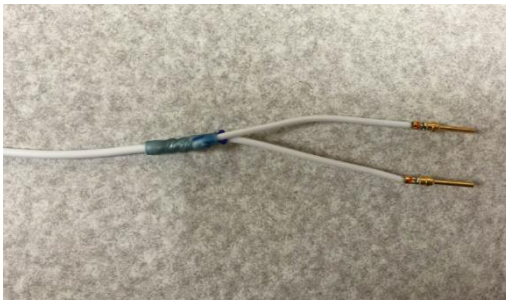
The following is a general recommendation on the steps required to install the Advanced Quick Panel:

- Disconnect the Aircraft Battery
- Remove the old panel from the aircraft (if upgrading). Label each wire as you disconnect them from the old panel switches and components.
- Mark all remote component locations and drill mounting holes using the information from the Remote Component Mounting section of this manual or supplied layout drawings.
- Cut any required clearance holes in the sub-panel.
- Remove EFIS screens from the new Panel for sub panel access. You will need to press the release buttons on the side of the USB data connector to get the cable to release
- Test fit new panel and trim panel ribs for clearance if required.
- Configure the ACM-ECB Jumpers on the back of the unit
- Mount the ACM Module.
- Connect the #8 main power wire from the battery master relay to the red power lug on the ACM. The main power wire should have a ¼" (0.250") ring terminal with a molded plastic cover. Torque to 30 in-lbs
- Connect the #10 airframe ground wire from the airframe ground to the black power lug on the ACM. The ACM main ground wire should have a #10 ring terminal with a molded plastic cover. Torque to 24 in-lbs
- Connect your existing aircraft Landing Lights, Nav Lights, Strobe Lights, Pitot Heat, and ELT to the supplied P/N: 57850 Aircraft Rear Harness ACM connector. You must limit the power on each D-Sub pin to less than 5 amps by using multiple pins at the connector. The recommended procedure is to use 20ga wire for each pin and then use a Solder Sleeve to connect the multiple wires to the larger gage wire going to the device.

SOLDER SLEEVE/1/4", Outside diameter: .050" - .200"

EDMO #: L-C-3
MFR #: STS L-C-3

Termination jackets consist of a heat-shrinkable, transparent, polyvinylidene fluoride jacket with an inner, pre-fluxed, solder preform and two thermoplastic sealing inserts. When heat is applied, the solder melts and flows to provide a superior connection between the ground lead and the shield. At the same time, the two thermoplastic sealing inserts melt and the outer sleeve shrinks to provide an environmentally protected termination. This L-C series of solder jackets does not have a ground lead.

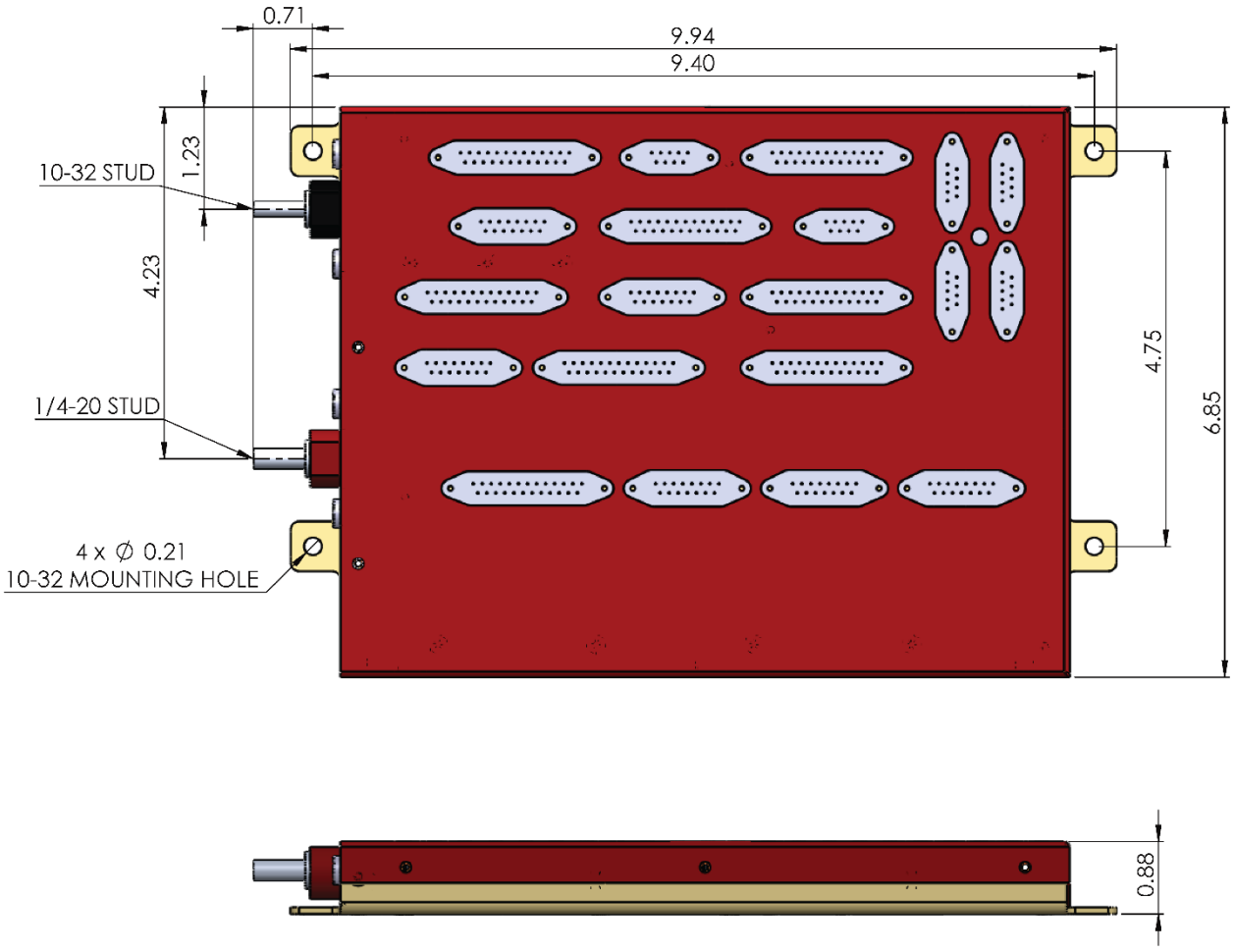


- Connect your existing aircraft Fuel Pump, Alternator, and Starter Switch to the supplied P/N: 57840 Aircraft Front Harness ACM connector.
- Connect your existing aircraft Control Stick switches to the supplied P/N: 57860 Aircraft Control Stick ACM connector.
- Connect your existing aircraft flap and trim motor wiring to the supplied P/N: 57870 Flap and Trim motor ACM connector.
- Mount the SV-200 and SV-201 ADAHRS units in the aircraft using the instructions from the AF-5000 manual.
- Mount the OAT sensor to the bottom of the wing. Wire the OAT sensor to the ADAHRS
- Plump Pitot,Static and AOA to the mounted ADAHRS
- Wire the ADAHRS to the spare SV Network DSUB-9 connector on the ACM module
- Wire the Autopilot servos to the ACM AP Servo connector
- Mount the remote components to the sub panel.
- Mount the AF-GPS module and connect to the ACM harness
- Connect aircraft Antennas to the remote radios (Transponder, Com, ADS-B in, …)
- Install the Engine Sensors
- Connect the Engine Sensors to the EMS and CHT/EGT Harness. The Engine Harnesses should route to the Left PFD EFIS display in the panel. BE sure to leave service loop of cable to make installing the EFIS PFD easier.
- Mount the Panel using the supplied mounting screws.
- Connect the aircraft Master relay to the screw terminals on the back of the Master Switch PCB board.
- Verify that you have protection diodes installed in your master and starter relay.
- Wire Aircraft Magneto P-Leads to the Key Switch.
- Carefully connect and route all the supplied panel harnesses to the ACM module.
- Double check that all ACM harnesses are connected to the correct DSUB connector.
- Install the EFIS PFD connecting the EFIS Main Connector, EFIS AUX connector, Ethernet, and USB data port wire.
- Install the EFIS MFD and connectors
- Connect the Aircraft Battery, verify that it is charged
- Turn on the Autopilot Panel Power Switch (should always be on before EFIS power up)
- Turn on the Panel Master Switch and verify that the EFIS PFD powers up
- Turn on the Panel Avionics Switch and verify that the EFIS MFD and Radios power up.

ACM-ECB Specifications

The ACM should be mounted on the sub panel behind the instrument panel. The Fused and Electronic Circuit Breaker versions are the same size and mounting. The ACM module should be mounted to the sub panel using four 10-32 screws and nut plates.

ACM Mounting



Do not over-torque the power terminal nuts, they are soft copper and will break if over-torqued.

Red Main Power Terminal Nut Torque: 30 in-lbs

Black Main Ground Terminal Nut Torque: 24 in-lbs

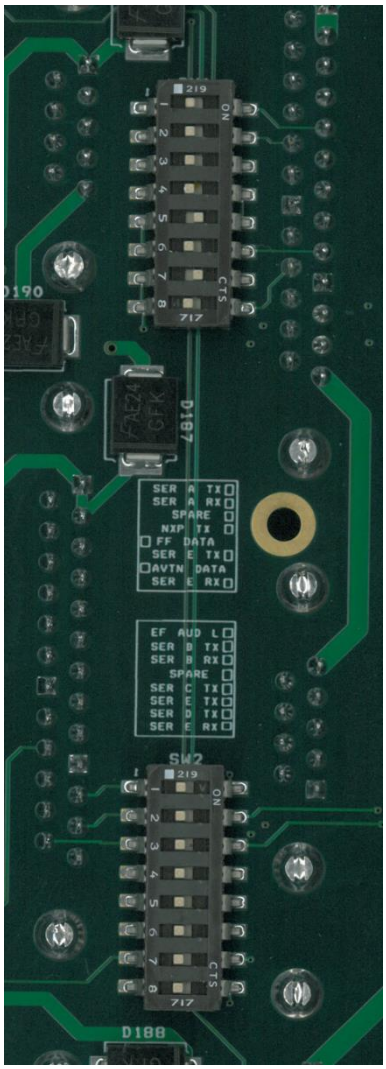
Component Weights

ACM-ECB Module	2 Lbs	3 oz
Master Switch Module		5 oz
Lower Switch Module		7 oz

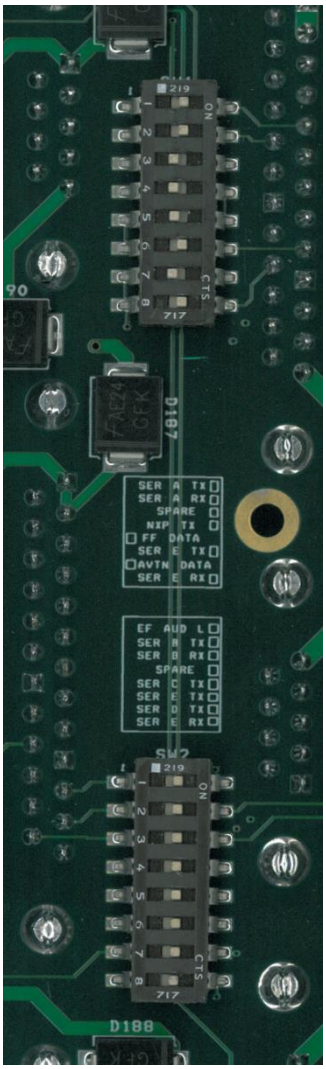
ACM-ECB Configuration Switch Settings

The Electronic Circuit Breaker version of the ACM has configuration switches on the back of the unit must be set for proper RS-232 serial port operation. The switch settings control how the EFIS PFD and MFD serial ports are routed to the attached devices. On a dual (PFD/MFD) EFIS screen AF-5000 system you will have a total of 10 serial ports to control attached devices. On a Skyview system both the PFD and MFD serial ports must be tied together so you end up with only 5 serial ports.

AF-5000 Settings



Skyview Settings



Dual EFIS AF-5000 Settings

SW1 >> CLOSED (ON) Grey is Switch Position

ACM RX<	PFD 0 TX	MFD 0 TX	>BACKUP EFIS RX
ACM TX>	PFD 0 RX	MFD 0 RX	<BACKUP EFIS TX
	Spare	spare	
NOT SUPPORTED	ARINC SP2 TX	GPS NAV RX	>GPS Nav Fuel Flow
PFD FUEL FLOW>	PFD 4 TX	GPS NAV RX	>GPS Nav Fuel Flow
	PFD 4 TX	MFD 4 TX	>DYNON GPS RX
PFD AVTN data<	PFD 4 RX	GPS NAV TX	<GPS Nav AVTN DATA
	PFD 4 RX	MFD 4 RX	<Dynon GPS TX

SW2 >> CLOSED (ON) Grey is Switch Position

EFIS AUDIO L			AUDIO PANEL
ACM TX>	PFD 1 TX	MFD 1 TX	>ELT/COM2 TUNE RX
	PFD 1 RX	MFD 1 RX	< COM2 TUNE TX
	SPARE	SPARE	
XPNDR RX<	PFD 2 TX	MFD 2 TX	>CO DETECT RX
XPNDR TX>	PFD 2 RX	MFD 2 RX	<CO DETECT TX
IFD RADIO TUNE RX	PFD 3 TX	MFD 3 TX	>ADSB RX
IFD RADIO TUNE TX	PFD 3 RX	MFD 3 RX	<ADSB TX

Single EFIS AF-5000 Settings

SW1 >> CLOSED (ON) Grey is Switch Position

ACM RX<	PFD 0 TX	MFD 0 TX	>BACKUP EFIS RX
ACM TX>	PFD 0 RX	MFD 0 RX	<BACKUP EFIS TX
	Spare	spare	
NOT SUPPORTED	ARINC SP2 TX	GPS NAV RX	>GPS Nav Fuel Flow
PFD FUEL FLOW>	PFD 4 TX	GPS NAV RX	>GPS Nav Fuel Flow
	PFD 4 TX	MFD 4 TX	>DYNON GPS RX
PFD AVTN data<	PFD 4 RX	GPS NAV TX	<GPS Nav AVTN DATA
	PFD 4 RX	MFD 4 RX	<Dynon GPS TX

SW2 >> CLOSED (ON)

EFIS AUDIO L			AUDIO PANEL
AUDIO P TX>	PFD 1 TX	MFD 1 TX	>ELT/COM2 TUNE RX
AUDIO P RX<	PFD 1 RX	MFD 1 RX	< COM2 TUNE TX
	SPARE	SPARE	
XPNDR RX<	PFD 2 TX	MFD 2 TX	>CO DETECT RX
XPNDR TX>	PFD 2 RX	MFD 2 RX	<CO DETECT TX
IFD RADIO TUNE RX	PFD 3 TX	MFD 3 TX	>ADSB RX
IFD RADIO TUNE TX	PFD 3 RX	MFD 3 RX	<ADSB TX

SKYVIEW EFIS Settings

SW1 >> CLOSED (ON) Grey is Switch Position

ACM RX<	PFD 0 TX	MFD 0 TX	>BACKUP EFIS RX
ACM TX>	PFD 0 RX	MFD 0 RX	<BACKUP EFIS TX
	Spare	spare	
NOT SUPPORTED	ARINC SP2 TX	GPS NAV RX	>GPS Nav Fuel Flow
PFD FUEL FLOW>	PFD 4 TX	GPS NAV RX	>GPS Nav Fuel Flow
	PFD 4 TX	MFD 4 TX	>DYNON GPS RX
PFD AVTN data<	PFD 4 RX	GPS NAV TX	<GPS Nav AVTN DATA
	PFD 4 RX	MFD 4 RX	<Dynon GPS TX

SW2 >> CLOSED

EFIS AUDIO L			AUDIO PANEL
AUDIO P TX>	PFD 1 TX	MFD 1 TX	>ELT/COM2 TUNE RX
AUDIO P RX<	PFD 1 RX	MFD 1 RX	< COM2 TUNE TX
	SPARE	SPARE	
XPNDR RX<	PFD 2 TX	MFD 2 TX	>CO DETECT RX
XPNDR TX>	PFD 2 RX	MFD 2 RX	<CO DETECT TX
IFD RADIO TUNE RX	PFD 3 TX	MFD 3 TX	>ADSB RX
IFD RADIO TUNE TX	PFD 3 RX	MFD 3 RX	<ADSB TX

Daniels Mil Spec Crimper AFM8
Part Number: M22520/2-01

AFM8 Positioner for Standard D-Sub Connectors
DMC Part Number: K13-1

Less expensive crimpers are available from a number of sources.
Crimper, D-Sub, Closed Barrel Contacts, 4-Way Indent AWG 26-20

CAUTION: Do not fly the aircraft until the following check list has been completed.

Never Power the system with an automotive battery charger and the aircraft battery disconnected.

Before Power is applied for the First Time

- Verify ACM-ECB Configuration Switch Settings
- Aircraft ground is properly connected to the ACM Module **BLACK** Terminal Verify relay protection diodes are installed on all large aircraft relays (Master, Starter, Avionics...etc)
- Pitot/Static and AOA plumbing is secured to the correct ports on the ADAHRS
- All Component Harnesses have been properly connected to the correct ports on the ACM module.

Applying Power for the First Time

- The **BLACK** Autopilot switch controls power to the autopilot servos. The Autopilot switch should be ON before powering up the EFIS screens.
- The **RED** Master Switch controls power to the Pilot PFD EFIS screen.
- The **BLACK** Avionics switch controls power to the MFD EFIS and all radios

AF-5000 EFIS Software Configuration (Must be done before first engine start and flight)

- Enter the EFIS instrument calibration menu by pressing the [SET] button followed by holding the [CAL] button on both EFIS screens.
- Scan for Network devices using the 2. SV-NETWORK Menu from the PFD EFIS.
- Press the PFD Update Button in the SV-Network Menu is any devices indicate they need updating.
- Verify that both EFIS screens are getting ADAHRS and Engine Data.
- Calibrate Trim Positions
- Configure and Test the Flaps

Flap Buttons

a. Verify that the flaps run in the correct direction using the Flaps Up and Down Buttons on the CHECK > ELECTRICAL Page. If they are backwards swap the motor leads or use the Reverse Polarity setting in the CAL > FLAPS menu

b. Verify that the flaps run in the correct direction using the panel mounted flap switch or Stick Grip buttons. ***If they are backwards you MUST Swap the wires to the flap switch or buttons.***

c. Verify that the Flap position value changes in the CAL > Flaps menu when you move the flaps.

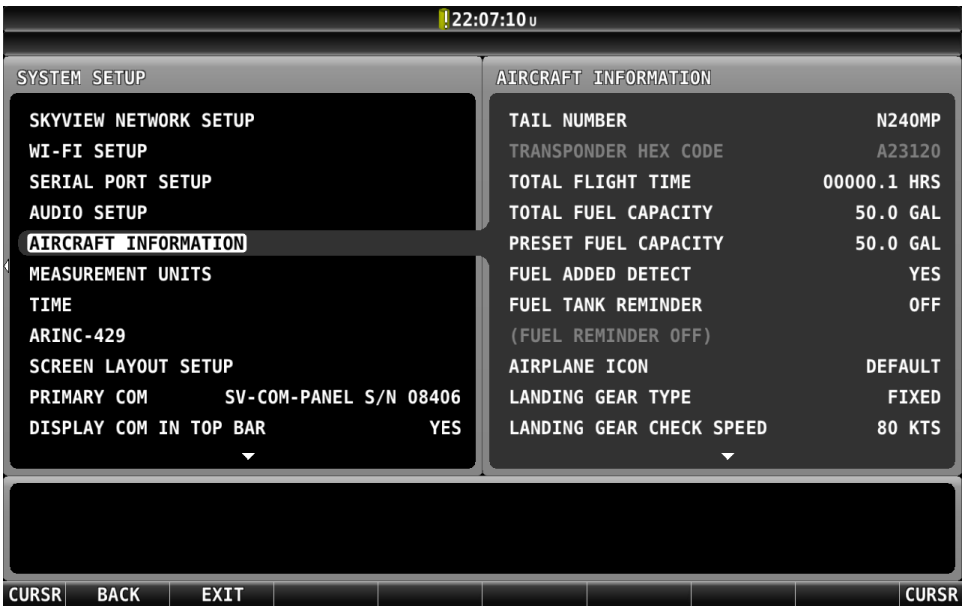
d. Program the Flap positions in the CAL > Flaps menu

e. Verify that the flaps stop at the correct locations.

- Calibrate Autopilot servos
- Test Autopilot servos
- Verify that the Engine parameters are correct on both EFIS screens. Configure the engine sensor types and range markings for your engine. (CHT – J type, EGT K-type, Oil Pressure, Fuel Pressure, …._
- Verify that all transponder settings are correct in both EFIS screens, including aircraft N Number
- Calibrate and verify the Fuel Tank sensors.
- Get a Pitot/Static and Transponder Test before the first flight.

Skyview HDX EFIS Software Configuration (Must be done before first engine start and flight)

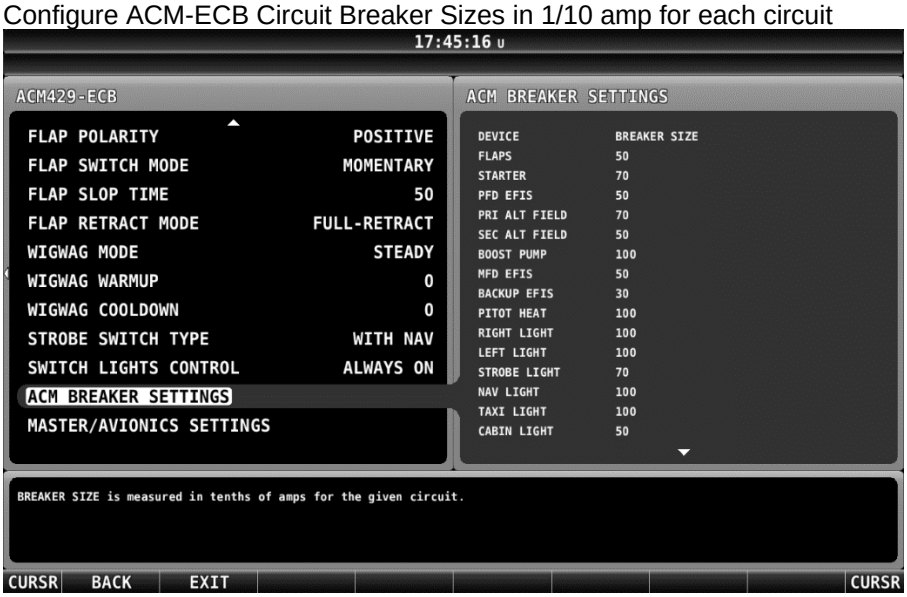
- ***Verify that your HDX screens are running software version 15.4 or newer, update if needed.***
- Enter the EFIS instrument calibration menu by holding down the right two buttons on the PFD
- Enter Aircraft Information: Tail Number, Total Fuel Capacity, …



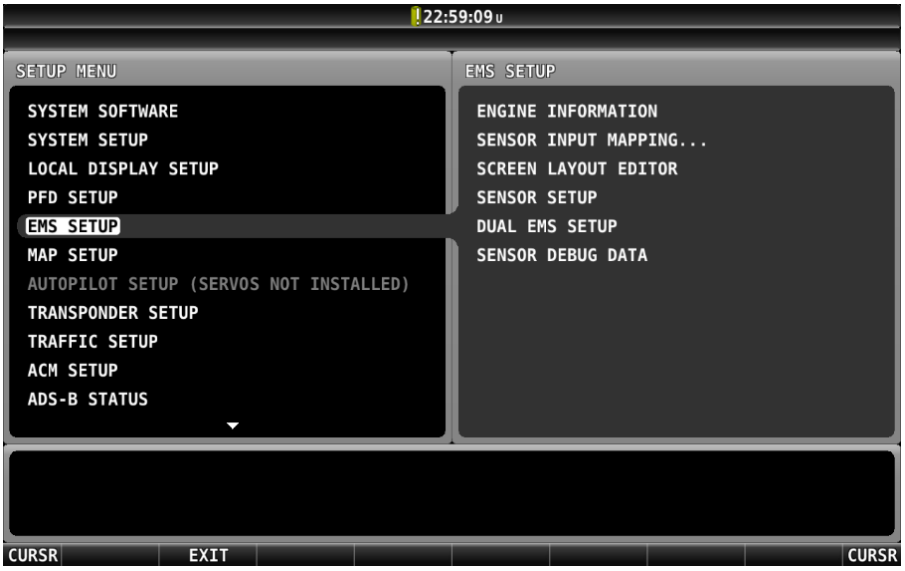
- Scan for Network devices by pressing the DETECT button in SKYVIEW NETWORK SETUP

- Configure ACM SETUP

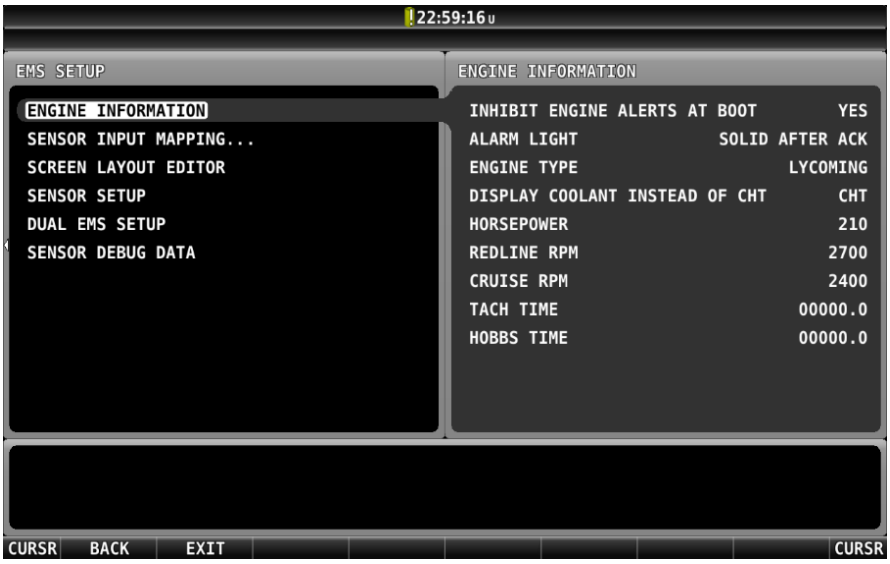
- Configure ACM-ECB Circuit Breaker Sizes in 1/10 amp for each circuit



- Configure SV-EMS from the EMS Setup page to match your engine sensors.

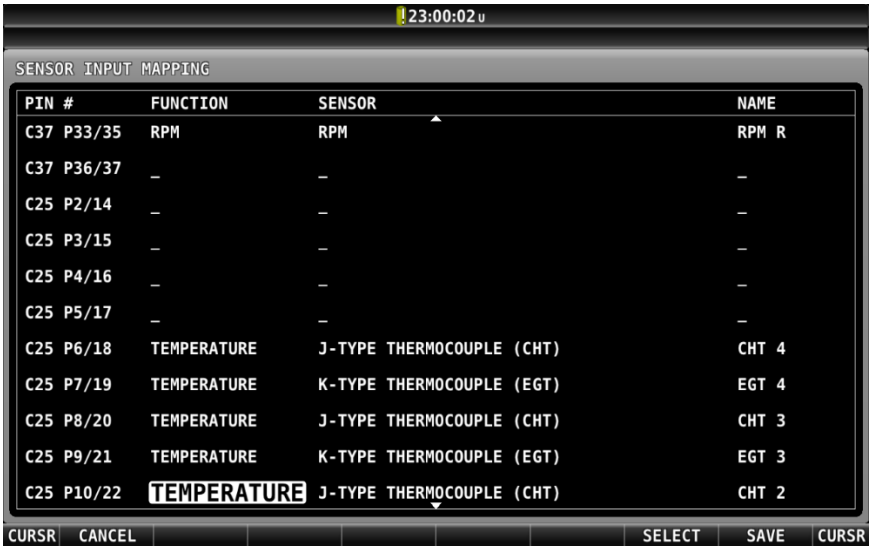


- Configure Engine Information

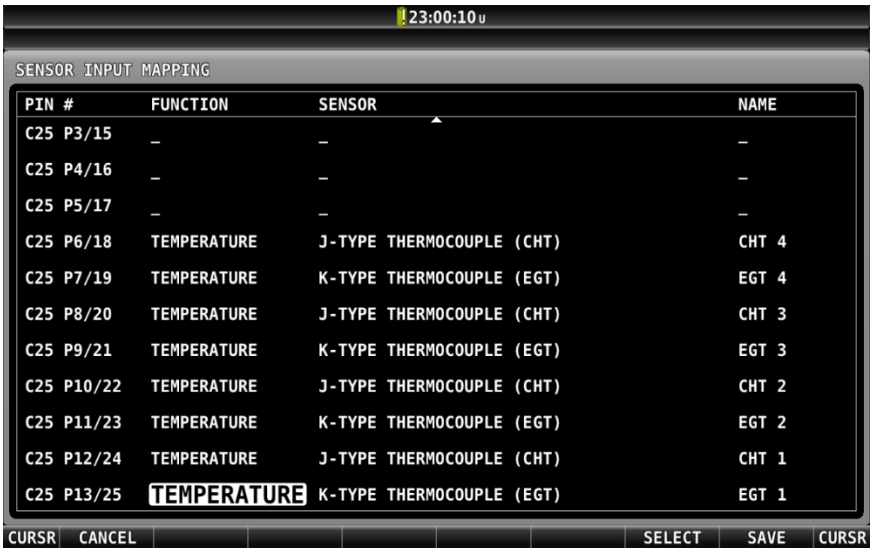


- Configure SV-EMS Sensor Input Mapping to match your engine sensor wiring

*The Flaps, Aileron and Elevator Trim do not use the SV-EMS inputs



- Configure SV-EMS C25 Pins for CHT and EGT Probes



- Configure Skyview SENSOR SETUP for each engine gauge

- Configure Skyview Serial Ports

  Serial Port 1 : Advanced CTRL Module

  Serial Port 2 : NMEA 9600 OUT for ELT Data

  Serial Port 3 : SV-XPNDR-261

Serial Port 4 : SV-ADSB-472

Serial Port 5 : SV-GPS-250 or SV-GPS-2020

- Calibrate Trim Positions

- Configure and Test the Flaps

a. Verify that the flaps run in the correct direction using the Flaps Up and Down Buttons on the ELECTRICAL Page. If they are backwards swap the motor leads or use the Reverse Polarity setting in setup menu.

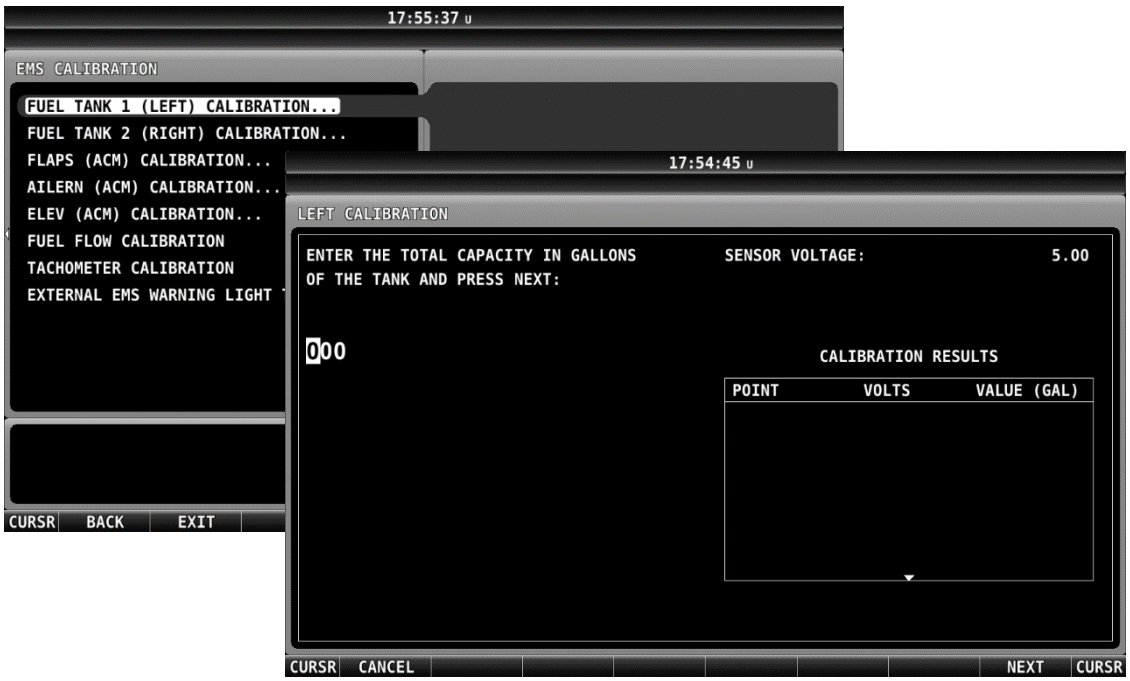
b. Verify that the flaps run in the correct direction using the panel mounted flap switch or Stick Grip buttons. ***If they are backwards you MUST Swap the wires to the flap switch or buttons.***

c. Verify that the Flap position value changes in the Setup > Flaps menu when you move the flaps.

d. Program the Flap positions in the Configuration Menu

e. Verify that the flaps stop at the correct locations.

- Calibrate Autopilot servos
- Test Autopilot servos
- Calibrate and verify the Fuel Tank sensors.



- Verify that both EFIS screens are getting ADAHRS and Engine Data

- Get a Pitot/Static and Transponder Test before the first flight.

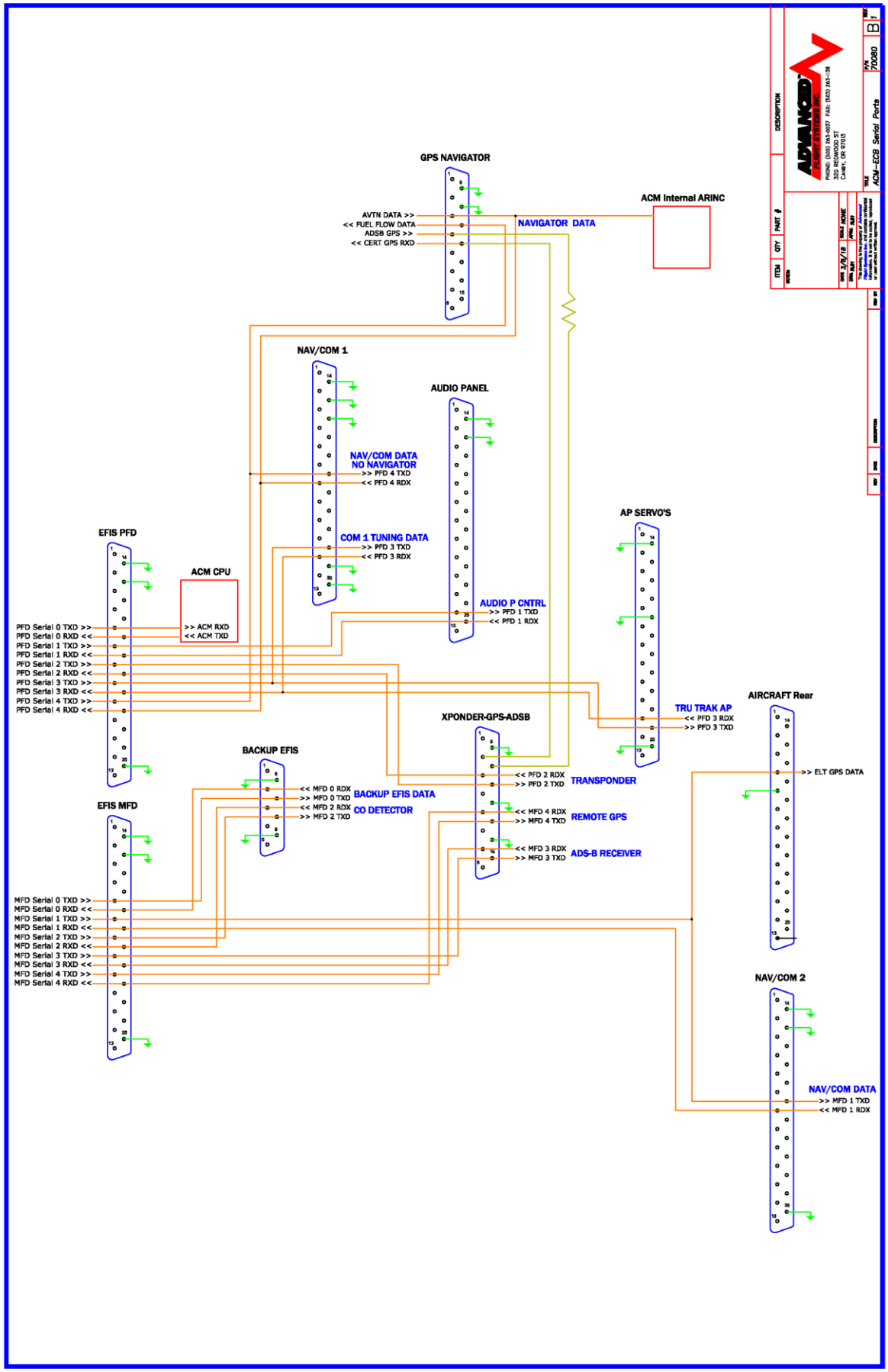
First Engine Start

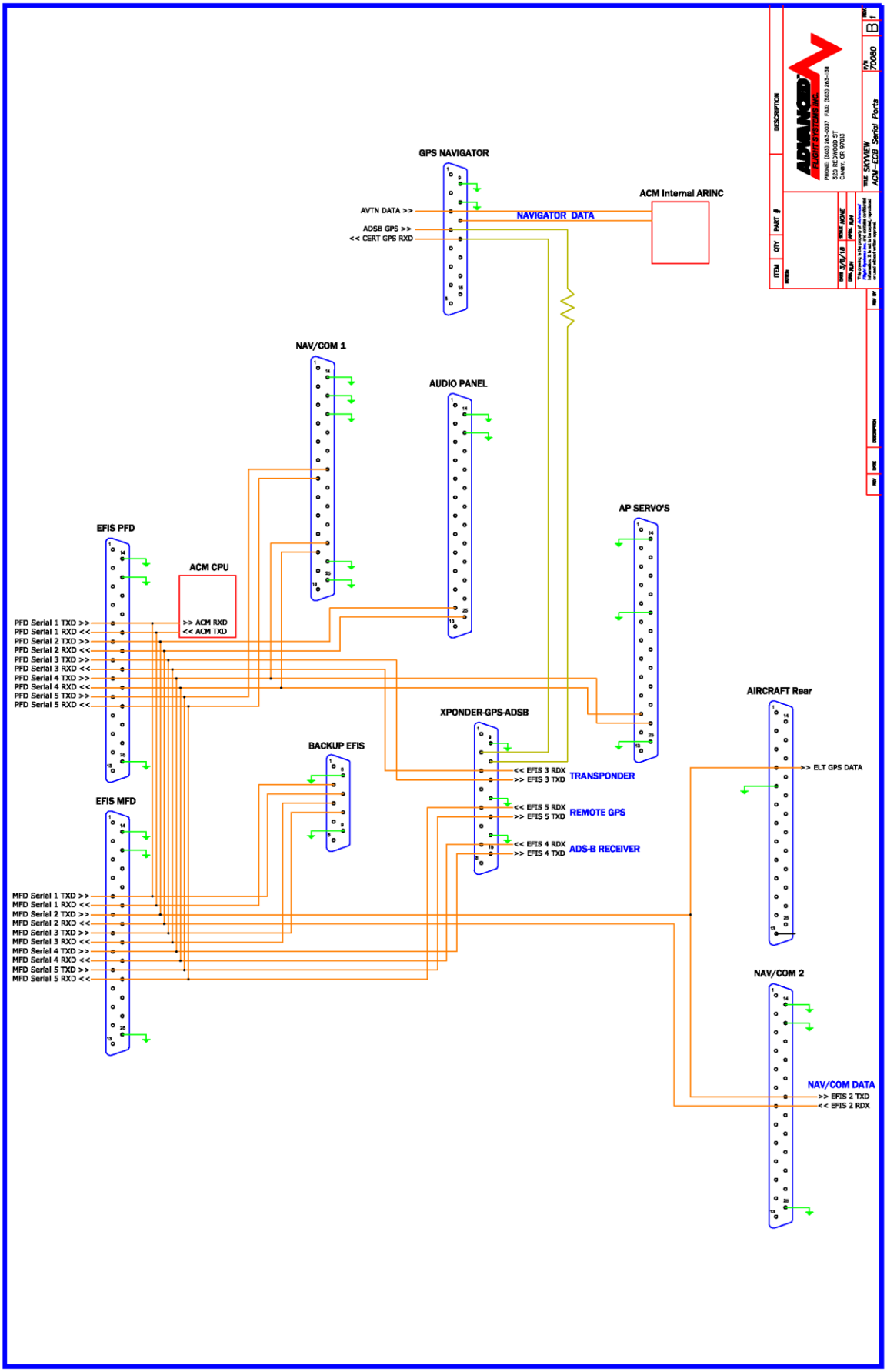
- With relay protection diodes installed, your EFIS screens can be turned on before the engine is started.
- After the engine has started, verify oil pressure and temperature. If none is indicated **SHUT DOWN,** the engine. Verify all wiring and consult your local A&P, the engine manufacturer, and/or AFS technical support.
- Verify all engine indications are correct per your **engine manufacturers** manual.

