I/O Module Setup Guide

The **DSTR-AOA-1971** module is a universal I/O module that allows inputs to, and outputs from the Alpha Systems AOA Computer. Its multifunction inputs can look at discrete switches, changing analog voltages for things such as flap deployment positions, Gear advisory or other future sensing applications. It also has a number of reserved outputs for future updates. Due to the wide number of aircraft and aircraft flap systems, the I/O module can be connected multiple ways. The Alpha Systems AOA must have an accurate, reliable **electrical** signal such as discrete switches, lights, LED's that corresponds to the flap positions. The DSTR-AOA-1971 has up to four **(4) DISCRETE**, high and low active inputs and **ANALOG** inputs for increasing or decreasing voltages as the flap deploy. This I/O Module kit comes with prewired cables, connectors and in-line fuses to protect the aircrafts systems.

STEP ONE:
Determine if the aircraft has an electrical signal, such as a changing analog voltage or a variable voltage flap position gauge **OR** multiple flap position switches, lights, LED's that can be used for the I/O module of the Alpha Systems AOA to electrically monitor the changes of flap positions, from clean to full flaps. **This will determine Analog monitoring or Discrete Switch input monitoring**

STEP TWO:
Determine if the signal / signals are either a **High active** or **Low active** Discrete, or an Analog voltage which is **Increasing** or **Decreasing** when the flaps are deployed. Follow the appropriate connection instructions below.

Determine if there are Discrete switch inputs OR Analog voltage to monitor on the DSTR-AOA-1971 that represents Flap positions for the aircraft. NOT BOTH!

IMPORTANT: If there is none of the above, no electrical way from the aircraft to monitor flap position, then the addition of the Alpha Systems AOA ,Flap Transmitter (**Flap TX**) is available. This **Flap TX** is a spring loaded, cable potentiometer that once solidly mounted and the Flap TX cable is connected to a flap control cable, linkage, rod or lever can send a variable analog voltage representing multiple flap stopped positions.
Then follow Option1, (Increasing Voltage), Analog Flap Position Sensing and connection diagrams provided.

Option1: Analog Flap Position Sensing
Analog Flap Input Setup and Configuration:
The I/O module, p/n DSTR-AOA-1971, connects via a prewired 6-pin Hirose connector to the Display I/M (Computer) AUX input, a DB-15 pin connector. Install the system using the **Sensor I/F + IO + Audio Interior Cable**. Find the cable drawing labeled **AOA-1973 or AOA-1974**.
To allow for connections to the aircraft, a male DB15 connector (p/n TYCO-5-747908-2) has been included to connect the following the inputs to the IO module.

Note: Multiple cable and connection drawings are included with the kit. Use the appropriate drawing for the flap sensing available from the aircraft.

Analog Flap Input I/O Connections: (For increasing voltage as flaps are deployed)
Connect the Flap input utilizing the hardware and the connection drawings provided. **500mA fuse assembly, p/n AOA-1967 must be installed in-line on the C2-13 connection:**
- Flap Position Analog voltage from aircraft to C2-13, Analog voltage ranging from 0 VDC to 28 VDC
- C2-14, Analog enabled = GND, (No Connection = Not Active)
- C2-15, To aircraft GND

I/O Module Setup Guide

Analog Flap Input I/O Connections: (For decreasing voltage as flaps are deployed)
Connect the Flap input utilizing the hardware and the connection drawings provided. **500mA fuse assembly, p/n AOA-1967 must be installed in-line on the C2-2 connection:**

- Flap Position Analog voltage from aircraft to C2-1 (Reverse Analog Flap input)
- C2-2, Reversed Analog Enabled = GND, (No Connection = Not Active)
- C2-15, To aircraft GND

I/O Module (Analog Input) Flap Setup:
The Alpha Systems AOA, I/O module **MUST CORRELATE ELECTRICALLY** the position of the flaps to voltage before the In-Flight, Flap OAA calibrations are done.

The following instructions VERIFY the AOA COMPUTER is sensing the changes of aircraft flaps.

Once all electrical connections have been completed, perform the following electrical adjustments for proper Flap position sensing.
There are THREE (3), multiturn adjustment potentiometers on the side of the I/O Module that are used for Analog Flap adjustments.

Rotate all 3 potentiometers **CLOCKWISE 25 times** or until a **"clicking"** is heard. This initializes or resets the beginning values for F0, F1, F2.

There is a I/O diagnostic routine built into the AOA system that allows the AOA's I/O Module to adjust and sense the appropriate voltage representing each flap stopped position. These voltage adjustments and the following test setup each flap stopped position. Once each is adjusted, **VERIFY BY RETURNING FLAPS** to **Clean (F0)**, **Takeoff (F1)**, and **Landing (F2)** positions, multiple times and verify the corresponding changes on the AOA display match and can be repeated **BEFORE IN-FLIGHT CALIBRATIONS ARE DONE!!!!**

**To Enter the flap position diagnostic Routine:**
Turn the Rotary Switch on the Switch Panel to position 7.

Push and hold the **SEL** (WHT) button down while applying power to the system. The system will enter the Flap Diagnostic routine.

Notes 1.) *There is no audio indication when this routine is active. The AOA display should be blank, all segments OFF to begin adjustment calibration.*

Analog Flap Position Adjustment Pots

2.) This 'Flap Diagnostic' function electrically tests that the I/O module is sensing appropriate flap positions. "Active Flap Input" identifies the flap stopped position on the aircraft. "AOA Display Reference" is a description of the illuminated segments on the display in response to the active flap input.

