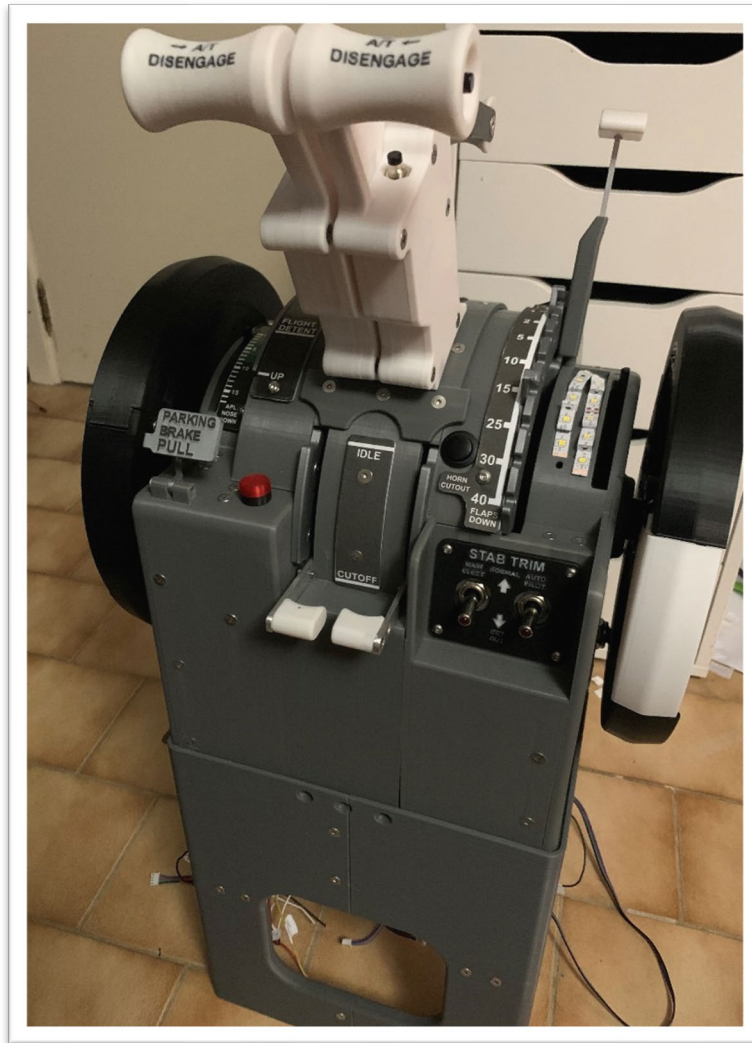


Motorized throttle quadrant V5 guide.

Only for PMDG 737 with MSFS using fsuipc7 and mobiflight.



By secoendo(discord name).

Thank you ShakaZ for helping to test the system!

Design by: Karl Clarke www.737diysim.com

Introduction.

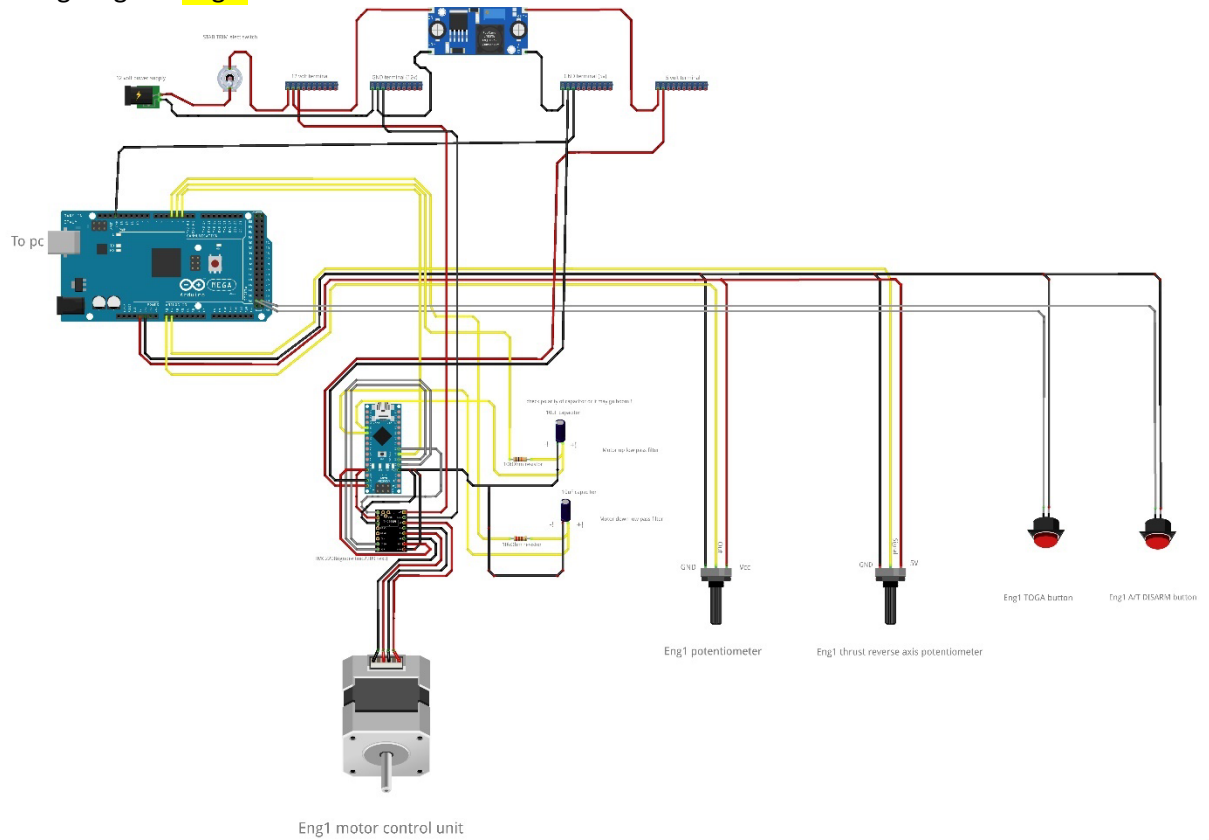
Welcome to this guide. I wanted to build the MTUv5 as realistic as possible. Unfortunately, prosim is required. After many hours I finally managed to get to a descent system. It isn't perfect but it is always a fight between realism and complexity. I hope you can get your MTU working just like mine! I divided this guide in steps going system by system (engines, parking brake, ...). 1 Arduino mega is used for the whole MTU. So, in each wiring diagram the Arduino mega and power supply is always the same. After that signals go to Arduino nanos running code (included in this guide). The Arduino nanos then signal the stepper motor drivers. I recommend going step by step and testing in msfs before going to the next step. Make sure to watch each element of the links provided closely because sometimes the required changes are a bit hard to spot. For the power supply I use a 12 v 3A adapter:

https://drive.google.com/file/d/1i0fOyZgviMIVDP969Zsi8FF2vJBZvsR_/view?usp=share_link

Before you start make sure the latest version of fsuipc7 for MSFS is installed and make sure that data broadcast for the PMDG 737 is enabled. You can find more information on data broadcast in the fsuipc7 folder where you can find a document called Offset Mapping for PMDG 737-700.pdf.

Step 1: Engine 1

1) Wiring diagram **Eng 1** via this link:



2)

Create following devices in mobiflight modules:

- Analogue Input: Name= Eng1 thrust Sensitivity= 2 Pin= A0
- LED/Output: Name= Eng1 servo pwr Pin= 2
- LED/Output: Name= Motor up 1 Pin= 3
- LED/Output: Name= Motor down 1 Pin= 4
- Button: Name= Eng1 TOGA Pin= 52
- Button: Name= Eng1 AT DISARM Pin= 53
- Analogue Input: Name= Eng1 REVERSE Sensitivity= 2 Pin= A1

- 3) Create a new input called **Eng 1 RAW input** with these settings:

The screenshot shows the 'InputConfigWizard' dialog box with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'Eng1 thrust'. The 'Input settings' section has 'On Change' set to 'MobiFlight - Variable'. The 'Variable Settings' section has 'Type' set to 'Number', 'Name' set to 'potentiometereng1', and 'Value' set to '@'. The 'Value' field has a tooltip that says 'Supports variable value (\$), input value (@) and placeholders (?,#, etc.)'. The 'OK' and 'Cancel' buttons are at the bottom right.

MF InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) Scan for input

Device: Eng1 thrust

Input settings

On Change

Action Type: MobiFlight - Variable

Variable Settings

Type: Number

Name: potentiometereng1

Value: @

Supports variable value (\$), input value (@) and placeholders (?,#, etc.)

OK Cancel

- 4) Create a new input called **Eng 1 TOGA** with these settings:

The screenshot shows the 'InputConfigWizard' dialog box with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'Eng1 TOGA'. The 'Input settings' section has 'On Press' selected, 'Action Type' set to 'Microsoft Flight Simulator 2020', and a 'Copy' button. Below this is a 'Filter Preset List' section with dropdowns for 'Vendor' (PMDG), 'Aircraft' (B737-700), and 'System' (Autothrust Syste), along with a 'Search' field and a 'Reset' button. The 'Select Preset' section shows 'PMDG_B737-7_AUTOTHRUST_TOGA_L_BTN' selected, with a note '3 matches found.' and a 'Description' field. At the bottom right are 'OK' and 'Cancel' buttons.

MF InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) Scan for input

Device: Eng1 TOGA

Input settings

On Press On Release

Action Type: Microsoft Flight Simulator 2020 Copy Paste

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor: PMDG Aircraft: B737-700 System: Autothrust Syste Search: Reset

Select Preset

PMDG_B737-7_AUTOTHRUST_TOGA_L_BTN 3 matches found.

Description

☐ Show Preset Code

OK Cancel

- 5) Create a new input called **Eng 1 A/T DISARM** with these settings:

The screenshot shows the 'InputConfigWizard' dialog box with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'Eng1 AT DISARM'. The 'Input settings' section has 'On Press' selected, 'Action Type' set to 'Microsoft Flight Simulator 2020', and 'Your Custom Code that will be executed in MSFS2020' is empty. The 'Filter Preset List' section shows 'Vendor' as 'PMDG', 'Aircraft' as 'B737-700', and 'System' as 'Autothrust Syste'. The 'Select Preset' section shows 'PMDG_B737-7_AUTOTHRUST_DISENGAGE' selected, with '3 matches found.' and a 'Description' field. The 'Show Preset Code' checkbox is unchecked. The 'OK' and 'Cancel' buttons are at the bottom right.

InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) Scan for input

Device: Eng1 AT DISARM

Input settings

On Press On Release

Action Type: Microsoft Flight Simulator 2020 Copy Paste

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor: PMDG Aircraft: B737-700 System: Autothrust Syste Search: Reset

Select Preset

PMDG_B737-7_AUTOTHRUST_DISENGAGE 3 matches found.

Description

☐ Show Preset Code

OK Cancel

- 6) Create a new input called **Eng 1 REVERSE RAW** with these settings:

The screenshot shows the 'MF InputConfigWizard' dialog box with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'Eng1 REVERSE'. A 'Scan for input' button is present. The 'Input settings' section has 'On Change' set to 'MobiFlight - Variable'. The 'Variable Settings' section has 'Type' set to 'Number', 'Name' set to 'Reverse raw input', and 'Value' set to '@'. A note below the 'Value' field states: 'Supports variable value (\$), input value (@) and placeholders (?,#, etc.)'. The 'OK' and 'Cancel' buttons are at the bottom right.

MF InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) Scan for input

Device: Eng1 REVERSE

Input settings

On Change

Action Type: MobiFlight - Variable

Variable Settings

Type: Number

Name: Reverse raw input

Value: @

Supports variable value (\$), input value (@) and placeholders (?,#, etc.)

OK Cancel

- 7) Create a new output called **Eng 1 Reverse** with these settings:

The screenshot shows the 'ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'MobiFlight Variable' selected. The 'Variable Settings' section shows 'Type' as 'Number' and 'Name' as 'Reverse raw input'. The 'More Options' section has 'Transform' unchecked. The 'Config References' section is empty. The 'OK' and 'Cancel' buttons are at the bottom right.

ConfigWizard

Sim Variable | Compare | Display | Precondition

Select Variable Type ☐ SimConnect (MSFS2020) ☒ **MobiFlight Variable** ☐ FSUIPC Offset ☐ X-Plane DataRef

Variable Settings
Access a local variable by type and name.

Type

Name

More Options
☐ Transform

Config References
Add references to other configs so that their values can be used in this config:

MF ConfigWizard

Sim Variable

Compare

Display

Precondition

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☐ Apply comparison to modify the current value

If current value is

=

1023

set it to

0

else set it to

Interpolation Settings

☒ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolization will be used between the values.

Input Value	Output Value
150	1023
952	0

Add new

Remove

OK

Cancel

ConfigWizard

Sim Variable Compare **Display** Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

☐ OnPress / OnRelease ☒ OnChange

Input Action

Define an action that will be executed when your config value changes.
You can reference the current config value with @ (not \$).

On Change

Action Type

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor	Aircraft	System	Search
<input type="text" value="Microsoft"/>	<input type="text" value="Generic"/>	<input type="text" value="Engines"/>	<input type="text"/>

Select Preset

100 matches found.