Before First Flight

- Verify you have the latest system software and mapping data (if applicable) - Visit the Dynon/AFS Website for latest software and map data
- Weight & Balance page updated with **your** aircrafts data
- Checklist pages updated with information from your **aircraft manufacturer**
- Magnetometer ADAHRS Alignment completed
- Pitot/Static check completed from an authorized FAA Repair Station.
- **Verify that both aircraft ignition system are properly wired and functioning**
- **Verify that Aircraft fuel system (Flow Meter, Pressure Transducer) is properly plumbed and not leaking.**
- **Perform a minimum fuel flow test and verify each tanks unusable fuel quantity.**

Verify that the RPM, Oil Pressure, Fuel Pressure, Fuel Flow, Manifold Pressure, Oil Temperature, CHT and EGT temperatures are correct and reasonable during a high-power run-up. ***Never take-off with high temperatures or abnormal readings.***


GPS NAVIGATOR
AVTN DATA >>
<< FUEL FLOW DATA
ADSB GPS >>
<< CERT GPS RXD
NAVIGATOR DATA
ACM Internal ARINC
NAV/COM 1
AUDIO PANEL
NAV/COM DATA
NO NAVIGATOR
>> PFD 4 TXD
<< PFD 4 RDX
COM 1 TUNING DATA
>> PFD 3 TXD
<< PFD 3 RDX
AUDIO P CNTRL
>> PFD 1 TXD
<< PFD 1 RDX
AP SERVO'S
EFIS PFD
ACM CPU
>> ACM RXD
<< ACM TXD
PFD Serial 0 TXD >>
PFD Serial 0 RXD <<
PFD Serial 1 TXD >>
PFD Serial 1 RXD <<
PFD Serial 2 TXD >>
PFD Serial 2 RXD <<
PFD Serial 3 TXD >>
PFD Serial 3 RXD <<
PFD Serial 4 TXD >>
PFD Serial 4 RXD <<
TRU TRAK AP
<< PFD 3 RDX
>> PFD 3 TXD
AIRCRAFT Rear
XPONDER-GPS-ADSB
BACKUP EFIS
<< MFD 0 RDX
>> MFD 0 TXD
<< MFD 2 RDX
>> MFD 2 TXD
BACKUP EFIS DATA
CO DETECTOR
<< PFD 2 RDX
>> PFD 2 TXD
TRANSPONDER
>> ELT GPS DATA
EFIS MFD
<< MFD 4 RDX
>> MFD 4 TXD
REMOTE GPS
<< MFD 3 RDX
>> MFD 3 TXD
ADS-B RECEIVER
MFD Serial 0 TXD >>
MFD Serial 0 RXD <<
MFD Serial 1 TXD >>
MFD Serial 1 RXD <<
MFD Serial 2 TXD >>
MFD Serial 2 RXD <<
MFD Serial 3 TXD >>
MFD Serial 3 RXD <<
MFD Serial 4 TXD >>
MFD Serial 4 RXD <<
NAV/COM 2
NAV/COM DATA
>> MFD 1 TXD
<< MFD 1 RDX
ACM-EDB Serial Ports
P/N 70080


GPS NAVIGATOR
AVTN DATA >>
ADSB GPS >>
<< CERT GPS RXD
NAVIGATOR DATA
ACM Internal ARINC
NAV/COM 1
AUDIO PANEL
AP SERVO'S
EFIS PFD
ACM CPU
>> ACM RXD
<< ACM TXD
PFD Serial 1 TXD >>
PFD Serial 1 RXD <<
PFD Serial 2 TXD >>
PFD Serial 2 RXD <<
PFD Serial 3 TXD >>
PFD Serial 3 RXD <<
PFD Serial 4 TXD >>
PFD Serial 4 RXD <<
PFD Serial 5 TXD >>
PFD Serial 5 RXD <<
XPONDER-GPS-ADSB
BACKUP EFIS
<< EFIS 3 RDX
>> EFIS 3 TXD
TRANSPONDER
<< EFIS 5 RDX
>> EFIS 5 TXD
REMOTE GPS
<< EFIS 4 RDX
>> EFIS 4 TXD
ADS-B RECEIVER
AIRCRAFT Rear
>> ELT GPS DATA
EFIS MFD
MFD Serial 1 TXD >>
MFD Serial 1 RXD <<
MFD Serial 2 TXD >>
MFD Serial 2 RXD <<
MFD Serial 3 TXD >>
MFD Serial 3 RXD <<
MFD Serial 4 TXD >>
MFD Serial 4 RXD <<
MFD Serial 5 TXD >>
MFD Serial 5 RXD <<
NAV/COM 2
NAV/COM DATA
>> EFIS 2 TXD
<< EFIS 2 RDX

Advanced IFR with IFD540

Serial Port	EFIS PFD	NOTES	EFIS MFD	NOTES
0	ACM-ECB		NMEA/AVTN	Backup EFIS
1	PDA360 Audio Panel		ACK ELT/SL30	
2	74109 AFS XPNDR		*CO	CO Detect Option
3	GTR/GNC-2xx	IFD Tuning	SV-ADSB-47X	
4	AVTN/RNAV		SV-GPS-250/2020	

Advanced RV-10 3 Screen IFD540

Serial Port	EFIS PFD	NOTES	EFIS MFD	NOTES
0	ACM-ECB		IFD-ADSB	Send ADSB to IFD
1	PDA360 Audio Panel		ACK ELT/SL30	
2	74109 AFS XPNDR		*CO	CO Detector
3	GTR/GNC-2xx	IFD Tuning	SV-ADSB-47X	AFS-ADSB
4	AVTN/RNAV		SV-GPS-250	

Skyview Serial Ports

Serial Port	EFIS PFD	NOTES	EFIS MFD	NOTES
1	ACM-ECB		ACM-ECB	
2	NMEA 9600		NMEA 9600	ELT Signal
3	TRANSPONDER		TRANSPONDER	
4	ADS-B		ADS-B	
5	SV-GPS-250 *GPS-220		SV-GPS-250 *GPS-2020	

Advanced IFR with GTN-650

Serial Port	EFIS PFD	NOTES	EFIS MFD	NOTES
0	ACM-ECB		NMEA 9600	D6 GPS Signal
1	PDA360 Audio Panel		ELT/SL30	
2	74109 AFS XPNDR		*CO	CO Detect Option
3	NONE		74112 AFS-ADSB	
4	AVTN/FADC1		SV-GPS-250 *GPS-2020	

LABEL	SIZE	DESCRIPTION
LEFT LT	**10**	Left Landing Light
STROBE	**7.5**	Strobe Lights
NAV LT	**10**	Nav Lights
RIGHT LT	**10**	Right Landing Light
PITOT H	**10**	Pitot Heat
TRIM	**2**	Trim Motors
FLAPS	**5**	Flap Motor
ALT FLD	**5**	Alternator Field Power
BOOST P	**10**	Boost Pump
STARTER	**7.5**	Starter contactor
AUX PWR	**5**	Auxiliary power plug (ACM-FUSE: Cabin Light, Fans, Aux Plug)
AUTO P	**5**	Autopilot Servos
NAV 2		Nav 2 Radio
COM 2	**5**	Com 2 Radio
XPONDER	**3**	Transponder and ADS-B Power
AUDIO P	**3**	Remote Audio Panel Power
BACKUP	**3-5**	Dynon D6 EFIS, ELT, CO Detector (5 AMP for AF-5000/HDX)
NAV 1	**7.5**	Navigator NAV Power
COM 1	**10**	Navigator Com Power
MFD	**5**	Copilot EFIS Screen
CHARGE	**10**	TCW Battery, Charge and Pass through power
PFD	**5**	Pilot EFIS Screen

LABEL	SIZE	DESCRIPTION
LEFT LT	**10**	Left Landing Light
STROBE	**7.5**	Strobe Lights
NAV LT	**10**	Nav Lights
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BOOST P	**10**	Boost Pump
STARTER	**7.5**	Starter contactor
AUX PWR	**5**	Auxiliary power plug (ACM-FUSE: Cabin Light, Fans, Aux Plug)
AUTO P	**5**	Autopilot Servos
NAV 2	**3**	Nav 2 Radio
COM 2	**5**	Com 2 Radio
XPONDER	**3**	Transponder and ADS-B Power
AUDIO P	**2**	Intercom
BACKUP	**3**	Backup EFIS
NAV 1	**3**	Nav 1 Radio
COM 1	**5**	Com 1 Radio
MFD	**5**	Copilot EFIS Screen
CHARGE	**10**	TCW Battery, Charge and Pass through power
PFD	**5**	Pilot EFIS Screen

AF-5000 Panel Configuration Checklist

(Completed by AFS before panel shipment)

N Number:_____ Customer:_____

Aircraft:_____ Tank Size:_____ INJ or Carb:_____

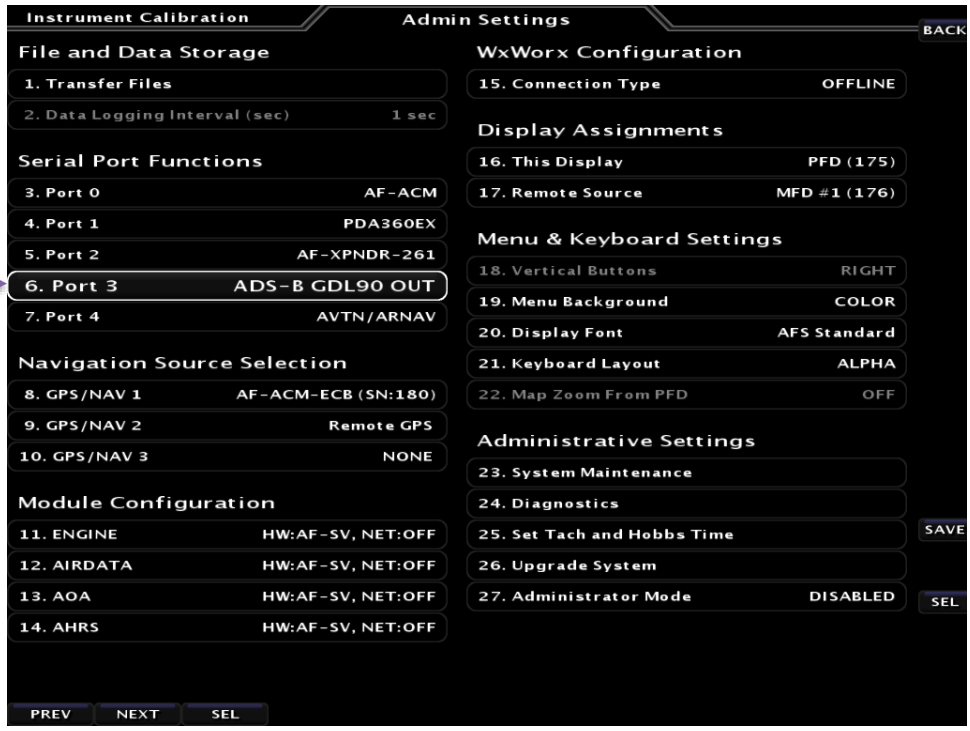
Verify Fuse or Circuit Breaker Sizes

1. Verify ELT Panel Battery (green sticker with date)
2. Configure EFIS ADMIN Settings

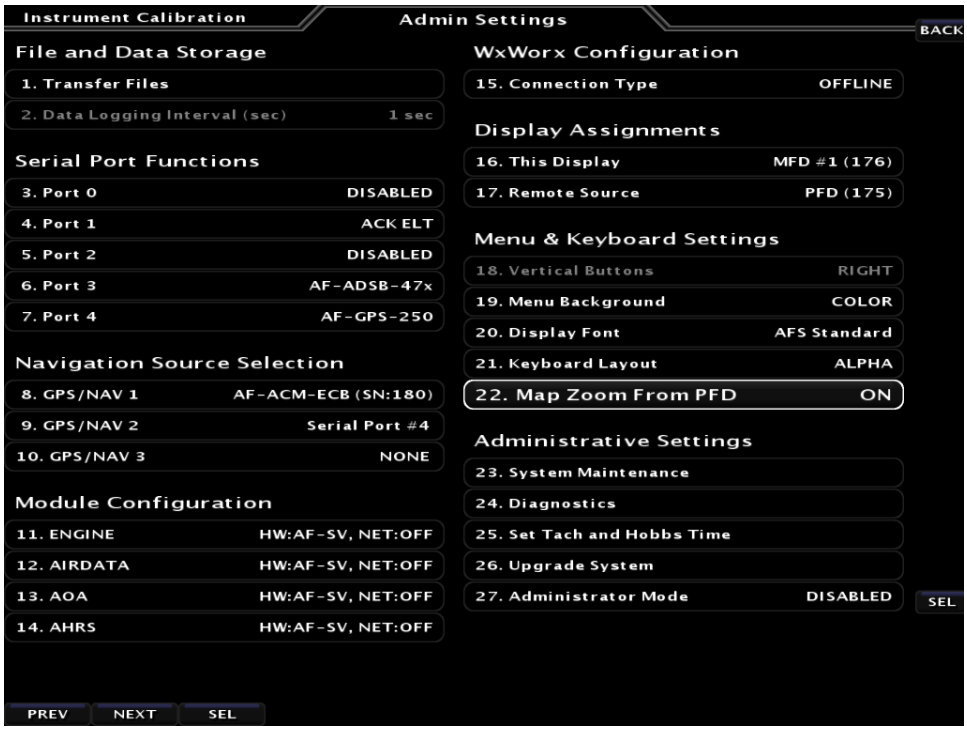
DUAL EFIS SCREEN IFR Panel Settings

PFD

ADS-B data sent to IFD

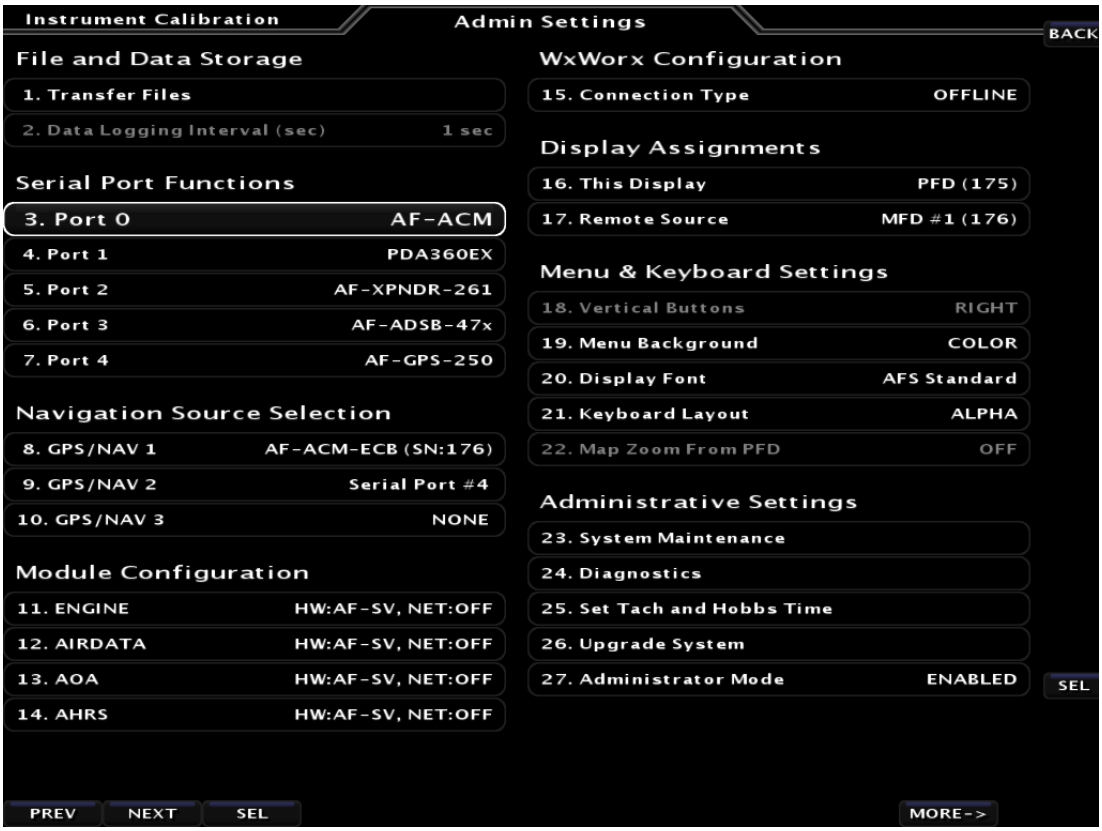


MFD



SINGLE EFIS SCREEN IFR Panel Settings

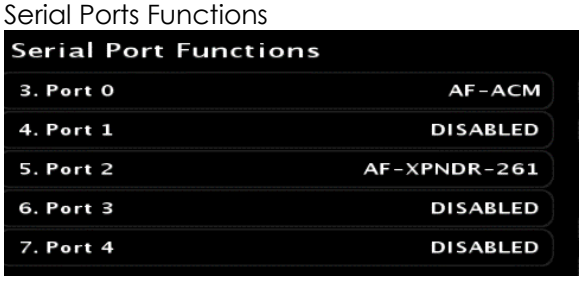
PFD

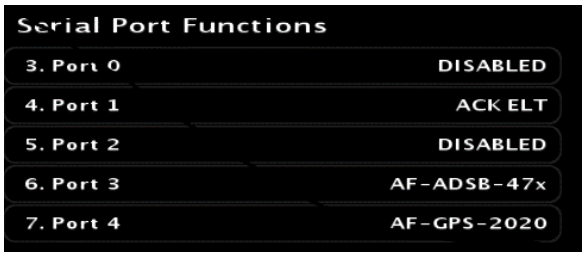


DUAL SCREEN VFR Settings

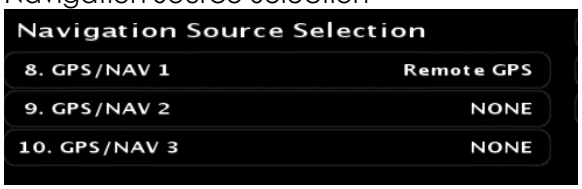
PFD **MFD** .

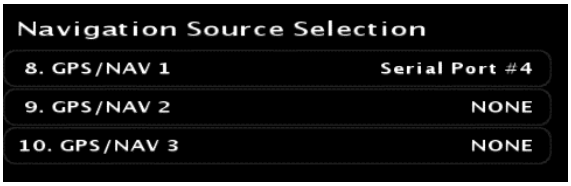
Serial Ports Functions



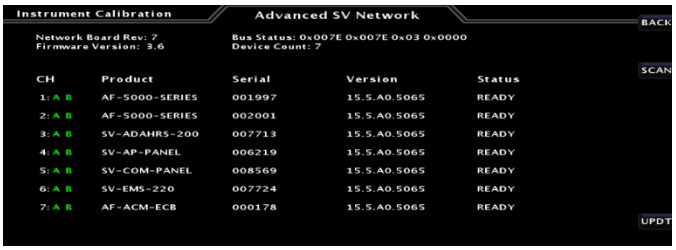


Navigation Source Selection

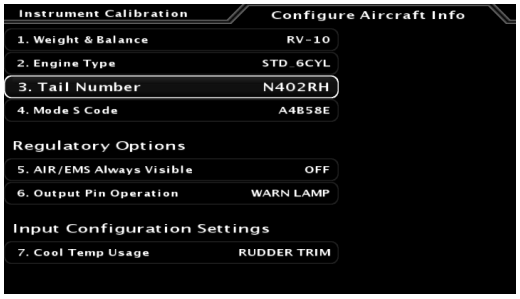




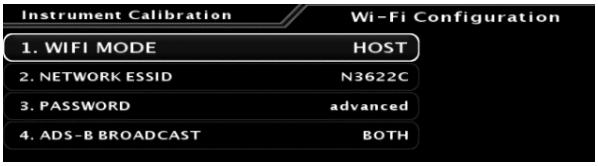
3. SV Network Configuration. Press **SCAN** and verify that all attached SV-Network devices are detected. Press **UPDT** to load the current software in all devices. Channel A and B should be green for all devices.



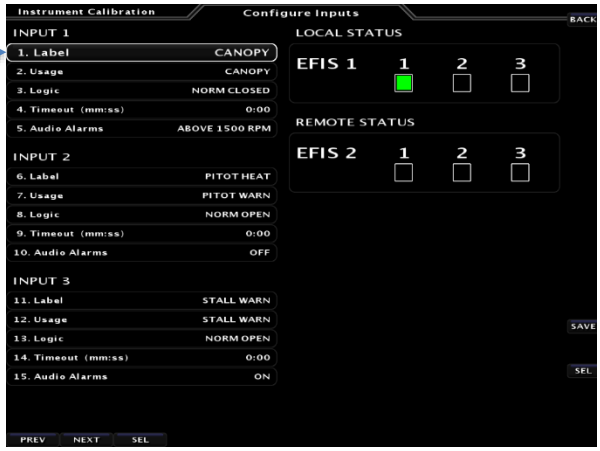
4. Configure Aircraft Info



5. Verify that the Wi-Fi module is installed in MFD and configure Wi-Fi Settings on MFD Screen. Set the NETWORK ESSID to the aircraft N Number.



6. Configure PFD EFIS Inputs if RV-14 (Canopy, Pitot Heat, Stall Warning Tab)



7. Configure Test Audio to 75 and verify that EFIS audio warnings are playing in headset.

8. Configure Autopilot Settings

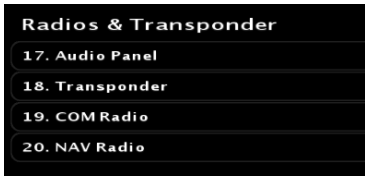
9. Configure Yaw Damper settings if present.

10. Verify Altitude Settings

11. Configure Airspeed Settings for aircraft

12. Configure AoA Settings for aircraft

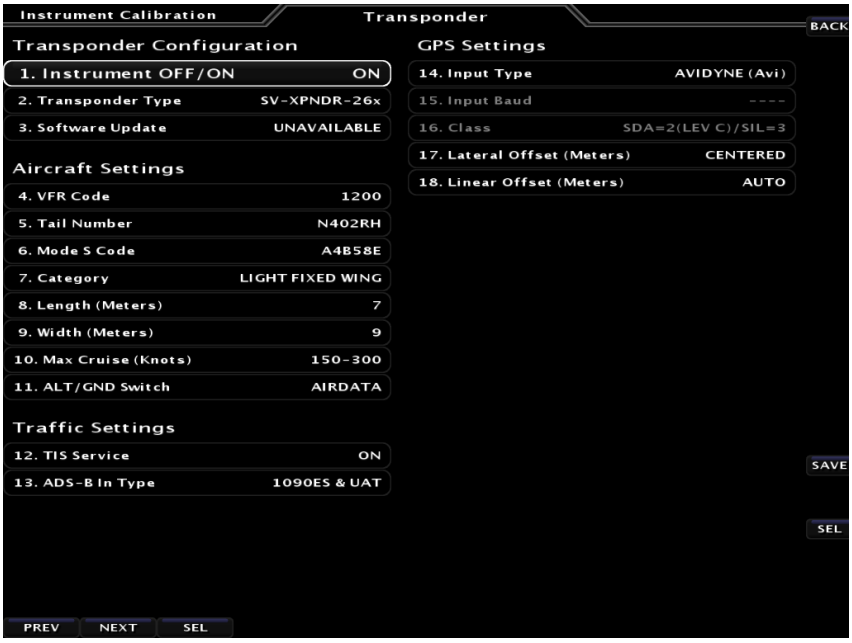
Radios & Transponder Settings



17. Configure Audio Panel Settings on PFD and MFD to PDA360

18. Configure Transponder Settings on PFD and MFD

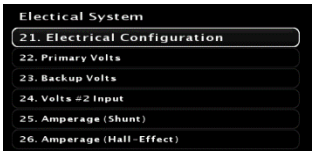
-Tail Number
-Length
-Width
-Max Cruise
-ALT/GND Switch
-ADS-B In Type
-GPS Input Type



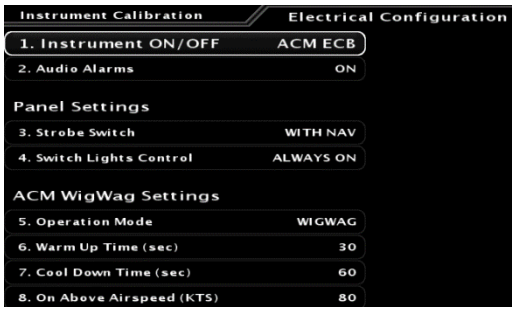
19. Configure Com Radio Setup on PFD and MFD
    Primary S/N (from SV-NET Scan)
    Radio Type SV-COM
    Squelch 70
    Side Tone 25
    Mic Gain 50

20. NAV Radio Configuration DISABLED

Electrical System Settings



21. **Configure Electrical System for ACM-ECB**



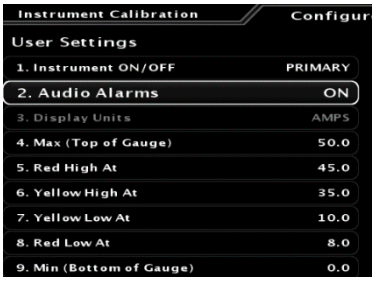
The ACM-ECB configuration is what controls how the panel switches operate.

2. Audio Alarms	Turns on ACM audio warnings
3. Strobe Switch	Three Position Strobe/Nav or separate switches.
4. Switch Lights	Controls Backlite always ON or turn on with NAV switch
5. Operation Mode	Landing Lights with WIGWAG
6. Warm Up Time	Time delay in seconds before landing lights start to flash
7. Cool Down Time	Time delay in seconds after landing lights are turned OFF before they can be turned back ON.
8. On Above Airspeed	Above this Airspeed (Knots) the landing lights will flash when the Panel switch is in the **PULSE** mode. Below this airspeed they will remain ON.

22. Configure Primary Volts — Settings for the EFIS Primary Volt Meter

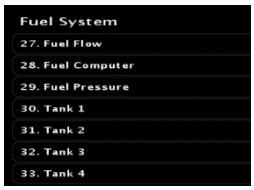
23. Configure Backup Volts — Settings for the EFIS Backup Volt Meter. When enabled the Backup Voltmeter splits the volt meter bar to display both voltages.

24. Configure Amperage (Shunt)

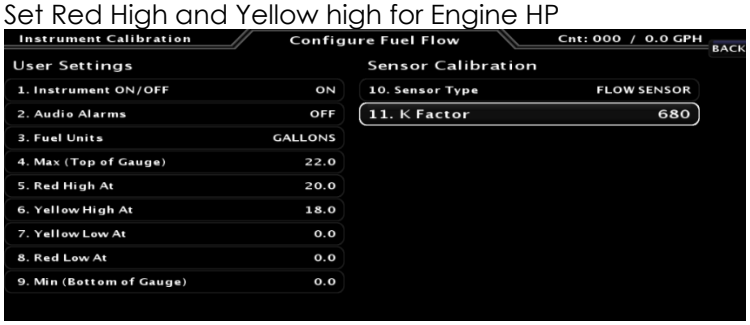


25. Configure Amperage (Hall-effect) — EFIS Amp meter display settings from the optional shunt transducer.

Fuel System Settings



27. Verify Fuel Flow Settings
    Set Red High and Yellow high for Engine HP



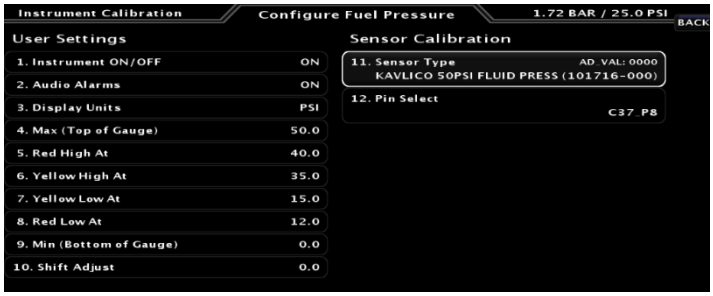
28. Verify Fuel Computer settings

29. Configure Fuel Pressure Sensor and Ranges

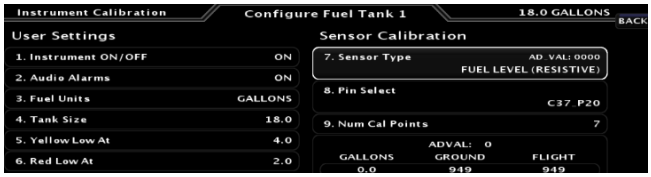
	Carburated	**Injected**
Sensor	**41201 (0-15PSI) 101690-000**	**41301 (0-50PSI) 101716-000**
Max	15	40
Red High	10	35
Yellow High	8	30
Yellow Low	3	15
Red Low	2	12
Min	0	0

Carb Setting

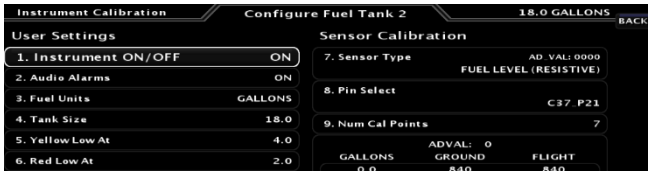
Injected Settings



30. Configure Tank 1



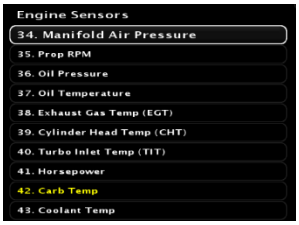
31. Configure Tank 2



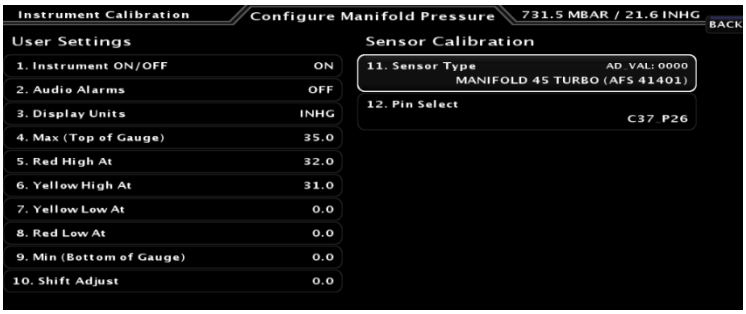
32. Set Tank 3 to Zero Gallons and OFF

33. Set Tank 4 to Zero Gallons and OFF

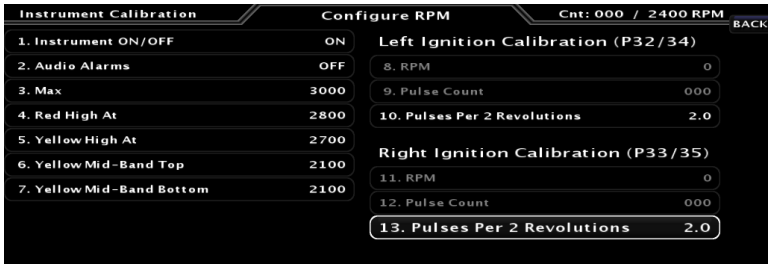
Engine Sensor Settings



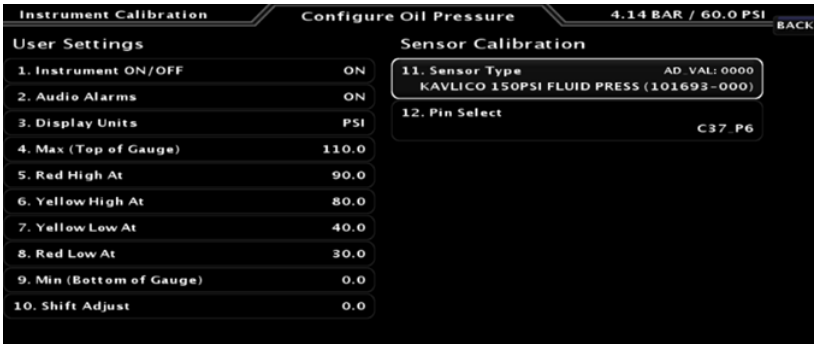
34. Verify Manifold Sensor Configuration



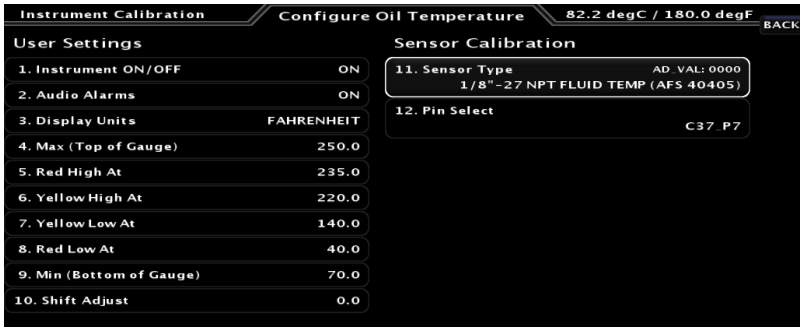
35. Verify RPM set to 2 Pulses for 4 Cylinder and 3 Pulses for 6 Cylinder



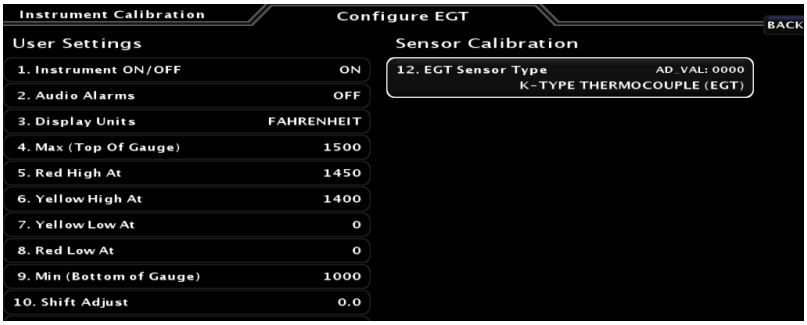
36. Configure Oil Pressure
41101 (0-150) 101693-000 Kavlico



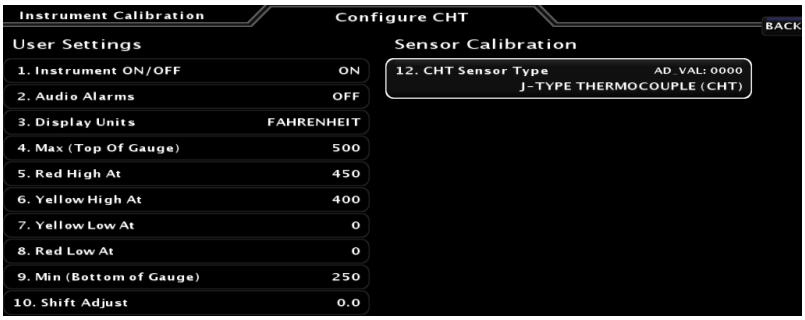
37. Configure Oil Temp
40405 VDO



38. Verify that EGT Sensor Type is K

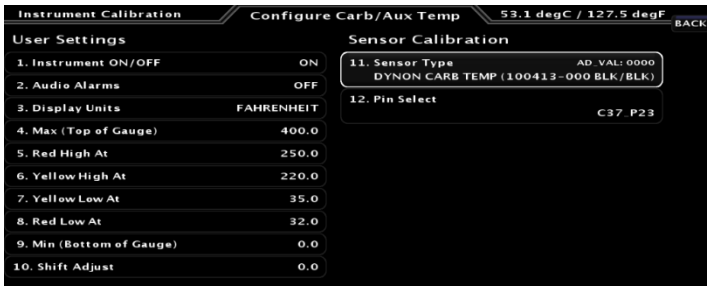


39. Verify that CHT Sensor type is J



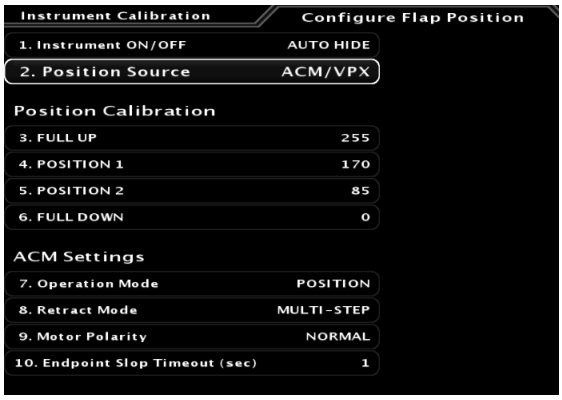
41. Configure HP Engine Type and Horse Power

42. Configure Carb Temp Carb = ON INJ = OFF



Flaps & Trim Settings

44. Configure Flap Position



Operation Mode
The Flaps can be configured for MOMENTARY or POSITION mode if you are using a RayAllen POS12 flap sensor.

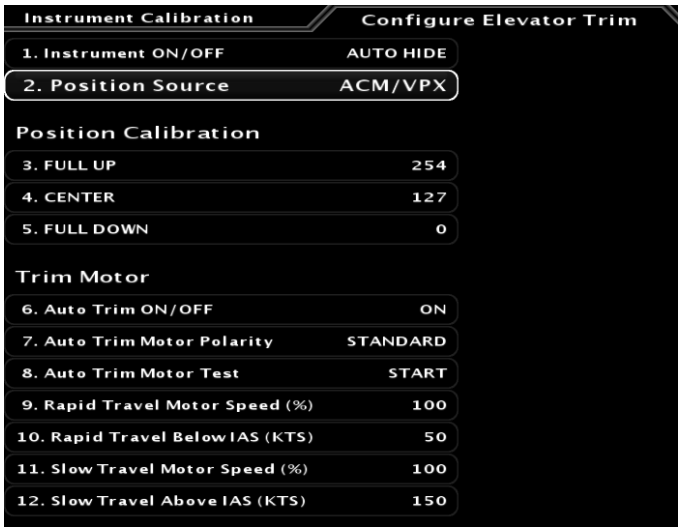
Position Calibration
You can program 4 unique flap positions.

Retract Mode
Selects if the flap move all the way UP or Multi-Step to the programed positions.

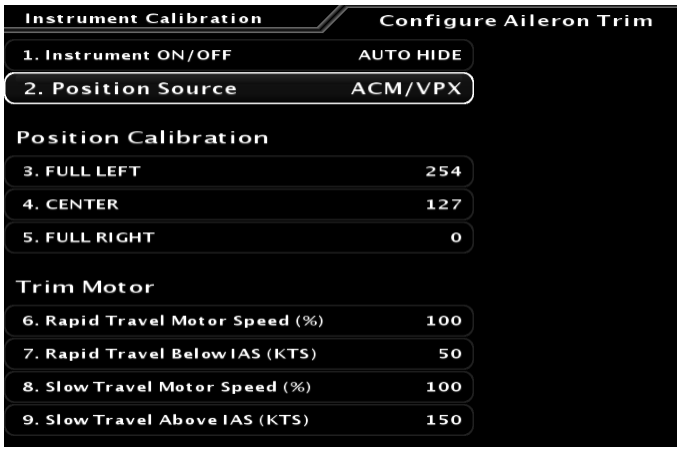
Motor Polarity
Used to change motor direction for the **CHECK** > **ELECTRICAL** > FLAPS > UP / DOWN buttons. ***Do not use this setting to change flap direction from the stick buttons.*** If the ELECTRICAL Page buttons work in the correct direction and the stick buttons are backwards you must swap the push button wiring at the sticks.

Endpoint Slop Timeout
This setting is used to make sure the flaps move up and down all the way in position mode. The flap motor will continue to run for this settings seconds in the UP and DOWN positions.

45. Configure Elevator Trim to ACM



46. Configure Aileron Trim to ACM



USB Slot

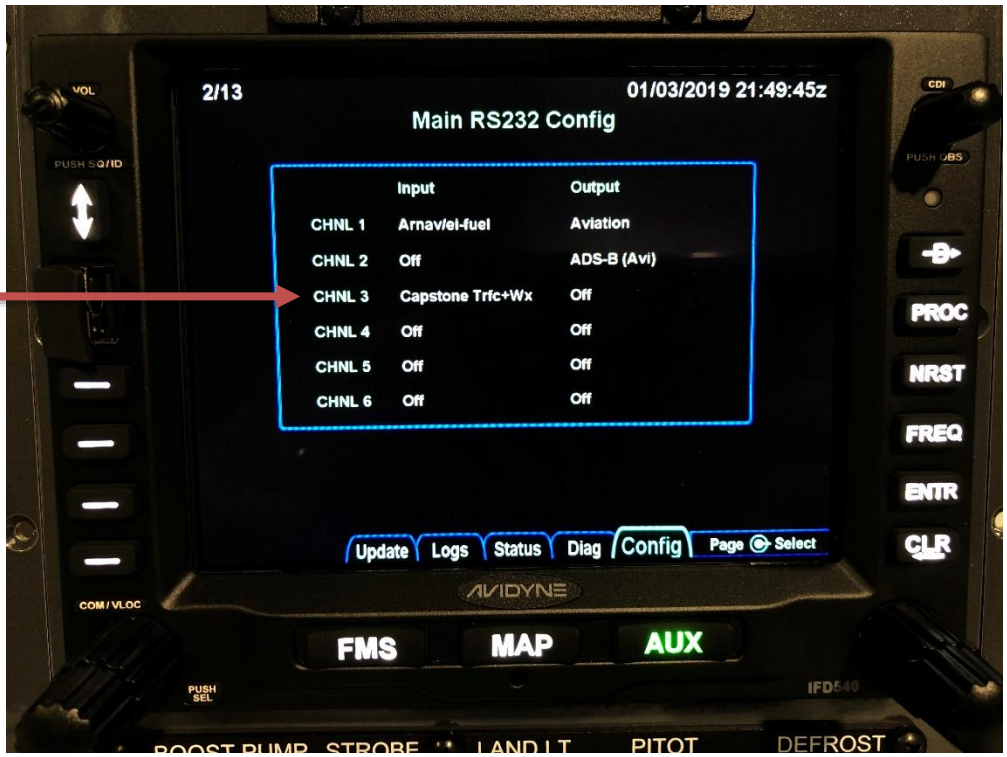
To enter configuration mode you will need to power up the IFD with a USB memory stick.