A.) To set an analog input value for the **Flap0, CLEAN/UP** position, verify the aircraft's flap position to **CLEAN/UP**. Rotate the F0 Potentiometer **counterclockwise** on the I/O module until a **Green LED BAR** segment is illuminated on the AOA Display. Readjust POT until satisfied with the position detection. **(See I/O Verification Chart)**
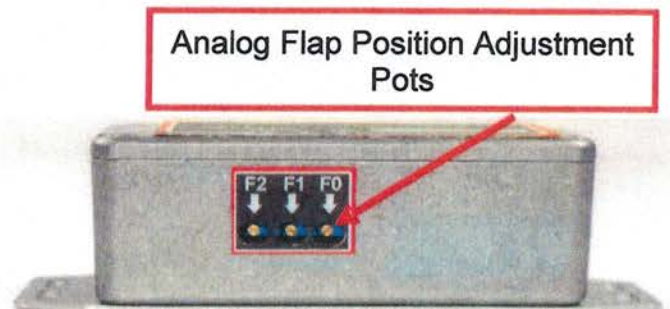
SEE NEXT PAGE

I/O Module Setup Guide

B.) To set an analog input value for the **Flap1** position, **(in some aircraft, this could be the 50% or Take-Off flap position),** move or increase the aircraft's flaps to the desired **Flap1** position, rotate the **F1** Potentiometer **counterclockwise** on the I/O module until a **Yellow Chevron LED** segments are illuminated on the AOA Display. Readjust POT until satisfied with the position detection. **The Yellow Chevron LED** segments should activate at the point *just before* the flap reaches its designated position **AND STAY ON AFTER THE FLAP STOPS MOVING. (See I/O Verification Chart)**

C.) To set an analog input value for **Flap2** position **(in some aircraft, this could be Full flaps or the Landing Flap position),** move / deploy the aircraft's flaps to the desired **Flap2** position, rotate the **F2** Potentiometer **counterclockwise** on the I/O module until a **Red Triangle LED** segment is illuminated on the AOA Display. Readjust POT until satisfied with the position detection. The **Red Triangle LED** segment should activate at the point *just before* the flap reaches its designated position **AND STAYS ON AFTER THE FLAP STOPS MOVING. (See I/O Verification Chart)**

D.) Return the flaps to **Clean(F0),** then flaps position **Take Off (F1),** then **Full Flaps(F2)** positions. Verify the AOA display changes to the appropriate LED indications for each selected flap position, readjust each pot if necessary, to guarantee repeatability when stopped at each of the indicated flap positions. **(See I/O Verification Chart)**

If Flap positions 0, 1, or 2 are not detected, the AOA system will default to Flap position 0 / CLEAN (0°).

Attention: The Analog Flap input cannot be used if the discrete I/O inputs (F0, F1, F2 and F3) inputs are enabled and vice versa.

NOTE: After the I/O module's electrical flap adjustments are made, the IN-FLIGHT Flap positions for "OAA" (1.3Vs) calibrations must be set to each flap position monitored.

Alpha Systems AOA provides a sticker to cover the opening on the I/O Module for the Analog Flap Adjustment Pots. After final adjustments and verification for each flap position, install sticker as seen below.

I/O Module Setup Guide

Option2: Discrete Flap Switch Sensing

Discrete Flap Input Setup and Configuration:
The I/O module, p/n DSTR-AOA-1971, connects via a prewired 6-pin Hirose connector to the Display I/F module, (Computer) AUX input, a DB-15 pin connector. Install the system using the **Sensor I/F + IO + Audio Interior Cable**. Find the cable drawing labeled **AOA-1973 or AOA-1974**.
To allow for connections, inputs from the aircraft, a DB15 connector (p/n TYCO-5-747908-2) has been included to connect the following the inputs to the IO module.

Note: Multiple cable and connection drawings are included with the kit. Use the appropriate drawing for the flap sensing available from the aircraft.

If it was determined that the aircraft has individual flap position switches, lights or LED's that can be used to indicate the various flap positions, then follow the instructions for the Discrete Flap Switch Sensing instructions:

The I/O Module can sense up to four (4) discrete individual flap position switches, Default, F0 = CLEAN/UP, then F1, F2, F3 for monitoring three (3) additional flap position sensing. The Discrete inputs allow for connections that sense either HIGH active or LOW active flap sensing. Depending on the electronics of the aircraft, it may be necessary to add isolation relays to aid in the sensing. ALL CONNECTIONS ARE MADE THROUGH THE PROVIDED .5 Amp. ISOLATION FUSES

The installer can sense as many or few of the inputs as required, F0 does NOT have to be connected to sense flap positions for F1, F2, F3. With no Flap switches detected, the AOA defaults to CLEAN or UP Flap position calibration.

I/O Module Discrete Inputs
C2-3 = F0, Flap Position, Clean / up (If Used, Must be used for Clean)
C2-4 = F1, Flap Position, (First Identified Flap Position)
C2-5 = F2, Flap Position, (Second Identified Flap Position)
C2-6 = F3, Flap position, (Third Identified Flap Position)

C2-11 = Flap sensing active level, when grounded, the active sensing level is LOW for F0 through F3. When left open (No Connection) the active sensing level is HIGH for F0 through F3.

NOTE: With LOW sensing, each input must be pulled HIGH when not active. If not, a relay must be used to reverse the LOW active signal to a HIGH active input on the I/O Module (see additional Discrete connection schematics)

Once the electrical connections are made, follow the Flaps Diagnostic routine, switch position 7 to verify the AOA system can repeatably sense the change of the flap position before ANY in-flight calibrations a done.

SEE NEXT PAGE

I/O Module Setup Guide

Flap Diagnostics:

This instruction will guide you through the 'Flap Diagnostics' function of the AOA system. This function will allow you to VERIFY each input to the I/O module has been properly connected and the AOA computer senses the changes of the flap positions from the appropriate inputs.