Description

INTENDED FOR ANALOG POTENTIOMETER AND CUSTOM INPUT BOX.
Expected input range 0-16383.

☒ Show Preset Code

@ -6 * -6000 max 16383 min (>K:THROTTLE1_SET)

Supports input value (@) and placeholders (\$, #, etc.)

Run mobi and write down the highest and lowest value (flight sim value in mobi) for the reverse line. Go to compare tab in settings and use these values to replace 150 and 952 in interpolation. This is to calibrate your reverse lever. If the lever in the sim works reversed, then swap the places of 0 and 1024.

- a) Create a new output called **Eng 1 input correction** with these settings:

The image shows a software window titled "ConfigWizard" with a standard Windows interface (minimize, maximize, close buttons). It has four tabs: "Sim Variable", "Compare", "Display", and "Precondition", with the "Precondition" tab currently selected. Below the tabs, there is a text instruction: "Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped." Below this is a section titled "Precondition list" containing a single entry: ".....☒ ☐ Config: Reverse < 5". Below the list is a note: "Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator." Below that is a section titled "Precondition type" with a label "Use type of" and a dropdown menu currently showing "none". At the bottom right of the window are "OK" and "Cancel" buttons.

MF ConfigWizard

Sim Variable Compare Display Precondition

Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped.

Precondition list

.....☒ ☐ Config: Reverse < 5

Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator.

Precondition type

Use type of none

OK Cancel

Choose your display type which is used for output from the list below.

Display type

Choose

☐ OnPress / OnRelease ☒ OnChange

Input Action

Define an action that will be executed when your config value changes.
You can reference the current config value with @ (not \$).

On Change

Action Type

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor	Aircraft	System	Search	
<input type="text" value="Microsoft"/>	<input type="text" value="Generic"/>	<input type="text" value="Engines"/>	<input type="text"/>	<input type="button" value="Reset"/>

Select Preset

100 matches found.

Description

INTENDED FOR ANALOG POTENTIOMETER AND CUSTOM INPUT BOX.
Expected input range 0-16383.

☒ Show Preset Code

@ 14.0147 * 0 max 16383 min (>K:THROTTLE1_SET)

Supports input value (@) and placeholders (\$, #, etc.)

OK

Cancel

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☐ Apply comparison to modify the current value


If current value is
 set it to
 else set it to

Interpolation Settings

☒ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
404	1024
990	0

 Add new

 Remove

OK

Cancel

ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☐ SimConnect (MSFS2020) ☒ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

Variable Settings
Access a local variable by type and name.

Type

Name

More Options

☐ Transform \$

Config References
Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

- b) Run mobi and write down the highest and lowest value (flight sim value in mobi) for the Eng1 input correction line. Go to compare tab in settings and use these values to replace 404 and 990 in interpolation. This is to calibrate your thrust lever. If the lever in the sim works reversed, then swap the places of 0 and 1024.
- 8) Create a new output called **Eng 1 sim position** with these settings:

MP ConfigWizard

Sim Variable

Compare

Display

Precondition

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☐ Apply comparison to modify the current value

If current value is

set it to

else set it to

Interpolation Settings

☒ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
0	0
88	255

Add new

Remove

OK

Cancel

a)

ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor	Aircraft	System	Search
Microsoft	Generic	Engines	

Reset

Select Preset

GENERAL ENG THROTTLE LEVER POSITION:index 118 matches found.

Description

Percent of max throttle position

☐ Show Preset Code

More Options

☐ Transform \$

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

- b) Move the throttle levers on the MTU and make sure the output value for Eng 1 sim position changes from 0 to 255. If this doesn't happen go to the compare tab in settings and change the number 88 in interpolation so that you get close to 255. (don't use numbers with a comma here).

- 9) Create a new output called **Eng 1 real position** with these settings:

ConfigWizard

Sim Variable | Compare | Display | Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor: - show all - Aircraft: - show all - System: - show all - Search: Reset

Select Preset

- Select Preset - 3441 matches found.

Description:

☐ Show Preset Code

More Options

☒ Transform

Config References

Add references to other configs so that their values can be used in this config:

☒ use as

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☐ Apply comparison to modify the current value

If current value is

set it to


else set it to

Interpolation Settings

☒ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
0	0
1024	255

 Add new

 Remove

OK

Cancel

10) Create a new output called **Eng 1 sim vs real** with these settings:

The screenshot shows the 'ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'SimConnect (MSFS2020)' selected. The 'MSFS2020 (WASM)' section is expanded, showing a 'Filter Preset List' with dropdowns for Vendor, Aircraft, and System, all set to '- show all -', and a search box. Below this is a 'Select Preset' dropdown set to '- Select Preset -' with a note '3441 matches found.' and a 'Description' text box. The 'More Options' section has a checked 'Transform' checkbox with a value of 'B-A'. The 'Config References' section has an 'Add Reference' button and two entries: 'ENG #1 real position' and 'ENG #1 sim position', both with 'use' checked and mapped to variables 'A' and 'B' respectively. The dialog has 'OK' and 'Cancel' buttons at the bottom right.

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor Aircraft System Search Reset

- show all - - show all - - show all -

Select Preset

- Select Preset - 3441 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform B-A

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

☒ use ENG #1 real position as A X

☒ use ENG #1 sim position as B X

OK Cancel

11) Create a new output called **Eng 1 servo enabled** with these settings:

(uses fsuipc)

The image shows a 'ConfigWizard' dialog box with a title bar containing a logo and window controls. It has four tabs: 'Sim Variable', 'Compare', 'Display', and 'Precondition', with 'Display' currently selected. The main area contains the instruction 'Choose your display type which is used for output from the list below.' Below this is a 'Display type' section with three dropdown menus: 'Choose' set to 'Output Device', 'Module' set to 'MobiFlight MTU/ SN-3e9-036', and 'Use type of' set to 'LED / Output'. A 'Display settings' section follows, with 'Select Pins' set to 'Eng1 servo pwr' and an unchecked 'select multiple' checkbox. The 'PWM Mode' section has an unchecked checkbox for 'Enabled (Values 0-255)'. At the bottom, there is a 'Test current settings' section with 'Test' and 'Stop' buttons. The dialog concludes with 'OK' and 'Cancel' buttons.

ConfigWizard

Sim Variable Compare Display Precondition

Choose your display type which is used for output from the list below.

Display type

Choose Output Device

Module MobiFlight MTU/ SN-3e9-036

Use type of LED / Output

Display settings

Select Pins Eng1 servo pwr ☐ select multiple

PWM Mode ☐ Enabled (Values 0-255)

Test current settings

Test Stop

OK Cancel

MF

ConfigWizard

Sim Variable

Compare

Display

Precondition

Select Variable Type

☐ SimConnect (MSFS2020)

☐ MobiFlight Variable

☒ FSUIPC Offset

☐ X-Plane DataRef

Define the necessary FSUIPC information. Use an existing preset for common values.

Load preset

Use preset

use

Base settings

Offset

0x643E

Value Type

Int

Size in Bytes

1

Mask value with

0xFF

☐ BCD Mode

More Options

☐ Transform

\$

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK

Cancel

12) Create a new output called **Eng 1 move up** with these settings:

The image shows a software window titled "ConfigWizard" with a standard Windows interface (minimize, maximize, close buttons). It has four tabs: "Sim Variable", "Compare", "Display", and "Precondition". The "Display" tab is currently selected. Below the tabs, there is a text instruction: "Choose your display type which is used for output from the list below." The main area is divided into two sections: "Display type" and "Display settings".

Display type

- Choose: Output Device (dropdown menu)
- Module: MobiFlight MTU/ SN-3e9-036 (dropdown menu)
- Use type of: LED / Output (dropdown menu)

Display settings

- Select Pins: Motor up 1 (dropdown menu) ☐ select multiple
- PWM Mode: ☒ Enabled (Values 0-255)

At the bottom of the configuration area, there is a "Test current settings" section with two buttons: "Test" (with a play icon) and "Stop" (with a square icon). At the very bottom of the window, there are "OK" and "Cancel" buttons.

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☒ Apply comparison to modify the current value

If current value is < 13

set it to 0

else set it to if(\$>254,254,\$)

Interpolation Settings

☐ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
0	0
1024	1024

Add new

Remove

OK

Cancel

MF

ConfigWizard

×

Sim Variable

Compare

Display

Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor

Aircraft

System

Search

Reset

- show all -

- show all -

- show all -

Select Preset

- Select Preset -

3441 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform

A*12.7

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

☒ use

ENG #1 sim vs real

 as

A

X

OK

Cancel

13) Create a new output called **Eng 1 move down** with these settings:

MF ConfigWizard

Sim Variable Compare Display Precondition

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☒ Apply comparison to modify the current value

If current value is

set it to

else set it to

Interpolation Settings

☐ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
0	0
1024	1024

OK Cancel

MF ConfigWizard

—

□

×

Sim Variable

Compare

Display

Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

Output Device

▼

Module

MobiFlight MTU/ SN-3e9-036

▼

Use type of

LED / Output

▼

Display settings

Select Pins

Motor down 1

▼

☐ select multiple

PWM Mode

☒ Enabled (Values 0-255)

Test current settings

▶ Test

■ Stop

OK

Cancel

ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor Aircraft System Search Reset

- show all - - show all - - show all -

Select Preset

- Select Preset - 3441 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform A*-12.7

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

☒ use ENG #1 sim vs real as A X

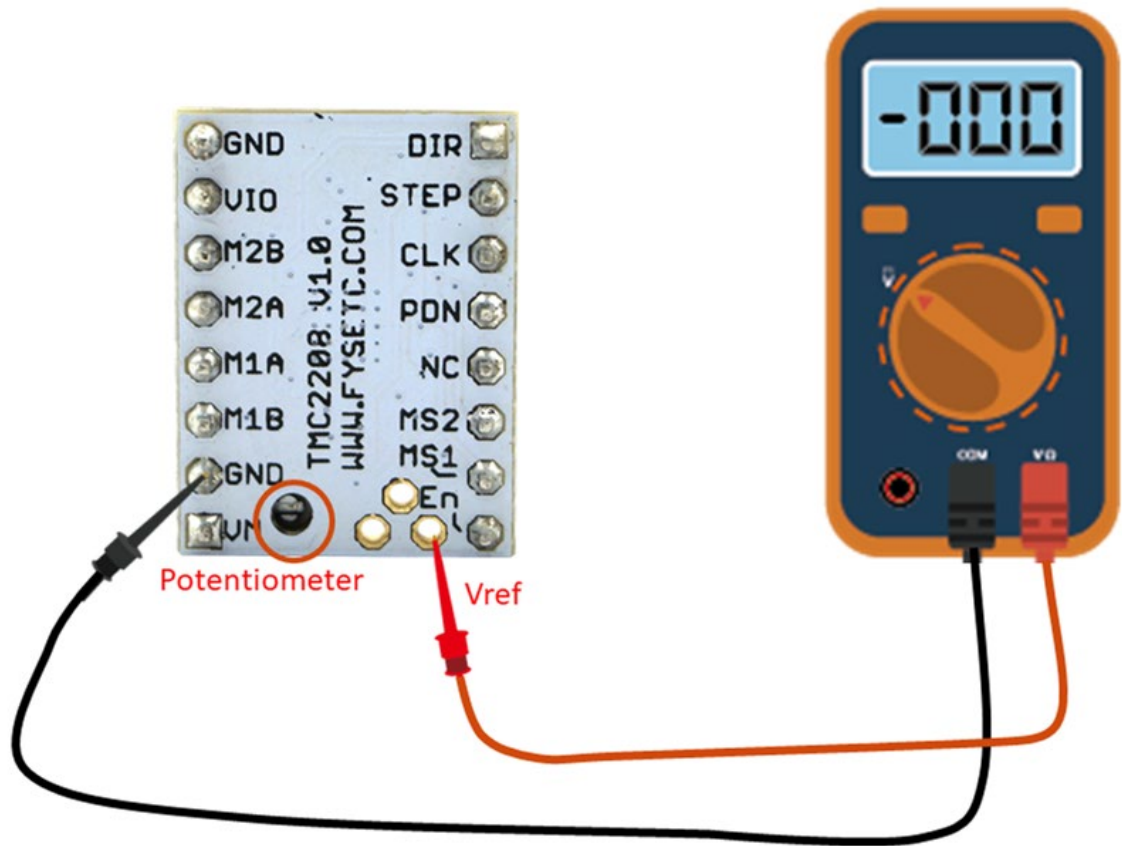
OK Cancel

14) Upload the Arduino sketch to the Arduino nano for engine 1

- a) <https://drive.google.com/file/d/1saeciDUUgZgshfGzDahQWJrMWN0PdQCH/view?usp=s>
[hare link](#)

15) Set the current of the tmc2208 driver by adjusting the potentiometer. This is done by measuring the voltage like the picture in the link. Set this voltage to about 1.5 volts. If you fail to get smooth movement of the thrust levers increase the reference voltage (this increases current to motor). Try to set a current level that is just enough so power consumption and heat production