ARINC configuration

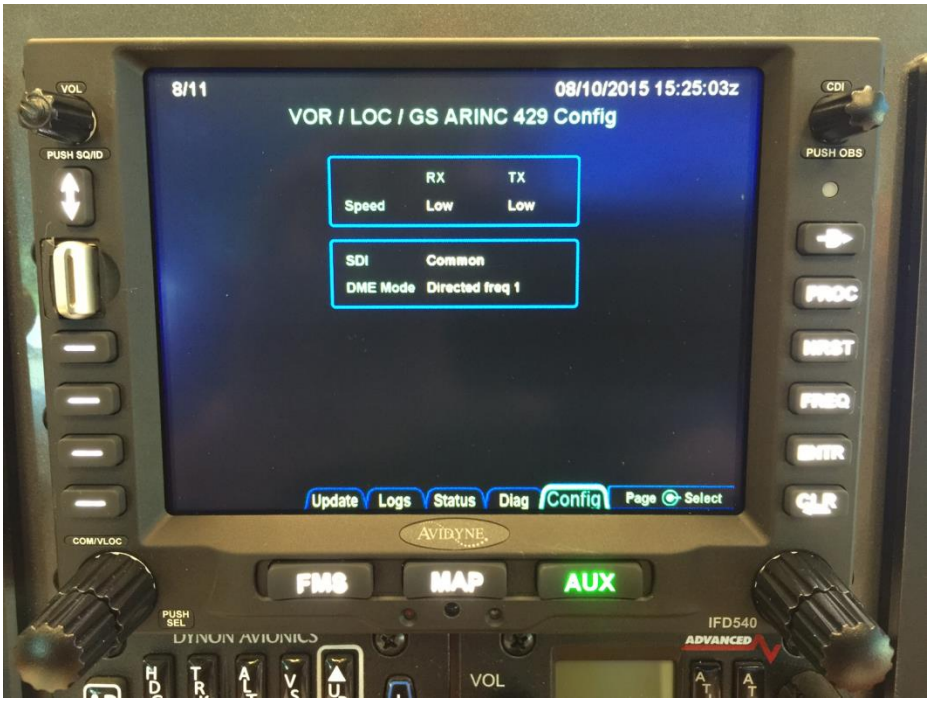
Set all channels to HIGH Speed for Skyview HDX systems, Low for AF-5000

Serial Port Configuration

Only set for dual AF-5000 EFIS systems, used to get ADS-B data from AF-5000 MFD EFIS.



VOR / LOC / GS ARINC 429 Configuration



GTN-650 Configuration

ARINC Settings

RS-232 Settings

VOR/LOC/GS Settings

- ADAHRS 1 and 2 working
- Verify all buttons
- Verify Knobs
- Verify Joystick (AF-5600)
- Test Dimmer
- Verify Ethernet (EMS and Bugs work on both screens)
- Test AP Panel FD Button
- Verify Map Database is current and High Res Terrain from USB sticks
- Verify ADAHRS cross check is working
- Verify Bugs are turned ON (Heading, ALT, Speed)
- Verify EFIS Backup Battery (Shutdown and Button 1 Power Up)

RADIO and Audio Panel Tests

- Pilot PTT – Radio TX is displayed on the AF-COM Panel and radio transmits.
- Copilot PTT – Radio TX is displayed on the AF-COM Panel and radio transmits.
- Radio receives from handheld
- Intercom works between headsets, verify squelch and volume work.
- Music input works
- EFIS PFD sets and displays radio freq
- EFIS MFD sets and displays radio freq.
- Radio displays airport data from EFIS
- EFIS audio works, test using EFIS timer
- EFIS PFD and MFD screens can flip-flop radio

Trim Servo Tests

- Trim and Flap motors work from control sticks
- Flap motor works from panel flap switch
- Trim and Flap positions change on EFIS PFD and MFD.
- Program and test flap positions

Panel Dimming

- Panel buttons dim with EFIS screens
- AP Panel Module buttons dim with EFIS screens
- Dynon Radio dims with EFIS screens

Aircraft Lights

- Left Landing light turns on
- Right Landing light turns on
- Landing lights flash in Pulse Mode
- Nav lights turn on
- Strobe lights turn on

Auto Pilot Tests

- AF-SV Scan for Servos
- Set Travel Limits
- Motors turn ON and OFF

ELT Tests

- Test GPS Signal to ELT using scope on pin 4.

D6 EFIS Tests

- Compass Wiring?
- D6 Receiving GPS data?

Pitot Tube Tests

- Pitot Status line

+12V Power Plug

- Verify Power

Backup EFIS PFD and MFD to Customer Panel Folder

Verify Switch Modules

Switch Color
Mounting Screw
Master Relay Screws
All Lences intact

Panel Shipping Checklist

Take Photo of completed running panel

Verify All Components have screws and are tight

1 Verify all Cables have a Description and Part Number Label

2 Check EFIS Seral Number Labels

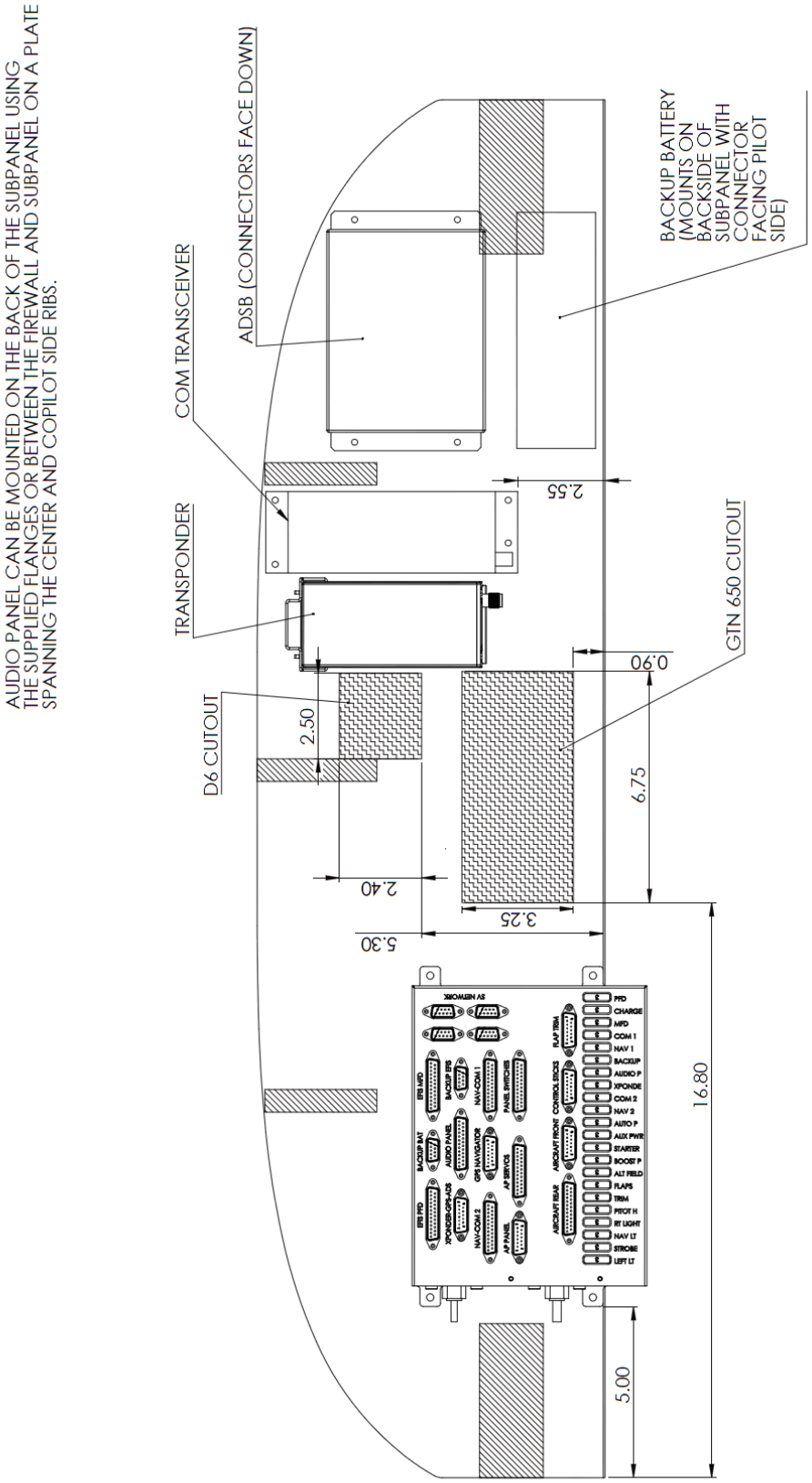
3 Use BOM to check off every item going into the box and serial number

4 Take photo of components in box

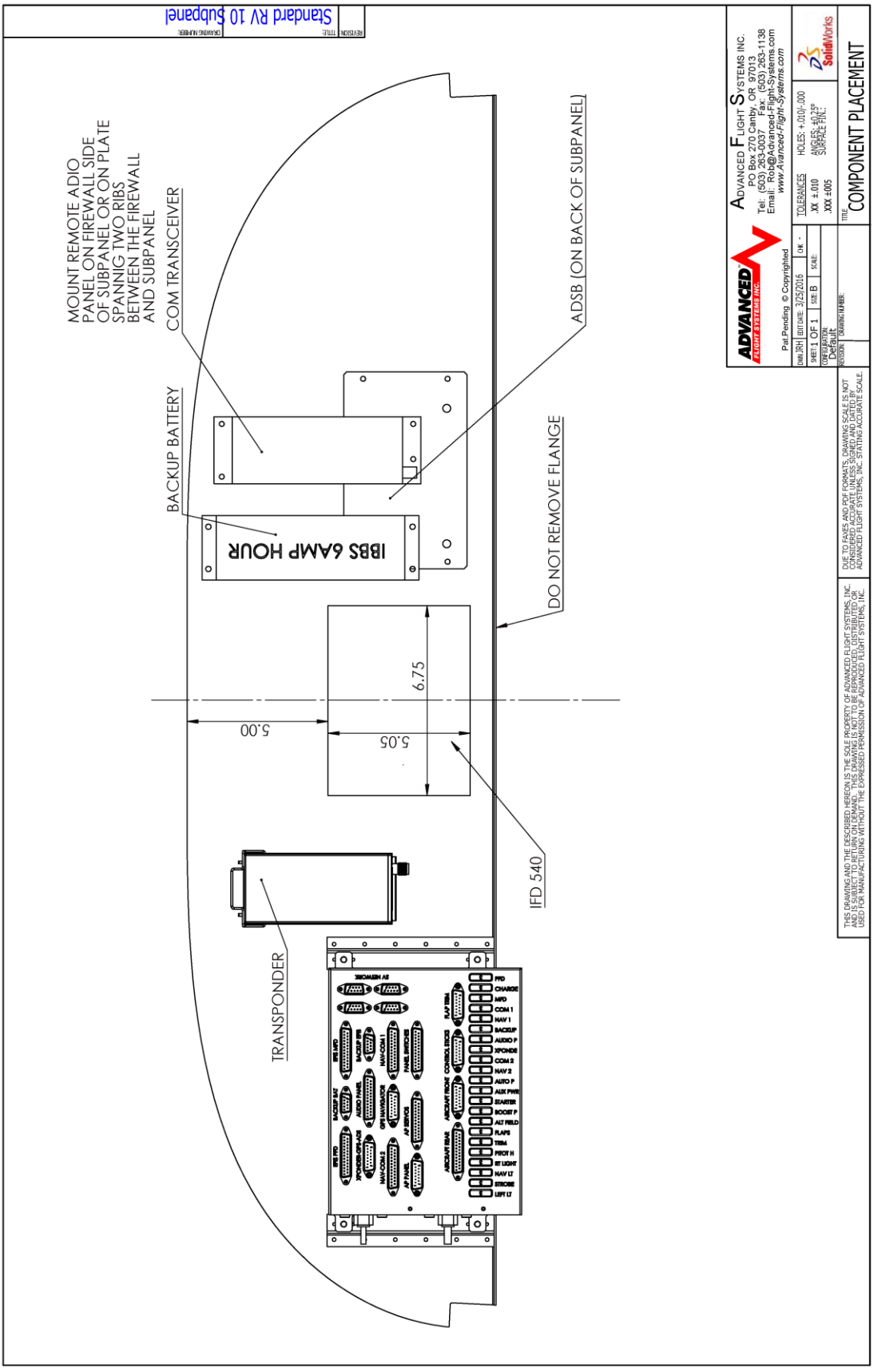
5 Verify Panel Mounting Hardware included.

6 Check Starter Switch Key and Terminal screws

RV-7 Slider Panel

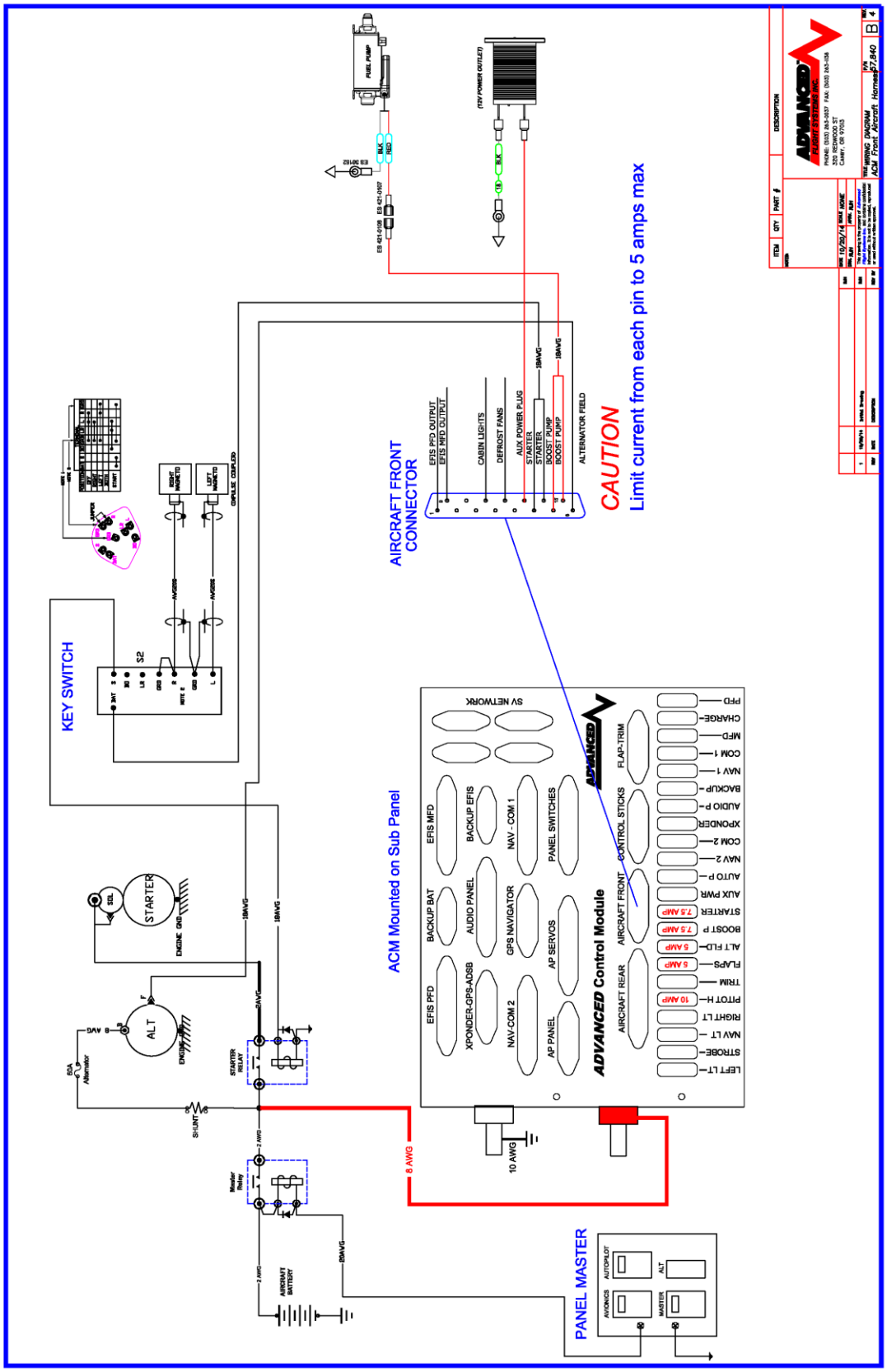


RV-10 Standard Panel



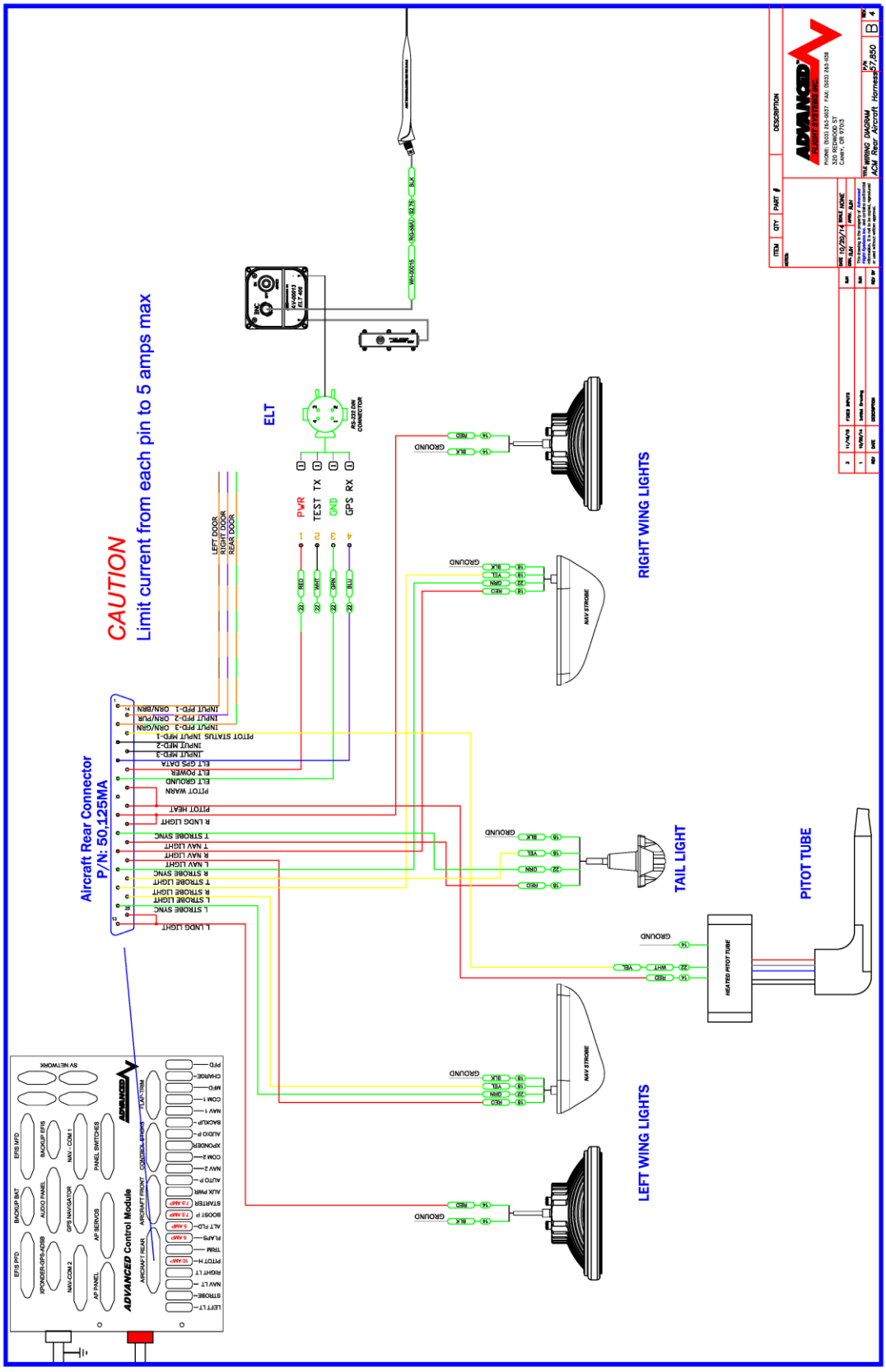
57840 Aircraft Front Harness

Use the supplied DSUB 15 Pin male connector assembly P/N: 50115MA and schematic to wire the aircraft front connector. Verify wire sizes from this drawing.



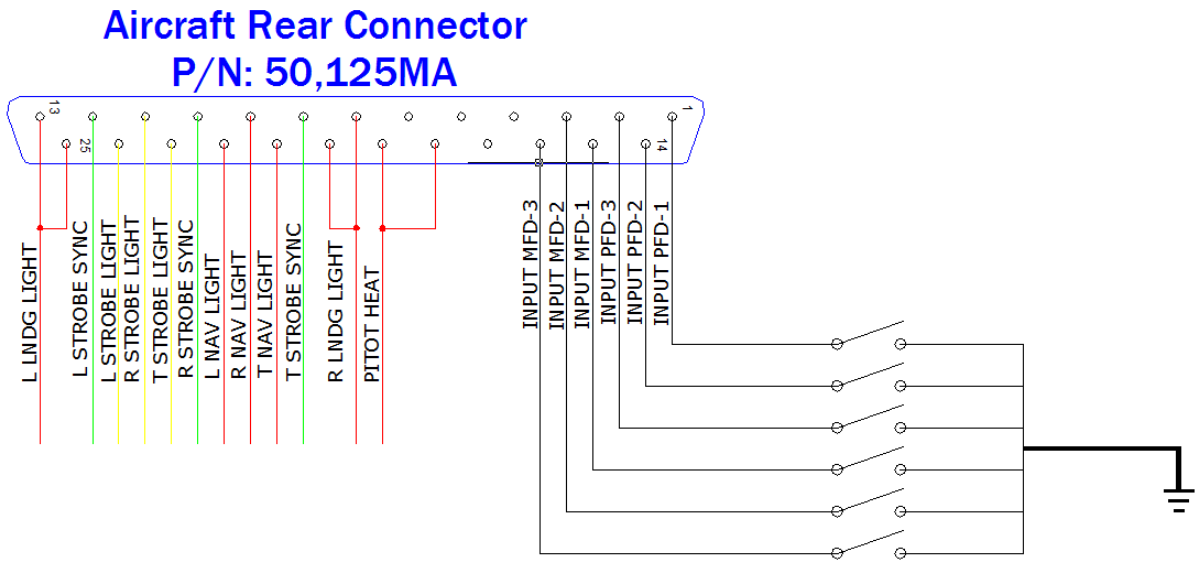
57850 AIRCRAFT REAR HARNESS

Use the supplied DSUB 25 Pin male connector assembly P/N: 50125MA and schematic to wire the aircraft front connector. Verify wire sizes from this drawing.

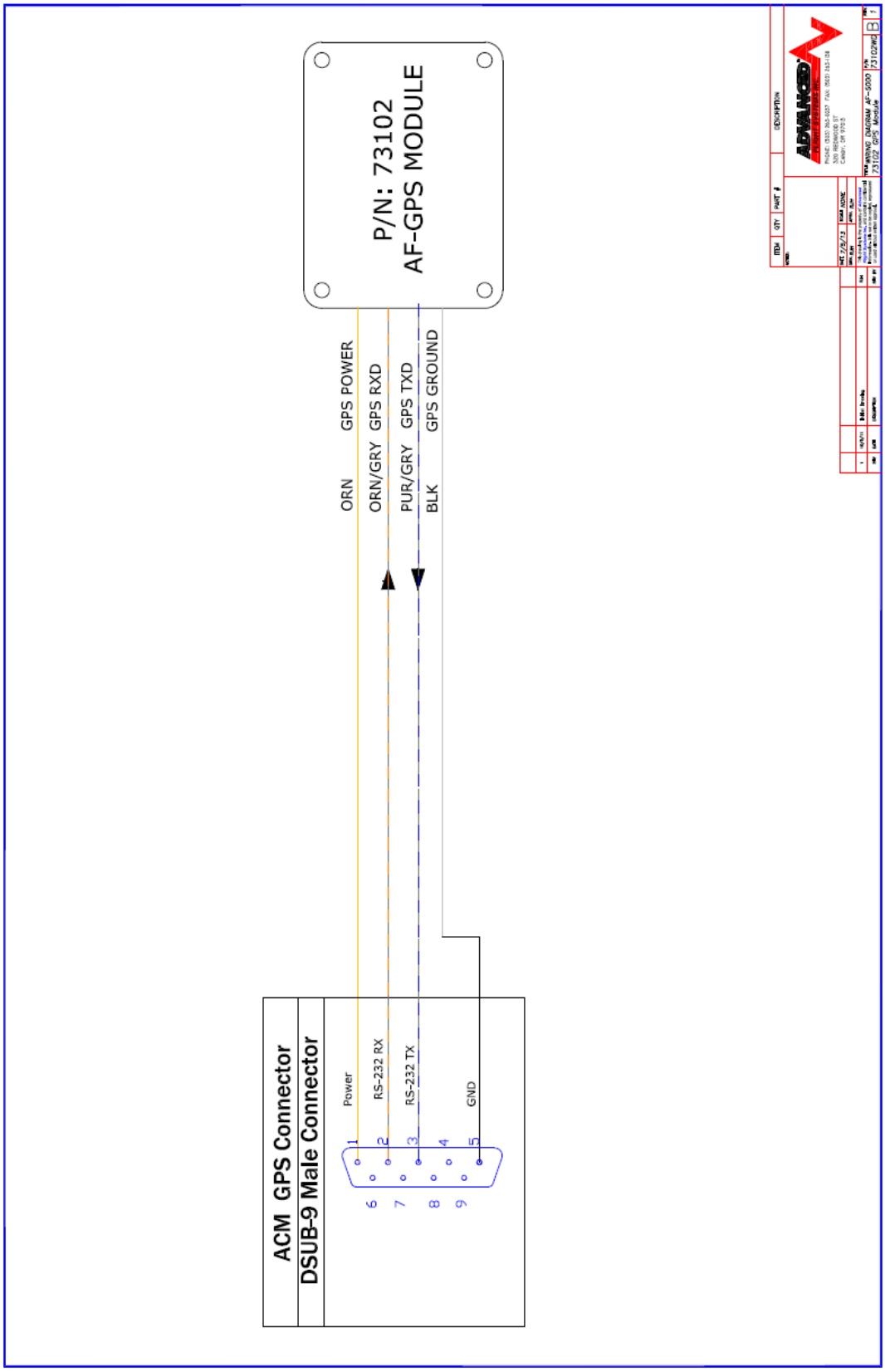


EFIS Inputs

The PFD and MFD EFIS screen digital inputs (1,2,3) are wired to the ACM Aircraft Rear Connector and configured in the EFIS calibration menu. The EFIS inputs are designed to activate when connected to ground.

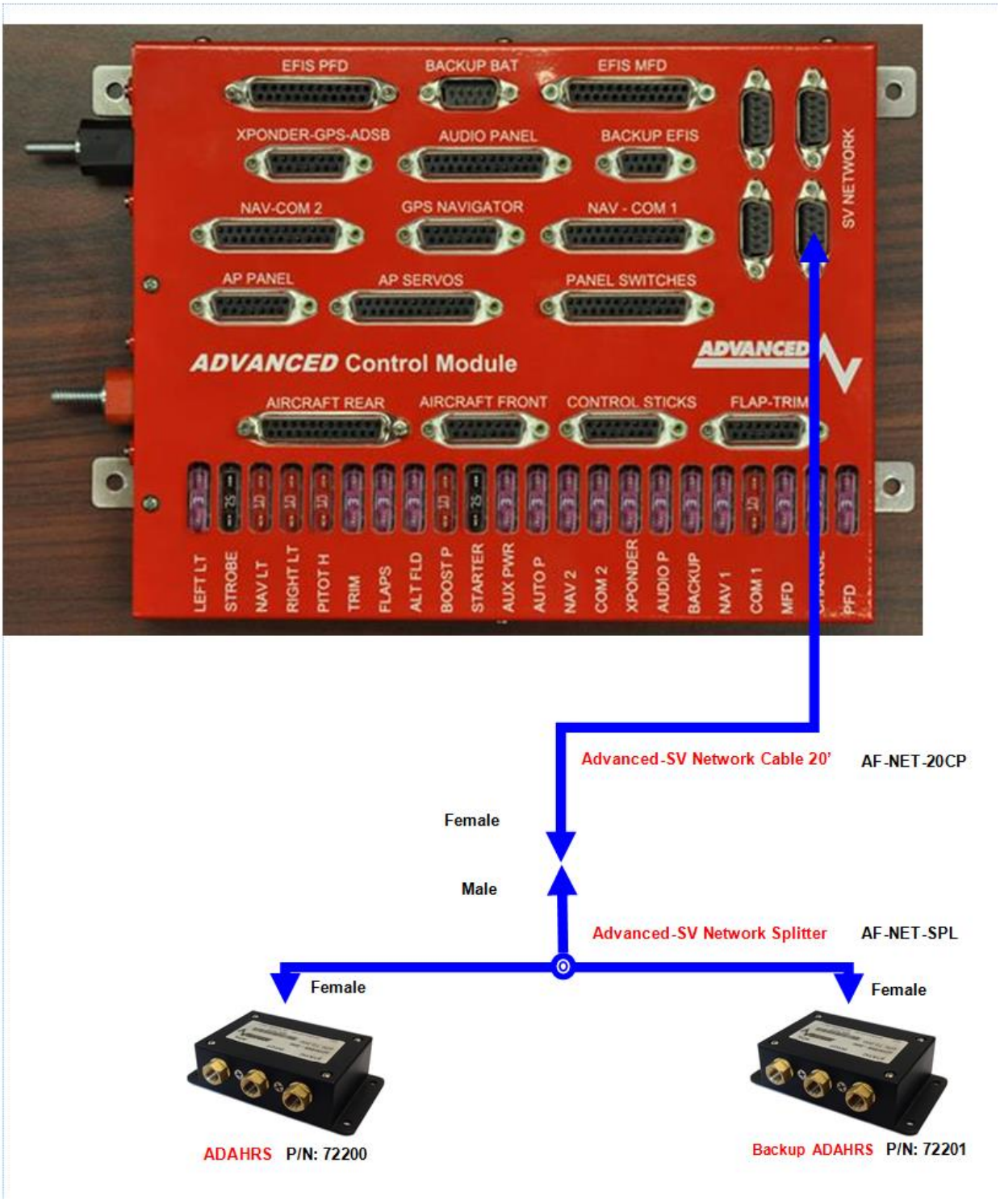


After routing the AF-GPS wires through the fuselage install the supplied DSUB-9 Male connector and plug into the Female AF-GPS harness from the ACM Module. The SV-250-GPS and SV-GPS-2020 all have the same mounting and wiring.

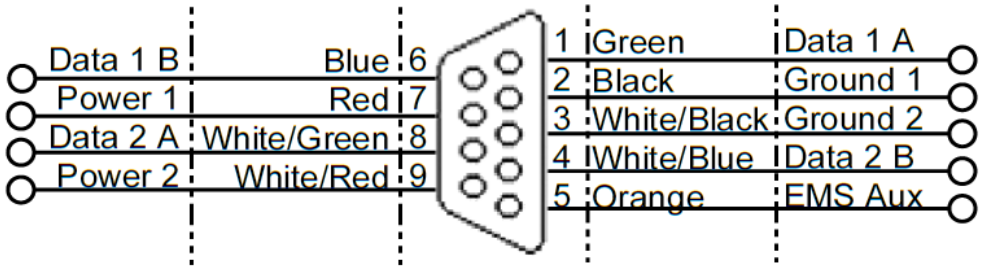


ADAHRS SV-ADAHRS 200/201 Wiring

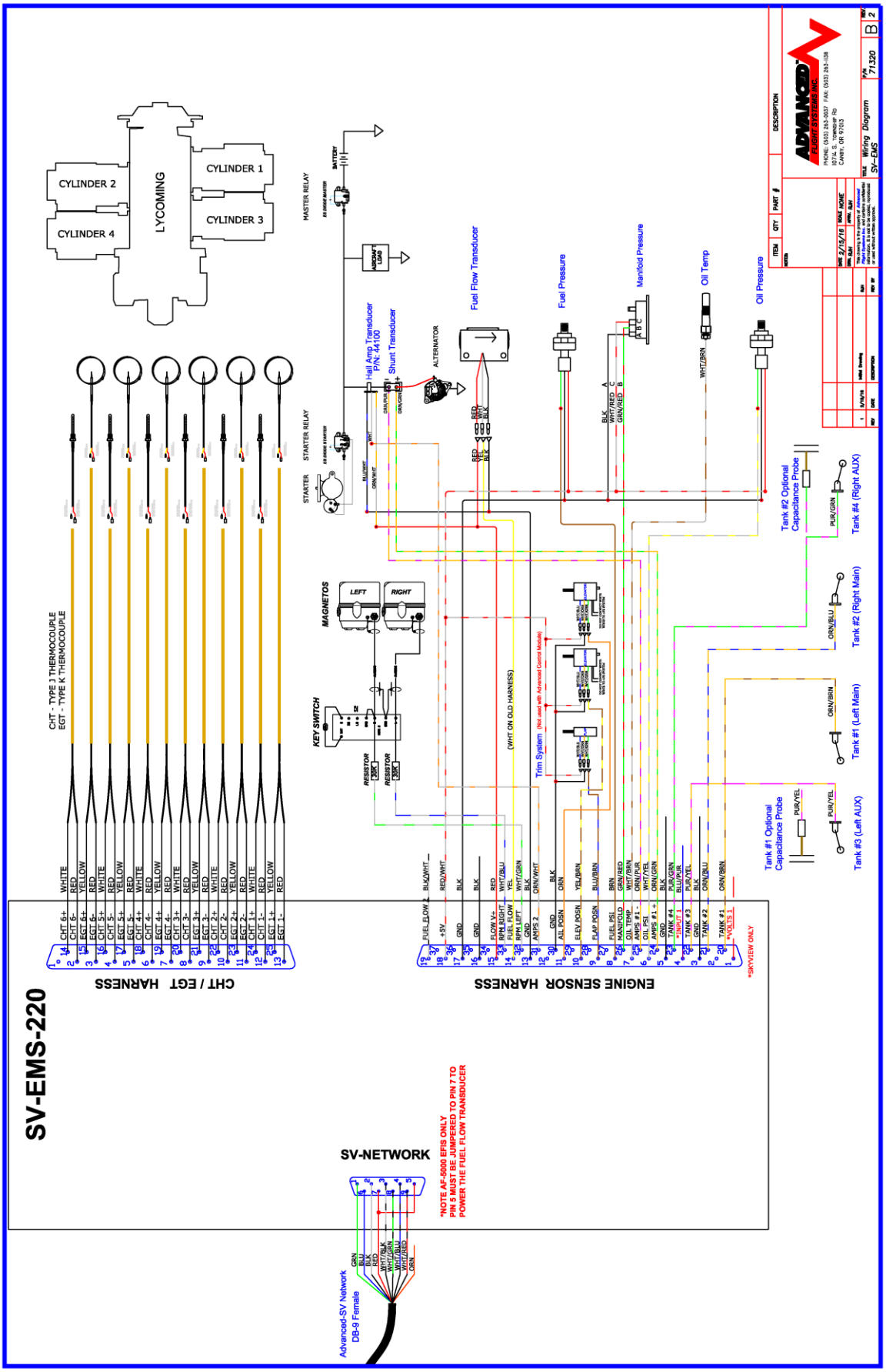
After mounting the ADAHRS in the rear fuselage you should connect it to the spare SV-NETWORK port on the ACM module. The ADAHRS uses the standard SV-NETWORK DSUB-9 Female cables and should be wired using the following:



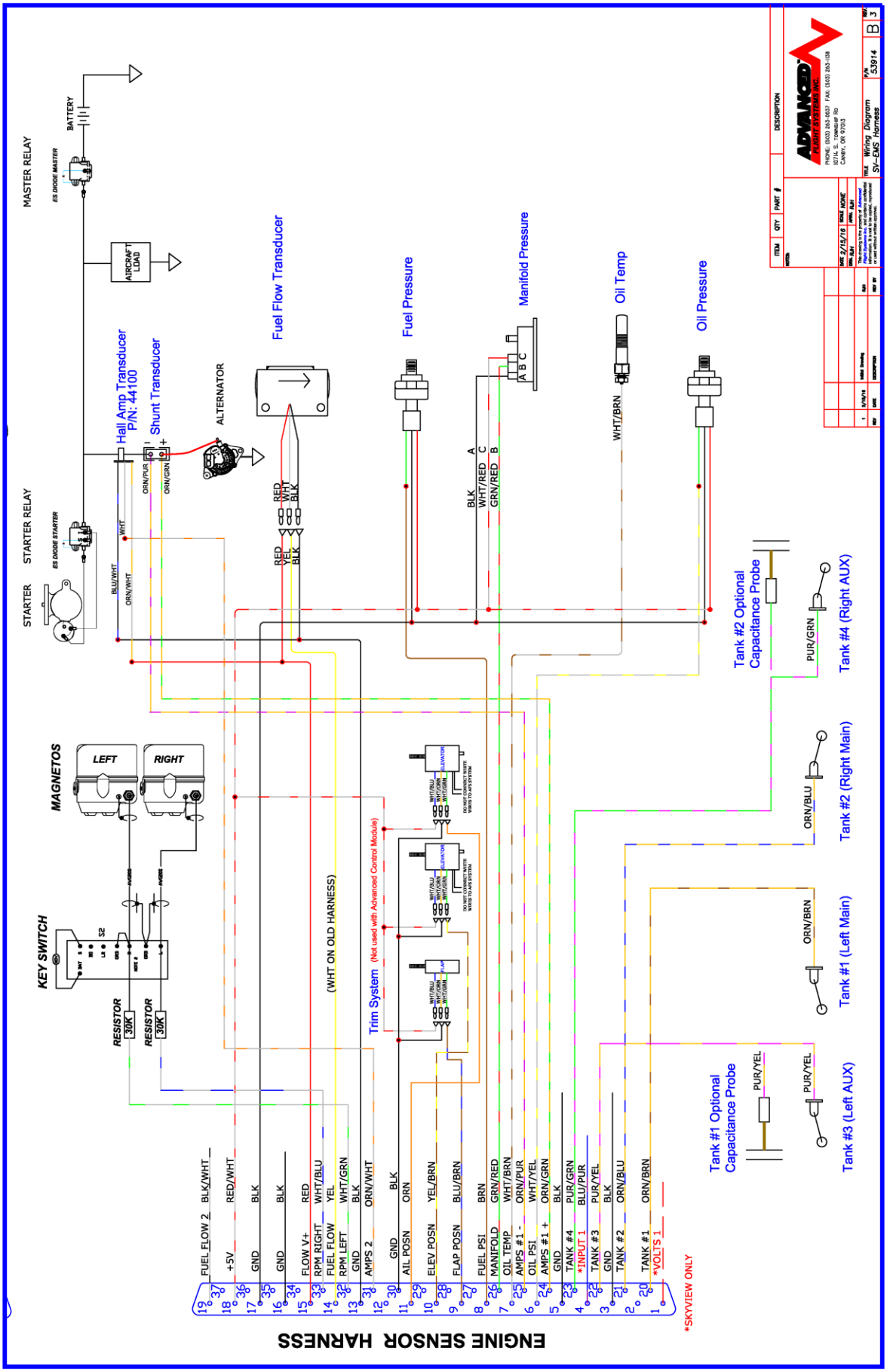
Advanced-SV Network Female D9 Pin	Advanced-SV Network Cable Wire Color	Description
1	Green	Network Data 1 A
2	Black	Network Ground 1
3	White with Black Stripe	Network Ground 2
4	White with Blue Stripe	Network Data 2 B
5	Orange	EMS Auxiliary Voltage
6	Blue	Network Data 1 B
7	Red	Network Power 1
8	White with Green stripe	Network Data 2 A
9	White with Red stripe	Network Power 2



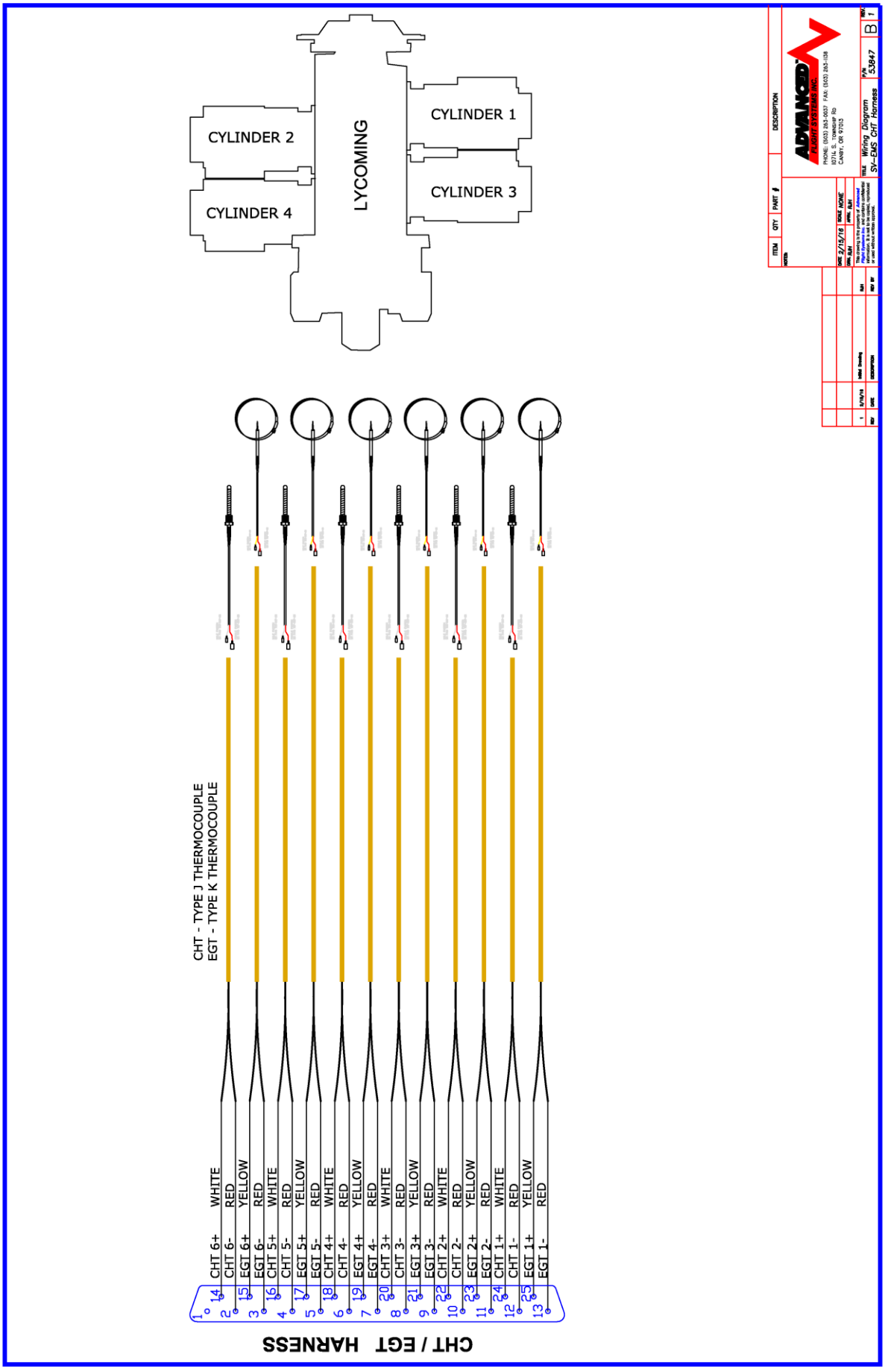
Network Female D9 Pin Insertion View (Rear)