To enter the Flap Position Diagnostics Routine:

- With power OFF, rotate the rotary switch to position 7. Press and hold the **SEL**, (WHT) button.
- While holding the **SEL** button in, turn power ON.
  You will not hear an audio response.
  Verify aircraft flap position, If UP or in the CLEAN position **AND** the **F0** input is connected, then the GREEN Bar LED segment should be Illuminated. IF flaps are UP and the F0 input is NOT connected then The AOA display should be blank, all segments must be OFF.

Note: This 'Flap Diagnostic' function electrically tests that the I/O module is sensing appropriate flap positions. "Active Flap Input" identifies the flap stopped position on the aircraft. "AOA Display Reference" is a description of the illuminated segments on the display in response to the active flap input.

While in this mode, VERIFY EACH connected flap position. You should see a corresponding LED segment on the display to the flap positions. *Not all aircraft require all described flap inputs to be installed. Test the flap inputs specific to the aircraft that the AOA system is being installed in.*

FO = Green LED segment
F1 = Yellow Chevron LED segments
F2 = Red Triangle LED segment
F3 = Blue Doughnut

Note: Not all aircraft require all described flap inputs to be installed. Test the flap inputs specific to the aircraft that the AOA system is being installed in.

- Power the system OFF.

Reference the table on the next page for your aircraft's flap input(s).

I/O Module Setup Guide

I/O Module Flap and Gear Input Verification Chart

Testing for Active Flaps and Gear Input.	AOA Display Reference
No Active Flap Inputs	Blank (No LED Segments Illuminated)
Multiple Active Flaps Simultaneously	Blank (No LED Segments Illuminated)
Flap Position 0 = F0 Input Test	F0 INPUT ACTIVE
Flap Position 1 = F1 Input Test	F1 INPUT = ACTIVE
Flap Position 2 = F2 Input Test	F2 INPUT = ACTIVE
Flap Position 3 = F3 Input Test	F3 INPUT = ACTIVE
Gear Locked Down Input Test	GEAR DOWN /LOCKED = ACTIVE

I/O Module Setup Guide

GEAR ADVISORY / INPUT

The I/O Module has an active input to sense the **LOCKED / DOWN** position of the gear. This input, when electrically connected and the **Gear Advisory is turned ON in software** will, at a high angle of attack (Yellow Chevrons and Blue lower ark of the Doughnut), monitors the Gear locked down switch. If the gear is **NOT LOCKED DOWN**, there is an audio warning message of **"GEAR, GEAR, GEAR"** through the pilot's headset.

C2-10, Gear Locked Down input, **(+12 or +28vdc) = down and locked.** GND = Not Locked Down

If the aircraft utilizes a GND for a Gear Down, then an isolation relay must be added.

After the electrical connections are made:
Follow the Diagnostic Routine, switch position 7 to test or verify the I/O Module senses the Gear input and operates correctly. When in the Diagnostic Routine 7, if the I/O Module Gear input is Active, the Red Chevrons on the display should be illuminated, if the gear is **NOT** Locked Down, the Red Chevrons will be off.

Once this Gear Input is checked for proper connection and function, the installer **MUST** turn on the **Gear Advisory** in software as described in the Operations Manual

DISCRETE FLAP SWITCH INPUTS
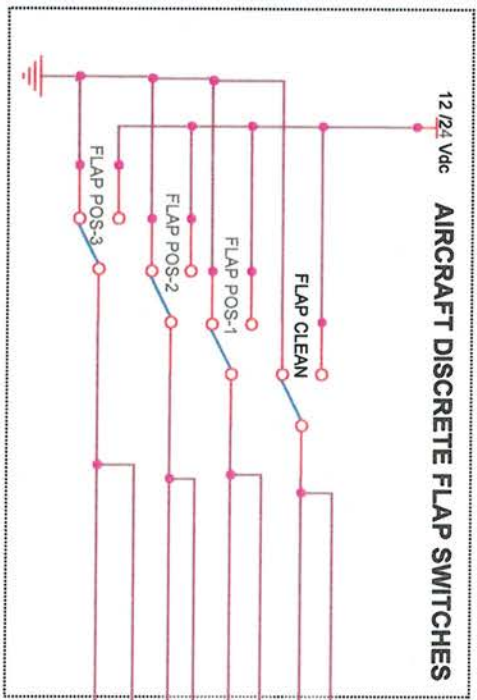
AIRCRAFT DISCRETE FLAP SWITCHES

12 /24 Vdc

FLAP POS-3
FLAP POS-2
FLAP POS-1
FLAP CLEAN

AOA-1967 FUSE ASSEMBLY (X 4)

0.5A FUSE

To Flap POS 3 LED/light
To Flap POS 2 LED/light
To Flap POS 1 LED/light
To Flap Clean LED/light

SEE NOTE 2

12/28 Vdc

NOT ACTIVE
ACTIVE
Gear Down/Locked SW.

DISPLAY I/F MODULE
(NON-PRESSURIZED - DSTR-AOA-1895)
(PRESSURIZED - DSTR-AOA-1960)

		C4
POWER	11	
GROUND	10	
CLOCK	7	
DATA	8	

AOA-1973 IO MODULE CABLE

		C1
POWER	1	
GROUND	2	
CLOCK	3	
DATA	4	
X	5	

NOTE: ONE DSUB 15 CONN INCLUDED
FOR INSTALLATION OF FLAPS AT C2

DSTR-AOA-1971 IO MODULE

	C2
F0 INPUT (MUST BE USED FOR CLEAN POS.)	3
F1 INPUT	4
F2 INPUT	5
F3 INPUT	6
FLAP ACTIVE LEVEL	11
Gear Down/Locked Input (High active input)	10
GND	15

NOTE 1

FIRST
Verify all electrical connections by the diagostic routine # 7. This validates the AOA can read EACH flap posion repeatably

SECOND
After CLEAN OAA AND CRUISE IN-FLIGHT calibrations are complete, then Calibrate the IN-FLIGHT OAA for each Flap switch that is monitored.