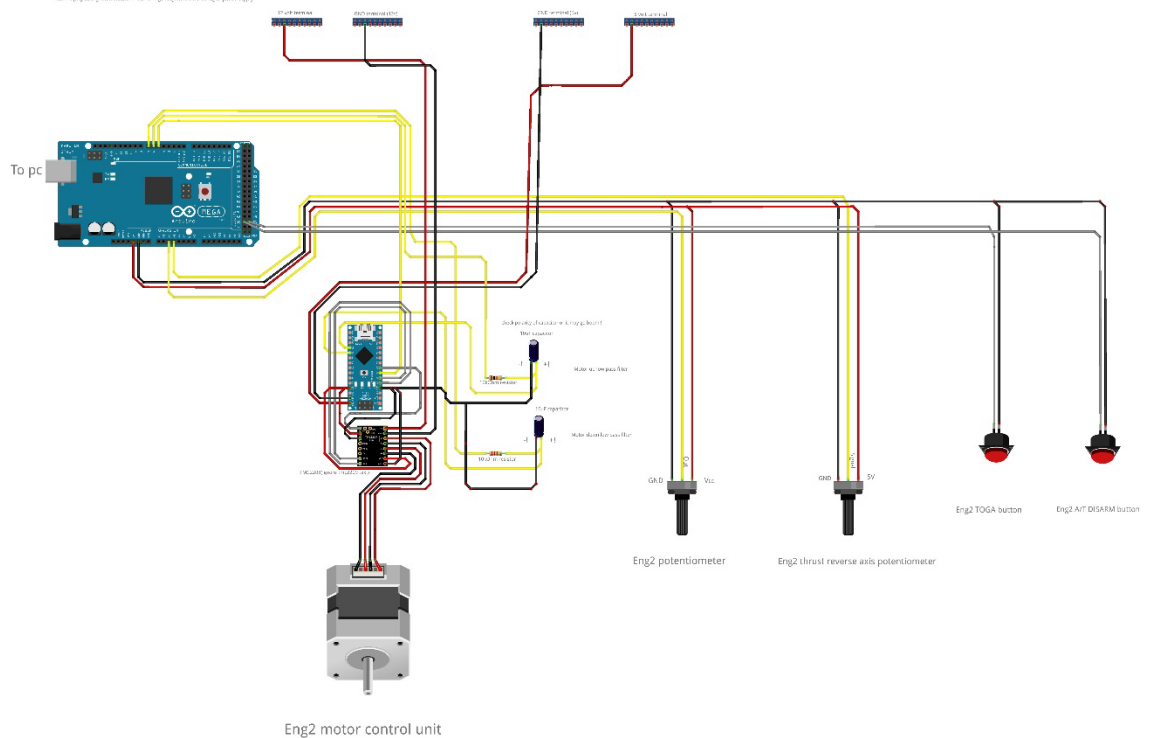
is limited. I highly suggest using a heat sink on the stepper driver (if you don't already have one).



- 16) Make sure mobiflight is running and power is connected to the MTU (make sure stab trim is turned on if you used it as a power switch) you can now test engine 1 with and without auto throttle. Make sure to also test toga and auto throttle disconnect buttons.

Step 2: Engine 2

1) Wiring diagram **Eng 2** via this link:



2) Create following devices in mobiflight modules:

- Analogue Input: Name= Eng2 thrust Sensitivity= 2 Pin= A2
- LED/Output: Name= Eng2 servo pwr Pin= 5
- LED/Output: Name= Motor up 2 Pin= 6
- LED/Output: Name= Motor down 2 Pin= 7
- Button: Name= Eng2 TOGA Pin= 51
- Button: Name= Eng2 AT DISARM Pin= 50
- Analogue Input: Name= Eng2 REVERSE Sensitivity= 2 Pin= A3

- 3) Create a new input called **Eng 2 RAW input** with these settings:

The screenshot shows the 'InputConfigWizard' dialog box with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'Eng2 thrust'. A 'Scan for input' button is present. The 'Input settings' section has 'On Change' set to 'MobiFlight - Variable'. The 'Variable Settings' section has 'Type' set to 'Number', 'Name' set to 'potentiometereng2', and 'Value' set to '@'. A note at the bottom of the variable settings section states: 'Supports variable value (\$), input value (@) and placeholders (?, #, etc.)'. The dialog box has 'OK' and 'Cancel' buttons at the bottom right.

MF InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) [v] Scan for input

Device: Eng2 thrust [v]

Input settings

On Change

Action Type: MobiFlight - Variable [v]

Variable Settings

Type: Number [v]

Name: potentiometereng2 [v]

Value: @

Supports variable value (\$), input value (@) and placeholders (?, #, etc.)

OK Cancel

- 4) Create a new input called **Eng 2 TOGA** with these settings:

The screenshot shows the 'MF InputConfigWizard' dialog box with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'Eng2 TOGA'. The 'Input settings' section has 'On Press' selected, 'Action Type' set to 'Microsoft Flight Simulator 2020', and a 'Copy' button. Below this is a 'Filter Preset List' section with dropdowns for 'Vendor' (PMDG), 'Aircraft' (B737-700), and 'System' (Autothrust Syste), along with a 'Search' field and a 'Reset' button. The 'Select Preset' section shows 'PMDG_B737-7_AUTOTHRUST_TOGA_R_BTN' selected, with a note '3 matches found.' and a 'Description' field. At the bottom right are 'OK' and 'Cancel' buttons.

MF InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) Scan for input

Device: Eng2 TOGA

Input settings

On Press On Release

Action Type: Microsoft Flight Simulator 2020 Copy Paste

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor: PMDG Aircraft: B737-700 System: Autothrust Syste Search: Reset

Select Preset

PMDG_B737-7_AUTOTHRUST_TOGA_R_BTN 3 matches found.

Description

☐ Show Preset Code

OK Cancel

- 5) Create a new input called **Eng 2 A/T DISARM** with these settings:

The screenshot shows the 'InputConfigWizard' window with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'Eng2 AT DISARM'. The 'Input settings' section has 'On Press' selected, 'Action Type' set to 'Microsoft Flight Simulator 2020', and 'Your Custom Code that will be executed in MSFS2020' is empty. The 'Filter Preset List' section shows 'Vendor' as 'PMDG', 'Aircraft' as 'B737-700', and 'System' as 'Autothrust Syste'. The 'Select Preset' section shows 'PMDG_B737-7_AUTOTHRUST_DISENGAGE' selected, with '3 matches found.' and a description field. The 'Show Preset Code' checkbox is unchecked. The 'OK' and 'Cancel' buttons are at the bottom right.

InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) Scan for input

Device: Eng2 AT DISARM

Input settings

On Press On Release

Action Type: Microsoft Flight Simulator 2020 Copy Paste

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor: PMDG Aircraft: B737-700 System: Autothrust Syste Search: Reset

Select Preset

PMDG_B737-7_AUTOTHRUST_DISENGAGE 3 matches found.

Description

Show Preset Code

OK Cancel

- 6) Create a new input called **Eng 2 REVERSE RAW** with these settings:

The screenshot shows the 'MF InputConfigWizard' dialog box with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'Eng 2 REVERSE'. A 'Scan for input' button is present. The 'Input settings' section has 'On Change' set to 'MobiFlight - Variable'. The 'Variable Settings' section has 'Type' set to 'Number', 'Name' set to 'Reverse raw input 2', and 'Value' set to '@'. A note at the bottom of the variable settings section states: 'Supports variable value (\$), input value (@) and placeholders (?,#, etc.)'. The 'OK' and 'Cancel' buttons are at the bottom right.

MF InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) Scan for input

Device: Eng 2 REVERSE

Input settings

On Change

Action Type: MobiFlight - Variable

Variable Settings

Type: Number

Name: Reverse raw input 2

Value: @

Supports variable value (\$), input value (@) and placeholders (?,#, etc.)

OK Cancel

- 7) Create a new output called **Eng 2 Reverse** with these settings:

ConfigWizard

Sim Variable Compare Display Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

☐ OnPress / OnRelease ☒ OnChange

Input Action

Define an action that will be executed when your config value changes.
You can reference the current config value with @ (not \$).

On Change

Action Type

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor Aircraft System Search

Select Preset

100 matches found.

Description

INTENDED FOR ANALOG POTENTIOMETER AND CUSTOM INPUT BOX.
Expected input range 0-16383.

☒ Show Preset Code

@ -6 * -6000 max 16383 min (>K:THROTTLE2_SET)

Supports input value (@) and placeholders (\$, #, etc.)

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☐ Apply comparison to modify the current value

If current value is

set it to

else set it to

Interpolation Settings

☒ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
150	1023
952	0

 Add new

 Remove

OK

Cancel

ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☐ SimConnect (MSFS2020) ☒ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

Variable Settings

Access a local variable by type and name.

Type

Name

More Options

☐ Transform

Config References

Add references to other configs so that their values can be used in this config:

- a) Run mobi and write down the highest and lowest value (flight sim value in mobi) for the reverse line. Go to compare tab in settings and use these values to replace 150 and 952 in interpolation. This is to calibrate your reverse lever. If the lever in the sim works reversed, then swap the places of 0 and 1024.

- 8) Create a new output called **Eng 2 input correction** with these settings:

The screenshot shows the 'ConfigWizard' dialog box with the 'Display' tab selected. The 'Display type' is set to 'Input Action'. Under 'Input Action', the 'On Change' radio button is selected. The 'Action Type' is 'Microsoft Flight Simulator 2020'. The 'Filter Preset List' shows 'Vendor: Microsoft', 'Aircraft: Generic', and 'System: Engines'. The 'Select Preset' section shows 'THROTTLE2_SET' with a description: 'INTENDED FOR ANALOG POTENTIOMETER AND CUSTOM INPUT BOX. Expected input range 0-16383.' The 'Show Preset Code' checkbox is checked, and the custom code is '@ 14.0147 * 0 max 16383 min (>K:THROTTLE2_SET)'. The 'OK' and 'Cancel' buttons are at the bottom right.

MF ConfigWizard

Sim Variable Compare Display Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

☐ OnPress / OnRelease ☒ OnChange

Input Action

Define an action that will be executed when your config value changes.
You can reference the current config value with @ (not \$).

On Change

Action Type

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor Aircraft System Search

Select Preset

100 matches found.

Description

INTENDED FOR ANALOG POTENTIOMETER AND CUSTOM INPUT BOX.
Expected input range 0-16383.

☒ Show Preset Code

@ 14.0147 * 0 max 16383 min (>K:THROTTLE2_SET)

Supports input value (@) and placeholders (\$, #, etc.)

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☐ Apply comparison to modify the current value

If current value is

set it to


else set it to

Interpolation Settings

☒ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
95	0
686	1024

 Add new

 Remove

OK

Cancel

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☐ SimConnect (MSFS2020) ☒ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

Variable Settings

Access a local variable by type and name.

Type

Name

More Options

☐ Transform \$

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

- a) Run mobi and write down the highest and lowest value (flight sim value in mobi) for the Eng2 input correction line. Go to compare tab in settings and use these values to replace 95 and 686 in interpolation. This is to calibrate your thrust lever. If the lever in the sim works reversed, then swap the places of 0 and 1024.

- 9) Create a new output called **Eng 2 sim position** with these settings:

MF ConfigWizard

Sim Variable Compare Display Precondition

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☐ Apply comparison to modify the current value

If current value is set it to else set it to

Interpolation Settings

☒ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
0	0
88	255

OK Cancel

ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor	Aircraft	System	Search
Microsoft	Generic	Engines	

Reset

Select Preset

GENERAL ENG THROTTLE LEVER POSITION:index 118 matches found.

Description

Percent of max throttle position

☐ Show Preset Code

More Options

☐ Transform \$

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

- a) Move the throttle levers on the MTU and make sure the output value for Eng 2 sim position changes from 0 to 255. If this doesn't happen go to the compare tab in settings and change the number 88 in interpolation so that you get close to 255. (don't use numbers with a comma here).

10) Create a new output called **Eng 2 real position** with these settings:

MF ConfigWizard

Sim Variable Compare Display Precondition

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☐ Apply comparison to modify the current value

If current value is set it to else set it to

Interpolation Settings

☒ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
0	0
1024	255

OK Cancel

ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor	Aircraft	System	Search	
- show all -	- show all -	- show all -		Reset

Select Preset

- Select Preset - 3441 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform A

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

☒ use Eng2 input correction as A X

OK Cancel

Create a new output called Eng 2 sim vs real with these settings:

MF

ConfigWizard

×

Sim Variable

Compare

Display

Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)
Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor

Aircraft

System

Search

Reset

- show all -

- show all -

- show all -

Select Preset

- Select Preset -

3441 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform

B-A

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

☒ use

Eng2 sim position

as

B

X

☒ use

Eng2 real position

as

A

X

OK

Cancel

11) Create a new output called **Eng 2 servo enabled** with these settings:

(uses fsuipc)

The screenshot shows the 'ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'FSUIPC Offset' selected. The 'Define the necessary FSUIPC information' section includes a 'Load preset' dropdown and a 'use' button. The 'Base settings' section shows 'Offset' as '0x643E', 'Value Type' as 'Int', 'Size in Bytes' as '1', and 'Mask value with' as '0xFF'. The 'More Options' section has a 'Transform' checkbox and a text field with '\$'. The 'Config References' section has an 'Add Reference' button. The 'OK' and 'Cancel' buttons are at the bottom right.