SV-EMS-220
CYLINDER 1
CYLINDER 2
CYLINDER 3
CYLINDER 4
LYCOMING
MASTER RELAY
STARTER RELAY
STARTER
BATTERY
AIRCRAFT LOAD
ALTERNATOR
Hall Amp Transducer P/N: 44100
Shunt Transducer
Fuel Flow Transducer
Fuel Pressure
Manifold Pressure
Oil Temp
Oil Pressure
MAGNETOS
LEFT
RIGHT
KEY SWITCH
RESISTOR 120Ω
RESISTOR 120Ω
Trim System (Not used with Advanced Control Module)
(WHT ON OLD HARNESS)
CHT - TYPE J THERMOCOUPLE
EGT - TYPE K THERMOCOUPLE
CHT / EGT HARNESS
ENGINE SENSOR HARNESS
Tank #2 Optional Capacitance Probe
Tank #4 (Right AUX)
Tank #2 (Right Main)
Tank #1 (Left Main)
Tank #3 (Left AUX)
Tank #1 Optional Capacitance Probe
SV-NETWORK
*NOTE AF-5000 EFIS ONLY PIN 5 MUST BE JUMPERED TO PIN 7 TO POWER THE FUEL FLOW TRANSDUCER
Advanced-SV Network DB-9 Female
*SKYVIEW ONLY
ADVANCED FLIGHT SYSTEMS INC.
Wiring Diagram
SV-EMS
P/N 71320
REV B 2

53914 SV EMS Engine Sensor Harness Diagram



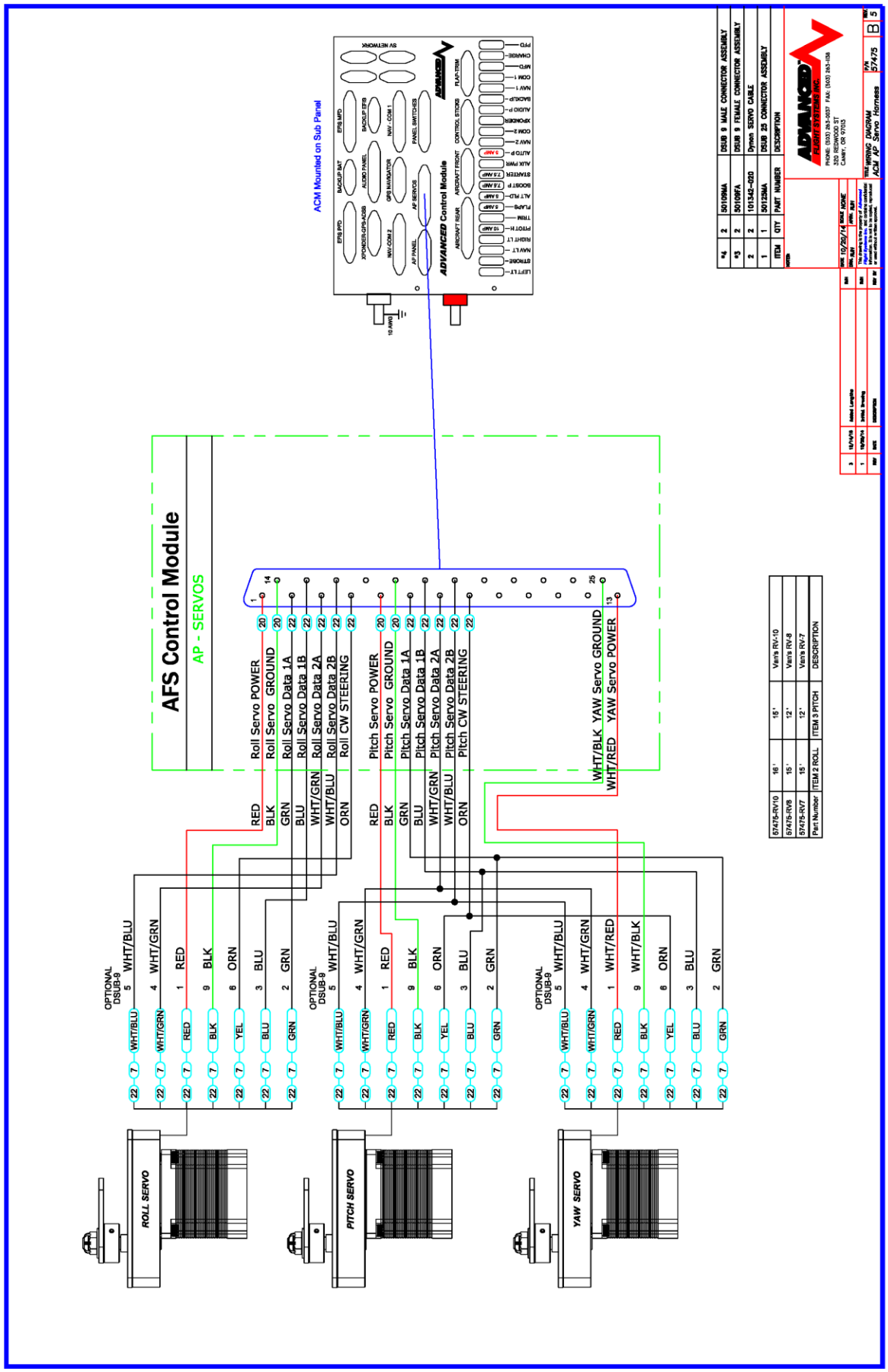
53847 SV EMS EGT-CHT Harness Diagram

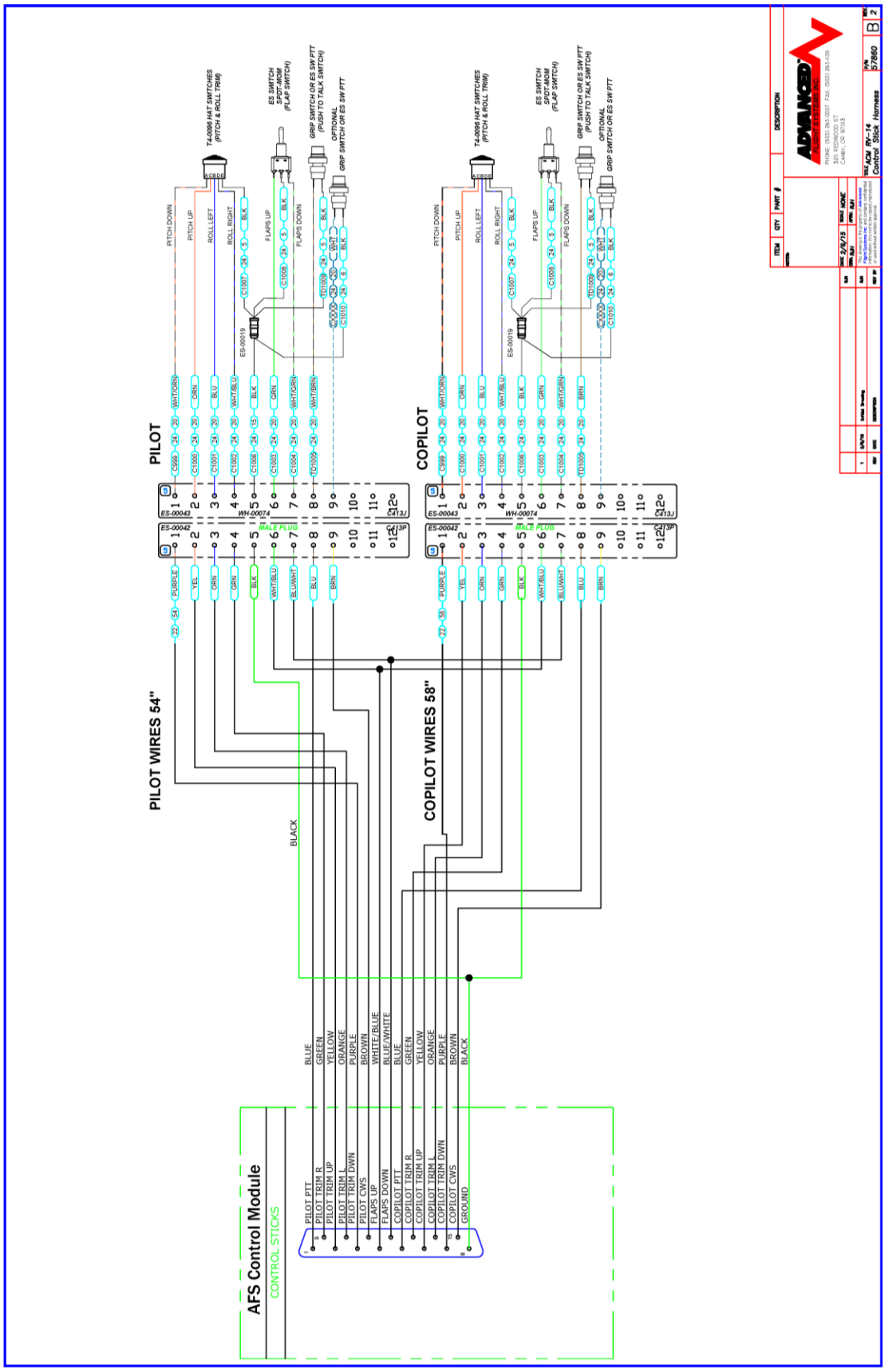


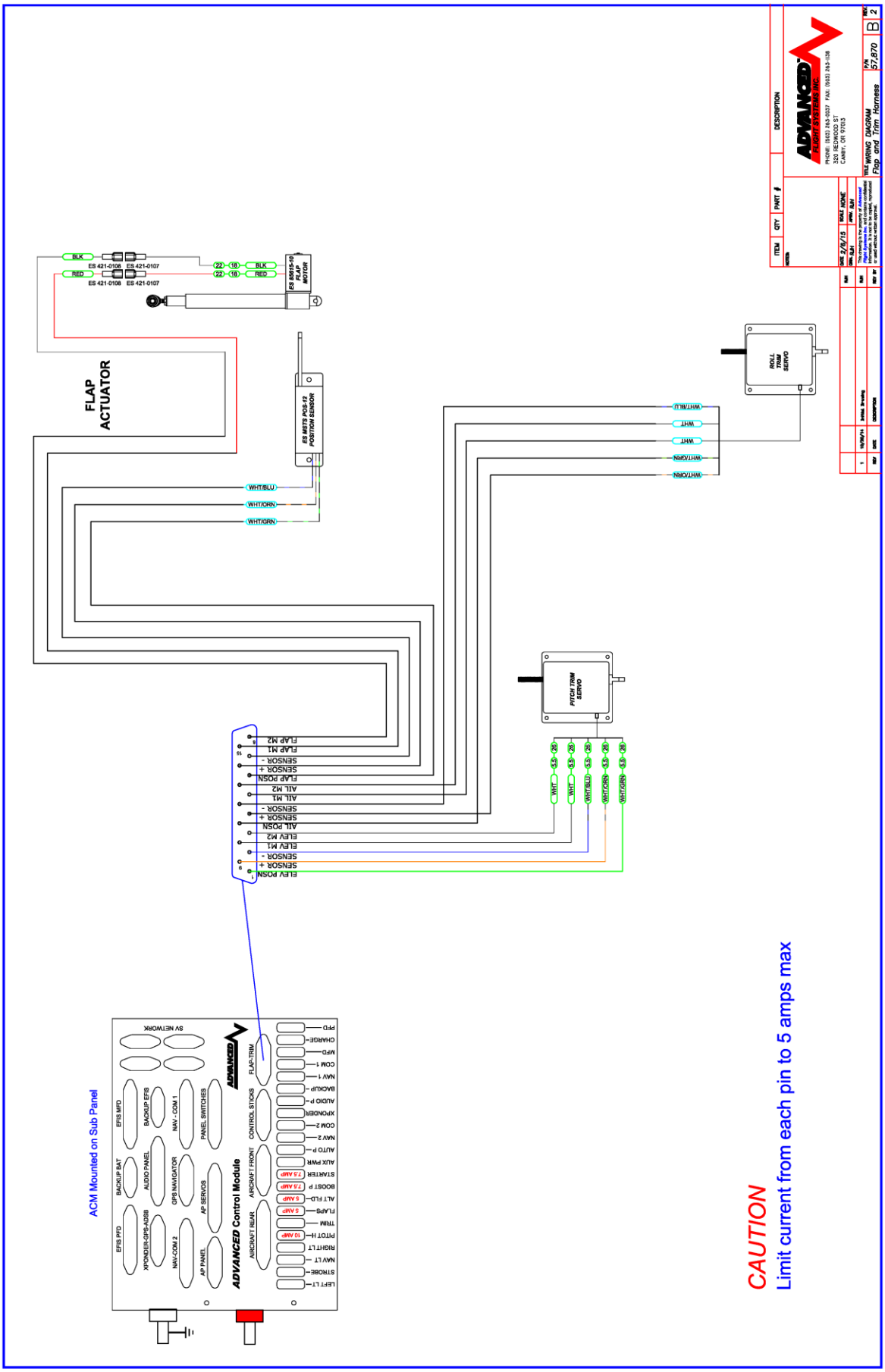
Advanced Control Module Fuses				
Fuse	**Description**	**Max Amps**	**Connector (Pins)**	**Control**
1	Left wing landing light	**10**	**AIRCRAFT REAR (13,25)**	**CPU**
2	Stobe Lights	**10**	**AIRCRAFT REAR (11,23,24)**	**CPU**
3	Nav Lights	**10**	**AIRCRAFT REAR (9,21,22)**	**CPU**
4	Right wing landing light	**10**	**AIRCRAFT REAR (7,20)**	**CPU**
5	Pitot Heat	**15**	**AIRCRAFT REAR (18,19)**	**Switch**
6	Trim Servos	**5**	**AP PANEL (9)**	**Vin-Power**
7	Flap Motor	**10**	**FLAP-TRIM**	**CPU**
8	Alternator Field	**5**	**AIRCRAFT FRONT (8)**	**Switch**
9	Boost Pump	**10**	**AIRCRAFT FRONT (7,15)**	**Switch**
10	Starter Contactor	**10**	**AIRCRAFT FRONT (6,14)**	**Vin-Power**
11	AUX Power (Defrost, AUX Plug)	**5+5**	**AIRCRAFT FRONT (12,13)**	**Switch**
12	Autopilot servos	**10**	**AP SERVOS (1,5,13)**	**Switch**
13	Nav 2 Radio	**10**	**NAV-COM 2 (12,13)**	**AV2 Relay**
14	Com 2 Radio	**10**	**NAV-COM 2 (1,2,3)**	**AV2 Relay**
15	Transponder + ADS-B	**5**	**XPONDER-GPS-ADSB (1,6)**	**AV2 Relay**
16	Audio Panel	**5**	**AUDIO PANEL (1,2)**	**AV2 Relay**
17	Backup EFIS - CO Detector	**5**	**BACKUP EFIS (1,5)**	**AV2 Relay**
18	NAV 1 Radio + GPS	**10**	**NAV-COM 1 (12,13)** **GPS NAVIGATOR (1,2)**	**AV1 Relay**
19	Com 1 Radio	**10**	**NAV-COM 1 (1,2,3)**	**AV1 Relay**
20	MFD EFIS	**5**	**EFIS MFD (1,2)**	**AV1 Relay**
21	Backup Battery Charger	**10**	**BACKUP BAT (2,3)**	**AV1 Relay**
22	PFD EFIS	**5**	**EFIS PFD (1,2)**	**Vin-Power**

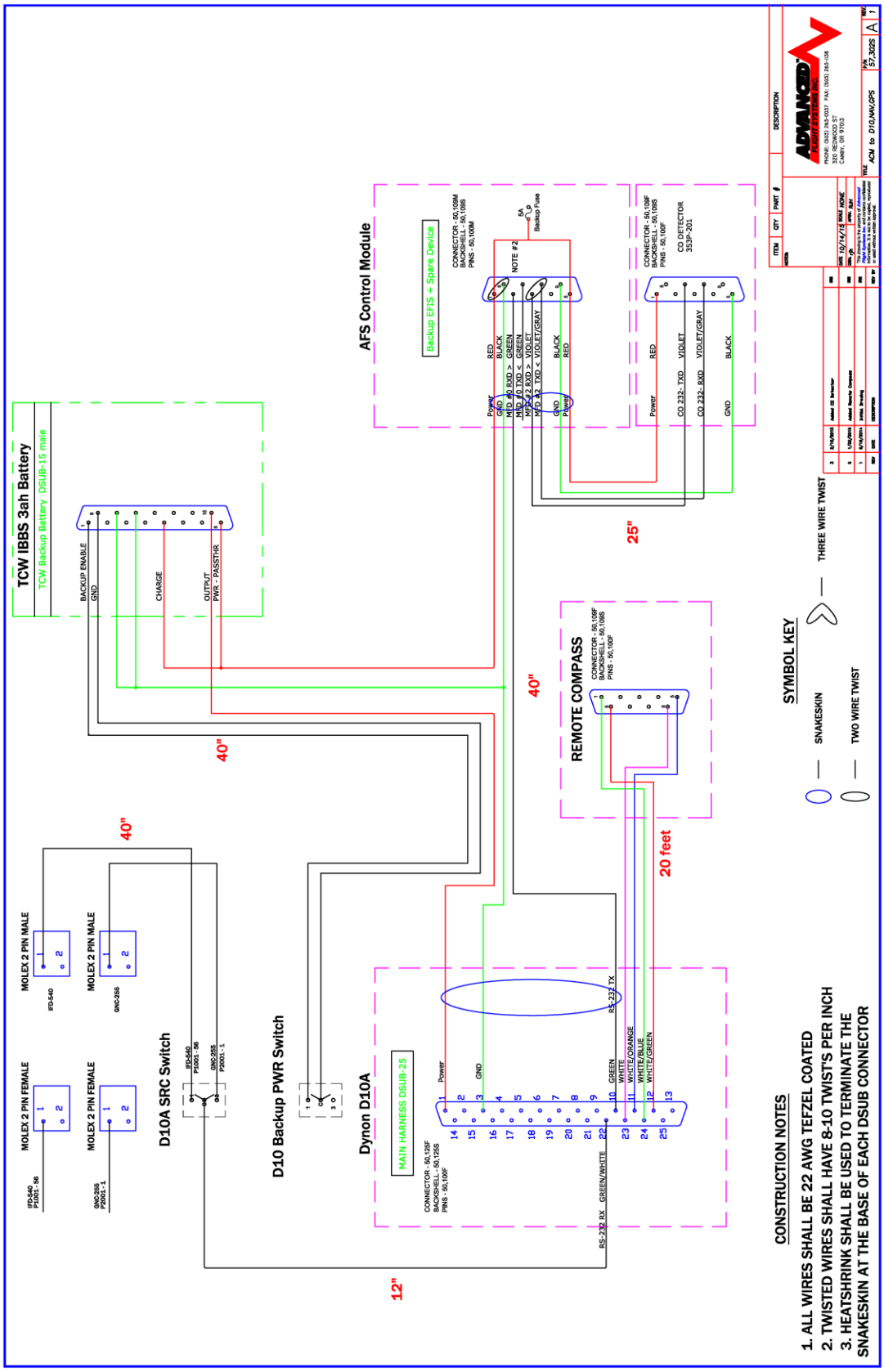
ACM-ECB Electronic Circuit Breakers

The ACM-ECB module uses electronic circuit breakers that can be reset or shut off from the EFIS screen.

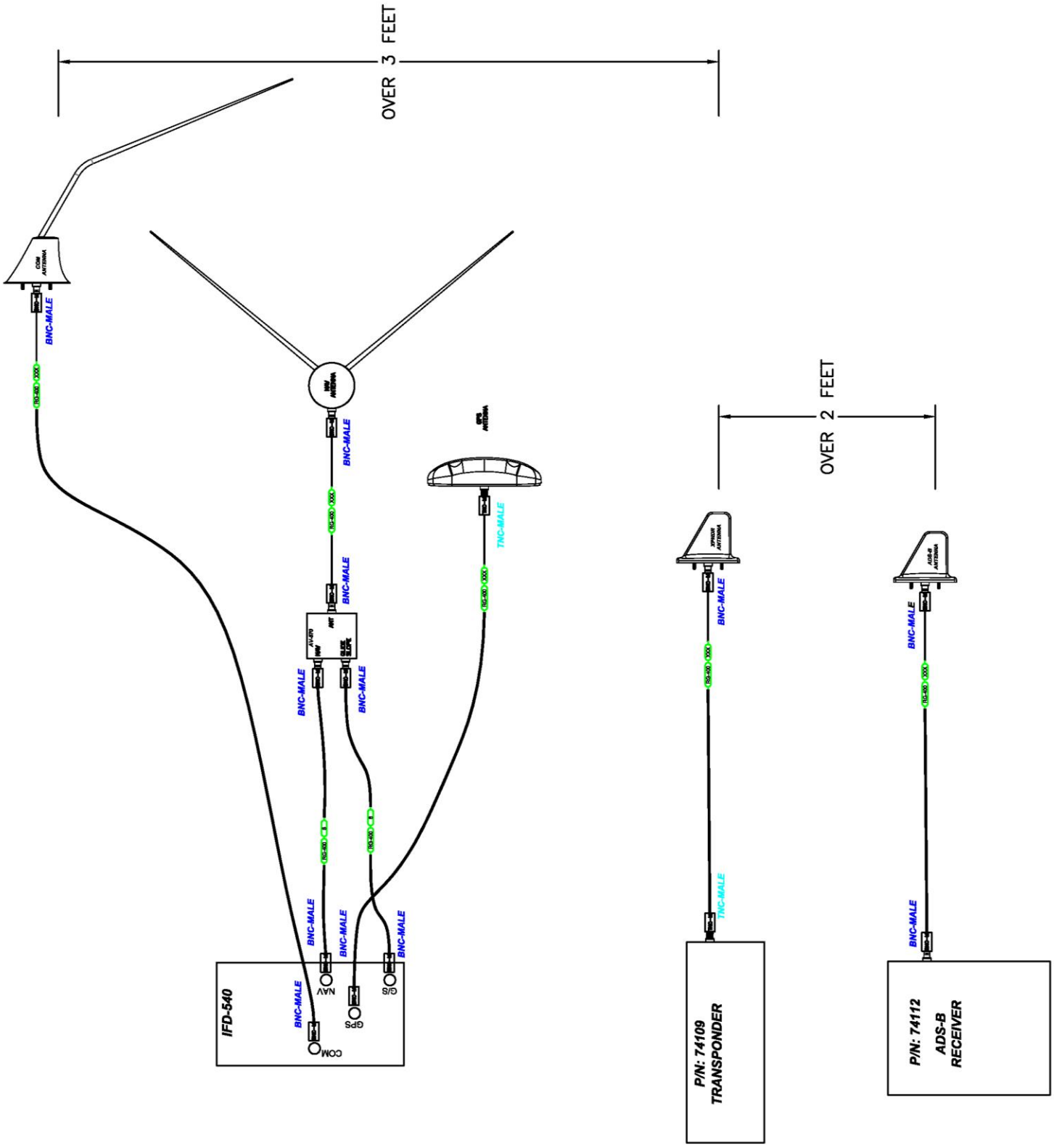

ACM Mounted on Sub Panel
ADVANCED Control Module
AFS Control Module
AP - SERVOS
Roll Servo POWER
Roll Servo GROUND
Roll Servo Data 1A
Roll Servo Data 1B
Roll Servo Data 2A
Roll Servo Data 2B
Roll CW STEERING
Pitch Servo POWER
Pitch Servo GROUND
Pitch Servo Data 1A
Pitch Servo Data 1B
Pitch Servo Data 2A
Pitch Servo Data 2B
Pitch CW STEERING
WHT/BLK YAW Servo GROUND
WHT/RED YAW Servo POWER
OPTIONAL DSUB-9
ROLL SERVO
PITCH SERVO
YAW SERVO
57475-RV10 16' Vans RV-10
57475-RV8 15' 12' Vans RV-8
57475-RV7 15' 12' Vans RV-7
Part Number ITEM 2 ROLL ITEM 3 PITCH DESCRIPTION
#4 2 S0109MA DSUB 9 MALE CONNECTOR ASSEMBLY
#3 2 S0109FA DSUB 9 FEMALE CONNECTOR ASSEMBLY
2 2 101345-020 Dynon SERVO CABLE
1 1 S0125MA DSUB 25 CONNECTOR ASSEMBLY
ITEM QTY PART NUMBER DESCRIPTION
ADVANCED FLIGHT SYSTEMS INC.
320 REDWOOD ST
Canby, OR 97013
TITLE WIRING DIAGRAM
ACM AP Servo Harness
DWG 57475
SIZE B
REV 5

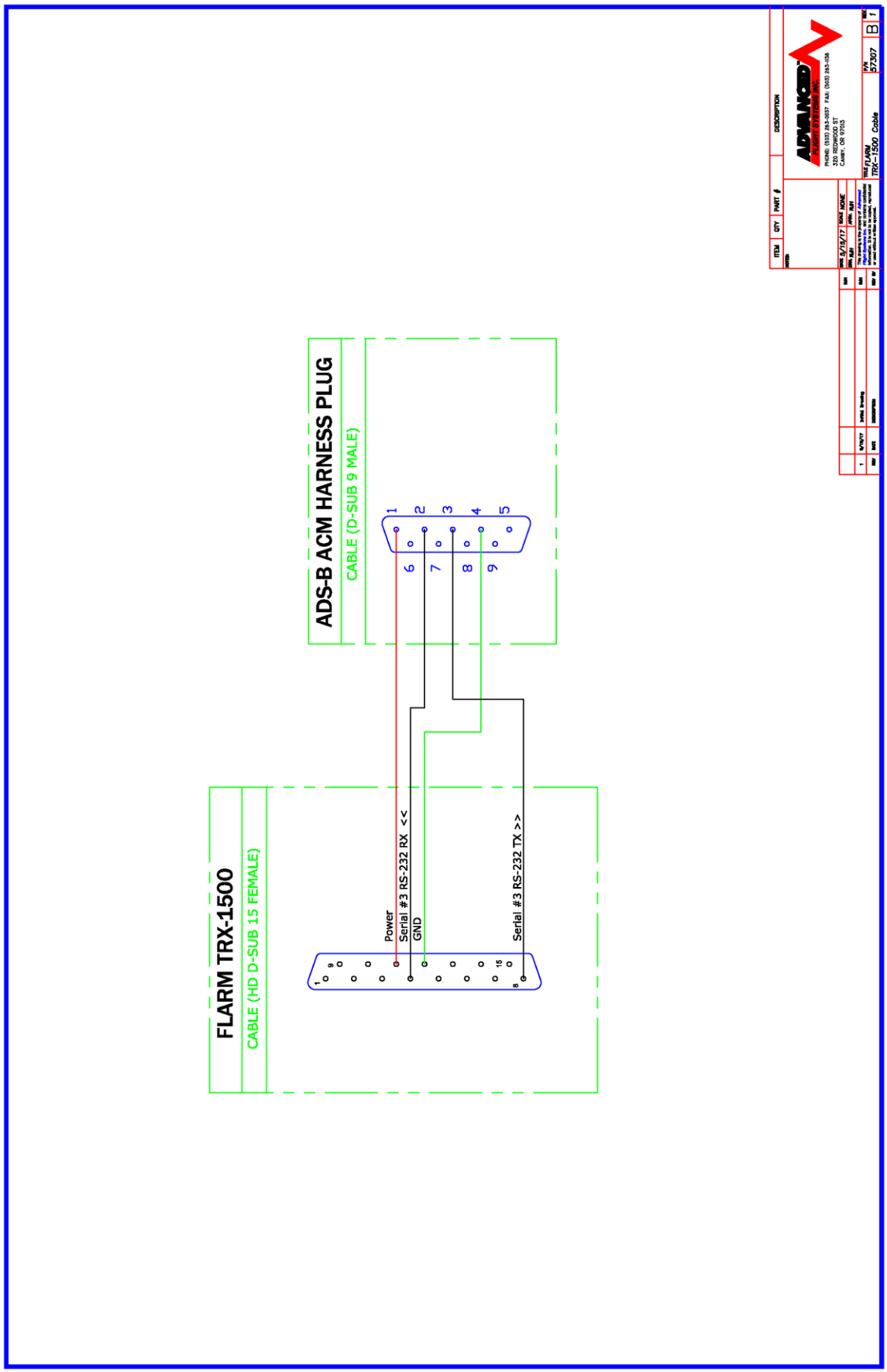

PILOT
COPILOT
PILOT WIRES 54"
COPILOT WIRES 58"
AFS Control Module
CONTROL STICKS
PILOT PTT
PILOT TRIM R
PILOT TRIM UP
PILOT TRIM L
PILOT TRIM DWN
PILOT CWS
FLAPS UP
FLAPS DOWN
COPILOT PTT
COPILOT TRIM R
COPILOT TRIM UP
COPILOT TRIM L
COPILOT TRIM DWN
COPILOT CWS
GROUND
BLUE
GREEN
YELLOW
ORANGE
PURPLE
BROWN
WHITE/BLUE
BLUE/WHITE
BLACK
T4-0096 HAT SWITCHES (PITCH & ROLL TRIM)
ES SWITCH 57860-HAM (FLAP SWITCH)
GRIP SWITCH OR ES SW PTT (PUSH TO TALK SWITCH)
OPTIONAL GRIP SWITCH OR ES SW PTT
MALE PLUG
ADVANCED FLIGHT SYSTEMS INC.
RV-14 Control Stick Harness
57860


FLAP ACTUATOR
ES 85615-10 FLAP MOTOR
ES MBT3 POS-12 POSITION SENSOR
ROLL TRIM SERVO
PITCH TRIM SERVO
ADVANCED Control Module
ACM Mounted on Sub Panel
CAUTION
Limit current from each pin to 5 amps max
TITLE WIRING DIAGRAM
Flap and Trim Harness
P/N 57.870


TCW IBBS 3ah Battery
TCW Backup Battery DSUB-15 male
BACKUP ENABLE
GND
CHARGE
OUTPUT PWR - PASSTHR
AFS Control Module
Backup EFIS + Spare Device
CONNECTOR - 50.100M
BACKSHELL - 50.100S
PINS - 50.100M
NOTE #2
5A Backup Fuse
Power
GND
MFD #1 RXD > GREEN
MFD #1 TXD < VIOLET
MFD #2 RXD > VIOLET
MFD #2 TXD < VIOLET/GRAY
GND
Power
RED
BLACK
RED
BLACK
RED
CONNECTOR - 50.108F
BACKSHELL - 50.108S
PINS - 50.108F
CO DETECTOR 353P-201
CO 232- TXD VIOLET
CO 232- RXD VIOLET/GRAY
GND BLACK
25"
REMOTE COMPASS
CONNECTOR - 50.108F
BACKSHELL - 50.108S
PINS - 50.108F
40"
20 feet
MOLEX 2 PIN MALE
MOLEX 2 PIN FEMALE
IFD-540
GNC-255
D10A SRC Switch
D10 Backup PWR Switch
40"
40"
12"
Dynon D10A
MAIN HARNESS DSUB-25
CONNECTOR - 50.125F
BACKSHELL - 50.125S
PINS - 50.100F
Power
GND
RS-232 TX
RS-232 RX
GREEN
WHITE
WHITE/ORANGE
WHITE/BLUE
WHITE/GREEN
GREEN/WHITE
SYMBOL KEY
SNAKESKIN
THREE WIRE TWIST
TWO WIRE TWIST
CONSTRUCTION NOTES
1. ALL WIRES SHALL BE 22 AWG TEFZEL COATED
2. TWISTED WIRES SHALL HAVE 8-10 TWIST'S PER INCH
3. HEATSHRINK SHALL BE USED TO TERMINATE THE SNAKESKIN AT THE BASE OF EACH DSUB CONNECTOR
ADVANCED FLIGHT SYSTEMS INC.
ACM to D10,NAV,GPS
57.302S

Use RG400 Cable and Contact airframe manufacturer for recommended mounting locations.




ADS-B ACM HARNESS PLUG
CABLE (D-SUB 9 MALE)
1
2
3
4
5
6
7
8
9
FLARM TRX-1500
CABLE (HD D-SUB 15 FEMALE)
Power
Serial #3 RS-232 RX <<
GND
Serial #3 RS-232 TX >>
1
9
15
8
ADVANCED FLIGHT SYSTEMS INC.
FLARM TRX-1500 Cable
97307

FLARM TRX-1500 Configuration

Use the TRX PC configuration software set the TRX-1500 to:

Serial Port 3 Output format: GARMIN TIS

Baud Rate: 9600

On the MFD EFIS screen:

Calibration->Admin Settings. Set item, '**6. Port 3**' to '**ZAON TRFC**'

RV-14 Remote Component Mounting

The remote radio transceiver, backup battery and audio panel mount on new ribs mounted in the glove compartment area. The following modifications need to be done:

- Remove glove compartment ring from the RV-14 sub panel P/N: F-01455B
- Install new ribs to the RV-14 sub panel P/N:68102 and P/N:68103
- Install new center console cover plate with Alternator Circuit breaker and Alternator Shunt P/N: 68101

Avidyne IFD-540 Tray Mounting

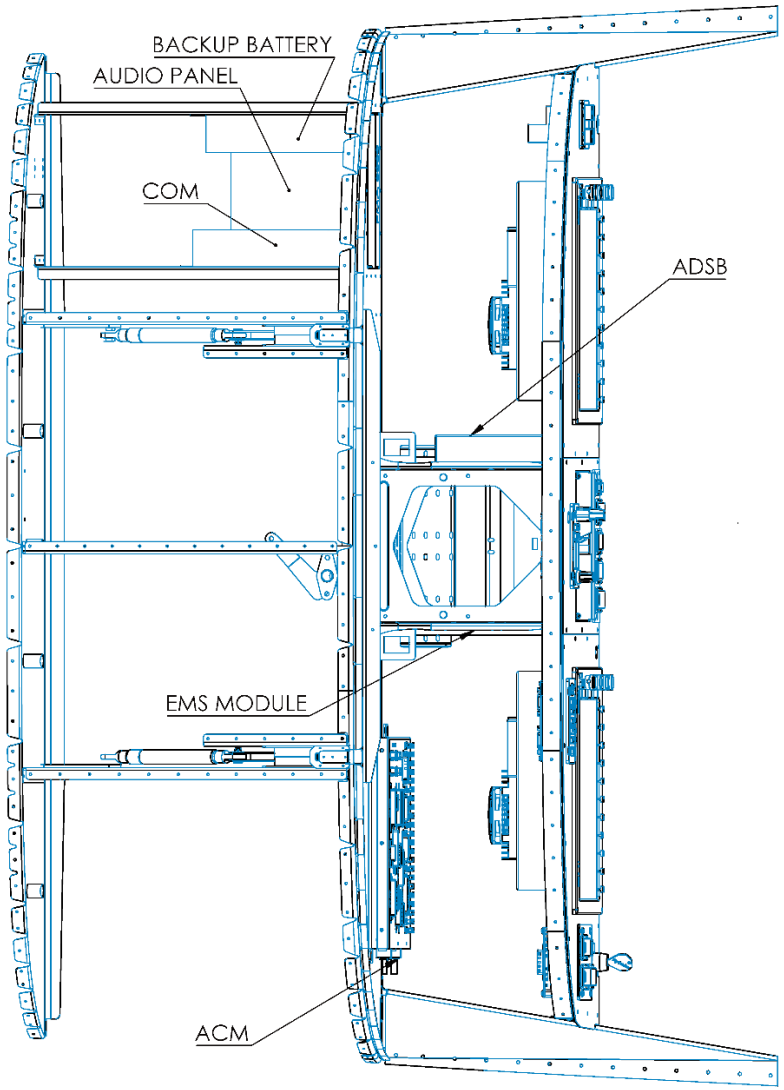
The IFD Tray mounts to the RV-14 airframe panel ribs. You will need to use the IFD tray as a template to mark the side hole locations on the airframe panel ribs. After marking the 8 hole locations, 4 on each side you will need to drill for 6-32 screws. Mount the tray to the airframe panel ribs using qty 8 6-32 x 3/8" counter sunk screws and nylon lock nuts.

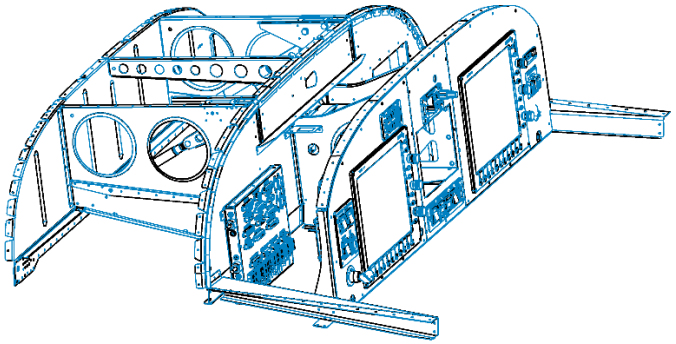
RV-14 EMS-220 Module Install

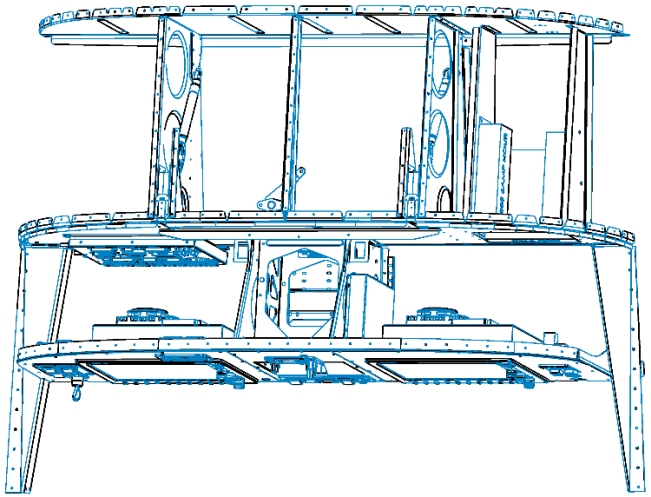
Mount the EMS-220 to the left side panel mounting rib, see P/N: 25014 RV-14 remote component mounting drawing.

RV-14 SV-ADSB-470/472 ADS-B Module Install

Mount the ADSB receiver to the right side panel mounting rib, see P/N: 25014 RV-14 remote component mounting drawing.







REVISION TITLE: RV 14 AVIONICS ASSEMBLY
DRAWING NUMBER:

ADVANCED FLIGHT SYSTEMS INC.