(1) FLAPS 0 - 3 SIGNALS ARE TAKEN FROM THE AIRCRAFT'S EXISTING FLAP POSITION SWITCHES, LIGHTS, LEDS OR CIRCUITS.

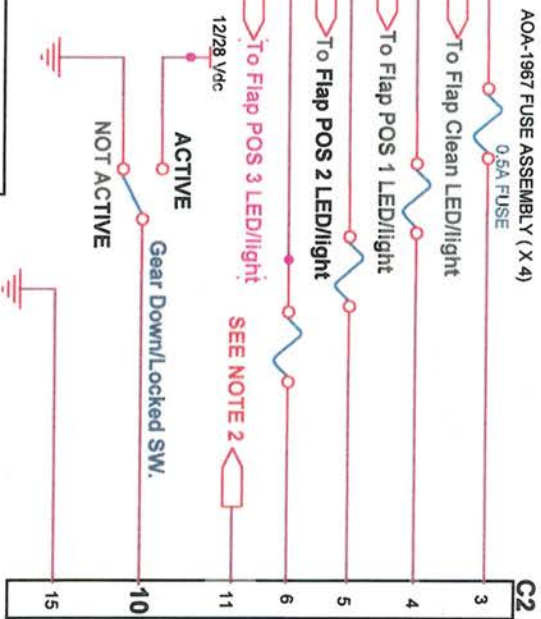(2) FOR ACTIVE HIGH FLAPS; LEAVE C2-11 OPEN
FOR ACTIVE LOW FLAPS; GROUND C2-11

(3) IF USING LOW ACTIVE FLAPS, IT MUST SWITCH FROM + VOLTAGE TO LOW (GND) ACTIVE FLAP POSITION.

(4) RELAYS CAN BE USED TO REVERSE POLARITY TO ALL AOA INPUTS IF NEEDED.

FOR AN ACTIVE LOW FLAPS: C2-11 = GND
(0V to <1.5V) = FLAP POSITION SELECTED
(1.5V to +28V) = FLAP POSITION NOT SELECTED

NOTE 2

FOR AN ACTIVE HIGH FLAPS: C2-11 = OPEN
(0V to <1.5V) = FLAP POSITION NOT SELECTED
(1.5V to +28V) = FLAP POSITION SELECTED

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ALPHA SYSTEMS AOA
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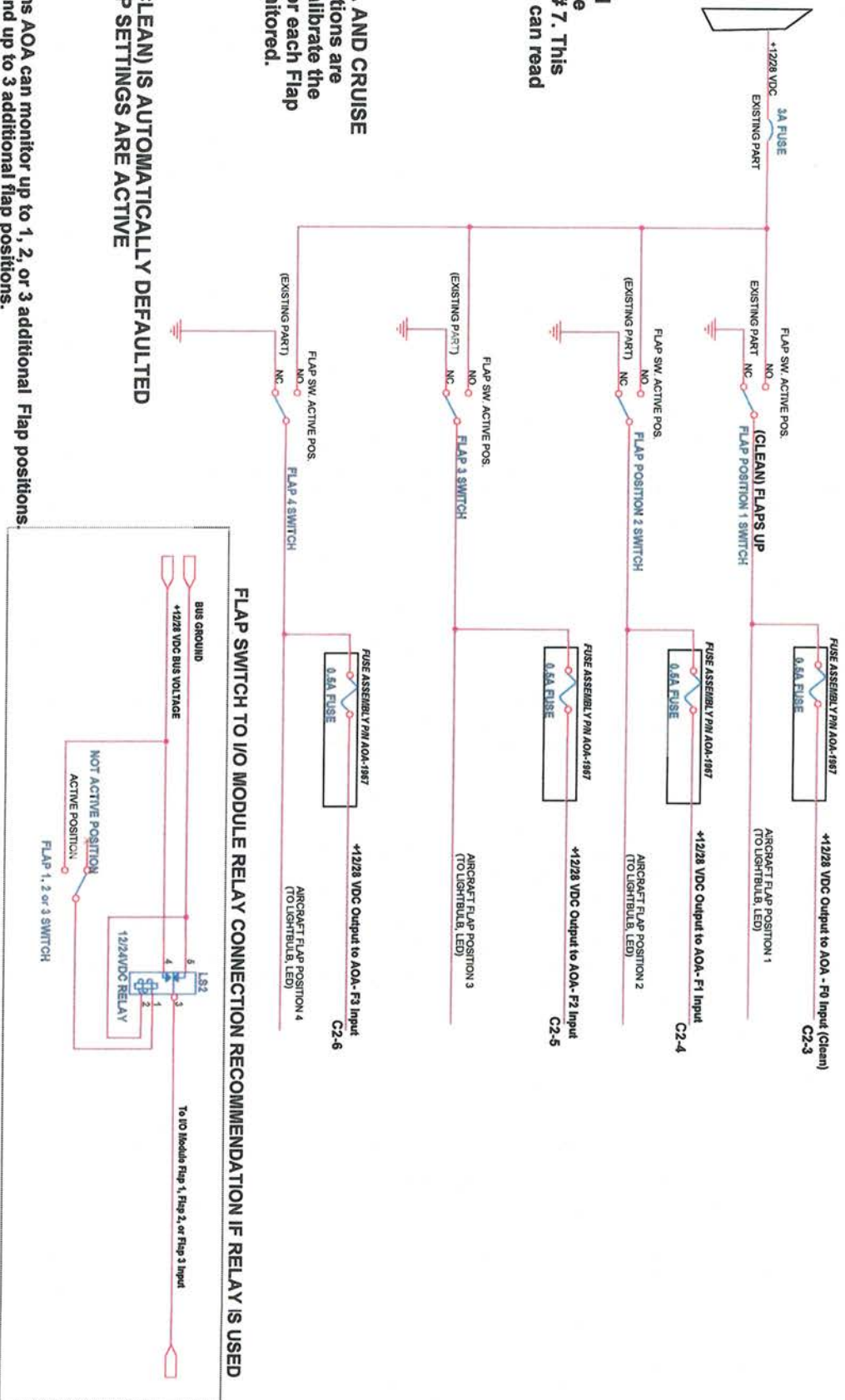| Title	FLAP CONNECTION FOR DISCRETE FLAP INPUTS	
Size B	Document Number DSTR-AOA-1971-1	Rev C
Date: Saturday, February 29, 2020	Sheet 1 of 1	