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☐ SimConnect (MSFS2020) ☐ MobiFlight Variable ☒ FSUIPC Offset ☐ X-Plane DataRef

Define the necessary FSUIPC information. Use an existing preset for common values.

Load preset

Use preset use

Base settings

Offset

Value Type Size in Bytes

Mask value with ... ☐ BCD Mode

More Options

☐ Transform

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

MF ConfigWizard

Sim Variable

Compare

Display

Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

Output Device

▼

Module

MobiFlight MTU/ SN-3e9-036

▼

Use type of

LED / Output

▼

Display settings

Select Pins

Eng2 servo pwr

▼

☐ select multiple

PWM Mode

☐ Enabled (Values 0-255)

Test current settings

▶ Test

■ Stop

OK

Cancel

12) Create a new output called **Eng 2 move up** with these settings:

The image shows a 'ConfigWizard' dialog box with four tabs: 'Sim Variable', 'Compare', 'Display', and 'Precondition'. The 'Display' tab is selected. The dialog contains the following sections:

- Display type**: A section with three dropdown menus: 'Choose' (set to 'Output Device'), 'Module' (set to 'MobiFlight MTU/ SN-3e9-036'), and 'Use type of' (set to 'LED / Output').
- Display settings**: A section with two settings: 'Select Pins' (set to 'Motor up 2') and 'PWM Mode' (checked, set to 'Enabled (Values 0-255)'). There is also an unchecked checkbox labeled 'select multiple'.
- Test current settings**: A section at the bottom with a 'Test' button (blue play icon) and a 'Stop' button (grey square icon).

At the bottom right of the dialog are 'OK' and 'Cancel' buttons.

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☒ Apply comparison to modify the current value

If current value is < 13

set it to 0

else set it to if(\$>254,254,\$)

Interpolation Settings

☐ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
0	0
1024	1024

Add new

Remove

OK

Cancel

MF

ConfigWizard

×

Sim Variable

Compare

Display

Precondition

Select Variable Type

☒ SimConnect (MSFS2020)

☐ MobiFlight Variable

☐ FSUIPC Offset

☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor

- show all -

▼

Aircraft

- show all -

▼

System

- show all -

▼

Search

Reset

Select Preset

- Select Preset -

▼

3441 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform

A*12.7

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

☒ use

Eng2 sim vs real

▼

 as

A

X

OK

Cancel

13) Create a new output called **Eng 2 move down** with these settings:

The image shows a 'ConfigWizard' dialog box with a title bar containing a logo and window controls. It has four tabs: 'Sim Variable', 'Compare', 'Display', and 'Precondition', with 'Display' currently selected. The main area contains the instruction 'Choose your display type which is used for output from the list below.' Below this are two sections: 'Display type' and 'Display settings'. The 'Display type' section has three dropdown menus: 'Choose' (set to 'Output Device'), 'Module' (set to 'MobiFlight MTU/ SN-3e9-036'), and 'Use type of' (set to 'LED / Output'). The 'Display settings' section has a 'Select Pins' dropdown (set to 'Motor down 2'), a 'select multiple' checkbox (unchecked), and a 'PWM Mode' checkbox (checked) with the text 'Enabled (Values 0-255)'. At the bottom of the main area is a 'Test current settings' section with 'Test' and 'Stop' buttons. The bottom of the dialog box has 'OK' and 'Cancel' buttons.

MF ConfigWizard

Sim Variable Compare **Display** Precondition

Choose your display type which is used for output from the list below.

Display type

Choose Output Device

Module MobiFlight MTU/ SN-3e9-036

Use type of LED / Output

Display settings

Select Pins Motor down 2 ☐ select multiple

PWM Mode ☒ Enabled (Values 0-255)

Test current settings

Test Stop

OK Cancel

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☒ Apply comparison to modify the current value

If current value is < 13

set it to 0

else set it to if(\$>254,254,\$)

Interpolation Settings

☐ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
0	0
1024	1024

Add new

Remove

OK

Cancel

ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor	Aircraft	System	Search
- show all -	- show all -	- show all -	<input type="text"/>

Reset

Select Preset

- Select Preset - 3441 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform

Config References

Add references to other configs so that their values can be used in this config:

☒ use as

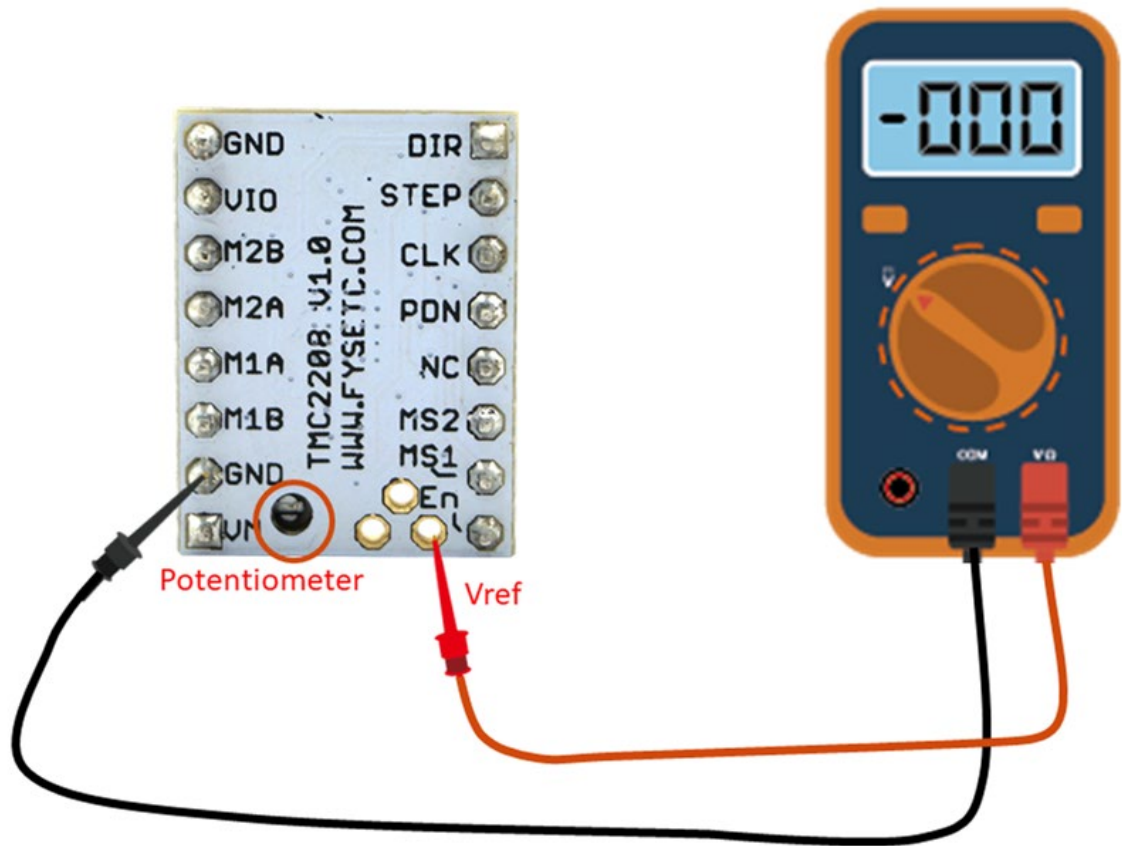
OK Cancel

14) Upload the Arduino sketch to the Arduino nano for engine 2

- a) https://drive.google.com/file/d/1saeciDUUgZgshfGzDahQWJrMWN0PdQCH/view?usp=share_link

15) Set the current of the tmc2208 driver by adjusting the potentiometer. This is done by measuring the voltage like the picture in the link. Set this voltage to about 1.5 volts. If you fail to get smooth movement of the thrust levers increase the reference voltage (this increases current to motor). Try to set a current level that is just enough so power consumption and heat production

is limited. I highly suggest using a heat sink on the stepper driver (if you don't already have one).

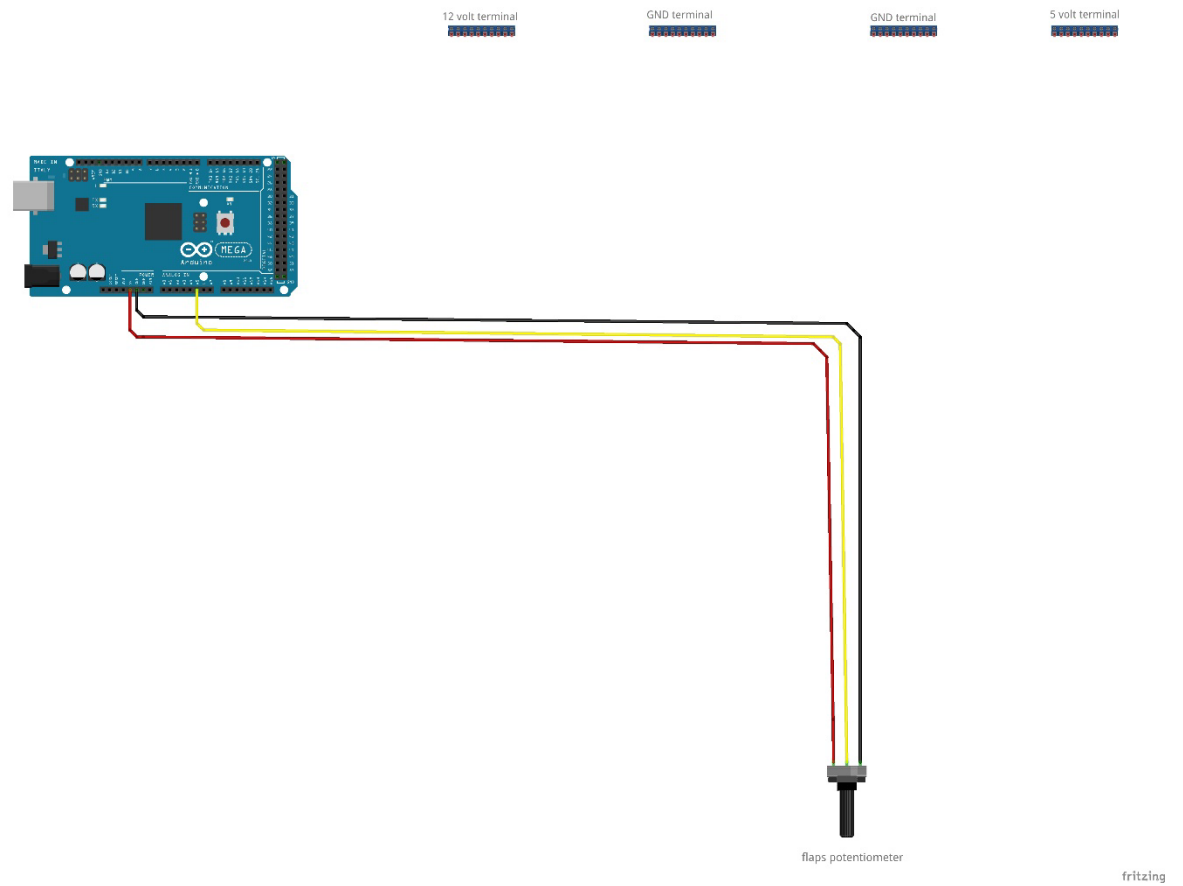


- 16) Make sure mobiflight is running and power is connected to the MTU (make sure stab trim is turned on if you used it as a power switch) you can now test both engines with and without auto throttle. Make sure to also test toga and auto throttle disconnect buttons.

Step 3: Flaps lever

1) Wiring diagram **Flaps** via this link:

Power supply wiring is not complete. Check Eng1 diagram for full wiring of power supply



2) Create following devices in mobiflight modules:

- Analogue Input: Name= Flaps Sensitivity= 2 Pin= A5

- 3) Create a new input called **Flaps RAW input** with these settings:

The screenshot shows the 'MF InputConfigWizard' dialog box with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'Flaps'. A 'Scan for input' button is present. The 'Input settings' section has 'On Change' set to 'MobiFlight - Variable'. The 'Variable Settings' section has 'Type' set to 'Number', 'Name' set to 'potentiometerflaps', and 'Value' set to '@'. A note at the bottom of the variable settings section states: 'Supports variable value (\$), input value (@) and placeholders (?, #, etc.)'. The dialog box has 'OK' and 'Cancel' buttons at the bottom right.

MF InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) Scan for input

Device: Flaps

Input settings

On Change

Action Type: MobiFlight - Variable

Variable Settings

Type: Number

Name: potentiometerflaps

Value: @

Supports variable value (\$), input value (@) and placeholders (?, #, etc.)

OK Cancel

- 4) Create a new output called **Flap lever** with these settings:

MF ConfigWizard

Sim Variable | Compare | Display | Precondition

Select Variable Type ☐ SimConnect (MSFS2020) ☒ **MobiFlight Variable** ☐ FSUIPC Offset ☐ X-Plane DataRef

Variable Settings
Access a local variable by type and name.