ADVANCED FLIGHT SYSTEMS INC.
PO Box 270 Canby, OR 97013
Tel: (503) 263-0037 Fax: (503) 263-1138
Email: Rob@Advanced-Flight-Systems.com
www.Avanced-Flight-Systems.com

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DWN: VR | EDIT DATE: 3/16/2017 | CHK: -
SHEET: 1 OF 1 | SIZE: B | SCALE:
CONFIGURATION: Default
TOLERANCES: .XX ±.010 .XXX ±005 HOLES: +.010/-.000 ANGLES: ±0.25° SURFACE FIN.:
SolidWorks

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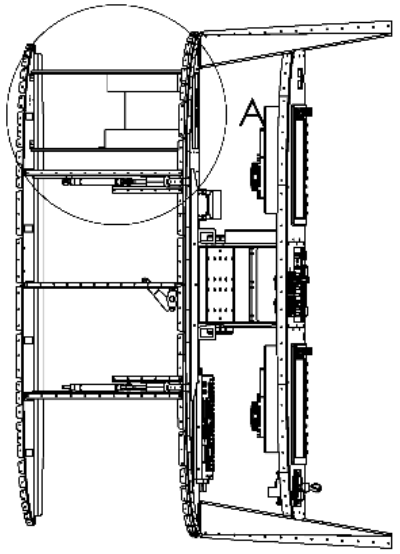
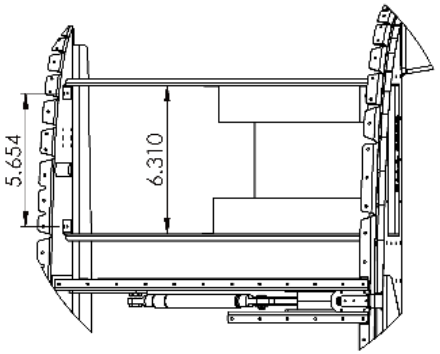
REVISION: | DRAWING NUMBER: 25014

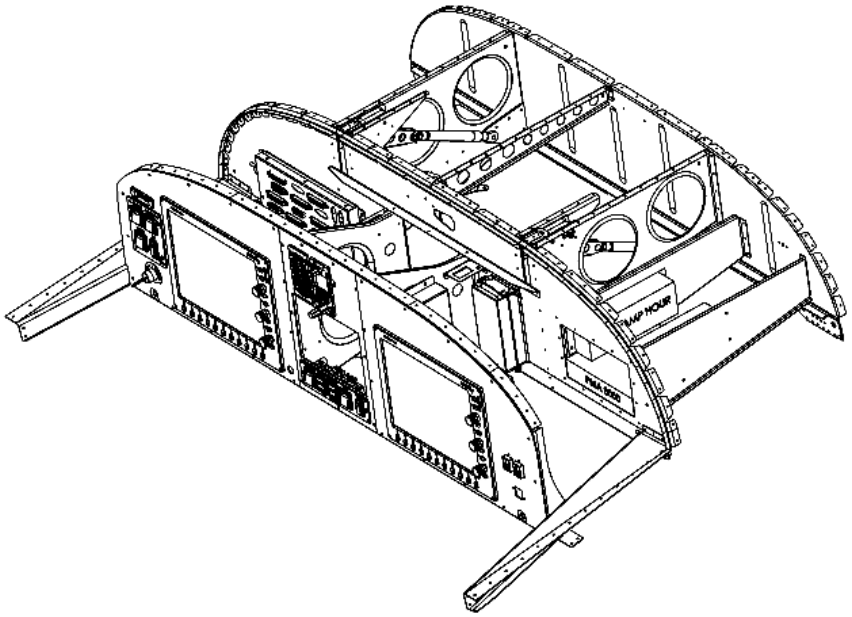
TITLE: 14 COMPONENTS



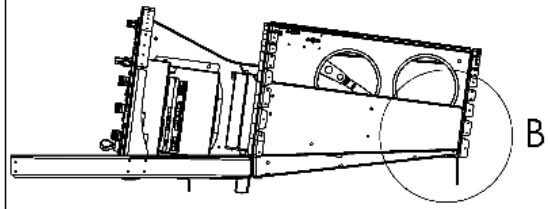


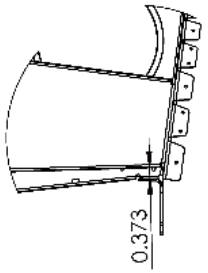
DETAIL A

SCALE 1 : 5



Avionics Assembly





DETAIL B

SCALE 1 : 4

ADVANCED FLIGHT SYSTEMS INC.

Advanced Flight Systems Inc.
PO Box 270 Canby, OR 97013
Tel: (503) 263-0037 Fax: (503) 263-1138
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www.Avanced-Flight-Systems.com

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DRAWN JRH | CHECKED | DATE 10/20/2015 | QA | MFG

SHEET 2 OF 2 | SIZE B | SCALE

CONFIGURATION Default

TOLERANCES
HOLES: +.010/-.000
.XX ±.010
ANGLES: ±0.25°
.XXX ±.005
SURFACE FIN.:

SolidWorks

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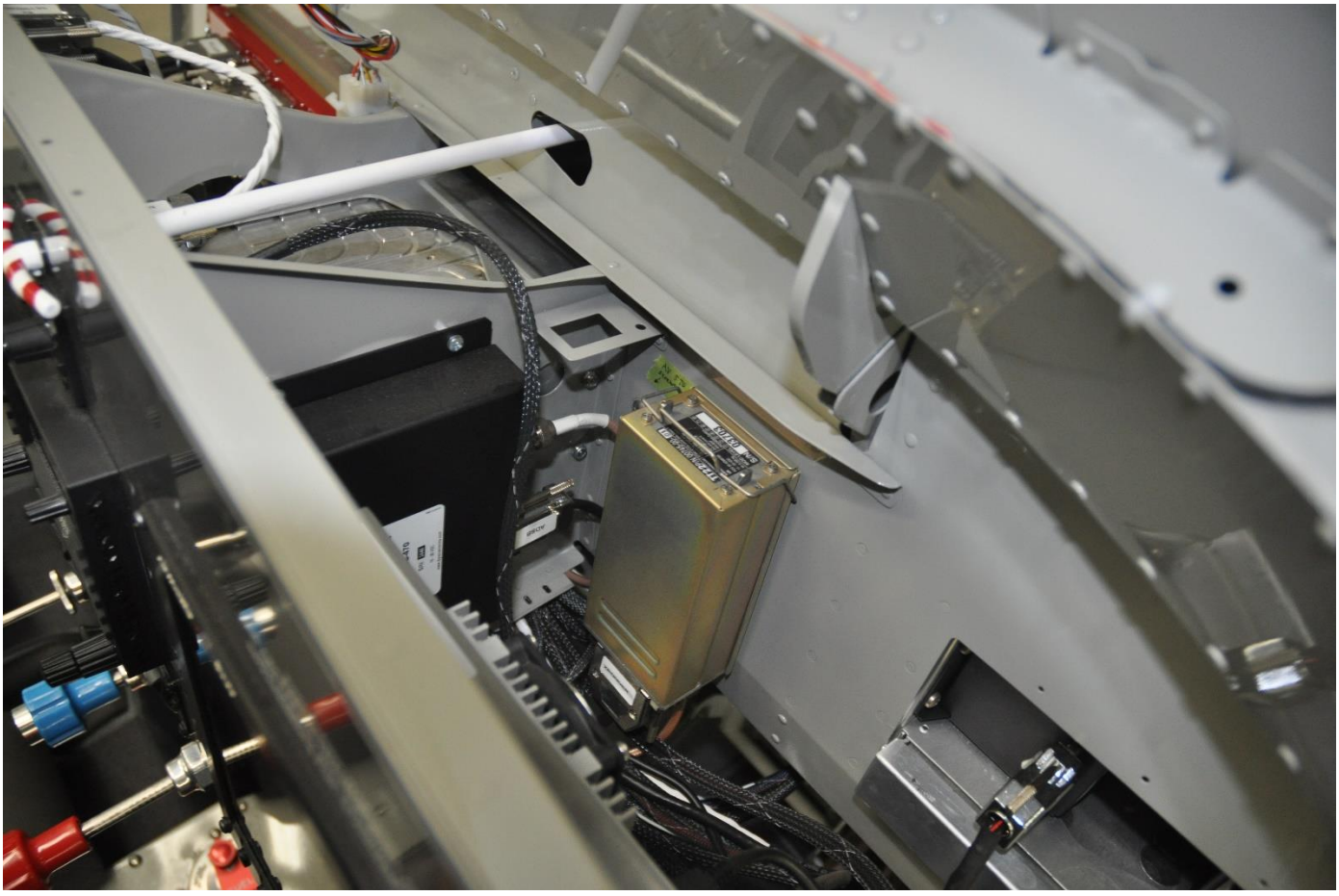
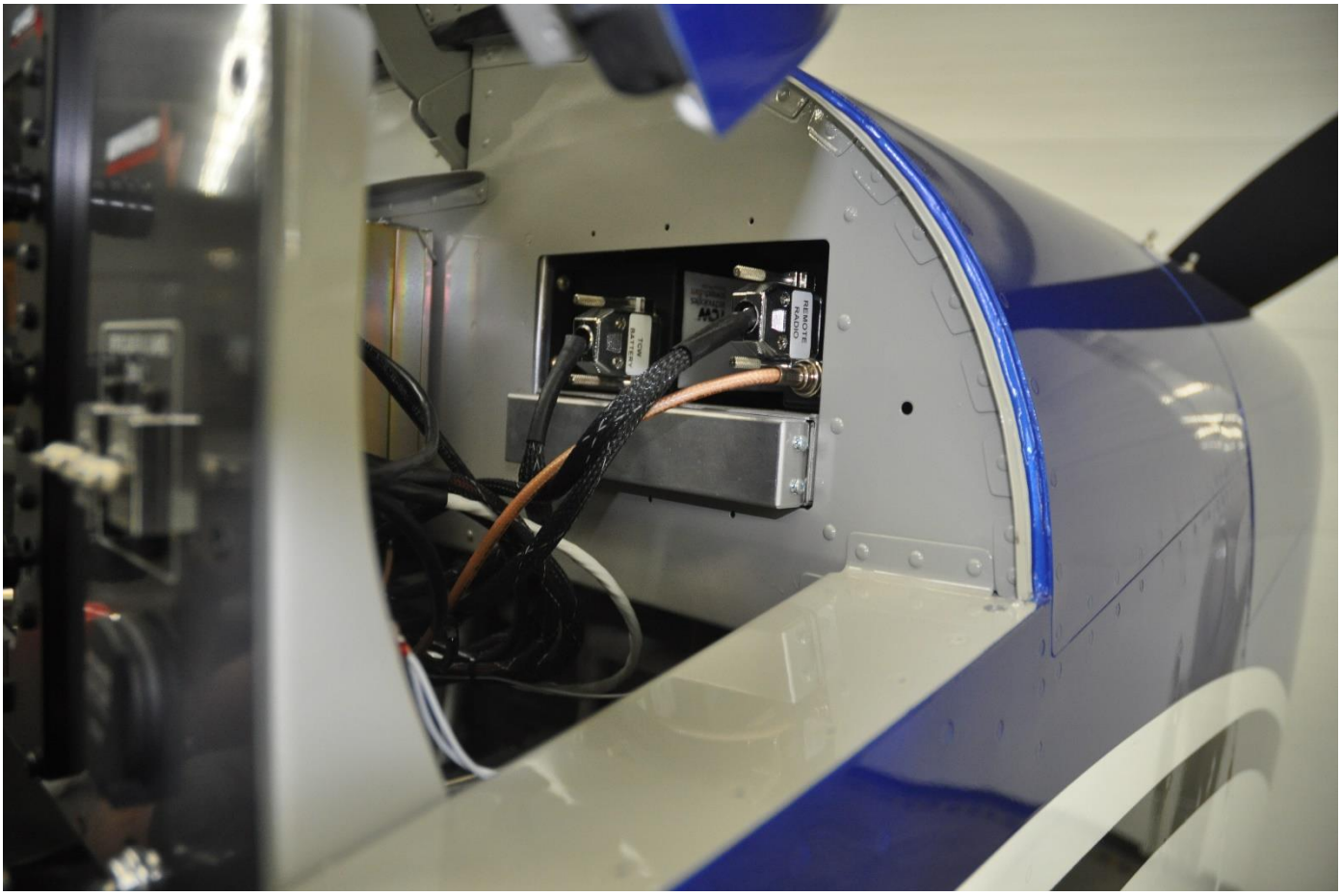
VERSION | DESCRIPTION

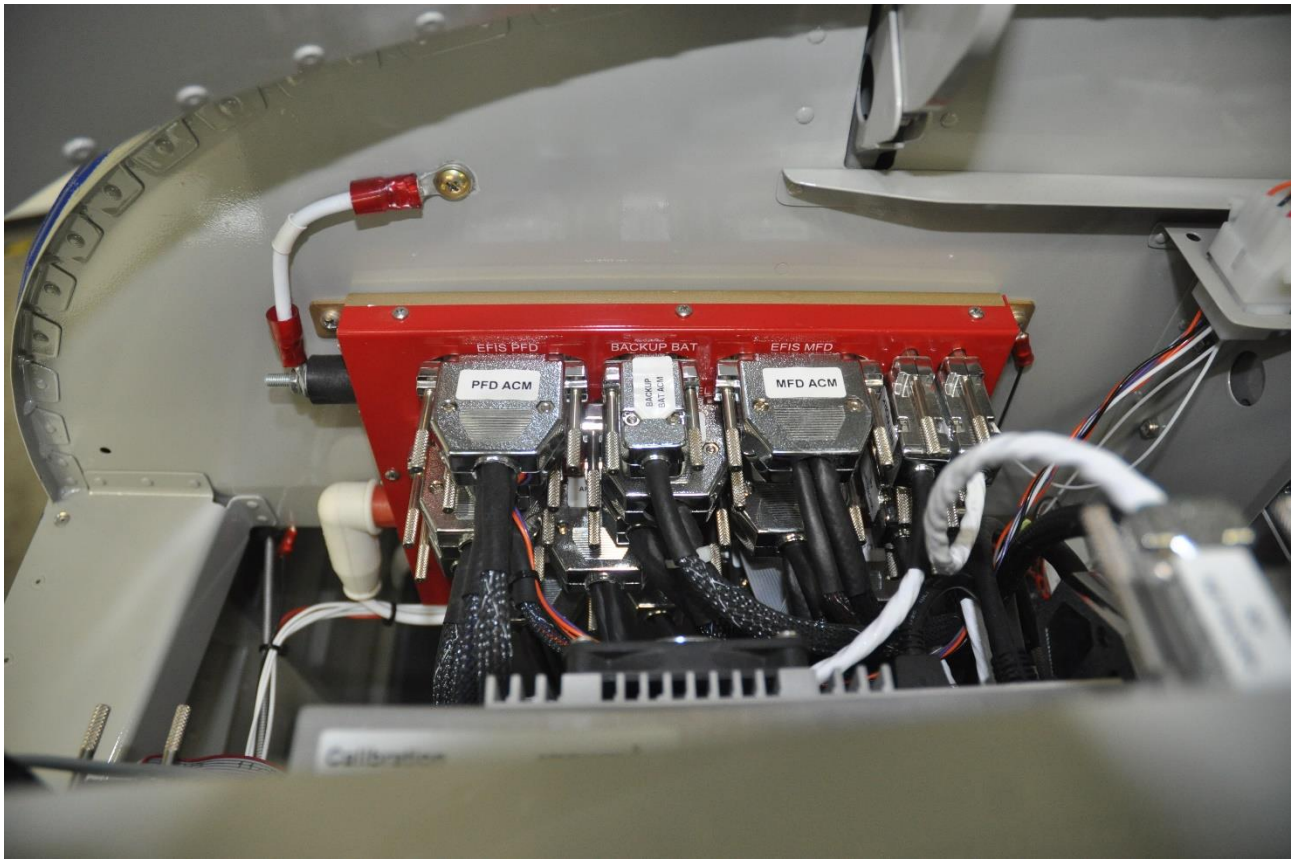
DWG NO. RV14 INSTALLATION




REMOTE
RADIO

Advanced Control Module (ACM)

The P/N: 70050 ACM or 70080 ACM-ECB module mounts on the sub panel behind the EFIS PFD. You will need to drill the sub-panel using the ACM module as a template. The ACM module should be connected using QTY:4 10-32 x .5" screw, washer and nylon lock nut. You will also need to drill the sub-panel for the ACM ground wire, make sure you remove the paint for a good electrical contact using a 10-32 x .5" screw, washer and nylon lock nut.



- Connect the main power wire from the battery master relay to the red power lug on the ACM. The Van's supplied main power wire should have a ¼" (0.250") ring terminal with a molded plastic cover.

- Connect the ground power wire from the airframe ground to the black power lug on the ACM. The ACM main ground wire should have a #10 ring terminal with a molded plastic cover.

Do not over-torque the power terminal nuts, they are soft copper and will break if over-torqued.

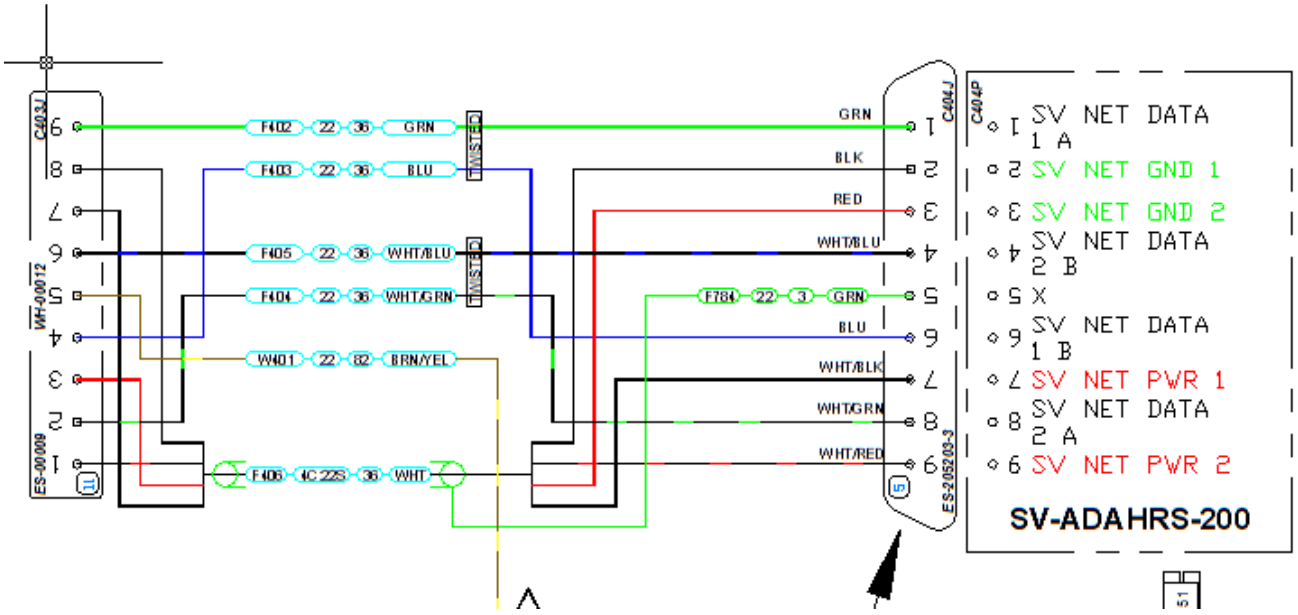
Red Main Power Terminal Max Nut Torque: 30 in-lbs

Black Main Ground Terminal Max Nut Torque: 24 in-lbs

RV-14 ADAHRS Mounting and Wiring

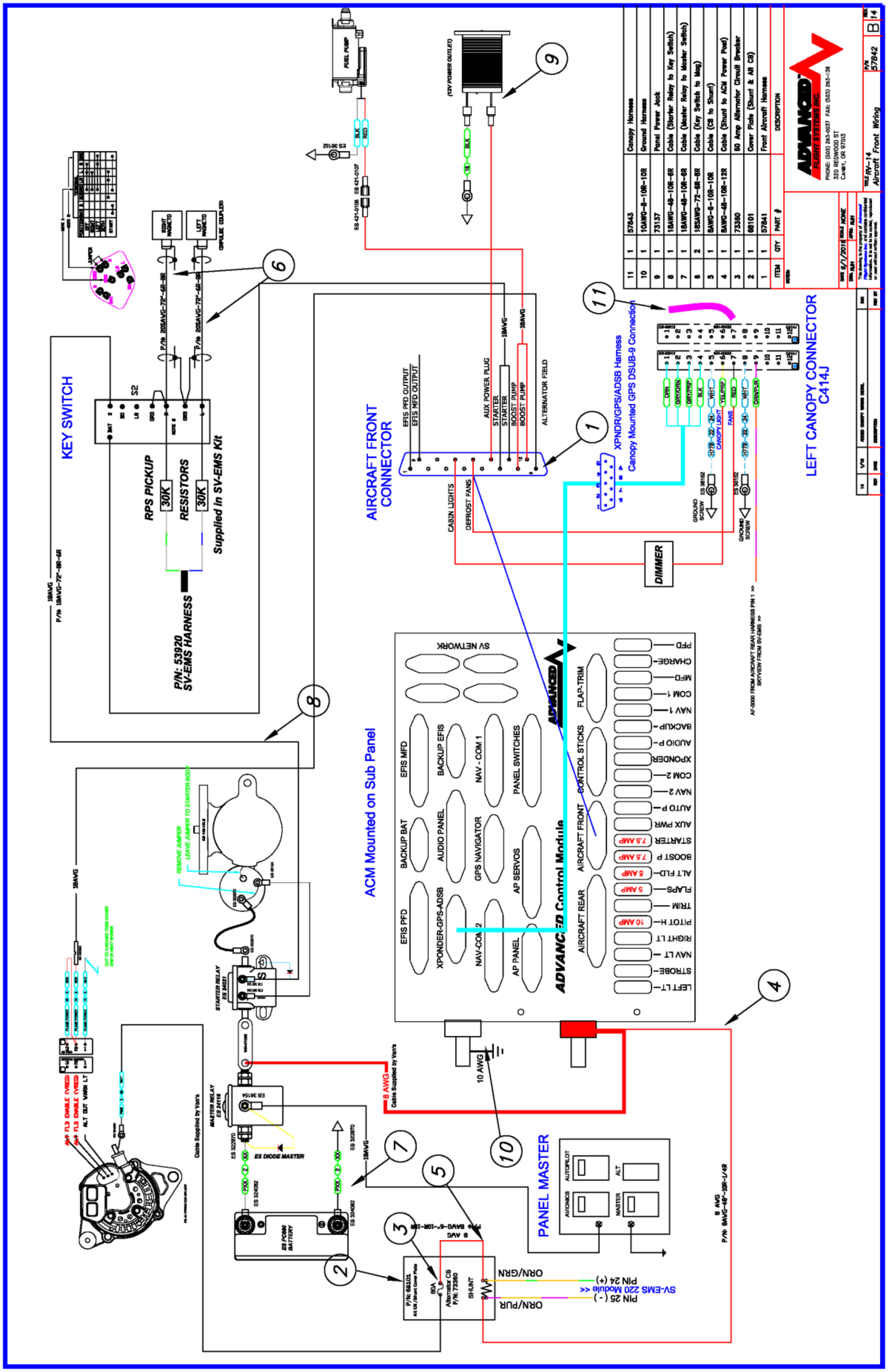
The RV-14 ADAHRS mounts in the left wing using the Van's supplied slide in mounting bracket. The Van's ADAHRS bracket has a built-in tab that will hold the ADAHRS into the slide in mounting bracket. The ADAHRS should slide into the bracket slots and not have any slop or looseness. If the ADAHRS is loose in the bracket you will need to shim the ADAHRS with UHMW tape. If you are using a dual ADAHRS system you should bolt the backup ADAHRS to the primary ADAHRS using the AFS supplied Dual ADAHRS mounting kit and instructions. When the ADARS is properly installed the PITOT/STATIC ports should point forward.

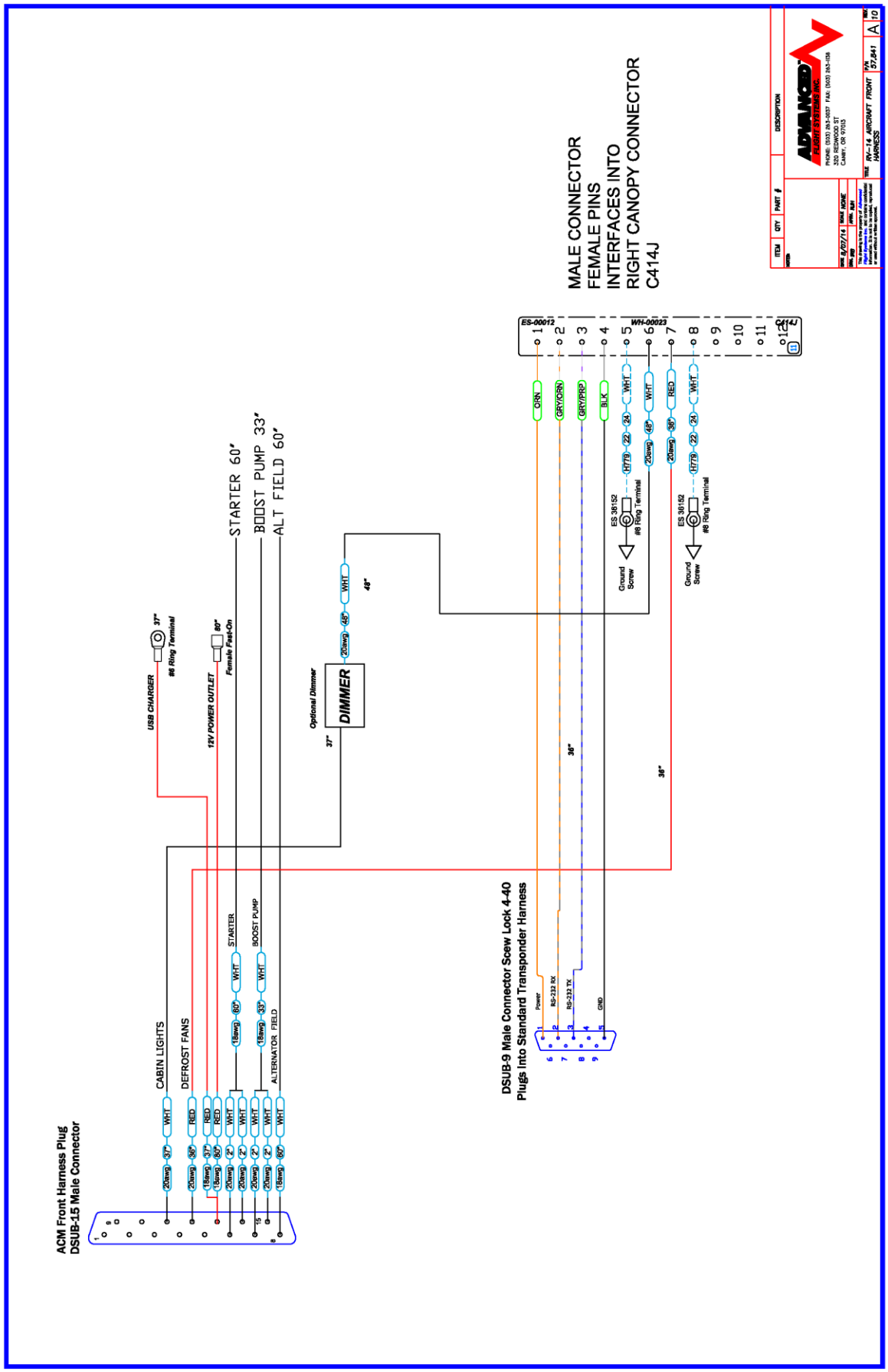
The ADAHRS wires are supplied in the Van's wing kit, you will need to insert the pre-wired female pins into the AFS supplied DSUB 9 female connector and connector Shell.



RV-14 Aircraft Front Wiring (P/N: 57842)

Complete the aircraft front wiring using the following drawing and items.



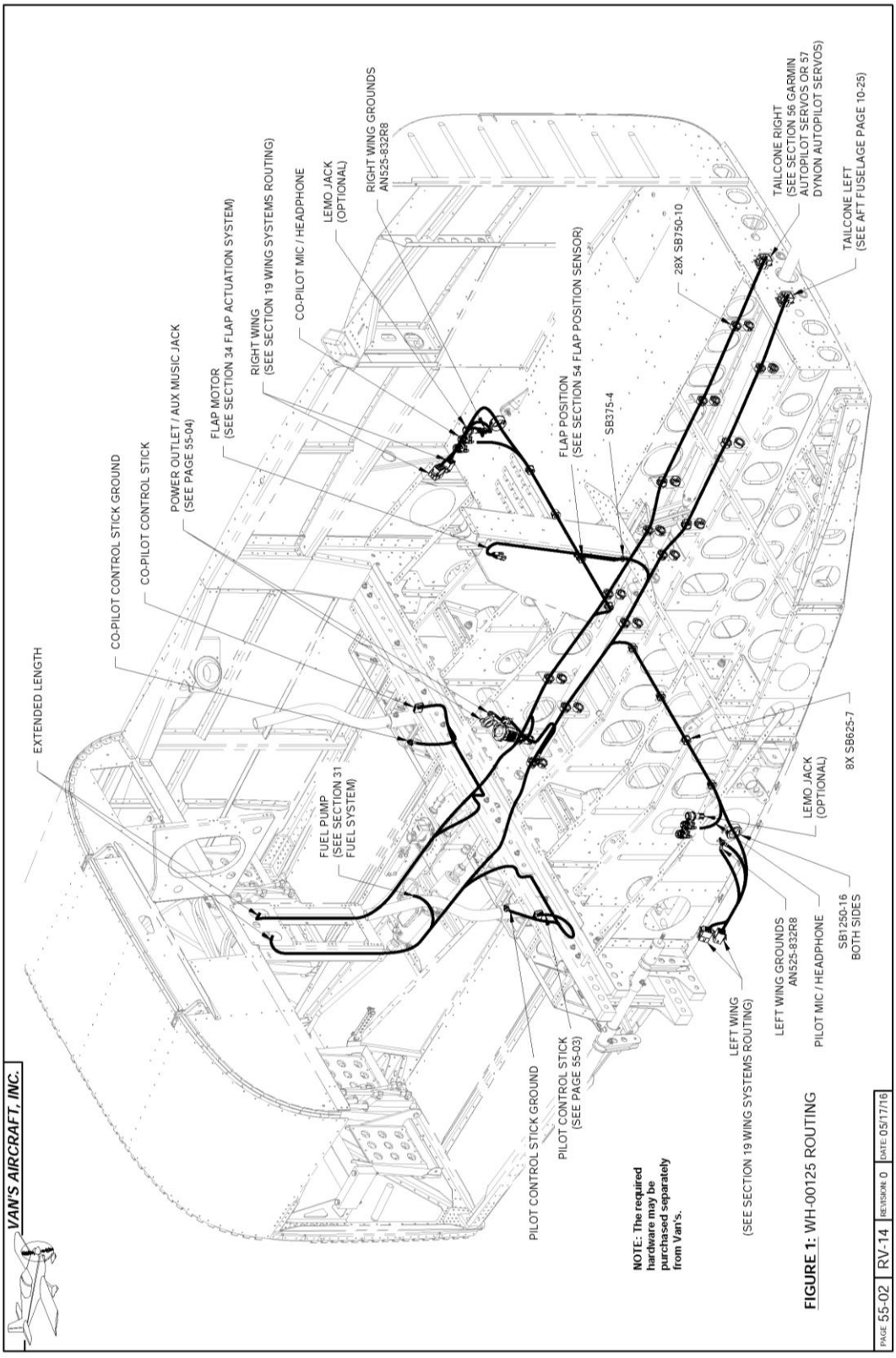

ACM Front Harness Plug
DSUB-15 Male Connector
CABIN LIGHTS
DEFROST FANS
STARTER
BOOST PUMP
ALTERNATOR FIELD
STARTER 60"
BOOST PUMP 33"
ALT FIELD 60"
USB CHARGER
#6 Ring Terminal
12V POWER OUTLET
Female Fast-On
Optional Dimmer
DIMMER
DSUB-9 Male Connector Scew Lock 4-40
Plugs Into Standard Transponder Harness
Power
RS-232 RX
RS-232 TX
GND
ES-00012
WH-00023
C414J
ORN
GRY/ORN
GRY/PRP
BLK
WHT
RED
ES 36152
#8 Ring Terminal
Ground Screw
MALE CONNECTOR
FEMALE PINS
INTERFACES INTO
RIGHT CANOPY CONNECTOR
C414J
RV-14 AIRCRAFT FRONT HARNESS
ADVANCED FLIGHT SYSTEMS INC.

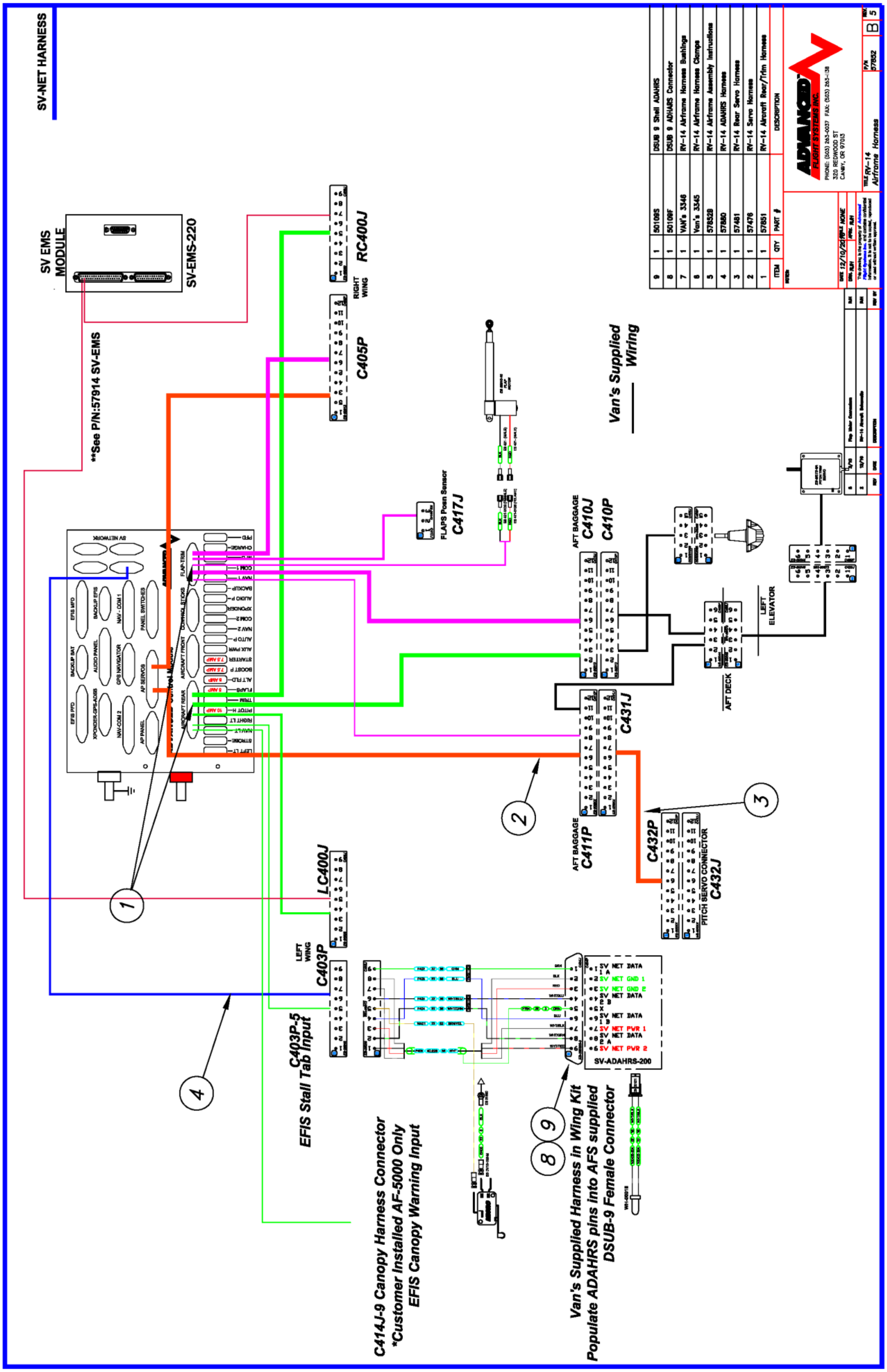
RV-14 Airframe Harnesses (P/N: 57852)

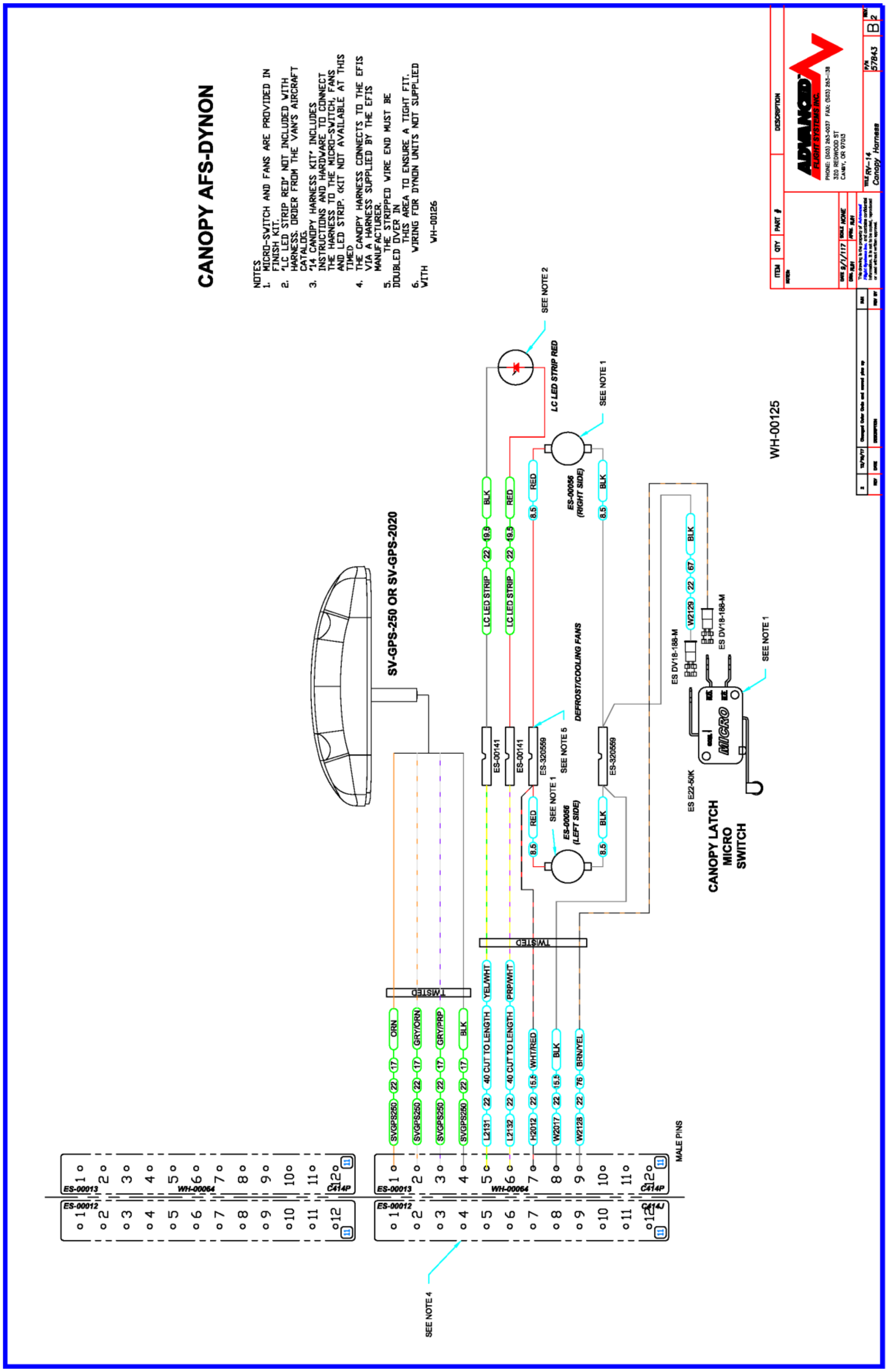
Install the AFS supplied RV-14 airframe harness

Do not purchase or use Van's RV-14 Airframe Harness

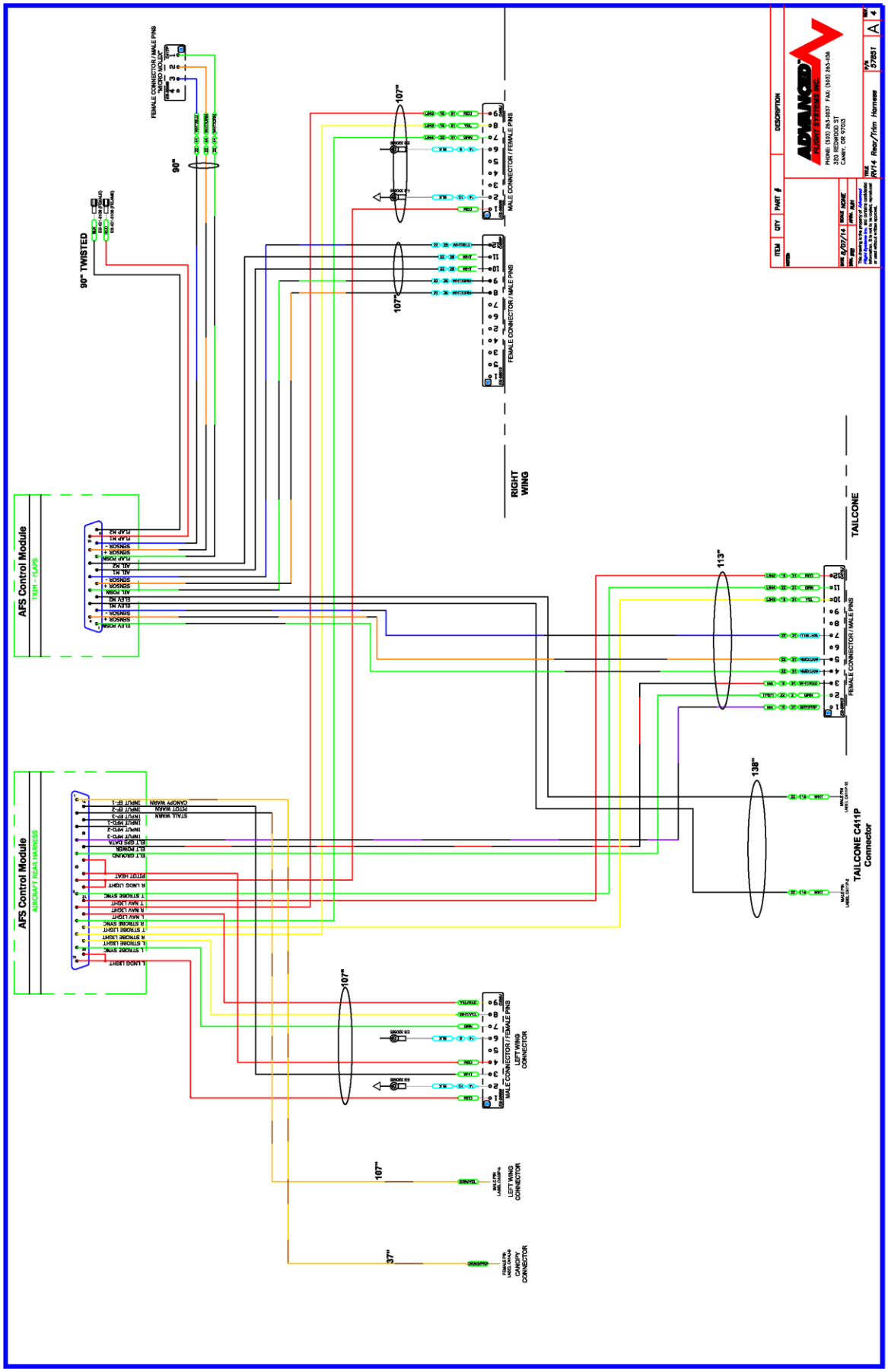
P/N: 57852AFS for AF-5600 install or P/N: 57852HDX for a Skyview HDX install. Start in the middle of the fuselage and work toward the ACM connector end (Aircraft Rear, AP Servo, Flap Trim, ADAHRS SVN-Net) routing the harness using Van's instructions Section 55-02 RV-14 Harness install. You will need to use the supplied Van's airframe harness bushing kit P/N: Van's 3346