TYPICAL DISCRETE FLAP CONNECTIONS

FIRST

Verify all electrical connections by the diagostic routine # 7. This validates the AOA can read EACH flap posion repeatably

SECOND

After CLEAN OAA AND CRUISE IN-FLIGHT calibrations are complete, then Calibrate the IN-FLIGHT OAA for each Flap switch that is monitored.

FLAP POSITION (CLEAN) IS AUTOMATICALLY DEFAULTED IF NO OTHER FLAP SETTINGS ARE ACTIVE

Notes:
1.) The Alpha Systems AOA can monitor up to 1, 2, or 3 additional Flap positions.
2.) Clean (F0 input) and up to 3 additional flap positions.
3.) Standard Discrete inputs = Active = (+ 12/24 Vdc), Not Active = GND.
4.) If the aircraft uses active Ground from switches, See Flap Active Level Line C2-11
5.) A relay can be used to reverse the signal to the AOA I/O module.
6.) 28 V shown, same for 12 Vdc systems, approreate voltage components must be used.

+12/28 VDC
3A FUSE
EXISTING PART

EXISTING PART
FLAP SW. ACTIVE POS.
NO.
NC.
(CLEAN) FLAPS UP
FLAP POSITION 1 SWITCH

FUSE ASSEMBLY P/N AOA-1967
0.5A FUSE
+12/28 VDC Output to AOA - F0 Input (Clean)
C2-3

FLAP SW. ACTIVE POS.
(EXISTING PART)
NO.
NC.
FLAP POSITION 2 SWITCH

FUSE ASSEMBLY P/N AOA-1967
0.5A FUSE
AIRCRAFT FLAP POSITION 1
(TO LIGHTBULB, LED)
+12/28 VDC Output to AOA- F1 Input
C2-4

FLAP SW. ACTIVE POS.
(EXISTING PART)
NO.
NC.
FLAP 3 SWITCH

FUSE ASSEMBLY P/N AOA-1967
0.5A FUSE
AIRCRAFT FLAP POSITION 2
(TO LIGHTBULB, LED)
+12/28 VDC Output to AOA- F2 Input
C2-5

FLAP SW. ACTIVE POS.
(EXISTING PART)
NO.
NC.
FLAP 4 SWITCH

FUSE ASSEMBLY P/N AOA-1967
0.5A FUSE
AIRCRAFT FLAP POSITION 3
(TO LIGHTBULB, LED)
+12/28 VDC Output to AOA- F3 Input
C2-6

FLAP SWITCH TO I/O MODULE RELAY CONNECTION RECOMMENDATION IF RELAY IS USED

BUS GROUND
+12/28 VDC BUS VOLTAGE

NOT ACTIVE POSITION
ACTIVE POSITION
FLAP 1, 2 or 3 SWITCH

12/24VDC RELAY
LS2

AIRCRAFT FLAP POSITION 4
(TO LIGHTBULB, LED)

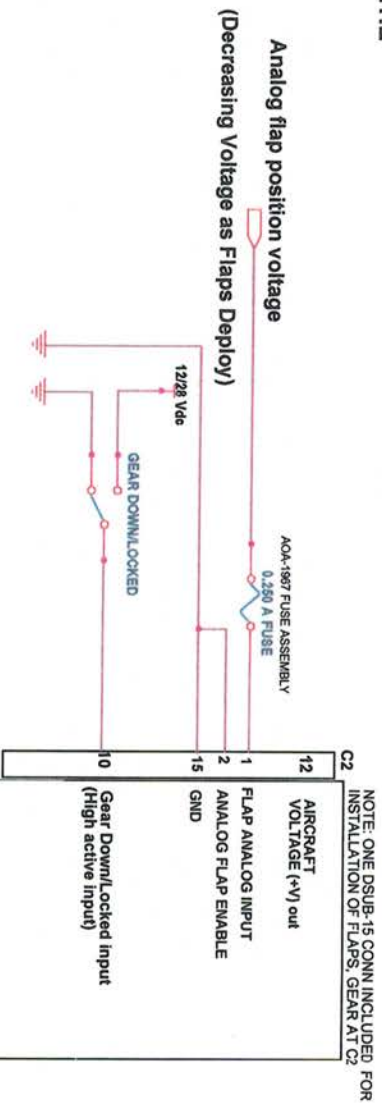To I/O Module Flap 1, Flap 2, or Flap 3 Input