Type

Name

More Options
☐ Transform

Config References
Add references to other configs so that their values can be used in this config:

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☐ Apply comparison to modify the current value

If current value is

set it to


else set it to

Interpolation Settings

☒ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
416	30
831	1023

 Add new

 Remove

OK

Cancel

ConfigWizard

Sim Variable Compare **Display** Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

☐ OnPress / OnRelease ☒ OnChange

Input Action

Define an action that will be executed when your config value changes.
You can reference the current config value with @ (not \$).

On Change

Action Type

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor	Aircraft	System	Search
<input type="text" value="PMDG"/>	<input type="text" value="B737-700"/>	<input type="text" value="Controls"/>	<input type="text"/>

Select Preset

38 matches found.

Description

☐ Show Preset Code

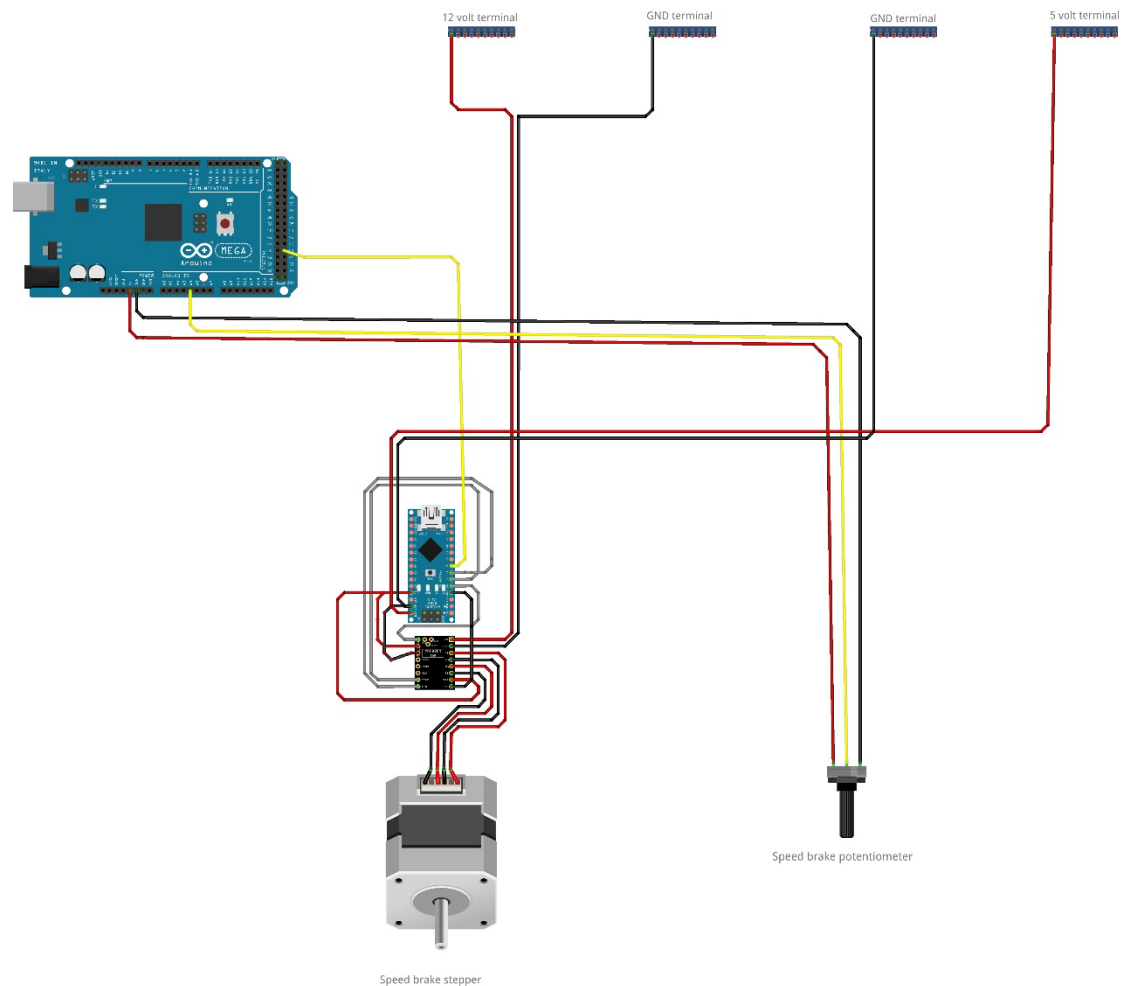
- 5) Move the flap lever to flaps 0.
 - a. Write down the flight sim value (to the left of output value in mobi).
- 6) Move the flap lever to flaps 40.
 - a. Write down the flight sim value (to the left of output value in mobi).
- 7) Go to edit (settings) and click on the compare tab. Replace 416 with the value you wrote down for flaps 0. Replace 831 with the value you wrote down for flaps 40. Make sure next to the output value 30 you have the value for flaps 0 and next to 1023 you have the value for flaps 40.

- 8) If you ever find that the flaps lever misses to move for a certain flap setting enable the transform setting (sim variable tab for flaps lever output) and use \$+10 (change number 10 until all flap settings are in sync with the movement off the flap lever on the MTU).

Step 4: Speed brake lever

- 1) Wiring diagram **Speed brake** via this link:

Power supply wiring is not complete. Check Eng1 diagram for full wiring of power supply



fritzing

Create following devices in mobiflight modules:

- Analogue Input: Name= SPD BRK Sensitivity= 2 Pin= A4
- LED/Output: Name= SPD BRK deploy Pin= 47

- 2) Create a new input called **SPD BRK RAW input** with these settings:

The screenshot shows the 'MF InputConfigWizard' dialog box with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'SPD BRK'. A 'Scan for input' button is present. The 'Input settings' section has 'On Change' set to 'MobiFlight - Variable'. The 'Variable Settings' section has 'Type' set to 'Number', 'Name' set to 'potentiometerspbrk', and 'Value' set to '@'. A note at the bottom of the variable settings states: 'Supports variable value (\$), input value (@) and placeholders (?, #, etc.)'. The dialog has 'OK' and 'Cancel' buttons at the bottom right.

MF InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) Scan for input

Device: SPD BRK

Input settings

On Change

Action Type: MobiFlight - Variable

Variable Settings

Type: Number

Name: potentiometerspbrk

Value: @

Supports variable value (\$), input value (@) and placeholders (?, #, etc.)

OK Cancel

- 3) Create a new output called **SPD BRK** with these settings:

The screenshot shows the 'ConfigWizard' window with the 'Display' tab selected. The window has a title bar with the 'MF' logo and standard window controls. The 'Display' tab is active, showing instructions to choose a display type. The 'Display type' section has a 'Choose' dropdown set to 'Input Action' and two radio buttons: 'OnPress / OnRelease' (unselected) and 'OnChange' (selected). The 'Input Action' section provides instructions on defining an action and references the current config value with '@'. The 'On Change' sub-tab is active, showing an 'Action Type' dropdown set to 'Microsoft Flight Simulator 2020'. Below this, a message states 'Your Custom Code that will be executed in MSFS2020'. The 'Filter Preset List' section contains three dropdowns for 'Vendor' (Microsoft), 'Aircraft' (Generic), and 'System' (Controls), along with a 'Search' text box and a 'Reset' button. The 'Select Preset' section shows 'Axis Spoiler Set' selected in a dropdown, with a note '61 matches found.' Below this is a 'Description' text box containing 'New axis spoiler set event. Intended for potentiometer. Expected range -16383 to +16383.' and a checkbox for 'Show Preset Code' which is currently unchecked. At the bottom right are 'OK' and 'Cancel' buttons.

MF ConfigWizard

Sim Variable Compare Display Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

☐ OnPress / OnRelease ☒ OnChange

Input Action

Define an action that will be executed when your config value changes.
You can reference the current config value with @ (not \$).

On Change

Action Type

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor Aircraft System Search

Select Preset

61 matches found.

Description

☐ Show Preset Code

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☐ Apply comparison to modify the current value

If current value is

set it to

else set it to

Interpolation Settings

☒ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
17	0
1017	1020

 Add new

 Remove

OK

Cancel

The screenshot shows the 'InputConfigWizard' window with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'SPD BRK'. A 'Scan for input' button is present. The 'Input settings' section has 'On Change' set to 'MobiFlight - Variable'. The 'Variable Settings' section has 'Type' set to 'Number', 'Name' set to 'potentiometerspbrk', and 'Value' set to '@'. A note below the 'Value' field states: 'Supports variable value (\$), input value (@) and placeholders (?, #, etc.)'. At the bottom right are 'OK' and 'Cancel' buttons.

- 4) Make sure the full range of movement (SPD BRK lever) is covered by the potentiometer. Range must be between the min and max value (min 0 max 1023).
 - a. Move the speed brake lever to the down position (not extended).
 - i. Write down the flight sim value (to the left of output value in mobi).
 - b. Move the speed brake lever to the up position (extended).
 - i. Write down the flight sim value (to the left of output value in mobi).
 - c. Go to edit (settings) and click on the compare tab. Replace 17 with the value you wrote down for speed brake down. Replace 1017 with the value you wrote down for speed brake up. Run mobi and test the movement of speed brake. If movement is reversed, you can reverse the values in the compare tab in settings.

- 5) Create a new output called **Ground speed** with these settings:

The screenshot shows the 'MF ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'SimConnect (MSFS2020)' selected. The 'MSFS2020 (WASM)' section is active, showing a 'Filter Preset List' with 'Vendor' set to 'Microsoft', 'Aircraft' set to 'Generic', and 'System' set to 'Position and Speec'. The 'Select Preset' section shows 'GROUND VELOCITY' selected, with a description of 'Speed relative to the earths surface'. The 'More Options' section has 'Transform' checked. The 'Config References' section is empty. The 'OK' and 'Cancel' buttons are at the bottom right.

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor Aircraft System Search Reset

Microsoft Generic Position and Speec

Select Preset

GROUND VELOCITY 81 matches found.

Description

Speed relative to the earths surface

☐ Show Preset Code

More Options

☒ Transform \$

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

- 6) Create a new output called **Airplane on ground check** with these settings:

The screenshot shows the 'ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'SimConnect (MSFS2020)' selected. The 'MSFS2020 (WASM)' section is expanded, showing a filter preset list with 'Vendor' set to 'Microsoft', 'Aircraft' set to 'Generic', and 'System' set to 'Position and Speec'. The 'Select Preset' section shows 'SIM ON GROUND' selected, with a description of 'On ground flag'. The 'More Options' section has 'Transform' checked. The 'Config References' section is empty. The 'Add Reference' button is visible. The 'OK' and 'Cancel' buttons are at the bottom right.

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor Aircraft System Search Reset

Microsoft Generic Position and Speec

Select Preset

SIM ON GROUND 81 matches found.

Description

On ground flag

☐ Show Preset Code

More Options

☒ Transform \$

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

- 7) Create a new output called **SPD BRK arm light** with these settings:

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor	Aircraft	System	Search	
PMDG	B737-700	Controls		Reset

Select Preset

PMDG B737 Speedbrake Armed 43 matches found.

Description

Speedbrake Armed

☐ Show Preset Code

More Options

☐ Transform \$

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

- 8) Create a new output called **SPD BRK do not arm light** with these settings:

ConfigWizard

Sim Variable | Compare | Display | Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor	Aircraft	System	Search
PMDG	B737-700	Controls	

Reset

Select Preset

PMDG B737 Speedbrake Do Not Arm 43 matches found.

Description

Speedbrake Do Not Arm

☐ Show Preset Code

More Options

☐ Transform \$

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

- 9) Create a new output called **SPD BRK sim position** with these settings:

ConfigWizard

Sim Variable | Compare | Display | Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor: Microsoft Aircraft: Generic System: Controls Search: Reset

Select Preset

SPOILERS HANDLE POSITION 65 matches found.

Description: Spoiler handle position

☐ Show Preset Code

More Options

☒ Transform: \$/2

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☒ Apply comparison to modify the current value

If current value is

set it to


else set it to


Interpolation Settings

☐ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
0	0
1024	1024

 Add new

 Remove

OK

Cancel

Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped.

Precondition list

- ☒ ☐ Config: SPD BRK < 1000 (AND)
- ☒ ☐ Config: Ground speed > 80 (AND)
- ☒ ☐ Config: Ground speed < 170

Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator.

Precondition type

Use type of none

OK

Cancel

10) Create a new output called **SPD BRK difference** with these settings:

The screenshot shows the 'ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'SimConnect (MSFS2020)' selected. The 'MSFS2020 (WASM)' section is expanded, showing a 'Filter Preset List' with dropdowns for Vendor, Aircraft, and System, all set to '- show all -'. A search bar is empty, and a 'Reset' button is present. Below the filter list is a 'Select Preset' dropdown set to '- Select Preset -', showing '3504 matches found.' and a 'Description' text box. A 'Show Preset Code' checkbox is unchecked. The 'More Options' section has a 'Transform' checkbox checked and a text box containing 'B-A'. The 'Config References' section has a button 'Add Reference' and two entries: 'use SPD BRK' as 'A' and 'use SPD BRK sim position' as 'B'. At the bottom are 'OK' and 'Cancel' buttons.