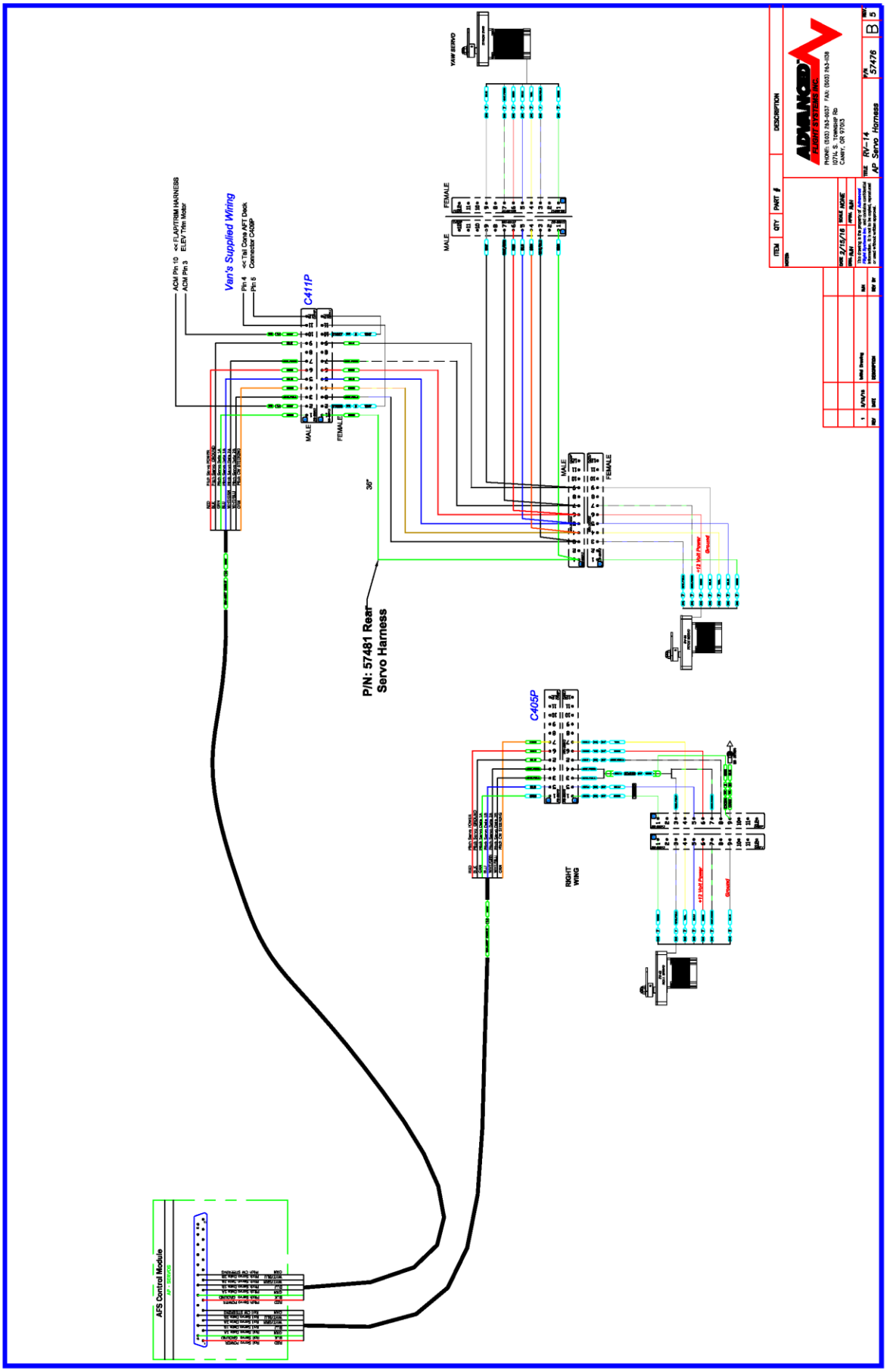


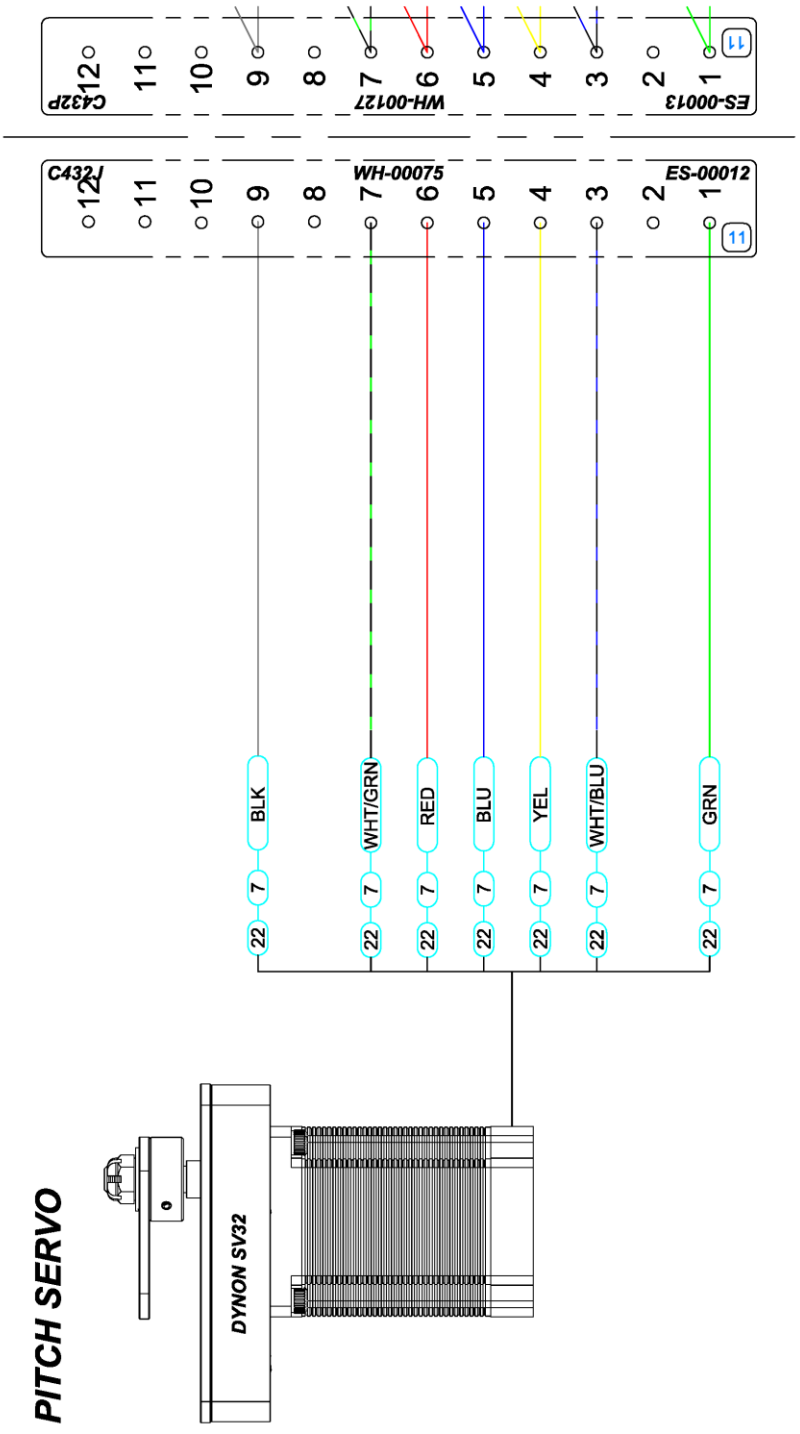

SV-NET HARNESS
SV EMS MODULE
SV-EMS-220
**See P/N:57914 SV-EMS
RIGHT WING
RC400J
C405P
FLAPS Posn Sensor
C417J
Van's Supplied Wiring
AFT BAGGAGE
C410J
C410P
C431J
AFT DECK
LEFT ELEVATOR
AFT BAGGAGE
C411P
C432P
PITCH SERVO CONNECTOR
C432J
LC400J
LEFT WING
C403P
C403P-5
EFIS Stall Tab Input
C414J-9 Canopy Harness Connector
*Customer Installed AF-5000 Only
EFIS Canopy Warning Input
Van's Supplied Harness in Wing Kit
Populate ADAHRS pins into AFS supplied
DSUB-9 Female Connector
SV-ADAHRS-200
RV-14
Airframe Harness
57852

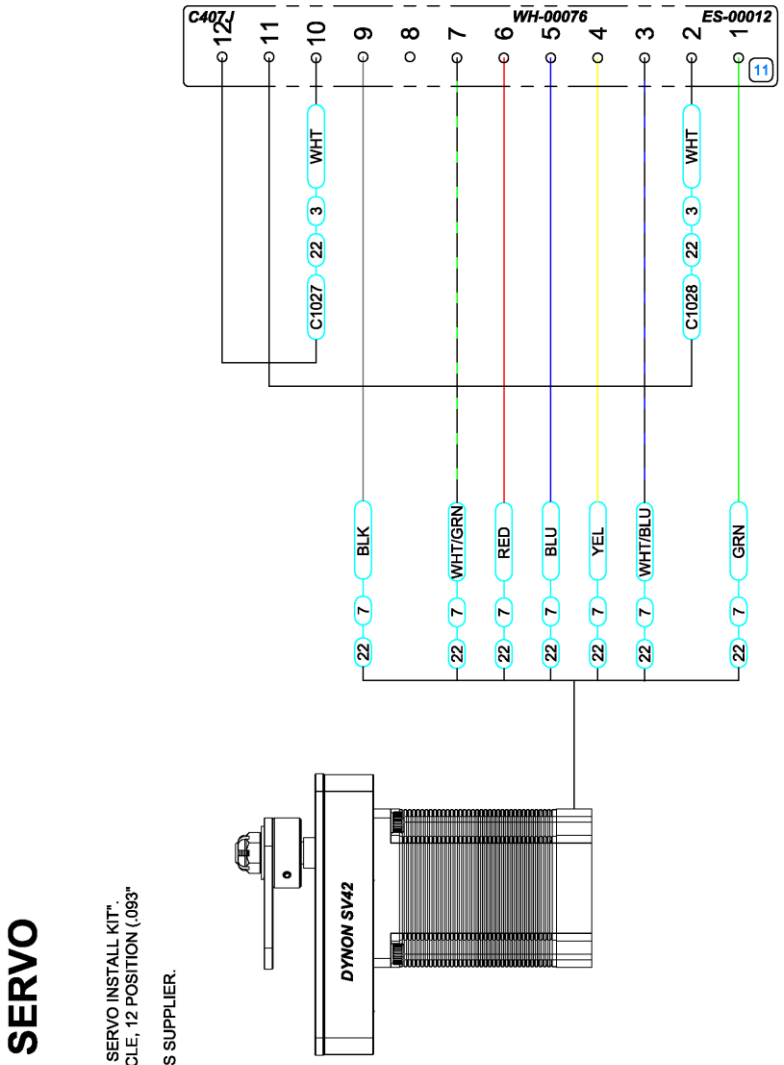

CANOPY AFS-DYNON
NOTES
1. MICRO-SWITCH AND FANS ARE PROVIDED IN FINISH KIT.
2. 'LC LED STRIP RED' NOT INCLUDED WITH HARNESS. ORDER FROM THE VAN'S AIRCRAFT CATALOG.
3. '14 CANOPY HARNESS KIT' INCLUDES INSTRUCTIONS AND HARDWARE TO CONNECT THE HARNESS TO THE MICRO-SWITCH, FANS AND LED STRIP. (KIT NOT AVAILABLE AT THIS TIME)
4. THE CANOPY HARNESS CONNECTS TO THE EFIS VIA A HARNESS SUPPLIED BY THE EFIS MANUFACTURER.
5. THE STRIPPED WIRE END MUST BE DOUBLED OVER IN THIS AREA TO ENSURE A TIGHT FIT.
6. WIRING FOR DYNON UNITS NOT SUPPLIED WITH WH-00126
SV-GPS-250 OR SV-GPS-2020
LC LED STRIP RED
DEFROST/COOLING FANS
CANOPY LATCH MICRO SWITCH
WH-00125
MALE PINS
SEE NOTE 4
57843

57851 RV-14 Aircraft Rear / Trim Harness




Van's Supplied Wiring
C411P
C405P
P/N: 57481 Rear
Servo Harness
RIGHT WING
AFS Control Module
RV-14
AP Servo Harness
57476


C432P
WH-00127
ES-00013
C432J
WH-00075
ES-00012
BLK
WHT/GRN
RED
BLU
YEL
WHT/BLU
GRN
22
7
DYNON SV32
PITCH SERVO



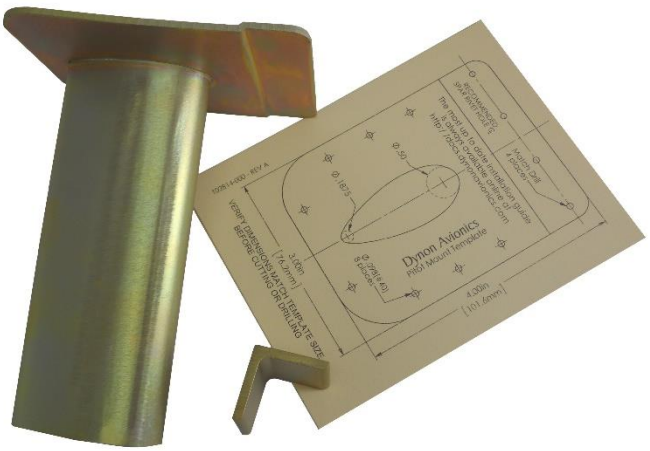
DYNON/AFS ROLL SERVO

NOTES
1. MOLEX PINS PROVIDED IN "14 SV AFS AP SERVO INSTALL KIT".
2. CONNECTOR ES-00012 MOLEX RECEPTACLE, 12 POSITION (.093" SOCKETS) SUPPLIED IN THE WING KIT.
3. PURCHASE SERVO FROM YOUR AVIONICS SUPPLIER.

RV-14 Heated Pitot Tube

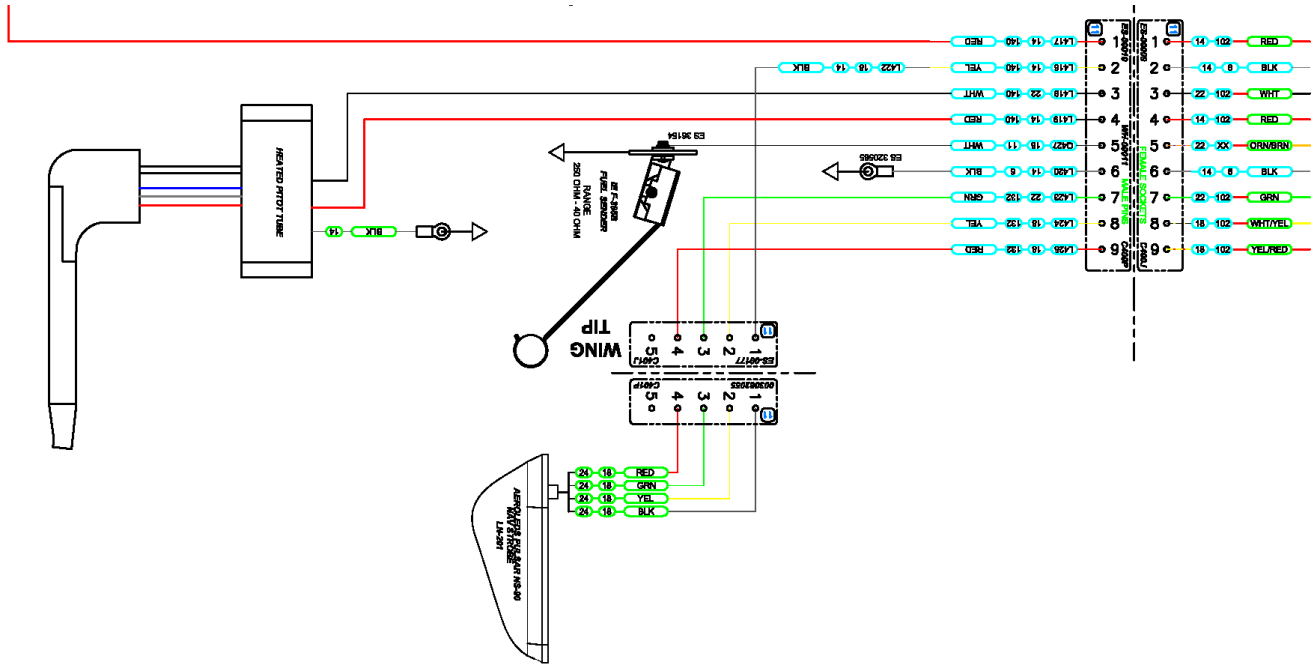
The Dynon heated pitot tube is mounted in the left wing using the Dynon Pitot Mast P/N: 102813-000

- Mount the controller box to one of the wing ribs near the pitot tube mounting location.

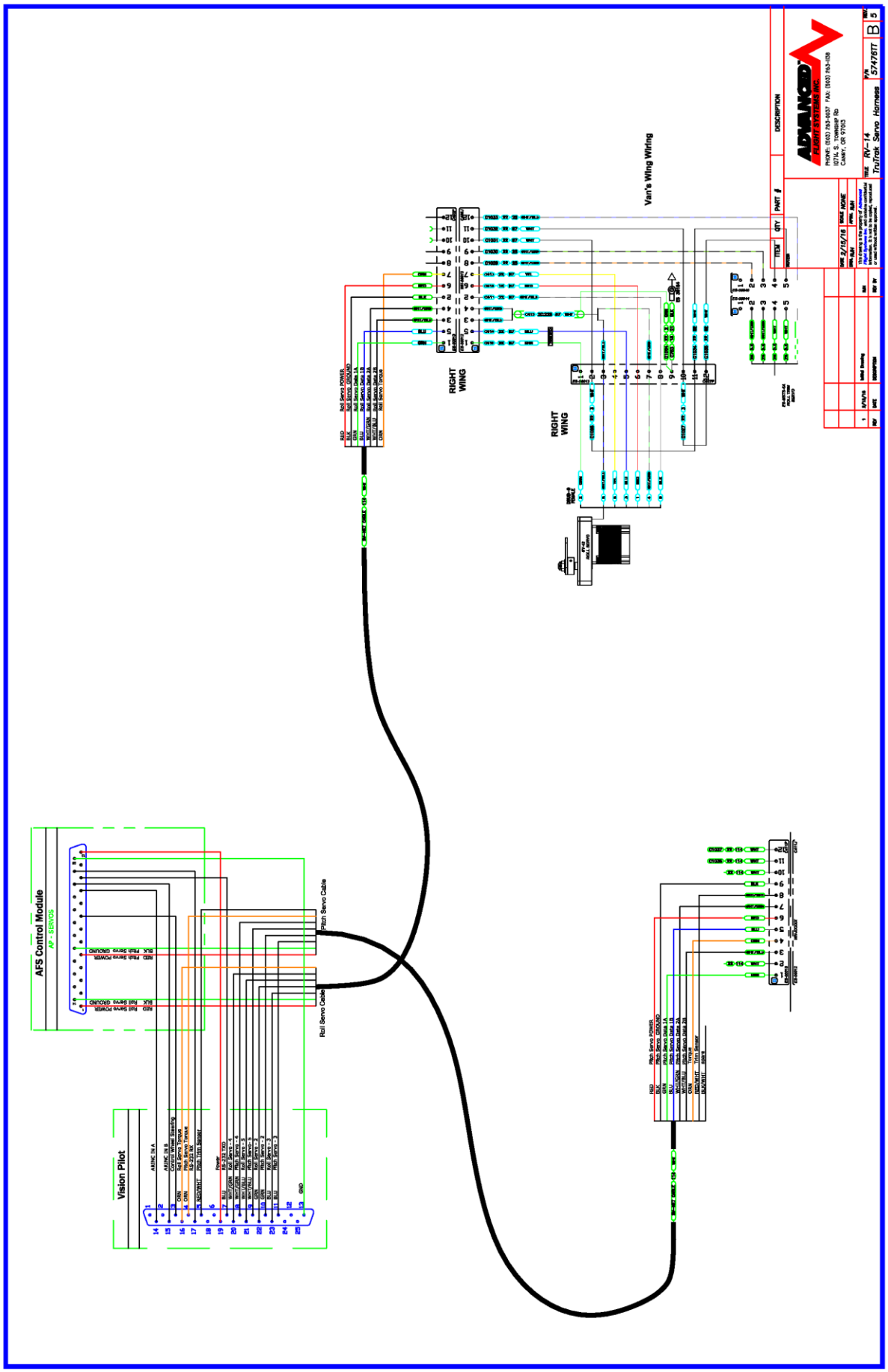


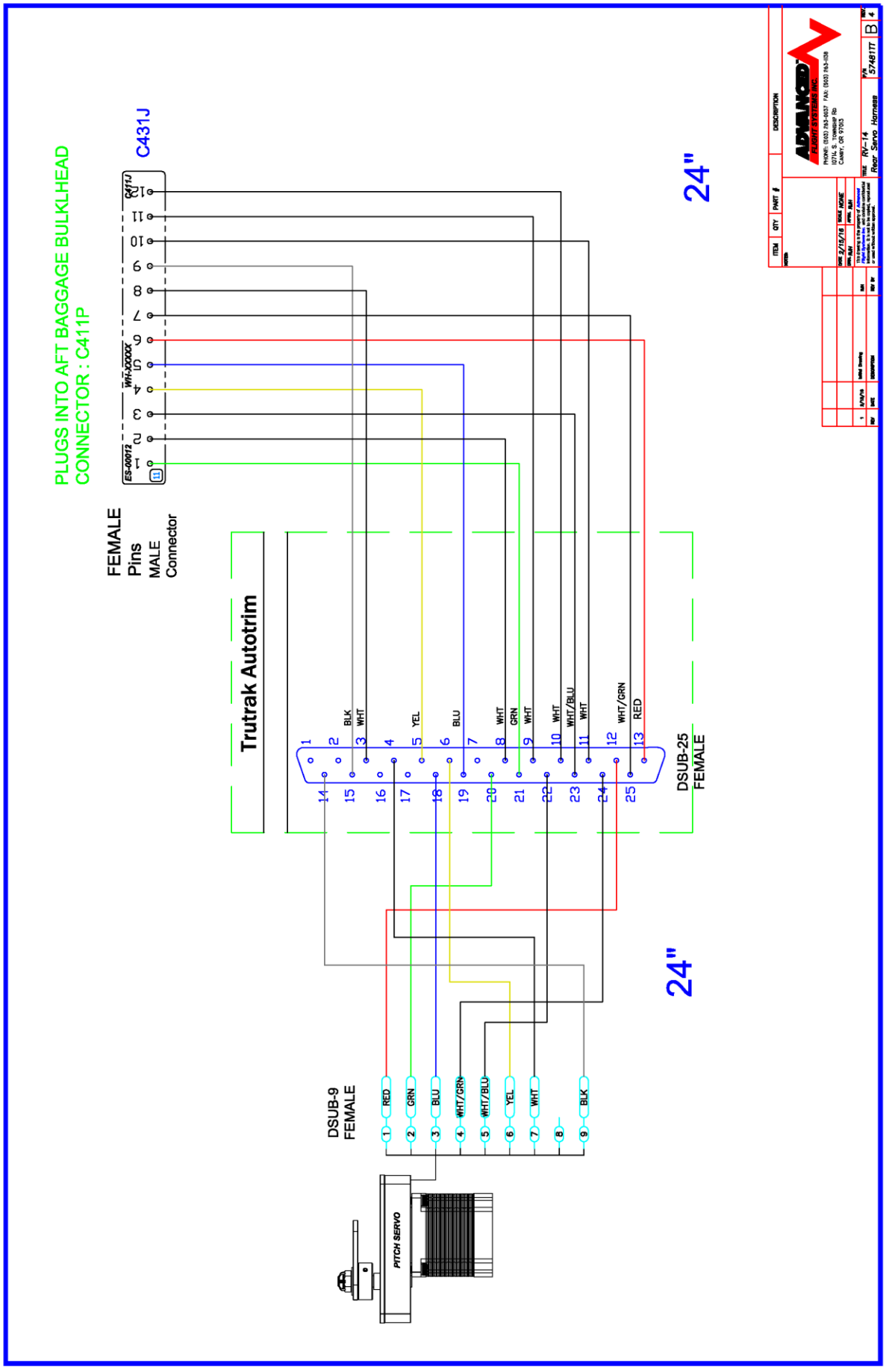
- Extend the Pitot Tube controller wires and connect to the Left Wing C400P Molex connector using the following:

Pitot Controller	Description	Wire Size	C400P Male Pin
Red	+12V Power	#14	4
Black	Ground	#14	Locally grounded using ring terminal
White	Signal	#22	3

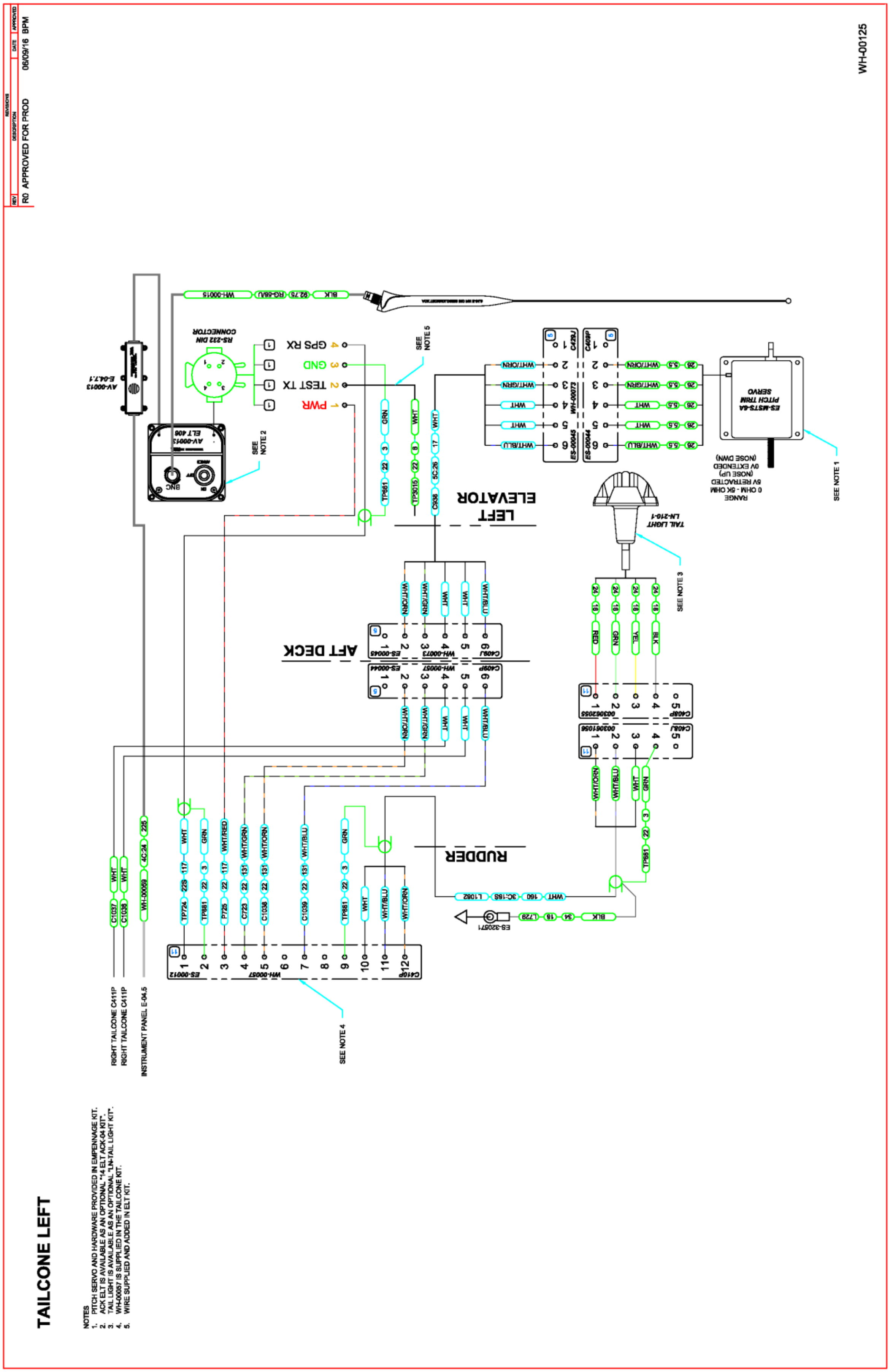


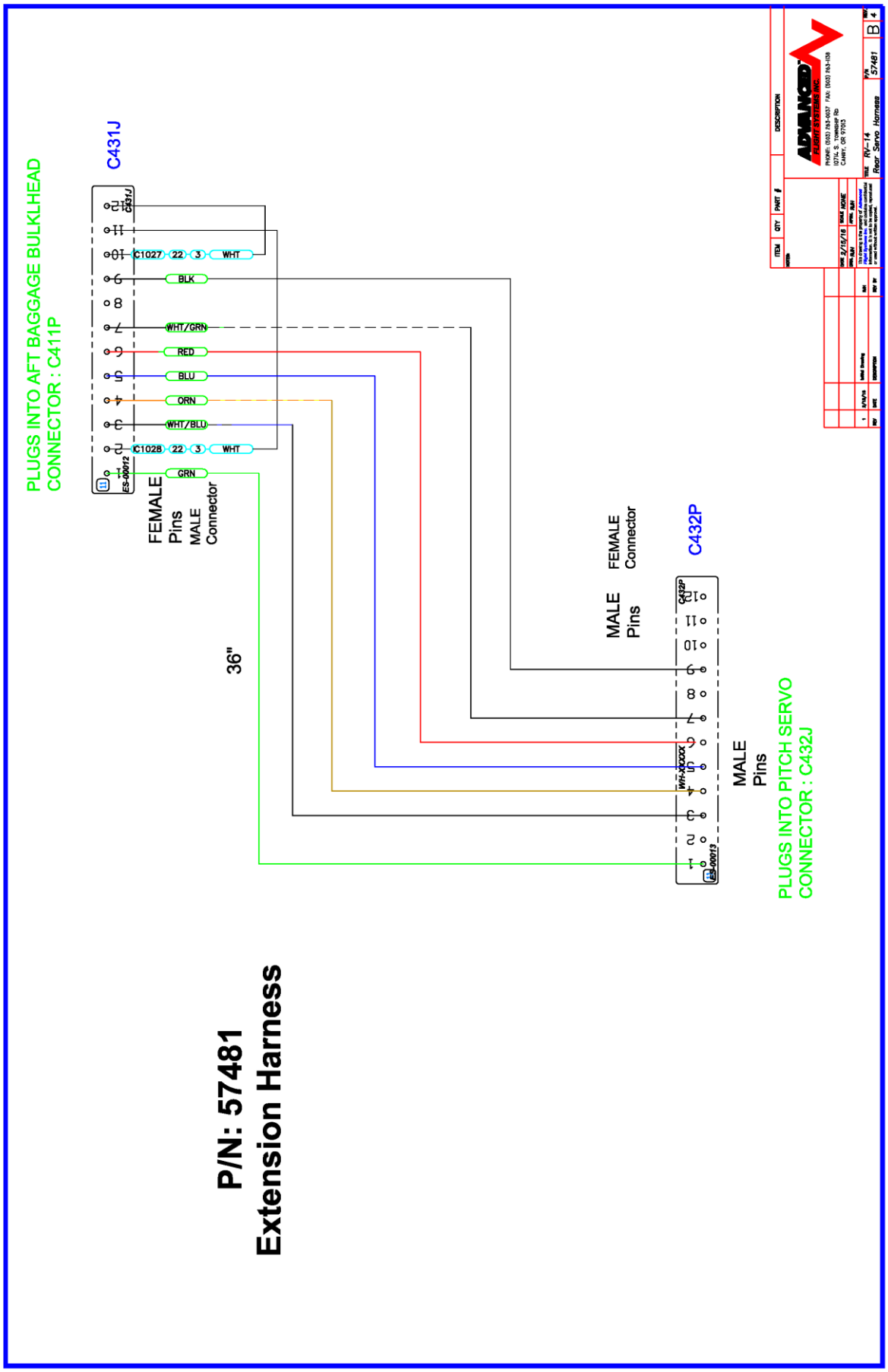
The Pitot line and AOA line should be connected to the Dynon ADAHRS using the Dynon Pitot/Static Plumbing Kit P/N: 102628-000


AFS Control Module
AP - SERVOS
Vision Pilot
Pitch Servo Cable
Roll Servo Cable
RIGHT WING
RIGHT WING
Van's Wing Wiring
RV-14
TruTrak Servo Harness
5747BTT


PLUGS INTO AFT BAGGAGE BULKHEAD
CONNECTOR : C411P
C431J
ES-00012
WH-XXXXX
FEMALE
Pins
MALE
Connector
24"
Trutrak Autotrim
BLK
WHT
YEL
BLU
WHT
GRN
WHT
WHT
WHT/BLU
WHT
WHT/GRN
RED
DSUB-25
FEMALE
24"
DSUB-9
FEMALE
RED
GRN
BLU
WHT/GRN
WHT/BLU
YEL
WHT
BLK
PITCH SERVO
ADVANCED
FLIGHT SYSTEMS INC.
RV-14
Rear Servo Harness
574811T
B

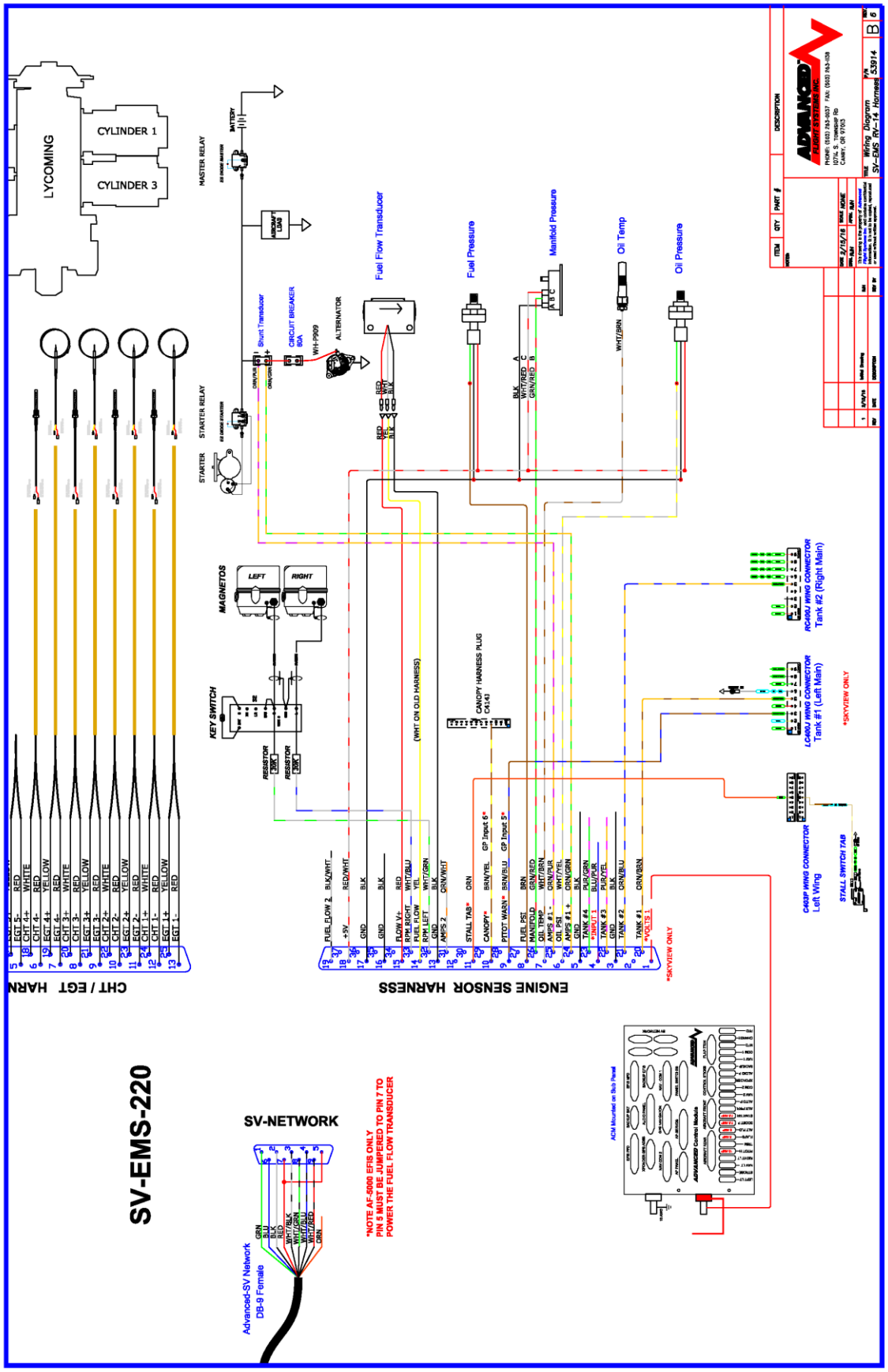
RV-14 Van's Tailcone Left Wiring



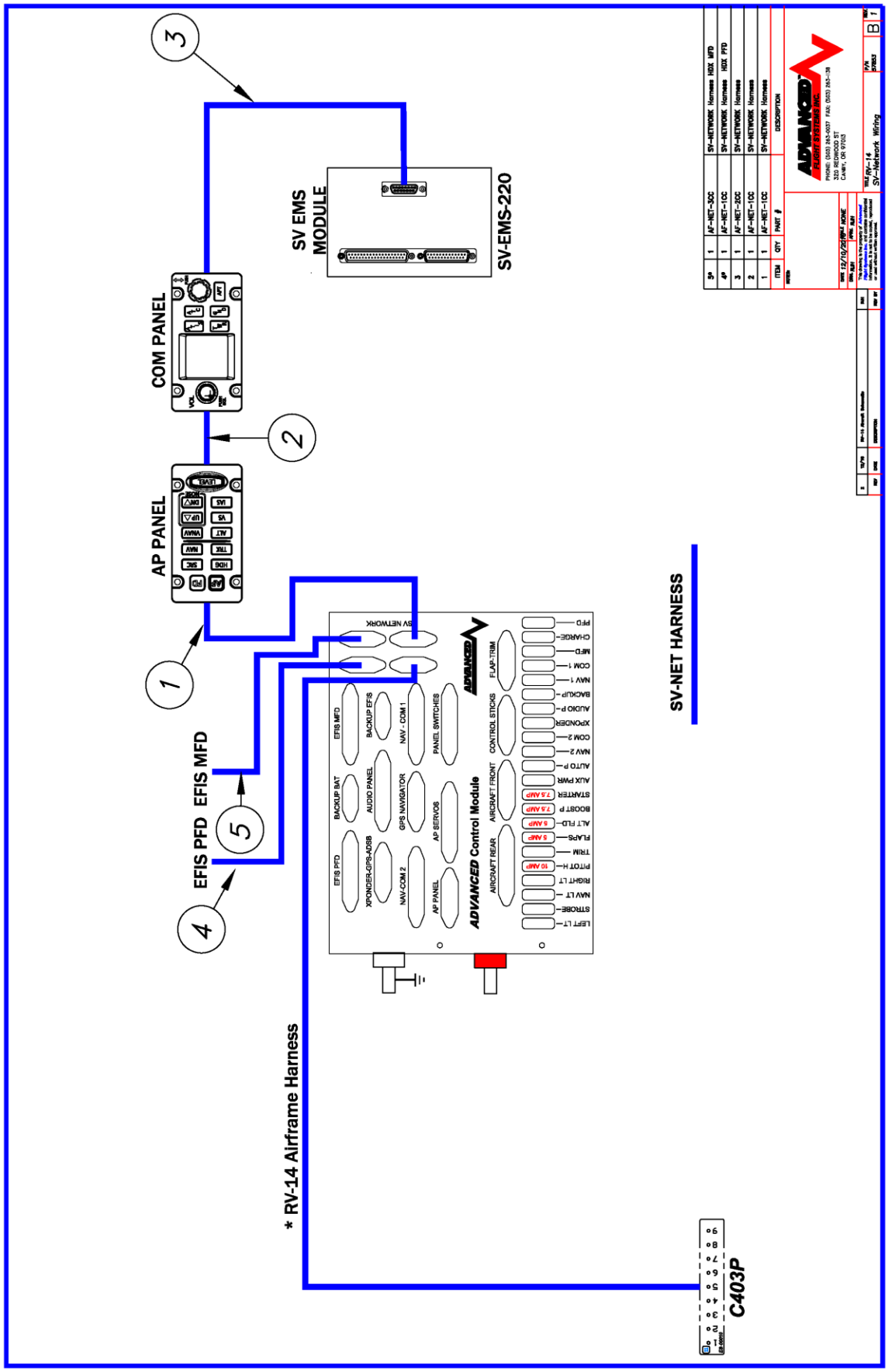

PLUGS INTO AFT BAGGAGE BULKHEAD
CONNECTOR : C411P
C431J
C1027 22 3 WHT
BLK
WHT/GRN
RED
BLU
ORN
WHT/BLU
C1028 22 3 WHT
GRN
FEMALE
Pins
MALE
Connector
36"
MALE
Pins
FEMALE
Connector
C432P
PLUGS INTO PITCH SERVO
CONNECTOR : C432J
P/N: 57481
Extension Harness
RV-14
Rear Servo Harness
57481

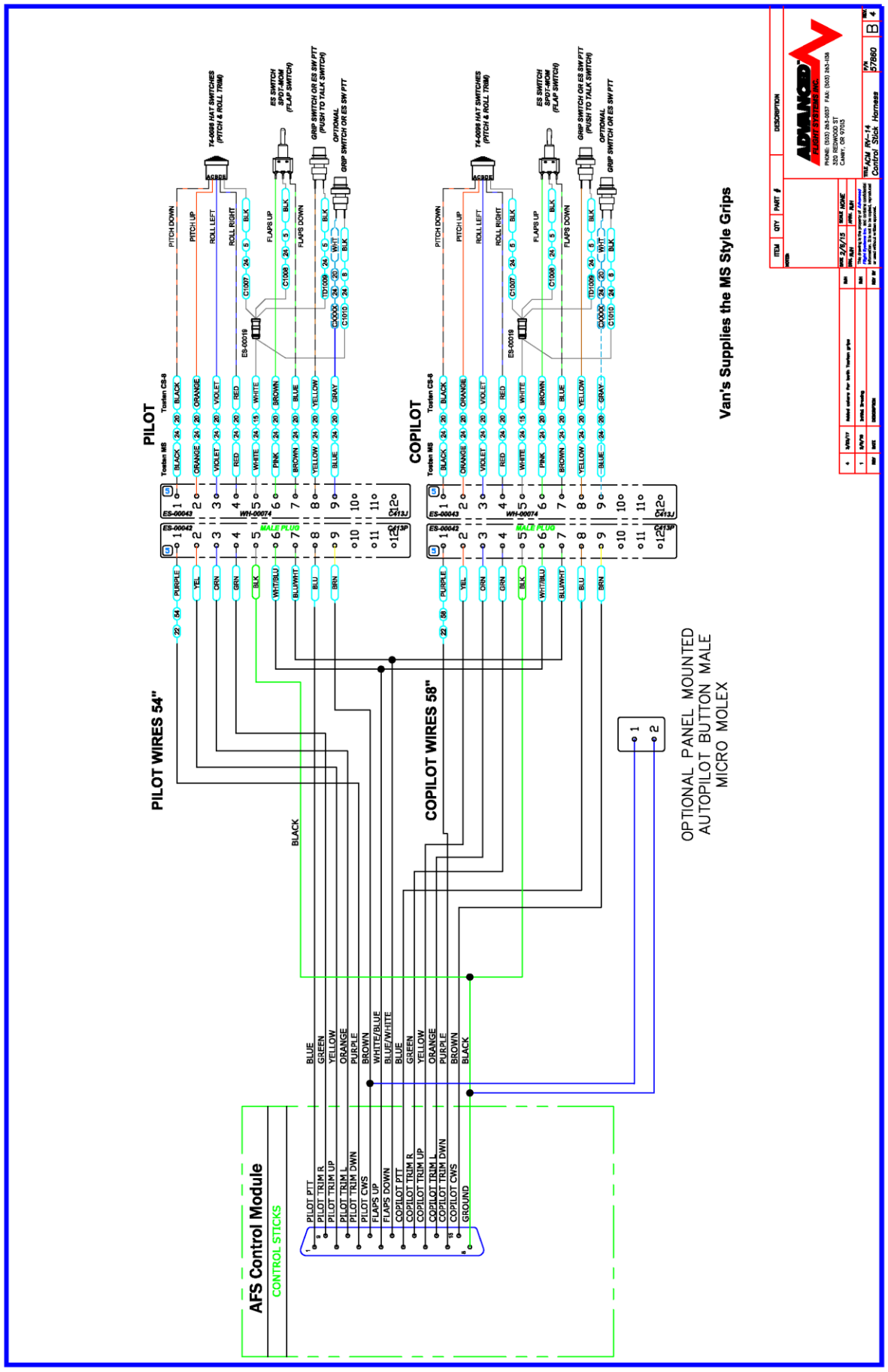
RV-14 EMS Harness Install (P/N: 53914)

If you are installing a Skyview EFIS you will need to wire the SV-EMS input pins (9,10,11) to the RV-14 airframe harness near the ACM connectors. An AF-5600 system uses the EFIS inputs for (Canopy, Stall Tab, and Pitot Heat warning).