REVERSE ANALOG FLAP POSITION VOLTAGE CONNECTIONS
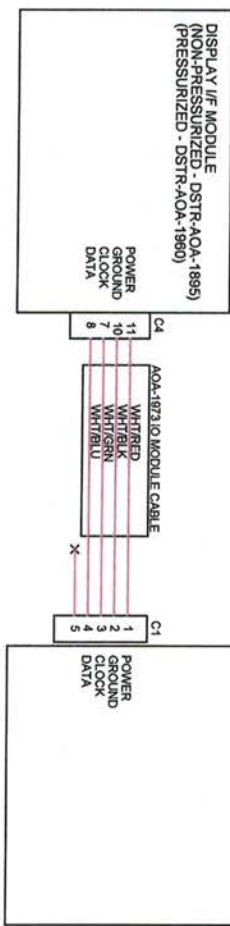
(Decreasing Voltage as Flaps Deploy)

THE AIRCRAFT FLAP ANALOG OUTPUT CORRESPONDS TO THE AIRCRAFT'S FLAP POSITION. CALIBRATION ALLOWS UP TO 3 FLAP POSITIONS.

1.) F0 MUST EQUAL CLEAN,
2.) F1 TYPICALLY EQUALS T.O. FLAP POSITION.
3.) F2 MUST EQUAL FULL FLAPS.

NOTES:
(1) FLAP 0 (CLEAN) ANALOG FLAP INPUT VOLTAGE AT C2-1 SET TO BE HIGHER THAN FLAP1 AND FLAP2 SETTINGS

(2.) FLAP1 ANALOG FLAP INPUT VOLTAGE AT C2-1 SET TO BE HIGHER THAN FLAP2, BUT LOWER THAN FLAP0 SETTING

(3.) FLAP2 ANALOG FLAP INPUT VOLTAGE AT C2-1 SET TO BE LOWER THAN FLAP0 AND FLAP1 SETTINGS

(4.) MAXIMUM FLAP ANALOG INPUT VOLTAGE AT C2-1 IS +12VDC

FIRST
Verify all electrical connections by the diagostic routine # 7. This validates the AOA can read EACH flap posion repeatably

SECOND
After CLEAN OAA AND CRUISE IN-FLIGHT calibrations are complete, then Calibrate the IN-FLIGHT OAA for each Flap switch that is monitored.

Analog flap position voltage
(Decreasing Voltage as Flaps Deploy)

DISPLAY I/F MODULE
(NON-PRESSURIZED - DSTR-AOA-1895)
(PRESSURIZED - DSTR-AOA-1960)

POWER	11	C4
GROUND	10	
CLOCK	7	
DATA	8	

AOA-1973 I/O MODULE CABLE

WHT/RED
WHT/BLK
WHT/GRN
WHT/BLU

		C1
POWER	1	
GROUND	2	
CLOCK	4	
DATA	5	

DSTR-AOA-1971 I/O MODULE

AOA-1967 FUSE ASSEMBLY

0.250 A FUSE

12/28 Vdc

GEAR DOWN/LOCKED

		C2
AIRCRAFT VOLTAGE (+V) out	12	
ANALOG FLAP INPUT	1	
ANALOG FLAP ENABLE	2	
GND	15	
Gear Down/Locked input (High active input)	10	

NOTE: ONE DSUB-15 CONN INCLUDED FOR INSTALLATION OF FLAPS, GEAR AT C2

ALPHA SYSTEMS AOA

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Title: REVERSE ANALOG FLAP POSITION VOLTAGE CONNECTIONS FOR DSTR-AOA-1971

Size

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Sheet 1 of 1

INCREASING ANALOG FLAP POSITION VOLTAGE CONNECTIONS

(Increasing Voltage as Flaps Deploy)

Analog flap position voltage

THE FLAP OUTPUT CORRESPONDS TO THE AIRCRAFT'S FLAP POSITION. CALIBRATION ALLOWS FOR UP TO 3 FLAP POSITIONS.
1.) F0 MUST EQUAL CLEAN,
2.) F1 TYPICALLY EQUALS T.O. FLAP POSITION.
3.) F2 MUST EQUAL FULL FLAPS.
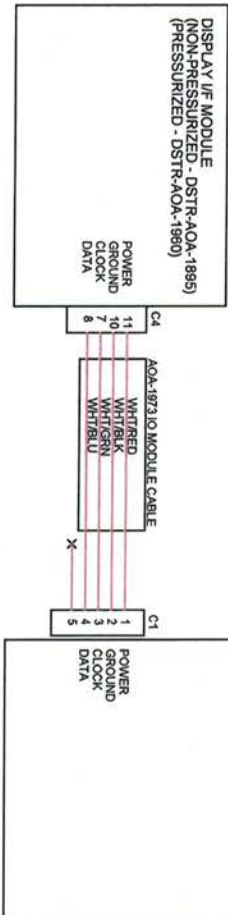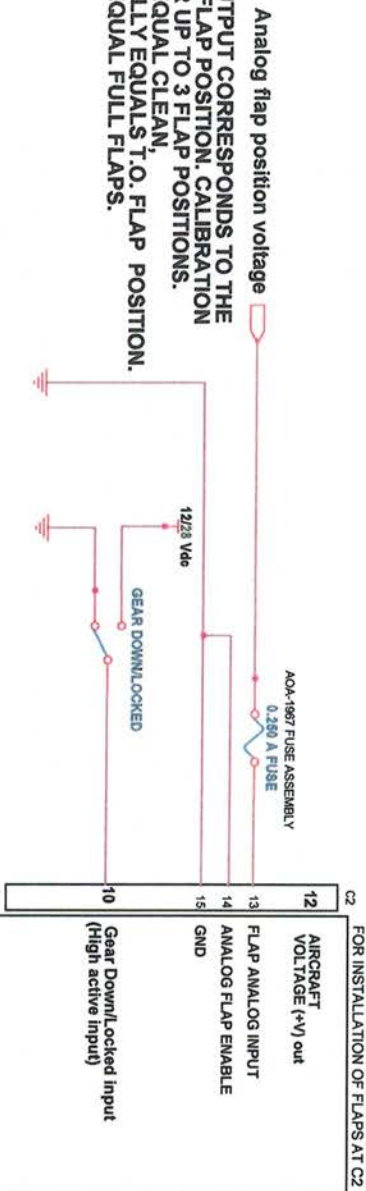
NOTES:
(1) FLAP 0 (CLEAN) ANALOG FLAP INPUT VOLTAGE AT C2-13 SET TO BE LOWER THAN FLAP1 AND FLAP2 SETTINGS