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor Aircraft System Search Reset

- show all - - show all - - show all -

Select Preset

- Select Preset - 3504 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform B-A

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

☒ use SPD BRK as A X

☒ use SPD BRK sim position as B X

OK Cancel

11) Create a new output called **SPD BRK auto deploy** with these settings:

The screenshot shows the 'ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'SimConnect (MSFS2020)' selected. The 'MSFS2020 (WASM)' section is expanded, showing a 'Filter Preset List' with dropdowns for Vendor, Aircraft, and System, all set to '- show all -', and a search box. Below this is a 'Select Preset' dropdown set to '- Select Preset -' with a note '3504 matches found.' and a 'Description' text box. There is a checkbox for 'Show Preset Code'. The 'More Options' section has a checked 'Transform' checkbox and a value of '1'. The 'Config References' section has an 'Add Reference' button. At the bottom right are 'OK' and 'Cancel' buttons.

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor Aircraft System Search Reset

- show all - - show all - - show all -

Select Preset

- Select Preset - 3504 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform 1

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

MF

ConfigWizard

Sim Variable

Compare

Display

Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

Output Device

Module

MobiFlight MTU/ SN-3e9-036

Use type of

LED / Output

Display settings

Select Pins

SPD BRK deploy

☐ select multiple

PWM Mode

☐ Enabled (Values 0-255)

Test current settings

▶ Test

■ Stop

OK

Cancel

MF ConfigWizard

—

□

×

Sim VariableCompareDisplayPrecondition

Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped.

Precondition list

☒

☒

Config: SPD BRK difference > 300 (AND)

☒

☒

Config: Ground speed > 60

Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator.

Precondition type

Use type of

none

▼

OK

Cancel

12) Create a new output called **SPD BRK retract** with these settings:

ConfigWizard

Sim Variable | Compare | Display | Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor Aircraft System Search Reset

- show all - - show all - - show all -

Select Preset

- Select Preset - 3504 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform 1

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

ConfigWizard

Sim Variable

Compare

Display

Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

Output Device

Module

MobiFlight MTU/ SN-3e9-036

Use type of

LED / Output

Display settings

Select Pins

SPD BRK deploy

☐ select multiple

PWM Mode

☐ Enabled (Values 0-255)

Test current settings

Test

Stop

OK

Cancel

MF ConfigWizard

Sim Variable

Compare

Display

Precondition

Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped.

Precondition list

☒☐

Config: Eng 1 input correction = 10 (OR)

☒☐

Config: Eng 2 input correction > 10 (AND)

☒☐

Config: Airplane on ground check = 1 (AND)

☒☐

Config: SPD BRK sim position = 590 (AND)

☐☐

Config: SPD BRK sim position = 590 (AND)

Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator.

Precondition type

Use type of

Config item

Precondition settings

Choose config

Eng 1 input correction

If current value is

=

10

OK

Cancel

Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped.

Precondition list

- ☒ ☐ Config: Airplane on ground check = 1 (AND)
- ☒ ☐ Config: SPD BRK sim position = 590 (AND)
- ☒ ☐ Config: Flap lever > 500 (AND)
- ☒ ☐ Config: SPD BRK do not arm light = 1

Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator.

Precondition type

Use type of

OK

Cancel

13) Create a new output called **SPD BRK auto deploy off** with these settings:

ConfigWizard

Sim Variable | Compare | Display | Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor: - show all - Aircraft: - show all - System: - show all - Search: Reset

Select Preset

- Select Preset - 3504 matches found.

Description:

☐ Show Preset Code

More Options

☒ Transform

Config References

Add references to other configs so that their values can be used in this config:

MF ConfigWizard

Sim Variable

Compare

Display

Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

Output Device

▼

Module

MobiFlight MTU/ SN-3e9-036

▼

Use type of

LED / Output

▼

Display settings

Select Pins

SPD BRK deploy

▼

☐ select multiple

PWM Mode

☐ Enabled (Values 0-255)

Test current settings

▶ Test

■ Stop

OK

Cancel

MF ConfigWizard

—

□

×

Sim VariableCompareDisplayPrecondition

Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped.

Precondition list

☒

☒

Config: SPD BRK > 1000 (AND)

☒

☒

Config: SPD BRK retract = 1

Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator.

Precondition type

Use type of

none

▼

OK

Cancel

- 14) Create a new output called **SPD BRK retract off** with these settings:

ConfigWizard

Sim Variable | Compare | Display | Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor: - show all - Aircraft: - show all - System: - show all - Search: Reset

Select Preset

- Select Preset - 3504 matches found.

Description:


☐ Show Preset Code

More Options

☒ Transform

Config References

Add references to other configs so that their values can be used in this config:

 ConfigWizard

—

□

×

Sim Variable

Compare

Display

Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

Output Device

▼

Module

MobiFlight MTU/ SN-3e9-036

▼

Use type of

LED / Output

▼

Display settings

Select Pins

SPD BRK deploy


▼


☐ select multiple

PWM Mode

☐ Enabled (Values 0-255)

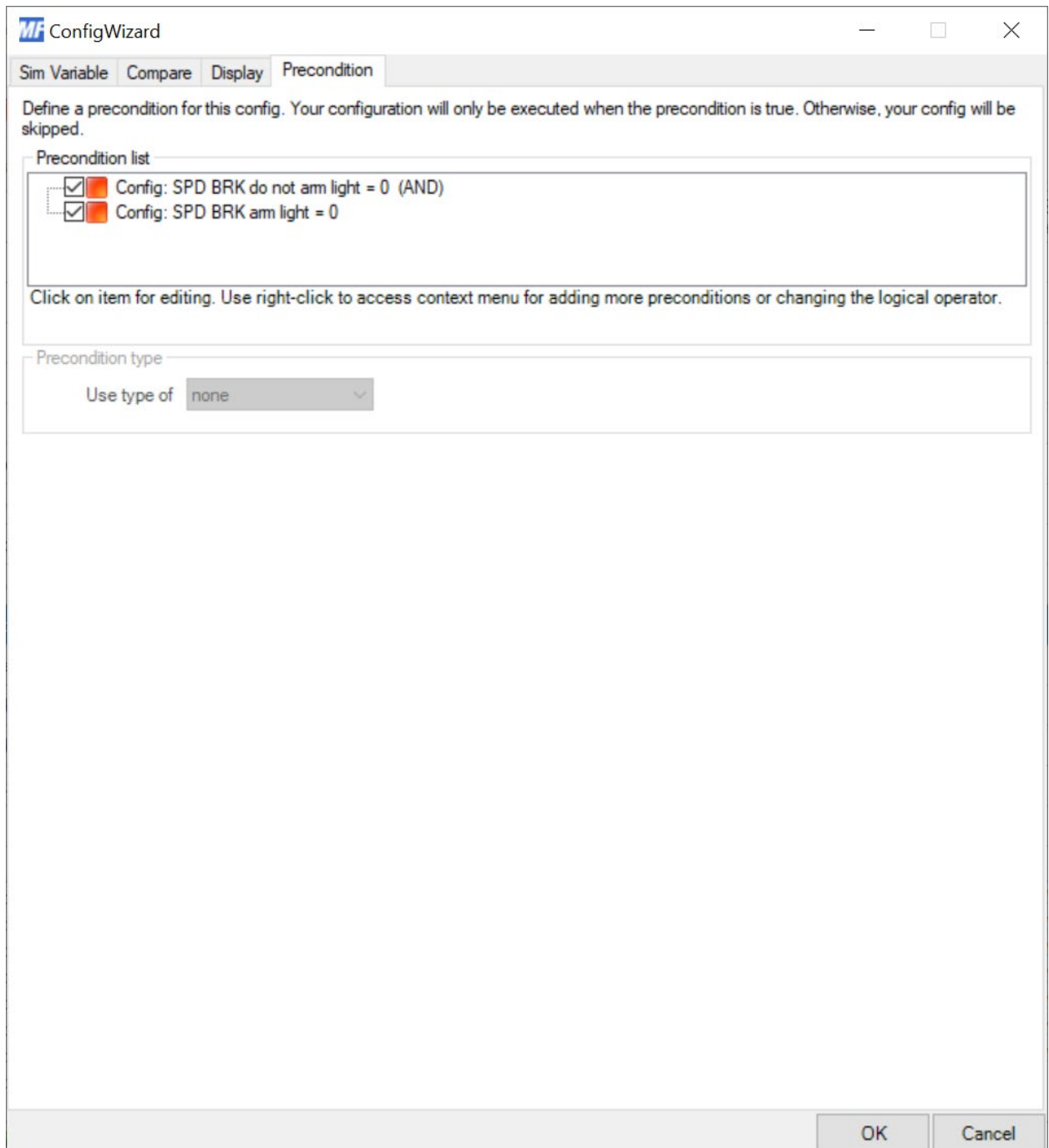
Test current settings

 Test

 Stop

OK

Cancel



- 15) Upload the Arduino sketch to the Arduino nano for the speed brake.
 - a. https://drive.google.com/file/d/1922QezRMPPZz8AImDIxfdbgyawL2U6hQ/view?usp=share_link
- 16) Set the current of the tmc2208 driver by adjusting the potentiometer. This is done by measuring the voltage like the picture in the link. Set this voltage to about 1.5 volts. If you fail to get smooth movement of the motor, you can increase current by increasing the reference voltage. https://drive.google.com/file/d/1Wva4IbLbk_FKW-lfKSp1Raa9vyan00eO/view?usp=share_link
- 17) Calibration step for retracting amount of speed brake. Disable the precondition the same as in link a (SPD BRK auto deploy). This allows the speed brake to move while stationary. Make sure

power to the MTU is on. Extend the speedbrake lever in the sim by clicking on the up mark next to the speed brake lever. This should make the speedbrake lever on the MTU rise by itself. After the lever on the MTU has extended move the thrust levers on the MTU a bit forward until the speed brake lever moves to the down position by itself. The goal is for the lever to move back to the down position and the speed brake armed light must go out. If the lever doesn't move far enough (lever might move back to up position) increase the number of retraction steps in the Arduino sketch (highlighted in link b). If the lever moves too far and makes the motor click reduce the number of retraction steps in the Arduino sketch (highlighted in link b). Remember to upload the Arduino sketch again and keep doing this until you are happy with the position of the speedbrake when it has retracted. After completing make sure to re enable the precondition for SPD BRK auto deploy (link a).

MTU_SPD_BRK_sketch | Arduino 1.8.15

File Edit Sketch Tools Help

MTU_SPD_BRK_sketch

```
void setup() {
  Serial.begin(9600);
  pinMode(enableInput, INPUT);
  pinMode(enableOutput, OUTPUT);
  pinMode(stepPin, OUTPUT);
  pinMode(dirPin, OUTPUT);
  i = 0;
  autodeploy = 0;
  retract = 0;
  deploycount = 0;
}

void loop() {
  deploy = digitalRead(enableInput);
  Serial.println(deploy);
  if((deploy == 1) && (autodeploy == 0)) {
    autodeploy = 1;
  }
  //Serial.println(autodeploy);

  if((autodeploy == 1) && (deploy == 1)) {
    digitalWrite(enableOutput, LOW);
    digitalWrite(dirPin, HIGH);
    digitalWrite(stepPin, HIGH);
    delayMicroseconds(2000);
    digitalWrite(stepPin, LOW);
    delayMicroseconds(2000);
  } else {
    digitalWrite(enableOutput, HIGH);
  }
  if((deploy == 0) && (autodeploy == 1)) {
    autodeploy = 2;
    //Serial.println(autodeploy);
  }
  while((autodeploy == 2) && (deploy == 1)) {
    digitalWrite(enableOutput, LOW);
    digitalWrite(dirPin, LOW);
    digitalWrite(stepPin, HIGH);
    delay(2);
    digitalWrite(stepPin, LOW);
    delay(2);
    retract++;
    if(retract > 435) {
      autodeploy = 0;
      retract = 0;
      delay(1000);
    } else {
      digitalWrite(enableOutput, HIGH);
    }
  }
  //Serial.println(retract);
}
```

Updates available for some of your boards and libraries

Arduino Nano, ATmega328P on COM4

a.

ConfigWizard

Sim Variable Compare Display **Precondition**

Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped.

Precondition list

- ☒ ☐ Config: SPD BRK difference > 300 (AND)
- ☐ ☐ Config: Ground speed > 60

Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator.