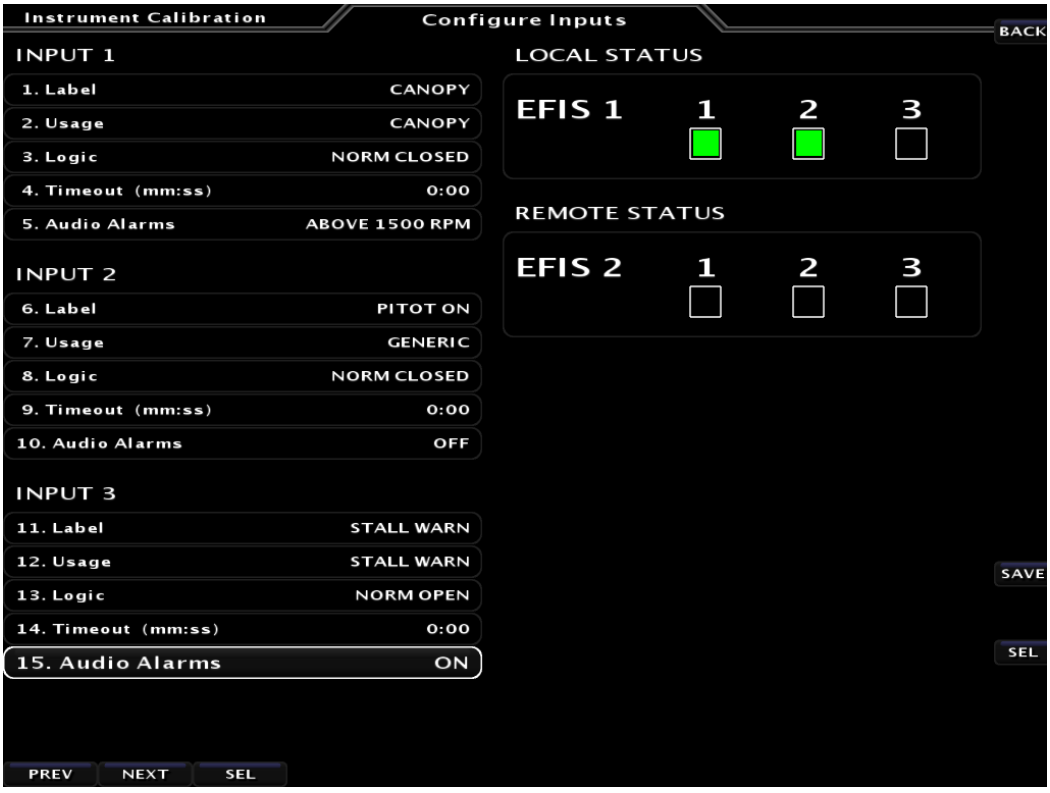
RV-14 SV-Network Wiring (P/N: 57853)

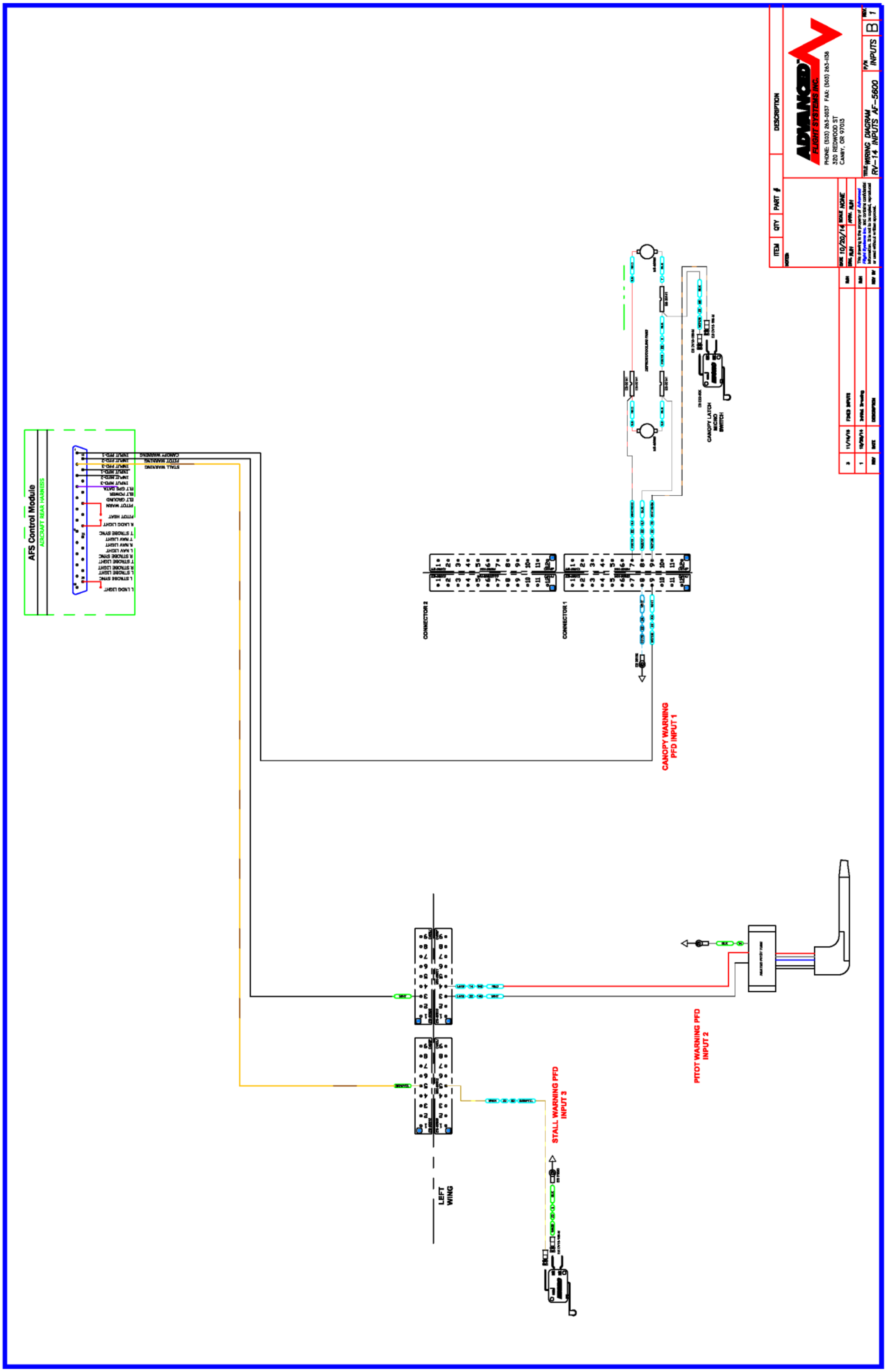



PILOT
COPILOT
PILOT WIRES 54"
COPILOT WIRES 58"
Van's Supplies the MS Style Grips
OPTIONAL PANEL MOUNTED
AUTOPILOT BUTTON MALE
MICRO MOLEX
AFS Control Module
CONTROL STICKS
PILOT PTT
PILOT TRIM R
PILOT TRIM UP
PILOT TRIM L
PILOT TRIM DWN
PILOT CWS
FLAPS UP
FLAPS DOWN
COPILOT PTT
COPILOT TRIM R
COPILOT TRIM UP
COPILOT TRIM L
COPILOT TRIM DWN
COPILOT CWS
GROUND
BLUE
GREEN
YELLOW
ORANGE
PURPLE
BROWN
WHITE/BLUE
BLUE/WHITE
BLUE
GREEN
YELLOW
ORANGE
PURPLE
BROWN
BLACK
BLACK
PITCH DOWN
PITCH UP
ROLL LEFT
ROLL RIGHT
FLAPS UP
FLAPS DOWN
T4-00089 HAT SWITCHES (PITCH & ROLL TRIM)
ES SWITCH SPDT-MOM (FLAP SWITCH)
GRIP SWITCH OR ES SW PTT (PUSH TO TALK SWITCH)
OPTIONAL GRIP SWITCH OR ES SW PTT
ES-00019
ES-00043
WH-00074
C413J
C413P
MALE PLUG
Toolen MS
Toolen CS-8
ADVANCED FLIGHT SYSTEMS INC.
TITLE ACM RV-14 Control Stick Harness
P/N 57860
REV B

RV-14 Input Wiring and Configuration (AF-5000)

The RV-14 uses the EFIS PFD inputs to monitor the Canopy Latch, Pitot Heat and wing mounted stall tab. The inputs are wired to the ACM aircraft rear harness and can be tested in the EFIS PFD Configure Inputs page in calibration.




AFS Control Module
AIRCRAFT REAR HARNESS
CONNECTOR 1
CONNECTOR 2
CANOPY WARNING
PFD INPUT 1
PITOT WARNING PFD
INPUT 2
STALL WARNING PFD
INPUT 3
LEFT
WING
CANOPY LATCH
MICRO
SWITCH
ADVANCED
FLIGHT SYSTEMS INC.
PHONE: (503) 263-0037 FAX: (503) 263-0136
320 REDWOOD ST
CANBY, OR 97013
WIRING DIAGRAM
RV-14 INPUTS AF-5600
INPUTS
B

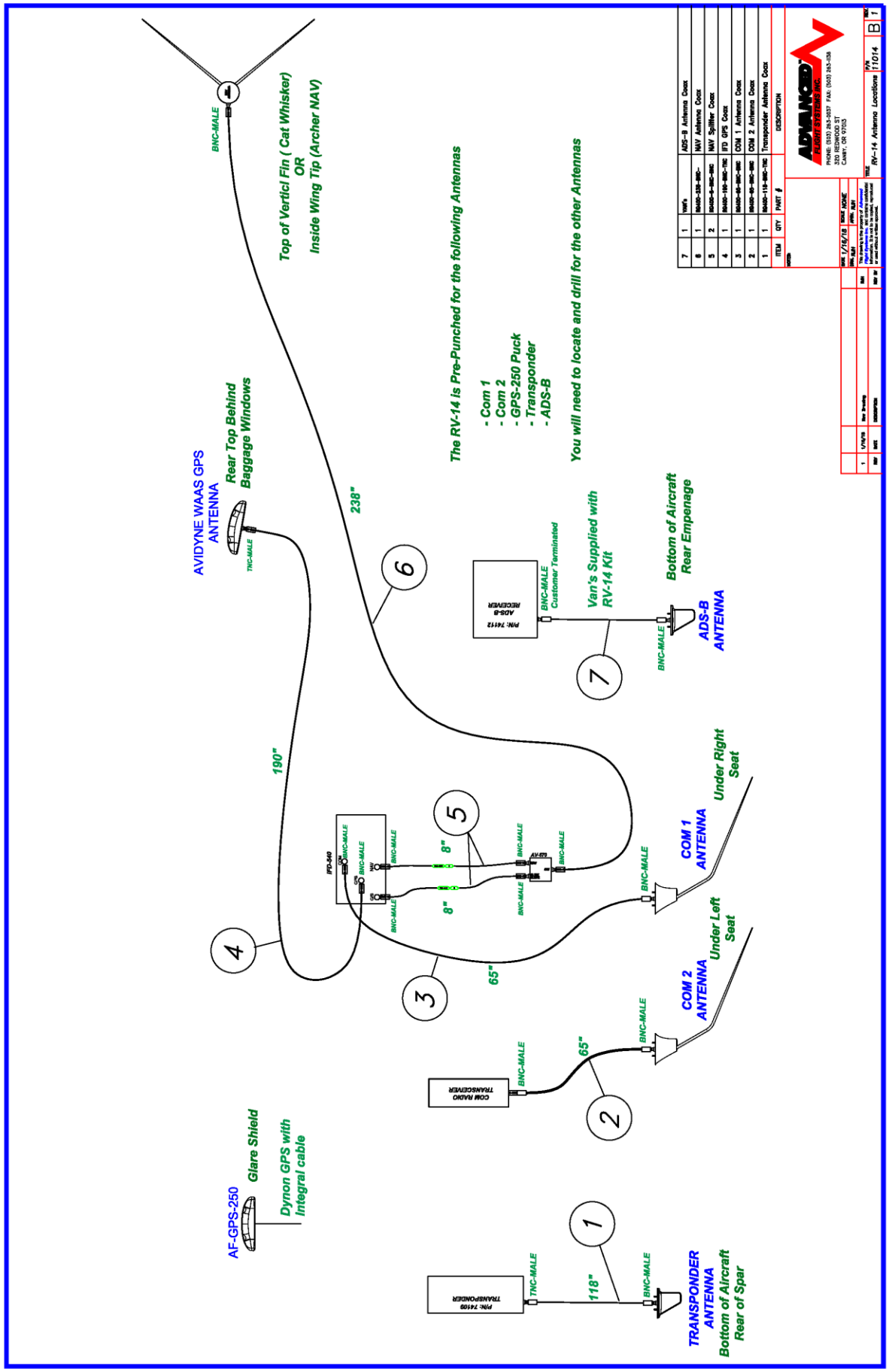
RV-14 Input Wiring and Configuration (Skyview)

The Skyview EFIS inputs cannot be used to monitor the Canopy, Pitot Heat or Stall Tab so you will need to connect the inputs from the RV-14 airframe harness to the SV-EMS harness. The RV-14 airframe harness should have three labeled wires to connect to the same color wires in the SV-EMS harness.

Function	Pin	Color	Input #	RV-14 Connector	Pin
Canopy Latch	10	Brown/Yellow	GP6	C414J	9
Stall Tab	11	Orange	GP7	C403P	5
Pitot Warning	9	Brown/Blue	GP5	LC400J	3

Using the Skyview Inputs Configuration menu you will need to configure the inputs

RV-14 Antenna Locations



ACM Flap Control

The ACM flap control can be configured from the PFD EFIS calibration menu:

SET > CAL > 44. Flap Position

7. Operation Mode:

POSTION
Flaps will stop at the programed Position Calibration points (FULL UP, POSITION 1, POSITION 2, FULL DOWN). You must have a POS-12 position sensor installed and working to use position mode. Move the flaps to each position and use the COPY and SAVE buttons to record the position. *If the AD_VAL in the upper right hand EFIS screen corner does not change when you move the flaps you do not have the POS-12 correctly wired.*

MOMENTARY
Flaps will only move when you hold the Flap Up or Flap Down button. Momentary mode does not require a flap sensor.

8. Retract Mode:

MULTI-STEP
Flaps will move to the next position when the Flaps Up button is pressed

CONTINUOUS
Flaps will move to fully retracted position when the Flaps Up button is pressed

MOMENTARY
Flaps will only move when you hold the Flap Up button.

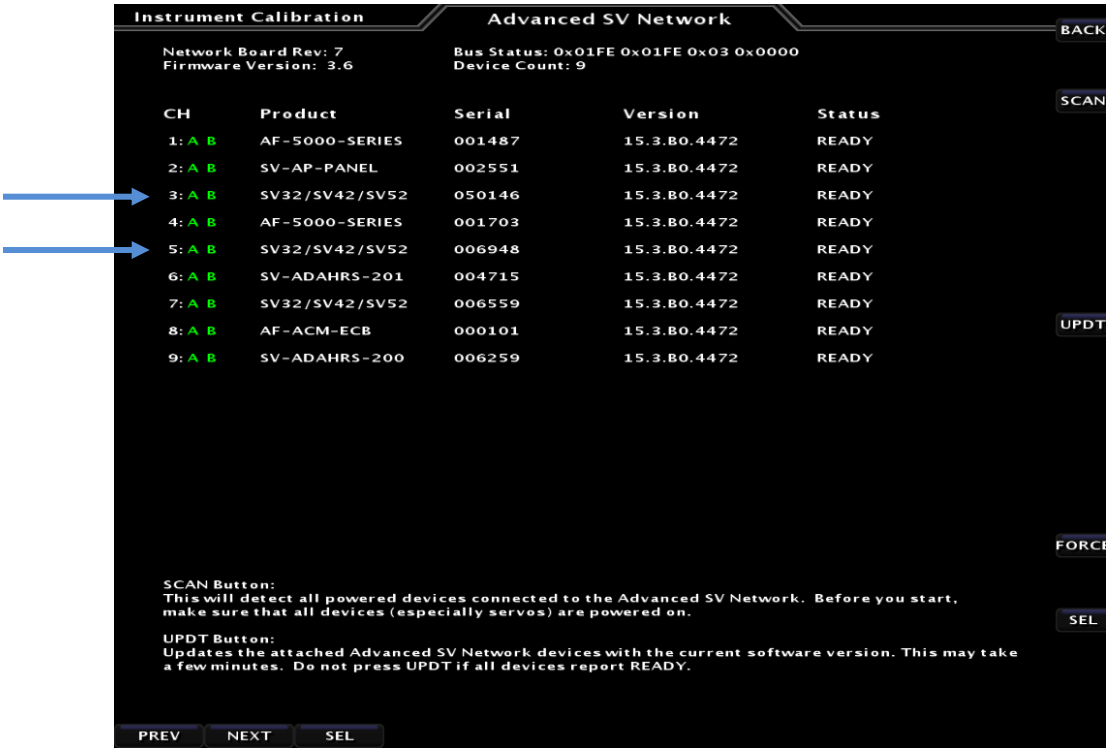
9. Motor Polarity (NORMAL or REVERSED) Verify that the Flaps move in the correct direction using the EFIS **CHECK** > **ELEC** menu buttons. If the Stick mounted buttons are backwards you will need to swap the stick Up and Down button wiring.

10. Endpoint Slop Timeout The Flap Motor will continue to run for this number of seconds to make sure the flaps are fully retracted or extended. The flap positioning system should not be used to provide an accurate position stop for full flap up or down settings.

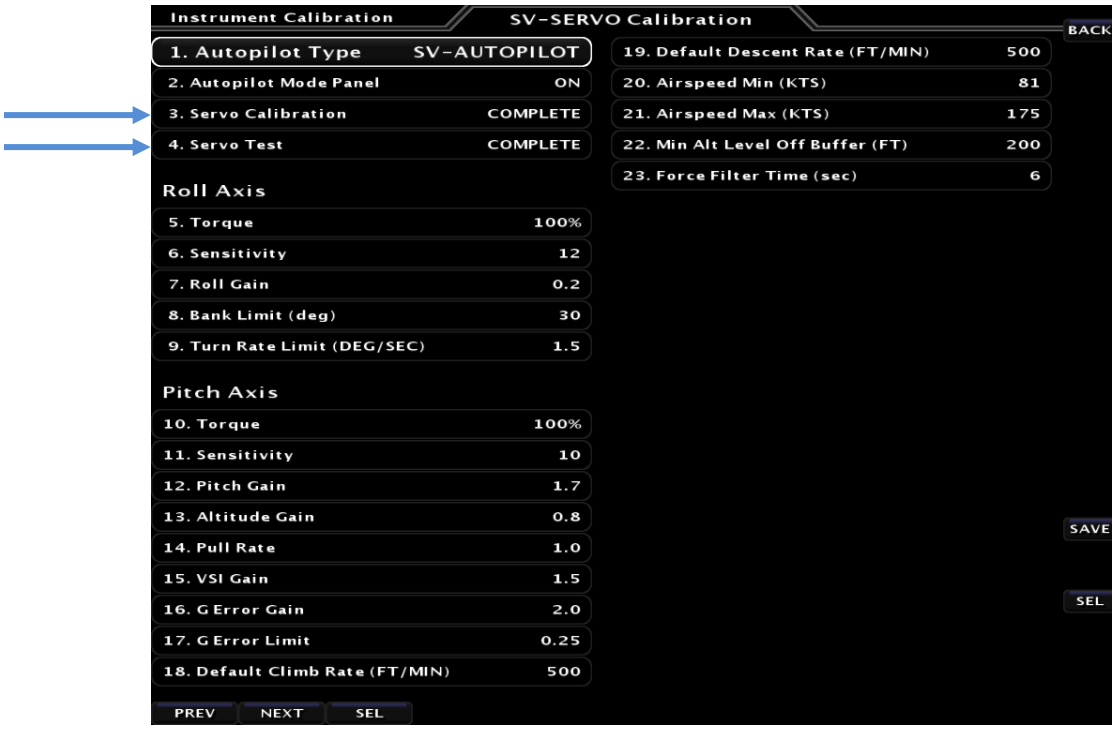
SV Autopilot Setup

To configure the SV Autopilot you will need to do the following:

1. Verify that the ROLL and Pitch AP Servo Status is READY in the SV-NETWORK PFD EFIS Menu. If the Status shows needs update press the **UPDT** button



2. Perform the **3. Servo Calibration** and **4. Servo Test** following the PFD EFIS on screen directions. After completing these steps both items ***MUST*** show **COMPLETE** before the Autopilot can be used. The following settings are from a Van's RV-14 and RV-10.



Advanced Control Module AF-GPS Routing Table

AFS GPS	Cable Color	DSUB-9	ACM 15 Pin ACM: XPND,GPS,ADSB	ACM 25 Pin ACM: MFD	EFIS MFD AUX 15 Pin
PWR +8V	Orange	1	4	12	1
Ground	Black	5	12	24	9
RS-232 TXD	Blue/Gray	3	5	22	10
RS-232 RXD	Orange/Gray	2	13	9	2

Advanced Control Module Skyview EFIS Audio Routing Table

Skyview PFD Function	Cable Color	Skyview DSUB-37	ACM 25 Pin ACM: PFD	ACM 25 Pin Audio Panel	SV-INTERCOM DSUB-25
Audio Left	Brown	13	11	11	19
Audio Right	Gray	31	10	10	6
Audio Ground	Black	30	23	23	20

Advanced Control Module AF-5000 EFIS Audio Routing Table

AF-5000 PFD Function	Cable Color	AF-5000 DB-25	ACM 25 Pin ACM: PFD	ACM 25 Pin Audio Panel	PDA-360 Audio P J1
Audio		18	11	11	J1-31
Audio Ground		16	23	23	J1-32

Advanced Control Module ADS-B Routing Table

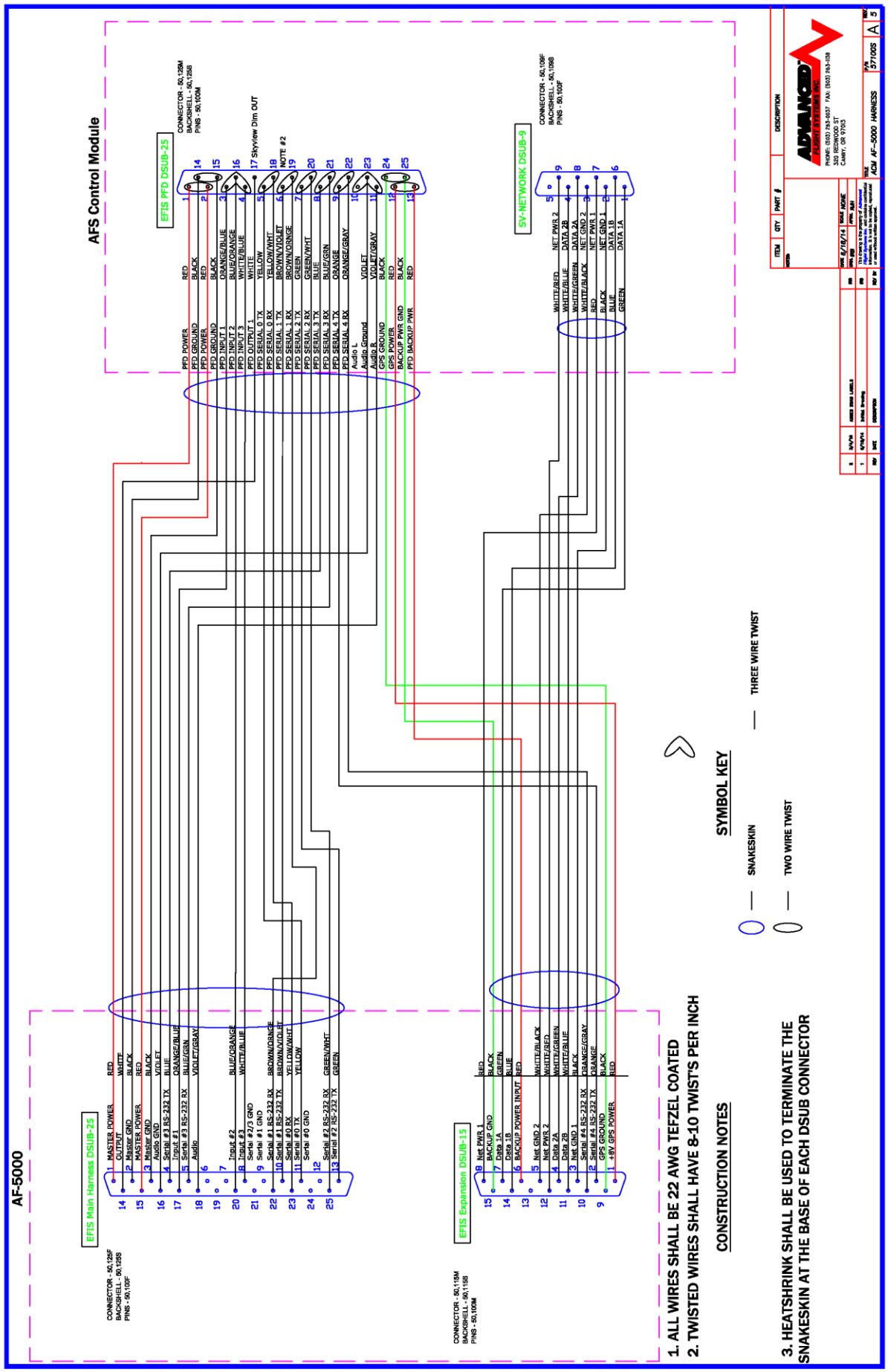
AFS ADS-B	Cable Color	DSUB-9	ACM 15 Pin ACM: XPND,GPS,ADSB	ACM 25 Pin ACM: MFD	EFIS MFD Serial #3 DSUB 25 Pin
PWR +12V	Red	1	6	nc	nc
Ground		4	14	nc	nc
RS-232 TXD		3	7	21	5
RS-232 RXD		2	15	8	4

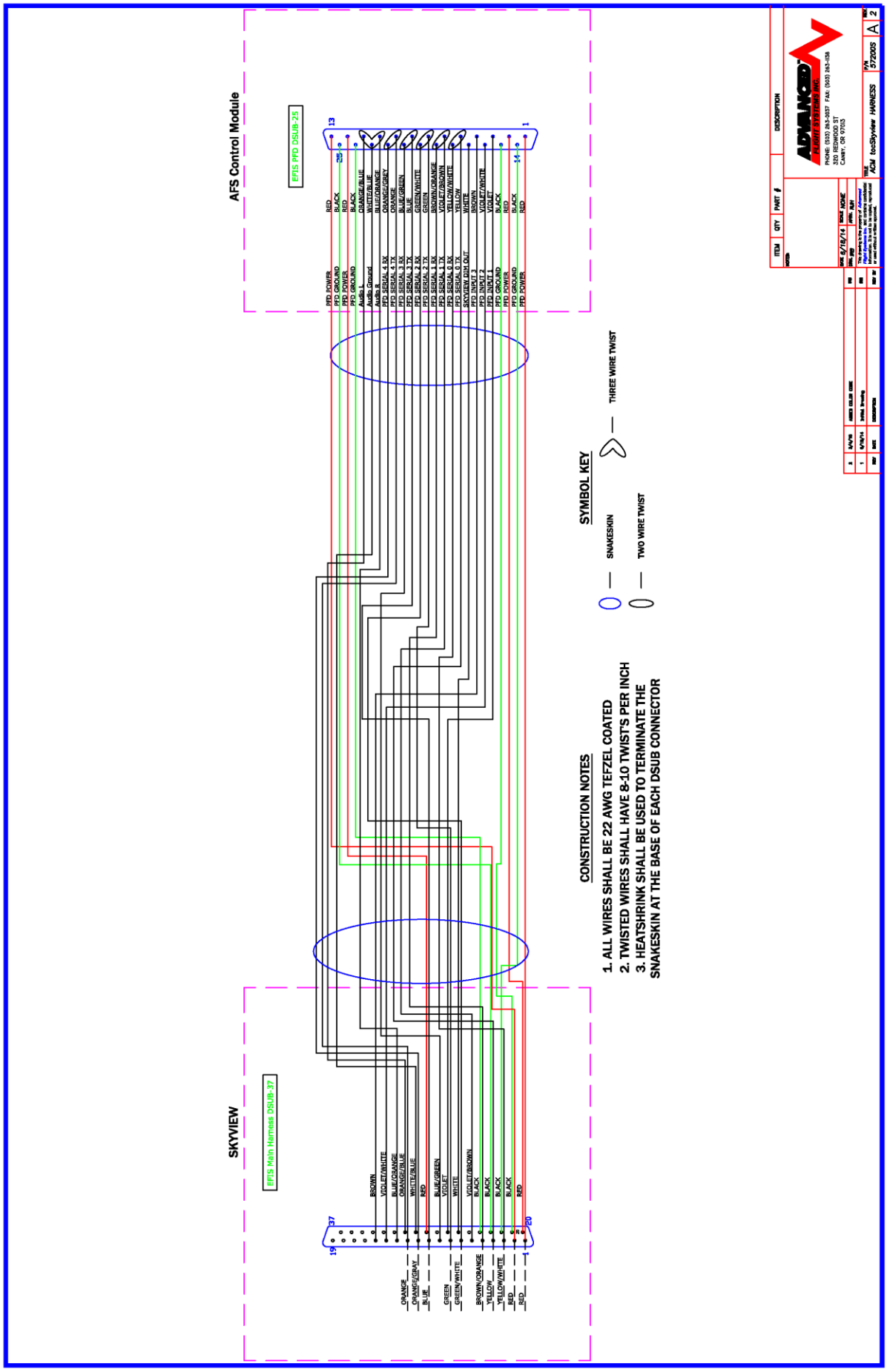
Advanced Control Module CO Detector Routing Table

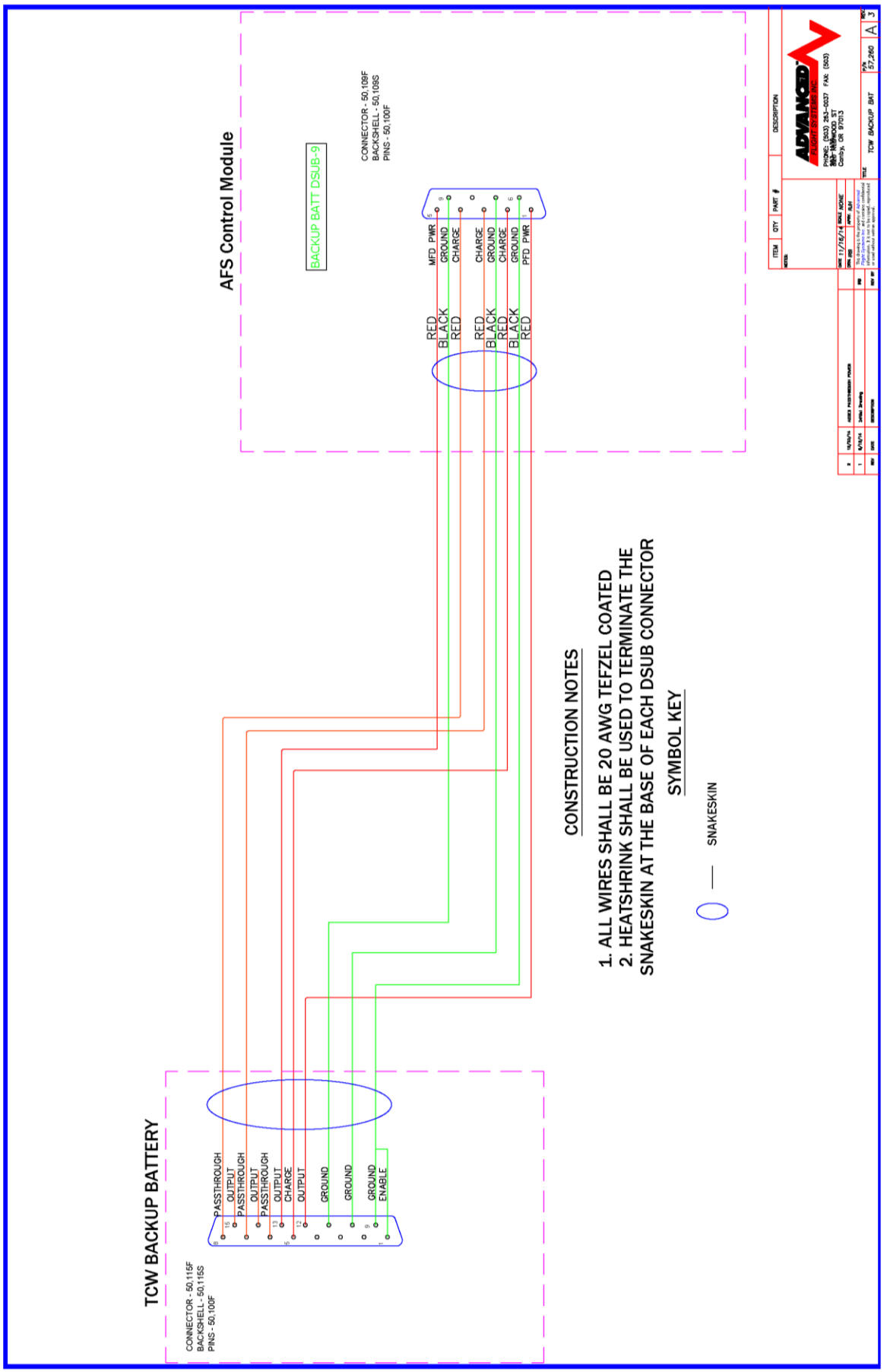
CO Guardian	Cable Color	CO DSUB-9	ACM 9 Pin ACM: BACKUP EFIS	ACM 25 Pin ACM: MFD	EFIS MFD Serial #2 DSUB 25 Pin
PWR +12V	Red	1	5	nc	nc
Ground	Black	5	9	nc	nc
RS-232 TXD >>		7	3	20	25
RS-232 RXD <<		8	8	7	13

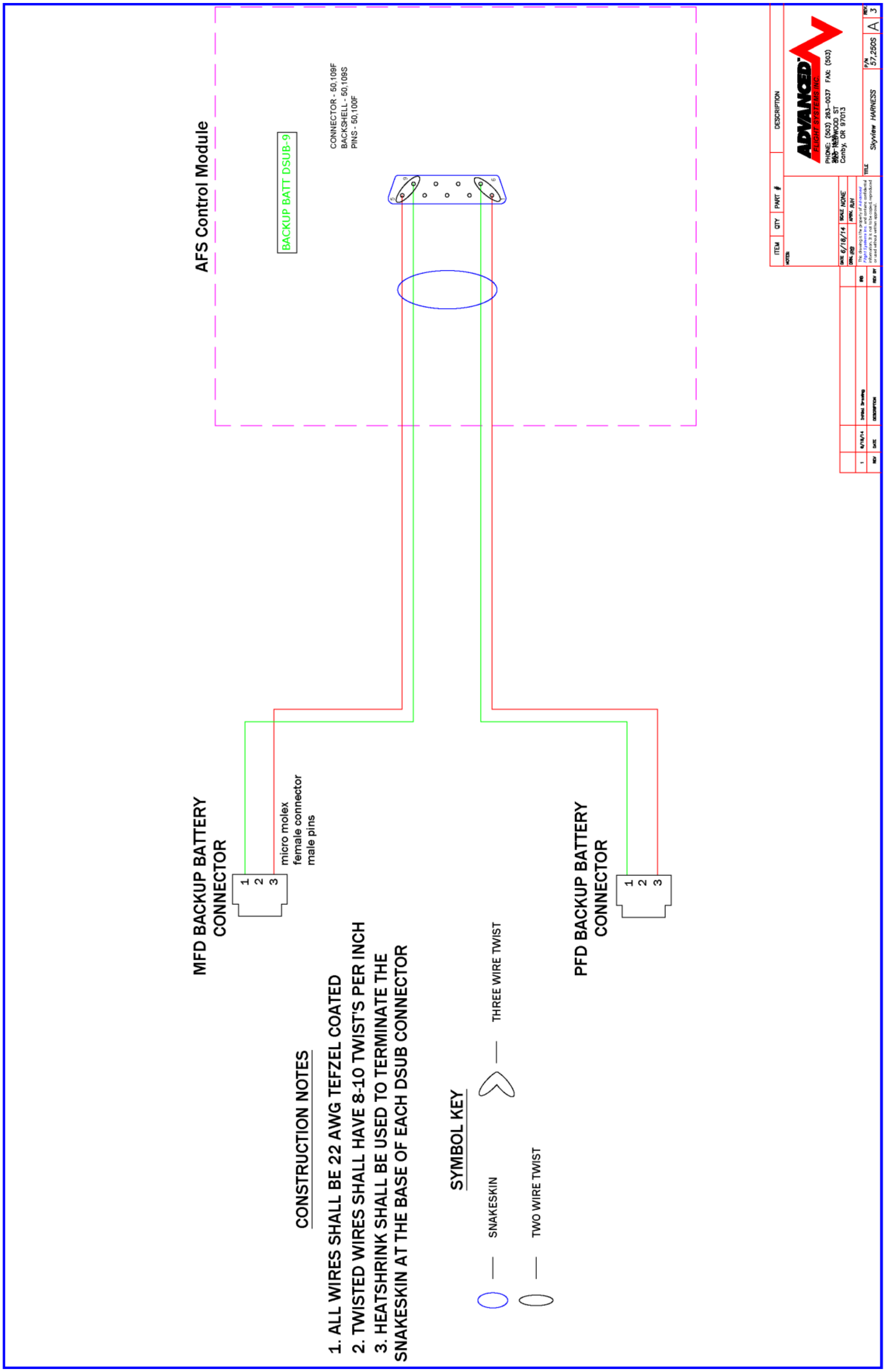
Advanced Control Module RV-14 Pitch Servo Routing Table