(2) FLAP1 ANALOG FLAP INPUT VOLTAGE AT C2-13 SET TO BE LOWER THAN FLAP2, BUT GREATER THAN FLAP0 SETTING

(3) FLAP2 ANALOG FLAP INPUT VOLTAGE AT C2-13 SET TO BE GREATER THAN FLAP0 AND FLAP1 SETTINGS

(4) MAXIMUM FLAP ANALOG INPUT VOLTAGE AT C2-13 IS +28VDC

FIRST
Verify all electrical connections by the diagostic routine # 7. This validates the AOA can read EACH flap posion repeatably

SECOND
After CLEAN OAA AND CRUISE IN-FLIGHT calibrations are complete, then Calibrate the IN-FLIGHT OAA for each Flap switch that is monitored.

DISPLAY I/F MODULE
(NON-PRESSURIZED - DSTR-AOA-1895)
(PRESSURIZED - DSTR-AOA-1960)

C4
POWER   11
GROUND   10
CLOCK   7
DATA   8

AOA-1973 I.O. MODULE CABLE
WHT/RED
WHT/BLK
WHT/GRN
WHT/BLU

C1
POWER   5
GROUND   4
CLOCK   2
DATA   1

DSTR-AOA-1971 I/O MODULE

AOA-1967 FUSE ASSEMBLY
0.250 A FUSE

12/28 Vdc

GEAR DOWN/LOCKED

C2
AIRCRAFT VOLTAGE (+V) out   12
FLAP ANALOG INPUT
ANALOG FLAP ENABLE   14
GND   13
                             15
Gear Down/Locked input   10
(High active input)

NOTE: ONE DSUB 15 CONN INCLUDED FOR INSTALLATION OF FLAPS AT C2

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Title: FLAP INCREASING VOLTAGE AS FLAPS DEPLOY. FOR DSTR-AOA-1971

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ALPHA SYSTEMS   DepotStar

RELAY TO REVERSE POLARITY FOR GROUND ACTIVE FLAP OR GEAR SWITCHES

GND

(12/28Vdc)

C2-15

(ON AIRCRAFT FLAP/ LANDING GEAR)

FLAP/GEAR switch

NOT ACTIVE POSITION

ACTIVE POSITION

F3

.500Amp.

A1
A3
B1
B3

RELAY DPDT

+X1   -X2   A2   B2

F2
.500Amp

To I/O Module C2 INPUTS
+ VOLTAGE=ACTIVE

TO AIRCRAFT GEAR/ FLAP LIGHT, LED
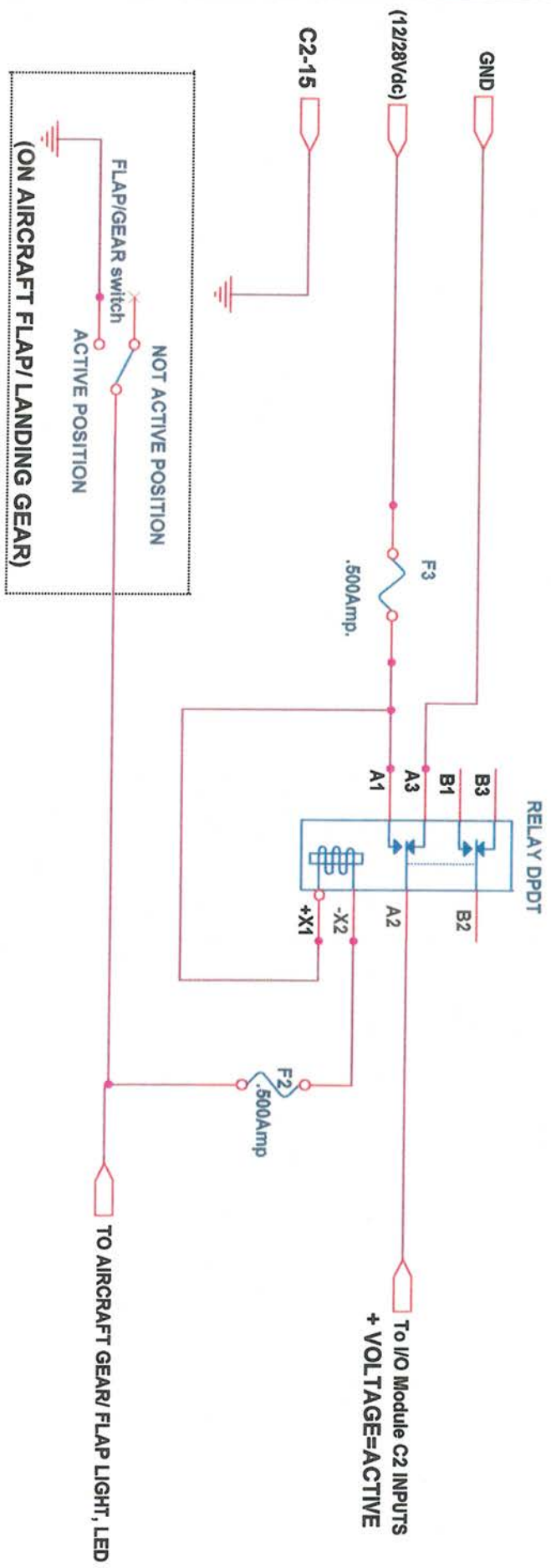
NOTE:

1.) VERIFY AOA SYSTEM SENSES THE FLAP POSITION OR GEAR LOCKED/
UN-LOCKED IN THE DIAGNOSTIC PROCEEDURE #7

2.) ONCE ACTIVATIONS ARE VERIFIED ELECTRICALLY, (IF SENSED) ENABLE
THE GEAR ADVISORY "ON" IN SOFTWARE SETUP, SETTING #3

Title	Reverse polarity relay for flap/gear down/locked		
Size	Document Number		Rev
A	DSTR-AOA-1971-7		A
Date:	Saturday, February 29, 2020 Sheet	1 of 1	

IO MODULE I/O CONNECTOR

```
  8  ○○○○○○○○○ 15
  ○○○○○○○○○
  1                9
```
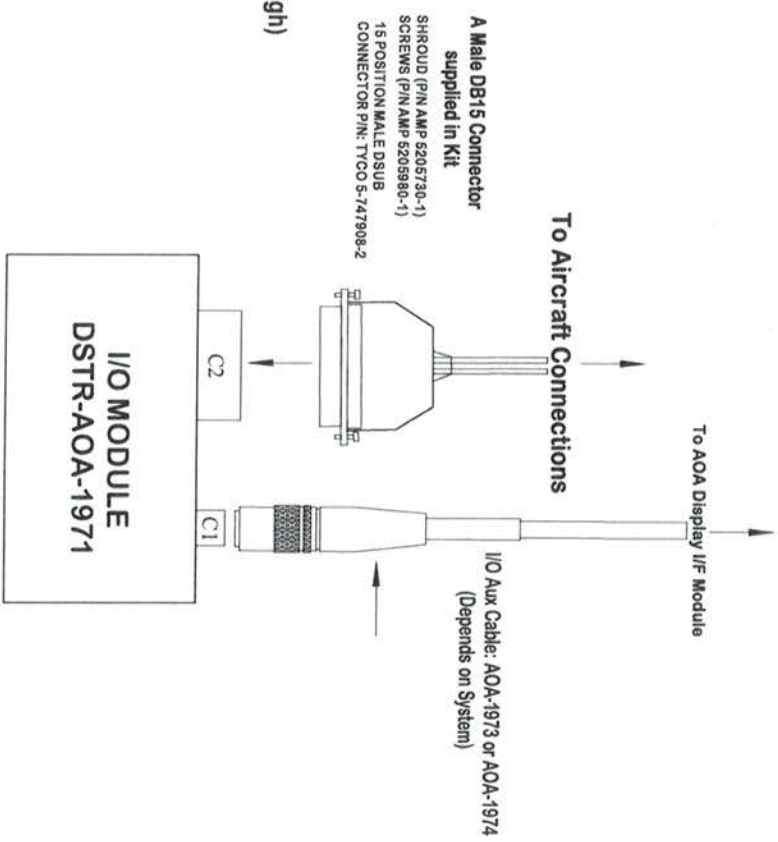C2

CONNECTOR PINOUT (Looking at C2 Connector on box)

C2-1 ---> Reverse Analog (Decreasing Voltage) as flaps deploy Input
C2-2 ---> Reverse Analog input Enable
C2-3 ---> Discrete F0 switch Input (This is the clean configuration) see (NOTE 1)
C2-4 ---> Discrete F1 switch Input see (NOTE 1)
C2-5 ---> Discrete F2 switch Input see (NOTE 1)
C2-6 ---> Discrete F3 switch Input see (NOTE 1)
C2-7 ---> Reserved Input
C2-8 ---> Reserved Input
C2-9 ---> Reserved Input
C2-10 ---> Gear Input (0VDC = Gear Up) (+28VDC = Gear Down/Locked)
C2-11 ---> Discrete Flap Switch Input, Active Level Select: (GND= active Low), (No Connect= Active High)
C2-12 ---> +12/28Vdc supply voltage @ .750 AMP.
C2-13 ---> Analog Flap Position voltage (Increasing as flaps deploy)
C2-14 ---> Analog Flap Input enable (For Increasing as flaps deploy)
C2-15 ---> To Aircraft Ground

NOTE 1:

For Active High Flaps,
Flap Input less than 1.5VDC = NOT selected
Flap Input greater than 1.5VDC = selected

For Active Low Flaps,
Flap Input less than 1.5 VDC = selected
Flap Input greater than 1.5 VDC = NOT selected

To AOA Display I/F Module

A Male DB15 Connector
supplied in Kit

SHROUD (P/N AMP 5205730-1)
SCREWS (P/N AMP 5205980-1)
15 POSITION MALE DSUB
CONNECTOR P/N: TYCO 5-747908-2

To Aircraft Connections

I/O Aux Cable: AOA-1973 or AOA-1974
(Depends on System)

C2

C1

I/O MODULE
DSTR-AOA-1971

MATERIAL						
FINISH						
REF. DRAWINGS WHERE USED:						
NO. REQD PER UNIT						

METRIC | DECIMAL
TOLERANCE
.XX=
.XX=
ANGLE DIM. + - 1/2
MODEL NO.
DECIMAL
.XX=.010
.XXX=.005
ECO NUMBER   000
000   000
DRAWN BY MRK   DATE 3/1/20
CHECKED   SCALE N/A

RAMSEY

DepotStar   MINNESOTA

TITLE: DSTR-AOA-1971 IO Module Connection Reference

SIZE B   DRAWING NO. 1971-002   REV. E