Precondition type

Use type of Config item

Precondition settings

Choose config SPD BRK difference

If current value is > 300

OK Cancel

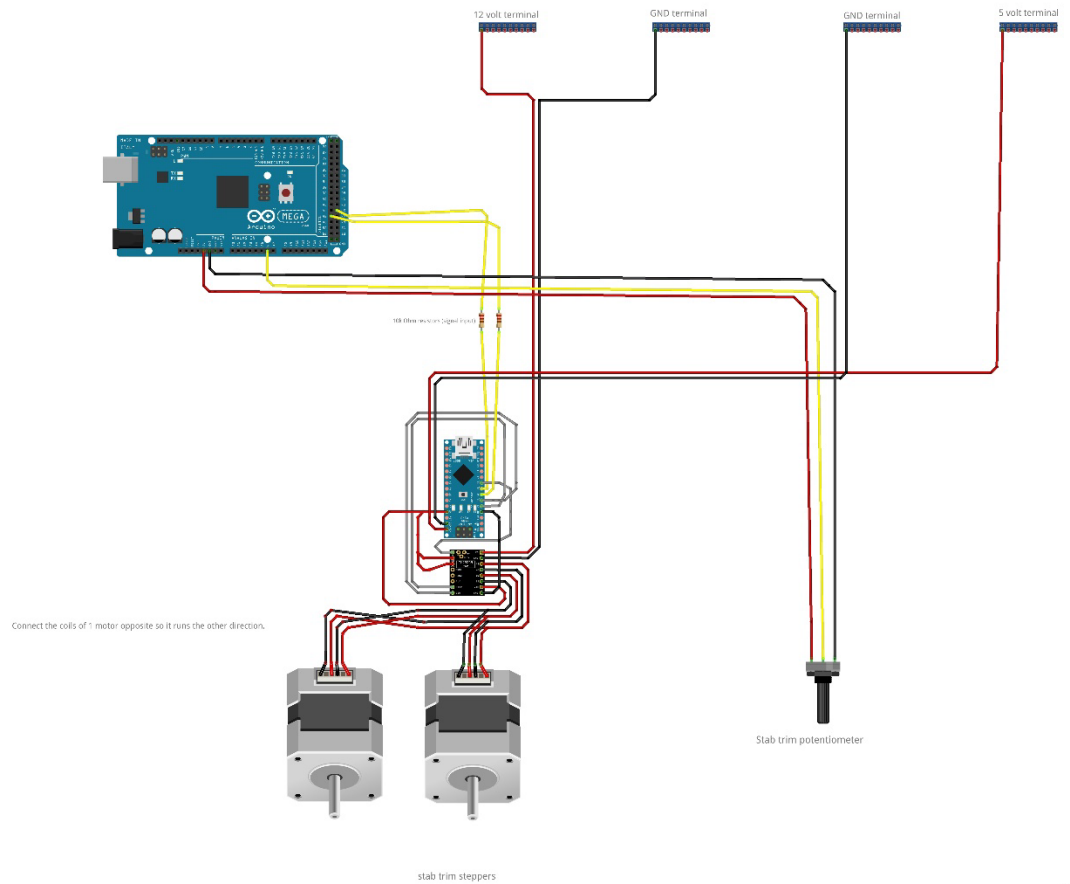
Step 5: Trim indicator

- 1) To get the trim indicator and trim wheel to work accurately I added a potentiometer to the trim indicator on the left side indicator. The motors for the left and right indicators are connected to the same driver so they work in tandem. I created some extra 3D printed parts which you can find in the following links.
 - a. https://drive.google.com/file/d/1B_JJbo72X95GssIEFpSINxzZqZdxrS0M/view?usp=share_link

- b. https://drive.google.com/file/d/1cLTz9LOH0PoK8svp1WHxogsDBWYd4U50/view?usp=share_link
 - c. https://drive.google.com/file/d/1bq7GRNUaqCaJF0uIGZ2R4TxcZriNPp4O/view?usp=share_link
- 2) In these pictures you can see how to assemble these extra parts. You will need to glue the outer gear to the trim indicator wheel. Make sure the outer gear is glued to the wheel in a position so that the full range of motion of the trim indicator is covered. Also make sure the gears aren't too close so the trim indicator wheel can move unobstructed.
- a. https://drive.google.com/file/d/1ZOa8lzt_FWgfAmOXhSgJ_bla5ci3mHqI/view?usp=share_link
 - b. https://drive.google.com/file/d/1n4lrNu8dFZpyS1LhB0RWeK-85Ql2LrOl/view?usp=share_link
 - c. https://drive.google.com/file/d/1nFAESe47UVJ7TLEX3M5mn-Q_yw1XnsB9/view?usp=share_link
 - d. https://drive.google.com/file/d/1yfbRMJySPQIBT07UTBIZOlceOKNkVexY/view?usp=share_link
 - e. https://drive.google.com/file/d/1OiLCh0Etf9Itndrr1IALqPtKFgrqi4OQ/view?usp=share_link
 - f. https://drive.google.com/file/d/1gE4jWmsguYoEOhiJ6xcAJfy4CRm97qx2/view?usp=share_link

3) Wiring diagram trim indicator via this link:

Power supply wiring is not complete. Check Eng1 diagram for full wiring of power supply



4) Create following devices in mobiflight modules:

- Analog Input: Name= Stab trim pot Sensitivity= 2 Pin= A6
- LED/Output: Name= Trimup Pin= 46
- LED/Output: Name= Trimdown Pin= 45

- 5) Create a new input called **Stab trim input** with these settings:

The screenshot shows the 'InputConfigWizard' dialog box with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'Stab trim pot'. A 'Scan for input' button is present. The 'Input settings' section has 'On Change' set to 'MobiFlight - Variable'. The 'Variable Settings' section has 'Type' set to 'Number', 'Name' set to 'potentiometertrim', and 'Value' set to '@'. A note at the bottom of the variable settings section states: 'Supports variable value (\$), input value (@) and placeholders (?, #, etc.)'. The 'OK' and 'Cancel' buttons are at the bottom right.

MF InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) [v] Scan for input

Device: Stab trim pot [v]

Input settings

On Change

Action Type: MobiFlight - Variable [v]

Variable Settings

Type: Number [v]

Name: potentiometertrim [v]

Value: @

Supports variable value (\$), input value (@) and placeholders (?, #, etc.)

OK Cancel

- 6) Create a new output called **Stab trim position** with these settings:

The image shows a 'ConfigWizard' dialog box with a title bar containing a logo and standard window controls. It has four tabs: 'Sim Variable', 'Compare', 'Display', and 'Precondition', with 'Sim Variable' being the active tab. The 'Select Variable Type' section has four radio buttons: 'SimConnect (MSFS2020)', 'MobiFlight Variable', 'FSUIPC Offset' (which is selected), and 'X-Plane DataRef'. Below this, a text instruction reads: 'Define the necessary FSUIPC information. Use an existing preset for common values.' The 'Load preset' section features a text box labeled 'Use preset' followed by a dropdown arrow and a 'use' button. The 'Base settings' section contains three input fields: 'Offset' with the value '0x0BC0', 'Value Type' with a dropdown set to 'Int', and 'Size in Bytes' with a dropdown set to '2'. Below these is a 'Mask value with' field containing '0xFFFF' and a 'BCD Mode' checkbox which is unchecked. The 'More Options' section has a 'Transform' checkbox which is unchecked, followed by an empty text box. The 'Config References' section at the bottom has a text instruction: 'Add references to other configs so that their values can be used in this config:', followed by an 'Add Reference' button. At the bottom right of the dialog are 'OK' and 'Cancel' buttons.

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☐ SimConnect (MSFS2020) ☐ MobiFlight Variable ☒ FSUIPC Offset ☐ X-Plane DataRef

Define the necessary FSUIPC information. Use an existing preset for common values.

Load preset

Use preset use

Base settings

Offset

Value Type Size in Bytes

Mask value with ... ☐ BCD Mode

More Options

☐ Transform

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☐ Apply comparison to modify the current value

If current value is

set it to


else set it to


Interpolation Settings

☒ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
-4905	0
16384	255

 Add new

 Remove

OK

Cancel

- 7) Create a new output called **Trim potentiometer** with these settings:

ConfigWizard

Sim Variable | Compare | Display | Precondition

Select Variable Type ☐ SimConnect (MSFS2020) ☒ **MobiFlight Variable** ☐ FSUIPC Offset ☐ X-Plane DataRef

Variable Settings
Access a local variable by type and name.

Type:

Name:

More Options
☐ Transform

Config References
Add references to other configs so that their values can be used in this config:

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☐ Apply comparison to modify the current value

If current value is

set it to


else set it to

Interpolation Settings

☒ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
357	255
970	0

 Add new

 Remove

OK

Cancel

- 8) Create a new output called **Trim real vs sim** with these settings:

The screenshot shows the 'ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'SimConnect (MSFS2020)' selected. The 'MSFS2020 (WASM)' section is expanded, showing a 'Filter Preset List' with dropdowns for Vendor, Aircraft, and System, all set to '- show all -'. A search bar is empty, and a 'Reset' button is present. Below this, the 'Select Preset' section shows '- Select Preset -' with a dropdown arrow and '3504 matches found.' A description box is empty, and a 'Show Preset Code' checkbox is unchecked. The 'More Options' section has a 'Transform' checkbox checked and a text box containing '(B-A)'. The 'Config References' section has the instruction 'Add references to other configs so that their values can be used in this config:' and an 'Add Reference' button. Below this, there are two rows of references, each with a checked 'use' checkbox, a dropdown menu, the text 'as', and a text box with a value and an 'X' button. The first row shows 'STAB TRIM indicator' as 'B'. The second row shows 'Trim potentiometer' as 'A'. At the bottom right are 'OK' and 'Cancel' buttons.

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor Aircraft System Search Reset

- show all - - show all - - show all -

Select Preset

- Select Preset - 3504 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform (B-A)

Config References

Add references to other configs so that their values can be used in this config: Add Reference

☒ use STAB TRIM indicator as B X

☒ use Trim potentiometer as A X

OK Cancel

- 9) Create a new output called **Trim up** with these settings:

The screenshot shows the 'ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'SimConnect (MSFS2020)' selected. The 'MSFS2020 (WASM)' section is expanded, showing a 'Filter Preset List' with dropdowns for Vendor, Aircraft, and System, all set to '- show all -'. A search bar is empty, and a 'Reset' button is present. Below this, the 'Select Preset' section shows '- Select Preset -' with a dropdown arrow and '3504 matches found.' A 'Description' text box is empty. A 'Show Preset Code' checkbox is unchecked. The 'More Options' section has a 'Transform' checkbox checked and a value of '1' in the adjacent text box. The 'Config References' section has an 'Add Reference' button. At the bottom right are 'OK' and 'Cancel' buttons.

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor Aircraft System Search Reset

- show all - - show all - - show all -

Select Preset

- Select Preset - 3504 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform 1

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

MF

ConfigWizard

Sim Variable

Compare

Display

Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

Output Device

Module

MobiFlight MTU/ SN-3e9-036

Use type of

LED / Output

Display settings

Select Pins

Trimup

☐ select multiple

PWM Mode

☐ Enabled (Values 0-255)

Test current settings

▶ Test

■ Stop

OK

Cancel

MF ConfigWizard

—

□

×

Sim Variable

Compare

Display

Precondition

Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped.

Precondition list

.....☒☐

Config: Trim real vs sim < -2

Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator.

Precondition type

Use type of

none

OK

Cancel

10) Create a new output called **Trim down** with these settings:

ConfigWizard

Sim Variable | Compare | Display | Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)
Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor	Aircraft	System	Search	
- show all -	- show all -	- show all -		Reset

Select Preset

- Select Preset - 3504 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform 1

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

MF ConfigWizard

Sim Variable

Compare

Display

Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

Output Device

▼

Module

MobiFlight MTU/ SN-3e9-036

▼

Use type of

LED / Output

▼

Display settings

Select Pins

Trimdown

▼

☐ select multiple

PWM Mode

☐ Enabled (Values 0-255)

Test current settings

▶ Test

■ Stop

OK

Cancel

MF ConfigWizard

—

□

×

Sim Variable

Compare

Display

Precondition

Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped.

Precondition list

.....☒☐

Config: Trim real vs sim < -2

Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator.

Precondition type

Use type of

none

OK

Cancel

11) Create a new output called **Trim up off** with these settings:

The screenshot shows the 'ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'SimConnect (MSFS2020)' selected. The 'MSFS2020 (WASM)' section is expanded, showing a 'Filter Preset List' with dropdowns for Vendor, Aircraft, and System, all set to '- show all -'. A search bar is empty, and a 'Reset' button is present. Below this, the 'Select Preset' section shows a dropdown menu with '- Select Preset -' and a count of '3504 matches found.' A 'Description' text box is empty. A checkbox for 'Show Preset Code' is unchecked. The 'More Options' section has a checked 'Transform' checkbox and a value of '0'. The 'Config References' section has an 'Add Reference' button. At the bottom right are 'OK' and 'Cancel' buttons.

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor Aircraft System Search Reset

- show all - - show all - - show all -

Select Preset

- Select Preset - 3504 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform 0

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

MF

ConfigWizard

Sim Variable

Compare

Display

Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

Output Device

Module

MobiFlight MTU/ SN-3e9-036

Use type of

LED / Output

Display settings

Select Pins

Trimup

☐ select multiple

PWM Mode

☐ Enabled (Values 0-255)

Test current settings

Test

Stop

OK

Cancel

MF ConfigWizard

—

□

×

Sim Variable

Compare

Display

Precondition

Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped.

Precondition list

.....☒☐

Config: Trim real vs sim < 2

Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator.