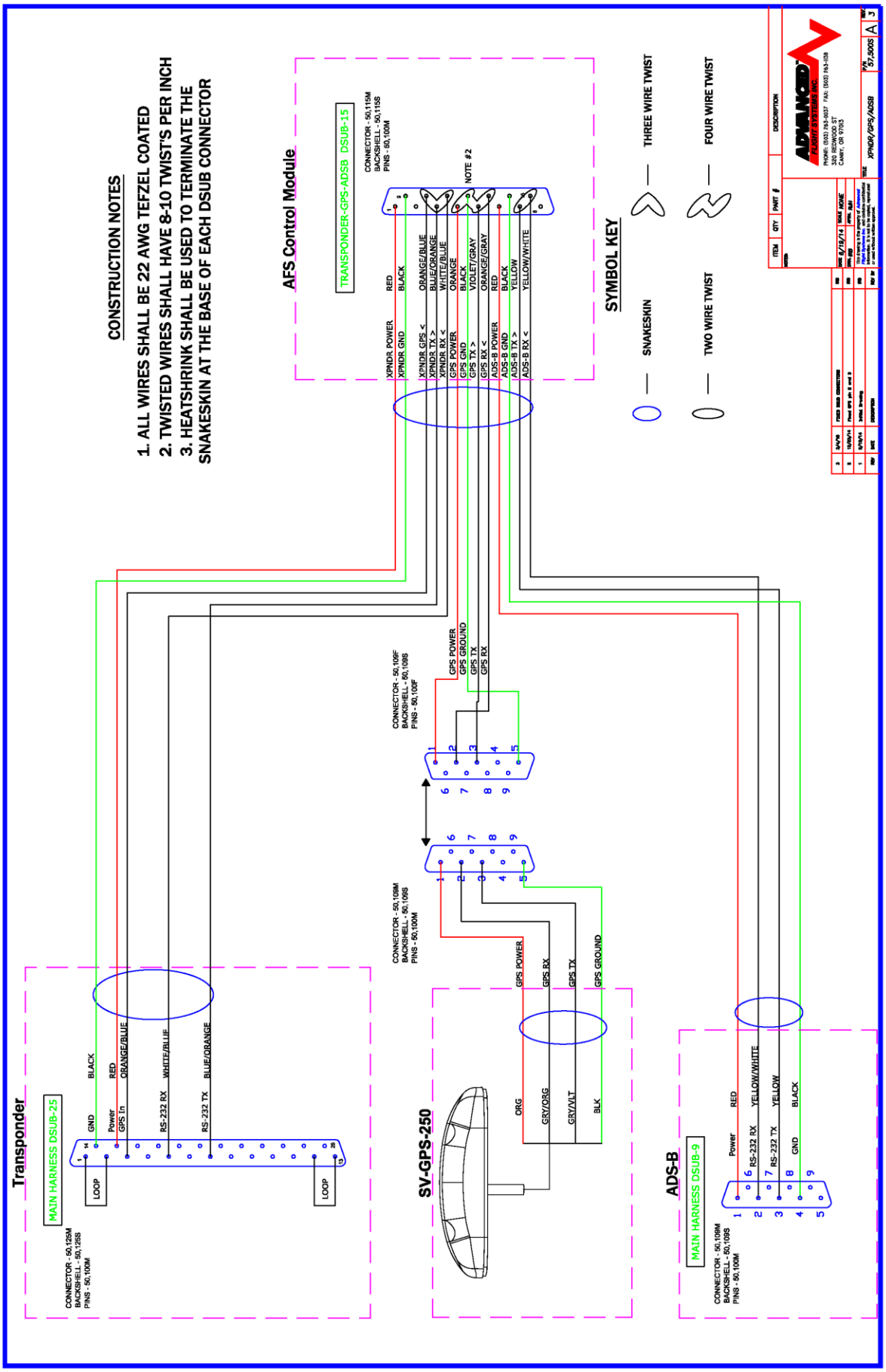
		Servo	Rear Bulkhead	ACM Servo
Pitch Servo	**Cable Color**	**Molex C411P/C431J**	**Molex C432P/C432J**	**DSUB-25**
Data 1A	Green	1	1	6
Data 2B	WHT/BLU	3	3	20
CW Steering	Yellow	4	4	8
Data 1B	Blue	5	5	19
PWR +12V	Red	6	6	5
Data 2A	WHT/GRN	7	7	7
Ground	BLK	9	9	18

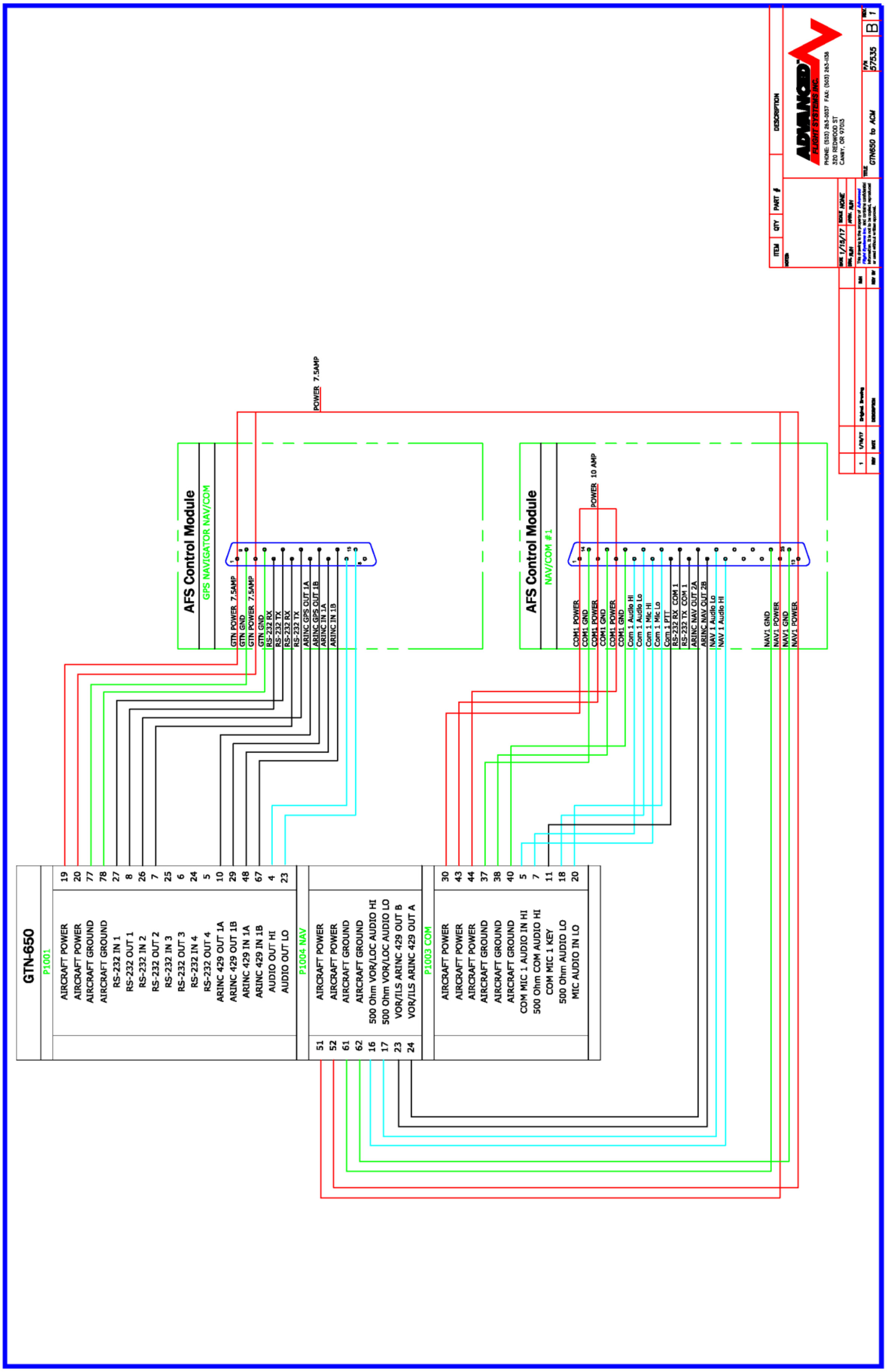

AF-5000
AFS Control Module
EFIS Main Harness DSUB-25
EFIS Expansion DSUB-15
EFIS PFD DSUB-25
SV-NETWORK DSUB-9
SYMBOL KEY
SNAKESKIN
THREE WIRE TWIST
TWO WIRE TWIST
1. ALL WIRES SHALL BE 22 AWG TEFZEL COATED
2. TWISTED WIRES SHALL HAVE 8-10 TWIST'S PER INCH
CONSTRUCTION NOTES
3. HEATSHRINK SHALL BE USED TO TERMINATE THE SNAKESKIN AT THE BASE OF EACH DSUB CONNECTOR
ACM AF-5000 HARNESS
57100S

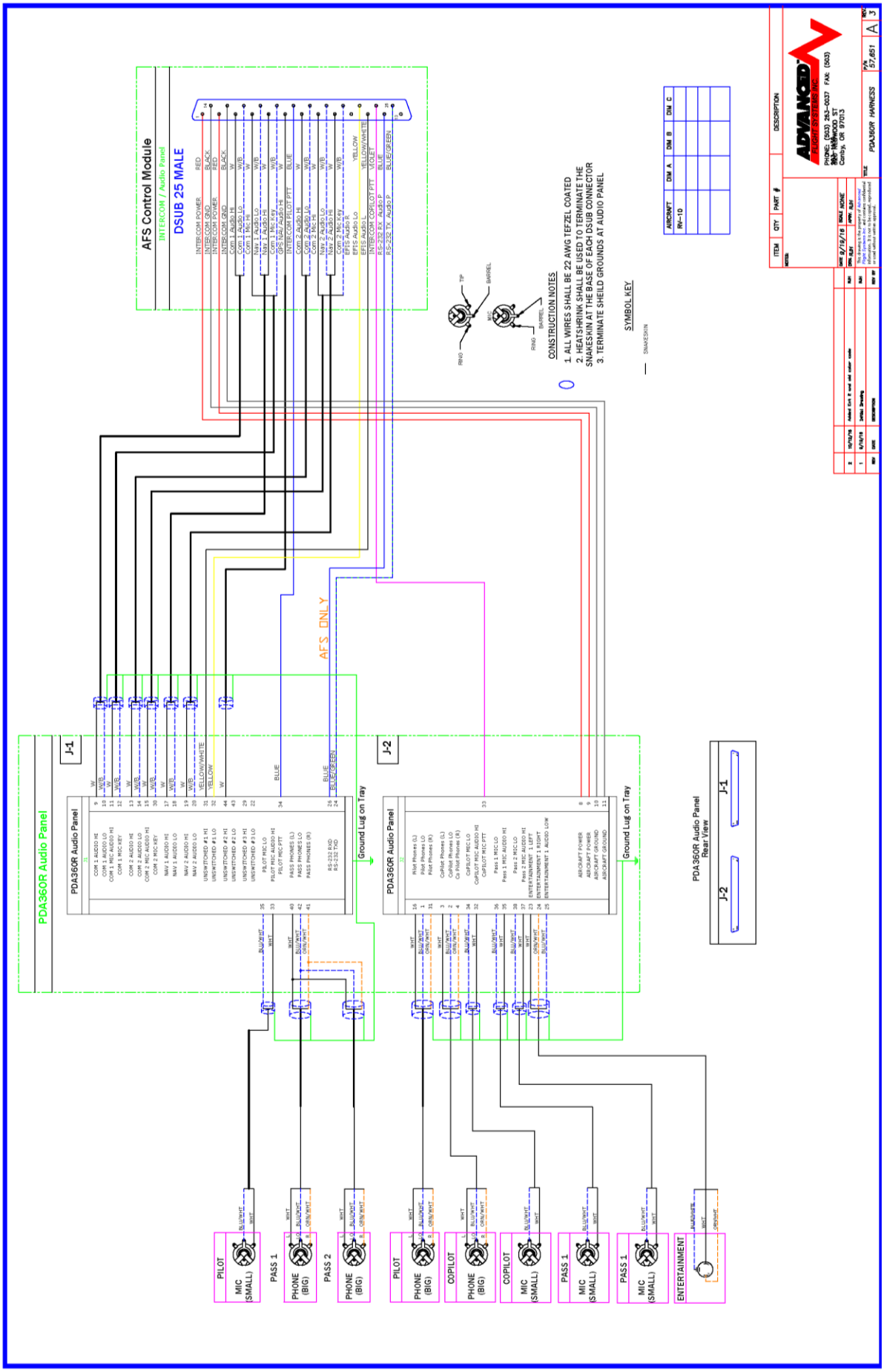

AFS Control Module
EFIS PFD DSUB-25
SKYVIEW
EFIS Main Harness DSUB-37
SYMBOL KEY
SNAKESKIN
TWO WIRE TWIST
THREE WIRE TWIST
CONSTRUCTION NOTES
1. ALL WIRES SHALL BE 22 AWG TEFZEL COATED
2. TWISTED WIRES SHALL HAVE 8-10 TWIST'S PER INCH
3. HEATSHRINK SHALL BE USED TO TERMINATE THE SNAKESKIN AT THE BASE OF EACH DSUB CONNECTOR

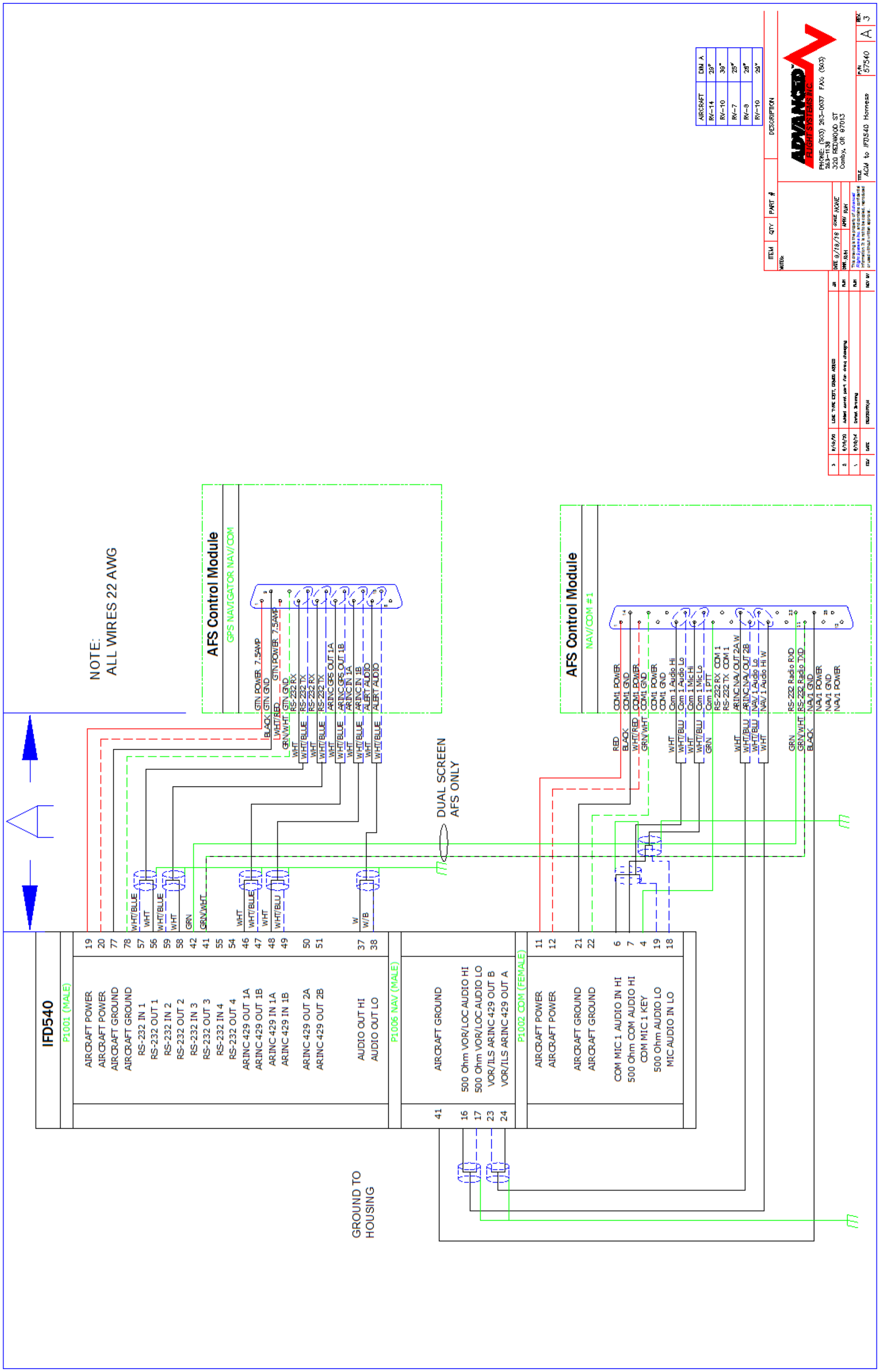

AFS Control Module
BACKUP BATT DSUB-9
CONNECTOR - 50.109F
BACKSHELL - 50.109S
PINS - 50.100F
MFD_PWR
GROUND
CHARGE
RED
BLACK
RED
CHARGE
GROUND
CHARGE
GROUND
PFD_PWR
RED
BLACK
RED
TCW BACKUP BATTERY
CONNECTOR - 50.115F
BACKSHELL - 50.115S
PINS - 50.100F
PASSTHROUGH
OUTPUT
PASSTHROUGH
OUTPUT
PASSTHROUGH
OUTPUT
CHARGE
OUTPUT
GROUND
GROUND
GROUND
ENABLE
CONSTRUCTION NOTES
1. ALL WIRES SHALL BE 20 AWG TEFZEL COATED
2. HEATSHRINK SHALL BE USED TO TERMINATE THE SNAKESKIN AT THE BASE OF EACH DSUB CONNECTOR
SYMBOL KEY
SNAKESKIN
ADVANCED
TCW BACKUP BAT
57260

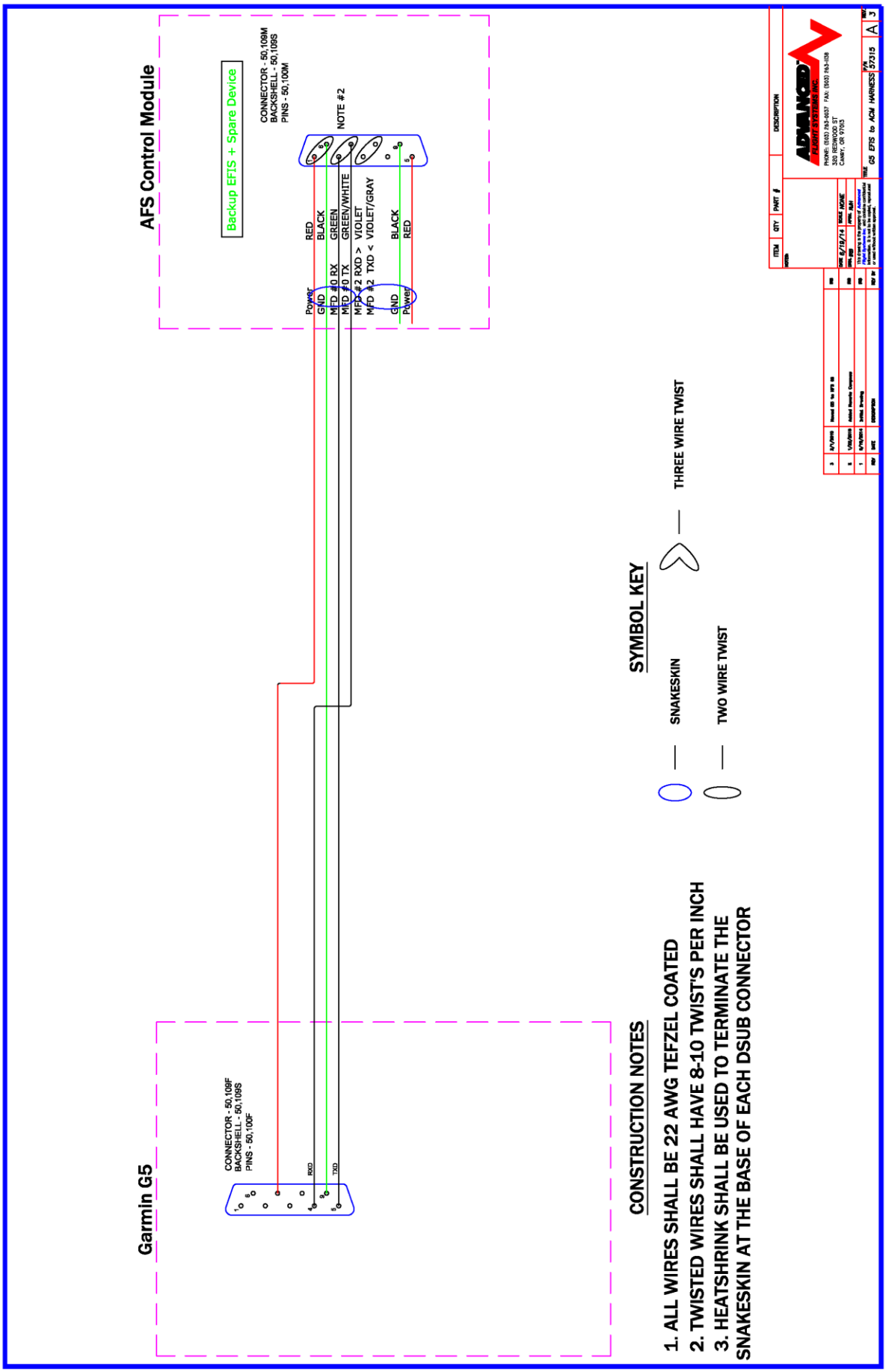

AFS Control Module
BACKUP BATT DSUB-9
CONNECTOR - 50,109F
BACKSHELL - 50,109S
PINS - 50,100F
MFD BACKUP BATTERY CONNECTOR
micro molex
female connector
male pins
PFD BACKUP BATTERY CONNECTOR
CONSTRUCTION NOTES
1. ALL WIRES SHALL BE 22 AWG TEFZEL COATED
2. TWISTED WIRES SHALL HAVE 8-10 TWIST'S PER INCH
3. HEATSHRINK SHALL BE USED TO TERMINATE THE SNAKESKIN AT THE BASE OF EACH DSUB CONNECTOR
SYMBOL KEY
SNAKESKIN
TWO WIRE TWIST
THREE WIRE TWIST
ADVANCED FLIGHT SYSTEMS INC.
Skyview HARNESS

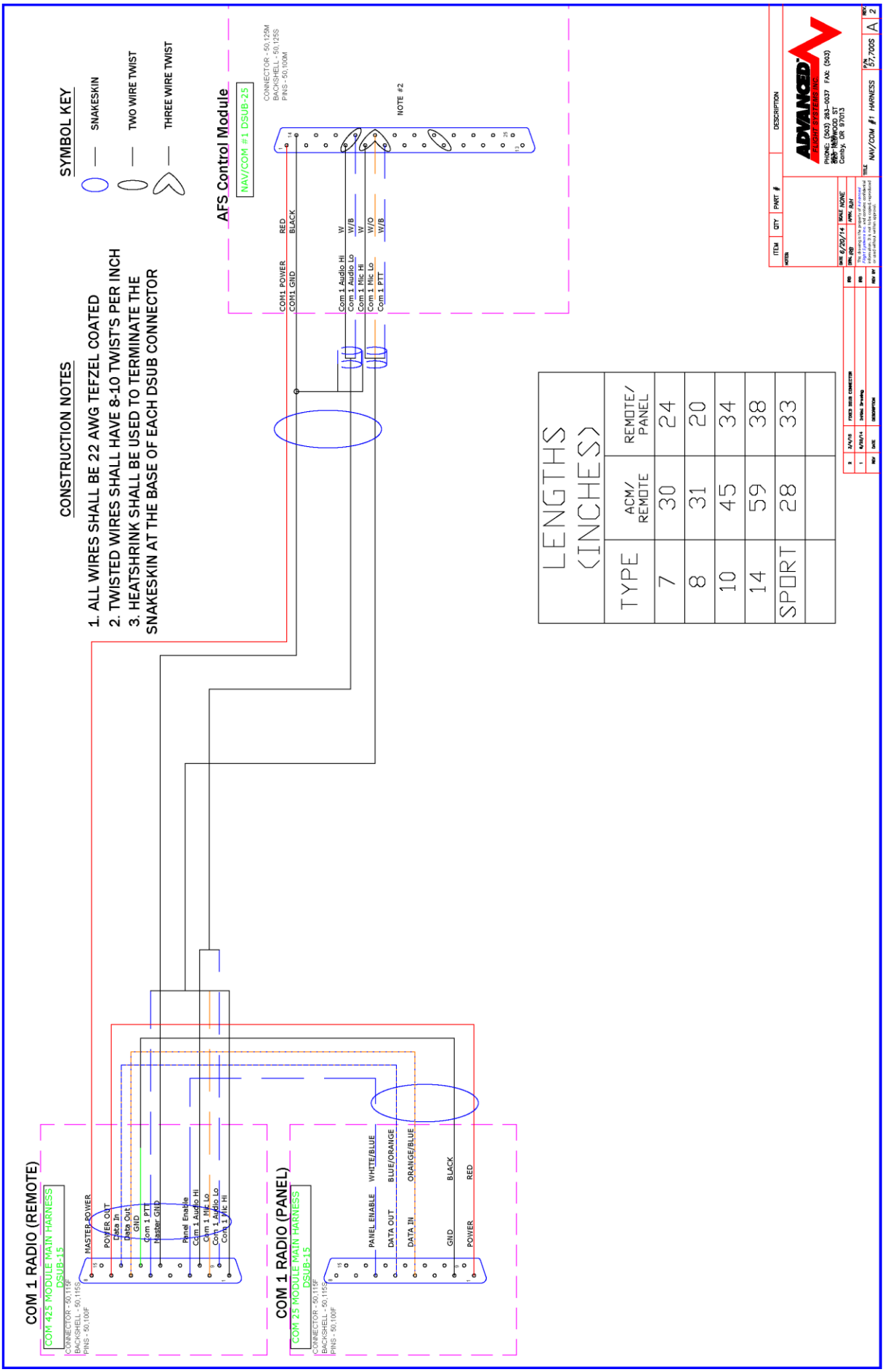

CONSTRUCTION NOTES
1. ALL WIRES SHALL BE 22 AWG TEFZEL COATED
2. TWISTED WIRES SHALL HAVE 8-10 TWIST'S PER INCH
3. HEATSHRINK SHALL BE USED TO TERMINATE THE SNAKESKIN AT THE BASE OF EACH DSUB CONNECTOR
SYMBOL KEY
SNAKESKIN
THREE WIRE TWIST
TWO WIRE TWIST
FOUR WIRE TWIST
AFS Control Module
TRANSPONDER-GPS-ADSB DSUB-15
CONNECTOR - 50,115M
BACKSHELL - 50,115S
PINS - 60,100M
NOTE #2
XPNDR POWER
XPNDR GND
XPNDR GPS <
XPNDR TX >
XPNDR RX <
GPS POWER
GPS GND
GPS TX >
GPS RX <
ADS-B POWER
ADS-B GND
ADS-B TX >
ADS-B RX <
RED
BLACK
ORANGE/BLUE
BLUE/ORANGE
WHITE/BLUE
ORANGE
BLACK
VIOLET/GRAY
ORANGE/GRAY
RED
BLACK
YELLOW
YELLOW/WHITE
CONNECTOR - 50,109F
BACKSHELL - 60,109S
PINS - 50,100F
CONNECTOR - 50,109M
BACKSHELL - 60,109S
PINS - 50,100M
Transponder
MAIN HARNESS DSUB-25
CONNECTOR - 50,125M
BACKSHELL - 50,125S
PINS - 50,100M
LOOP
GND
Power
GPS In
RS-232 RX
RS-232 TX
BLACK
RED
ORANGE/BLUE
WHITE/BLUE
BLUE/ORANGE
SV-GPS-250
ORG
GRY/ORG
GRY/VLT
BLK
ADS-B
MAIN HARNESS DSUB-9
CONNECTOR - 50,109M
BACKSHELL - 60,109S
PINS - 50,100M
Power
RS-232 RX
RS-232 TX
GND
RED
YELLOW/WHITE
YELLOW
BLACK
ADVANCED
ITEM
QTY
PART #
DESCRIPTION
TITLE
XPNDR/GPS/ADSB
P/N 57.3005
REV A 3

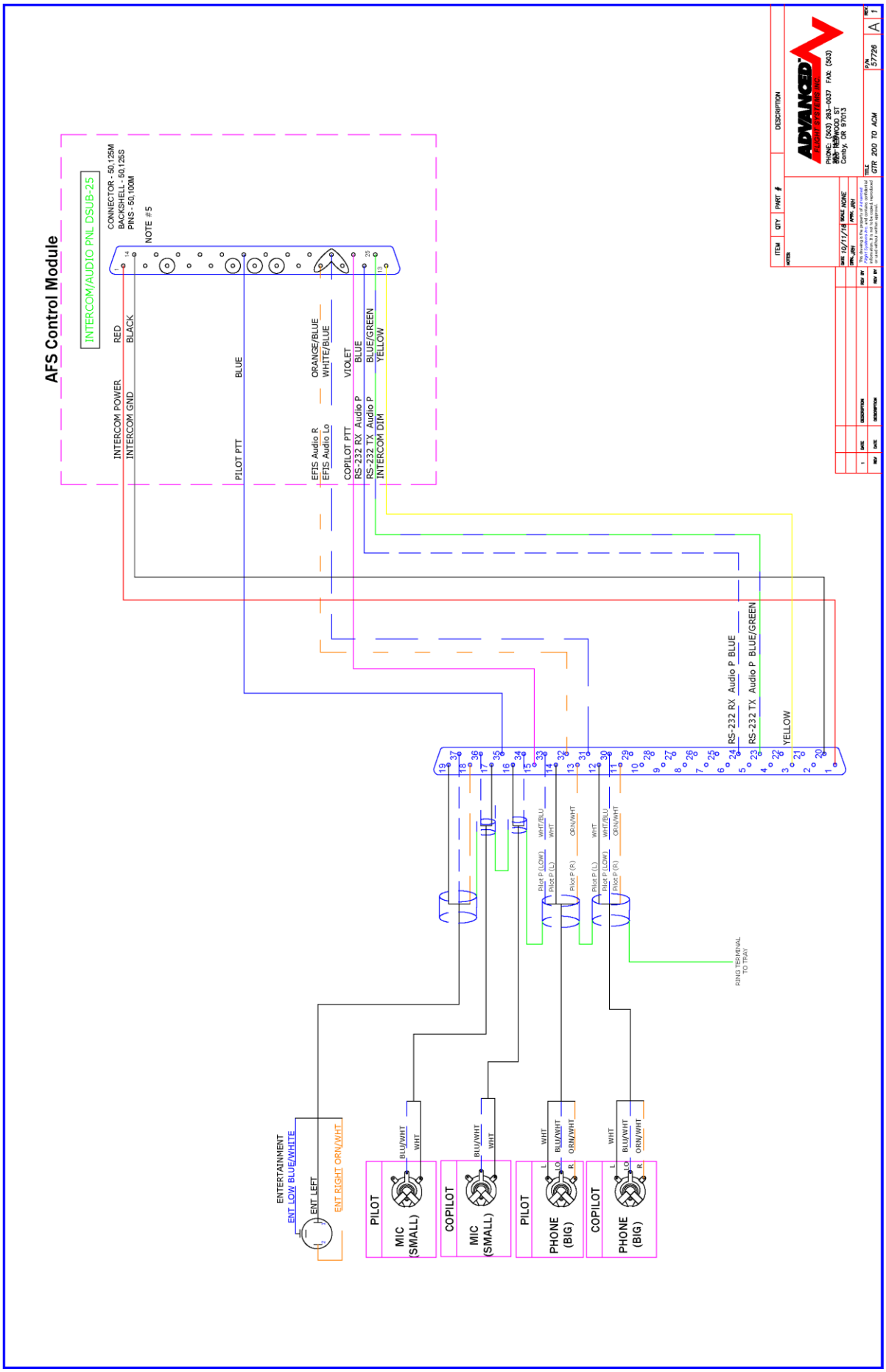

GTN-650
P1001
AIRCRAFT POWER 19
AIRCRAFT POWER 20
AIRCRAFT GROUND 77
AIRCRAFT GROUND 78
RS-232 IN 1 27
RS-232 OUT 1 8
RS-232 IN 2 26
RS-232 OUT 2 7
RS-232 IN 3 25
RS-232 OUT 3 6
RS-232 IN 4 24
RS-232 OUT 4 5
ARINC 429 OUT 1A 10
ARINC 429 OUT 1B 29
ARINC 429 IN 1A 48
ARINC 429 IN 1B 67
AUDIO OUT HI 4
AUDIO OUT LO 23
P1004 NAV
51 AIRCRAFT POWER
52 AIRCRAFT POWER
61 AIRCRAFT GROUND
62 AIRCRAFT GROUND
16 500 Ohm VOR/LOC AUDIO HI
17 500 Ohm VOR/LOC AUDIO LO
23 VOR/ILS ARINC 429 OUT B
24 VOR/ILS ARINC 429 OUT A
P1003 COM
AIRCRAFT POWER 30
AIRCRAFT POWER 43
AIRCRAFT POWER 44
AIRCRAFT GROUND 37
AIRCRAFT GROUND 38
AIRCRAFT GROUND 40
COM MIC 1 AUDIO IN HI 5
500 Ohm COM AUDIO HI 7
COM MIC 1 KEY 11
500 Ohm AUDIO LO 18
MIC AUDIO IN LO 20
AFS Control Module
GPS NAVIGATOR NAV/COM
GTN POWER 7.5AMP
GTN GND
GTN POWER 7.5AMP
GTN GND
RS-232 RX
RS-232 TX
RS-232 RX
RS-232 TX
ARINC GPS OUT 1A
ARINC GPS OUT 1B
ARINC IN 1A
ARINC IN 1B
POWER 7.5AMP
AFS Control Module
NAV/COM #1
COM1 POWER
COM1 GND
COM1 POWER
COM1 GND
COM1 POWER
COM1 GND
Com 1 Audio HI
Com 1 Audio Lo
Com 1 Mic Hi
Com 1 Mic Lo
Com 1 PTT
RS-232 RX COM 1
RS-232 TX COM 1
ARINC NAV OUT 2A
ARINC NAV OUT 2B
NAV 1 Audio Lo
NAV 1 Audio HI
NAV1 GND
NAV1 POWER
NAV1 GND
NAV1 POWER
POWER 10 AMP
ITEM QTY PART # DESCRIPTION
ADVANCED FLIGHT SYSTEMS INC.
PHONE: (503) 263-0837 FAX: (503) 263-0836
320 REDWOOD ST
CANBY, OR 97013
TITLE GTN650 to ACM
P/N 57535
REV B
SCALE NONE
1/15/17
1 1/15/17 Original Drawing


AFS Control Module
INTERCOM / Audio Panel
DSUB 25 MALE
PDA360R Audio Panel
J-1
J-2
AFS ONLY
Ground Lug on Tray
CONSTRUCTION NOTES
1. ALL WIRES SHALL BE 22 AWG TEFZEL COATED
2. HEATSHRINK SHALL BE USED TO TERMINATE THE SNAKESKIN AT THE BASE OF EACH DSUB CONNECTOR
3. TERMINATE SHIELD GROUNDS AT AUDIO PANEL
SYMBOL KEY
SNAKESKIN
PDA360R Audio Panel Rear View
PILOT MIC (SMALL)
PASS 1 PHONE (BIG)
PASS 2 PHONE (BIG)
PILOT PHONE (BIG)
COPILOT PHONE (BIG)
COPILOT MIC (SMALL)
PASS 1 MIC (SMALL)
PASS 1 MIC (SMALL)
ENTERTAINMENT
PDA360R HARNESS
P/N 57651


NOTE:
ALL WIRES 22 AWG
AFS Control Module
GPS NAVIGATOR NAV/COM
AFS Control Module
NAV/COM #1
IFD540
P1001 (MALE)
P1006 NAV (MALE)
P1002 COM (FEMALE)
DUAL SCREEN
AFS ONLY
GROUND TO
HOUSING
ACM to IFD540 Harness
57540


AFS Control Module
Backup EFIS + Spare Device
CONNECTOR - 50,109M
BACKSHELL - 50,109S
PINS - 50,100M
NOTE #2
RED
BLACK
GREEN
GREEN/WHITE
VIOLET
VIOLET/GRAY
BLACK
RED
Power
GND
MFD #0 RX
MFD #0 TX
MFD #2 RXD >
MFD #2 TXD <
GND
Power
Garmin G5
CONNECTOR - 50,109F
BACKSHELL - 50,109S
PINS - 50,100F
RXD
TXD
SYMBOL KEY
SNAKESKIN
THREE WIRE TWIST
TWO WIRE TWIST
CONSTRUCTION NOTES
1. ALL WIRES SHALL BE 22 AWG TEFZEL COATED
2. TWISTED WIRES SHALL HAVE 8-10 TWIST'S PER INCH
3. HEATSHRINK SHALL BE USED TO TERMINATE THE SNAKESKIN AT THE BASE OF EACH DSUB CONNECTOR
ITEM
QTY
PART #
DESCRIPTION
ADVANCED
FLIGHT SYSTEMS INC.
PHONE: (503) 793-1037 FAX: (503) 793-1038
330 REDWOOD ST
Canby, OR 97013
TITLE
G5 EFIS to ACM HARNESS
P/N
57315
REV
A 3


SYMBOL KEY
SNAKESKIN
TWO WIRE TWIST
THREE WIRE TWIST
CONSTRUCTION NOTES
1. ALL WIRES SHALL BE 22 AWG TEFZEL COATED
2. TWISTED WIRES SHALL HAVE 8-10 TWIST'S PER INCH
3. HEATSHRINK SHALL BE USED TO TERMINATE THE SNAKESKIN AT THE BASE OF EACH DSUB CONNECTOR
AFS Control Module
NAV/COM #1 DSUB-25
CONNECTOR - 50.125M
BACKSHELL - 50.125S
PINS - 50.100M
COM1 POWER
COM1 GND
Com 1 Audio Hi
Com 1 Audio Lo
Com 1 Mic Hi
Com 1 Mic Lo
Com 1 PTT
RED
BLACK
W
W/B
W
W/O
W/B
NOTE #2
COM 1 RADIO (REMOTE)
COM 425 MODULE MAIN HARNESS
DSUB-15
CONNECTOR - 50.115F
BACKSHELL - 50.115S
PINS - 50.100F
MASTER POWER
POWER OUT
Data In
Data Out
GND
Com 1 PTT
Master GND
Panel Enable
Com 1 Audio Hi
Com 1 Audio Lo
Com 1 Mic Lo
Com 1 Mic Hi
COM 1 RADIO (PANEL)
COM 25 MODULE MAIN HARNESS
DSUB-15
CONNECTOR - 50.115F
BACKSHELL - 50.115S
PINS - 50.100F
PANEL ENABLE
DATA OUT
DATA IN
GND
POWER
WHITE/BLUE
BLUE/ORANGE
ORANGE/BLUE
BLACK
RED
LENGTHS (INCHES)
TYPE
ACM/ REMOTE
REMOTE/ PANEL
7 30 24
8 31 20
10 45 34
14 59 38
SPORT 28 33
ADVANCED
NAV/COM #1 HARNESS
P/N 57.7005
REV A 2


AFS Control Module
INTERCOM/AUDIO PNL DSUB-25
CONNECTOR - 50.125M
BACKSHELL - 50.125S
PINS - 50.100M
NOTE #5
INTERCOM POWER
INTERCOM GND
PILOT PTT
EFIS Audio R
EFIS Audio Lo
COPILOT PTT
RS-232 RX Audio P
RS-232 TX Audio P
INTERCOM D/M
RED
BLACK
BLUE
ORANGE/BLUE
WHITE/BLUE
VIOLET
BLUE
BLUE/GREEN
YELLOW
RS-232 RX Audio P BLUE
RS-232 TX Audio P BLUE/GREEN
YELLOW
RING TERMINAL TO TRAY
ENTERTAINMENT
ENT LOW BLUE/WHITE
ENT LEFT
ENT RIGHT ORN/WHT
PILOT MIC (SMALL)
COPILOT MIC (SMALL)
PILOT PHONE (BIG)
COPILOT PHONE (BIG)
BLU/WHT
WHT
ORN/WHT
Pilot P (LOW)
Pilot P (L)
Pilot P (R)
ADVANCED FLIGHT SYSTEMS INC.
PHONE: (303) 283-0037 FAX: (303)
GTR 200 TO ACM
P/N 57726

Registration Information

To receive important notification of Service Bulletins, and service difficulty reports, please EMAIL the following information to:

Info@Advanced-Flight-Systems.com

Or Mail to:

Advanced Flight Systems Inc.
320 S. Redwood St.
Canby OR 97013 USA

*Owner's Name:*_____

Address: _____

_____

City: _____

*State:*_____*Postal Code ZIP:* _____

Country: _____

Home telephone: _____

Business Telephone: _____

E-mail: _____

Aircraft Model and N#: _____

*Engine Model :*_____

*System Model #:*_____*Serial Number:*_____

*Installer:*_____