Precondition type

Use type of

none

OK

Cancel

12) Create a new output called **Trim down off** with these settings:

The screenshot shows the 'ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'SimConnect (MSFS2020)' selected. The 'MSFS2020 (WASM)' section is active, showing a 'Filter Preset List' with dropdowns for Vendor, Aircraft, and System, all set to '- show all -'. A search bar is empty, and a 'Reset' button is present. Below this, the 'Select Preset' section shows '- Select Preset -' with a dropdown arrow and '3504 matches found.' A 'Description' text box is empty. A 'Show Preset Code' checkbox is unchecked. The 'More Options' section has a 'Transform' checkbox checked and a value of '0' in a text box. The 'Config References' section has an 'Add Reference' button. At the bottom right are 'OK' and 'Cancel' buttons.

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor Aircraft System Search Reset

- show all - - show all - - show all -

Select Preset

- Select Preset - 3504 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform 0

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

MF ConfigWizard

—

□

×

Sim Variable

Compare

Display

Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

Output Device

▼

Module

MobiFlight MTU/ SN-3e9-036

▼

Use type of

LED / Output

▼

Display settings

Select Pins

Trimdown

▼

☐ select multiple

PWM Mode

☐ Enabled (Values 0-255)

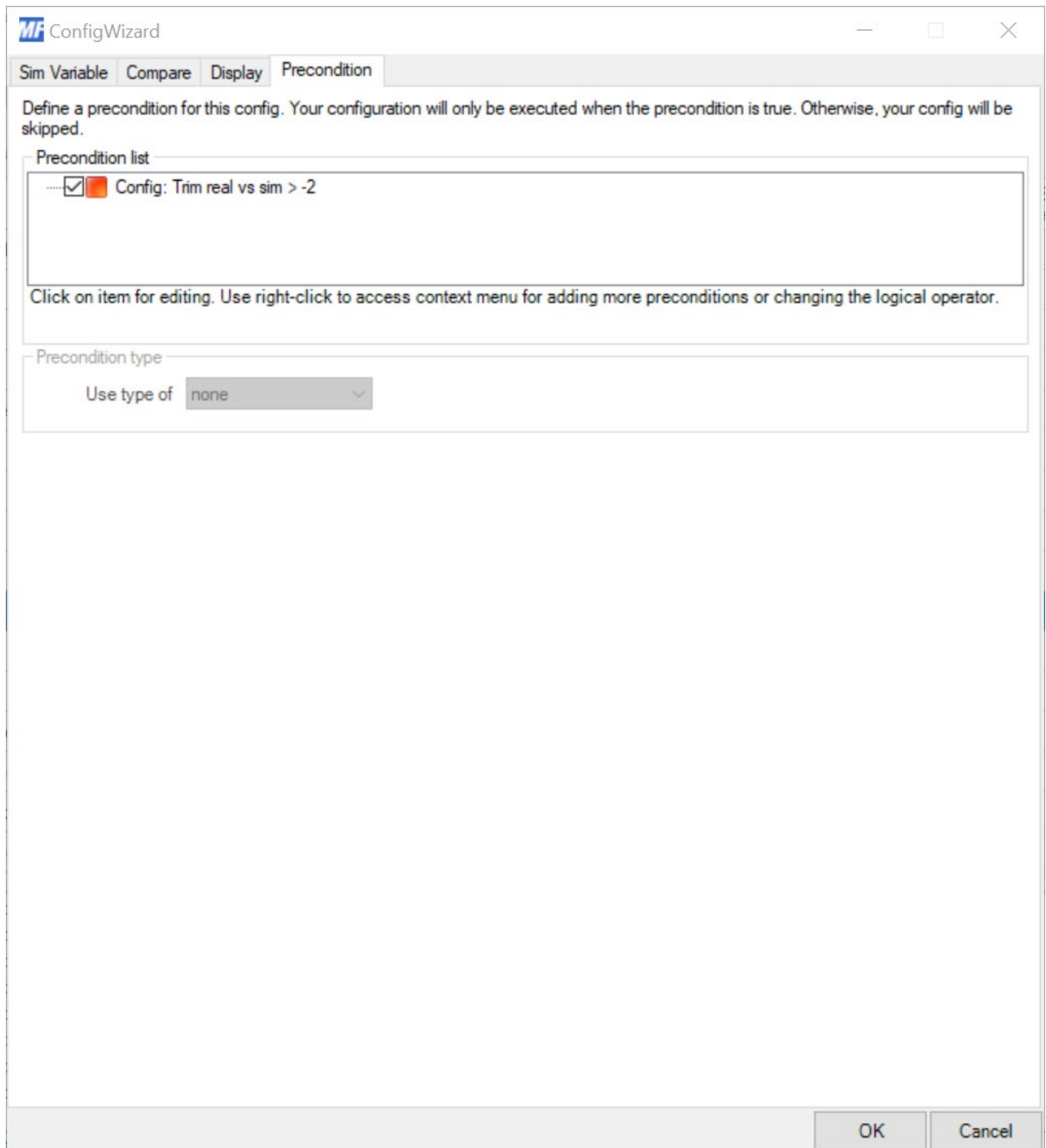
Test current settings

▶ Test

■ Stop

OK

Cancel



- 13) Upload the Arduino sketch to the Arduino nano for the trim indicator.
 - a. https://drive.google.com/file/d/1tXhLIPi-sxzSv-zYsGKPKIHB_aGfN3Yh/view?usp=share_link
- 14) Make sure power to the MTU is off and start running mobi (and sim). Move the trim indicator manually to minimum position (0 on the indicator). Write down the potentiometer value you get. After this move the trim indicator manually to the maximum position (17 to the indicator). Again, write down this value. Go to the compare tab for trim potentiometer and replace 357 with the position you got at 0 and replace 970 with the position at 17. If later, you notice the

trim indicator moving in the wrong direction switch these 2 values. Now the trim indicator should work (make sure power is on).

- 15) If the trim indicator is a little bit off target you can add a small correction factor in trim real vs sim (highlighted in link). Make sure to do step 14 first. Change the correction factor (can be positive or negative depending on direction) until the trim indicator is where you want it.

ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor Aircraft System Search Reset

- show all - - show all - - show all -

Select Preset

- Select Preset - 3504 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform (B-A)*8

Config References

Add references to other configs so that their values can be used in this config: Add Reference

☒ use Stab trim position as B X

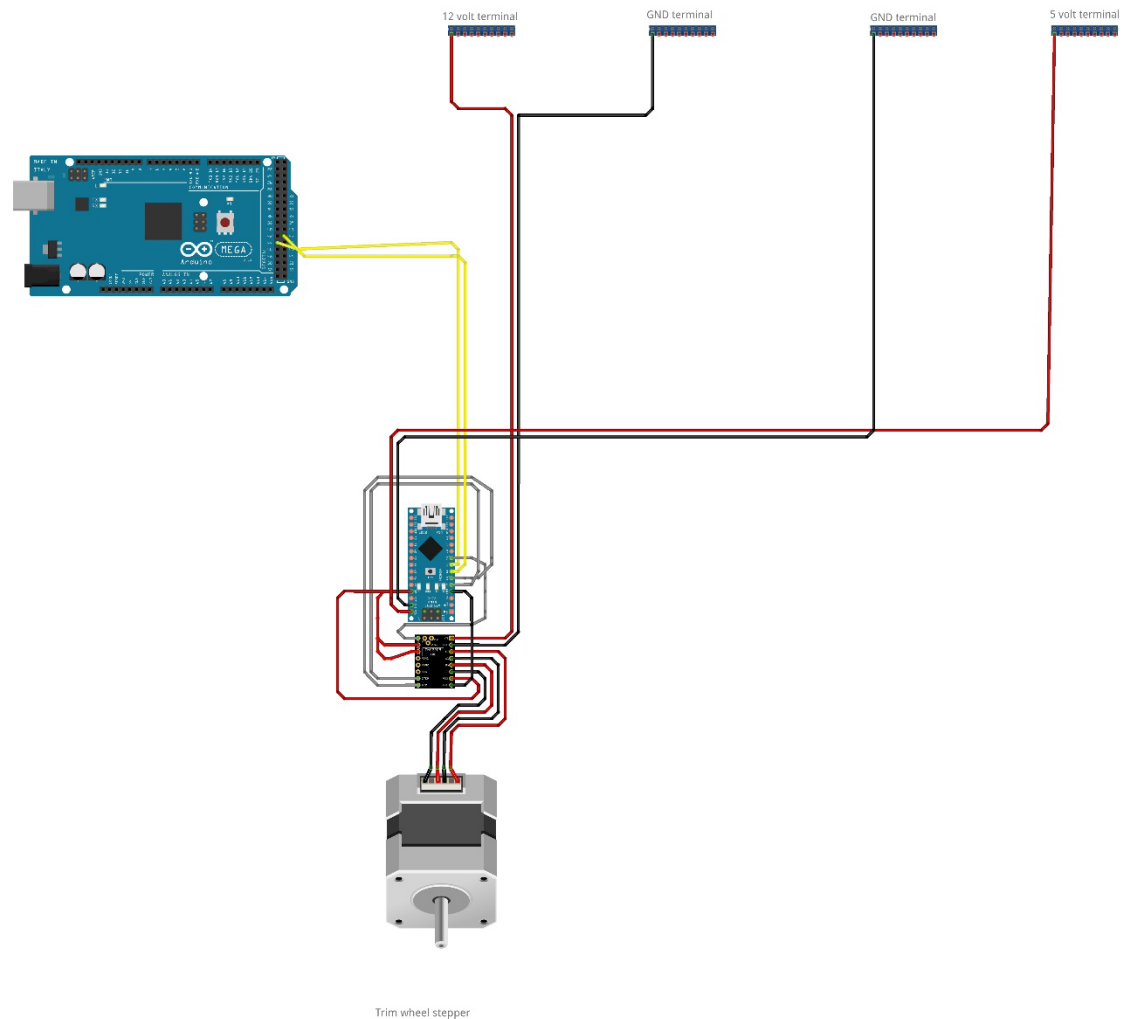
☒ use Trim potentiometer as A X

OK Cancel

Step 6: Trim wheels (extension of trim indicator)

- 1) Wiring diagram **Trim wheels** via this link:

Power supply wiring is not complete. Check Eng1 diagram for full wiring of power supply



fritzing

- 2) Create following devices in mobiflight modules:
 - a. LED/Output: Name= Trim wheel up Pin= 44
 - b. LED/Output: Name= Trim wheel down Pin= 43
- 3) Change the display tab for the following lines:

a. Trim up

MF ConfigWizard

Sim Variable Compare **Display** Precondition

Choose your display type which is used for output from the list below.

Display type

Choose Output Device ▾

Module MobiFlight MTU/ SN-3e9-036 ▾

Use type of LED / Output ▾

Display settings



Select Pins

- ☒ Trimup
- ☐ Trimdown
- ☐ BACKLIGHT
- ☐ Parking LED
- ☒ Trim wheel up
- ☐ Trim wheel down

☒ select multiple

PWM Mode ☐ Enabled (Values 0-255)

Test current settings

 Test  Stop

OK Cancel

b. Trim down

MF ConfigWizard

Sim Variable Compare **Display** Precondition

Choose your display type which is used for output from the list below.

Display type

Choose Output Device ▾

Module MobiFlight MTU/ SN-3e9-036 ▾

Use type of LED / Output ▾


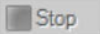
Display settings

Select Pins

<input type="checkbox"/> Trimup	^	<input checked="" type="checkbox"/> select multiple
<input checked="" type="checkbox"/> Trimdown		
<input type="checkbox"/> BACKLIGHT		
<input type="checkbox"/> Parking LED		
<input type="checkbox"/> Trim wheel up		
<input checked="" type="checkbox"/> Trim wheel down		

PWM Mode ☐ Enabled (Values 0-255)

Test current settings

 Test  Stop

OK Cancel

c. Trim up off:

MF ConfigWizard

Sim Variable Compare **Display** Precondition

Choose your display type which is used for output from the list below.

Display type

Choose Output Device ▾

Module MobiFlight MTU/ SN-3e9-036 ▾

Use type of LED / Output ▾

Display settings



Select Pins

<input checked="" type="checkbox"/>	Trimup
<input type="checkbox"/>	Trimdown
<input type="checkbox"/>	BACKLIGHT
<input type="checkbox"/>	Parking LED
<input checked="" type="checkbox"/>	Trim wheel up
<input type="checkbox"/>	Trim wheel down

☒ select multiple

PWM Mode ☐ Enabled (Values 0-255)

Test current settings

 Test  Stop

OK Cancel

d. Trim down off:

The screenshot shows the 'ConfigWizard' application window with the 'Display' tab selected. The window has a title bar with standard Windows controls. Below the title bar are four tabs: 'Sim Variable', 'Compare', 'Display', and 'Precondition'. The 'Display' tab is active, showing instructions to 'Choose your display type which is used for output from the list below.' The 'Display type' section contains three dropdown menus: 'Choose' set to 'Output Device', 'Module' set to 'MobiFlight MTU/ SN-3e9-036', and 'Use type of' set to 'LED / Output'. The 'Display settings' section includes a 'Select Pins' list with checkboxes for 'Trimup', 'Trimdown' (checked), 'BACKLIGHT', 'Parking LED', 'Trim wheel up', and 'Trim wheel down' (checked). A 'select multiple' checkbox is also checked. Below this is a 'PWM Mode' section with an unchecked 'Enabled (Values 0-255)' checkbox. At the bottom right of the settings area are 'Test' and 'Stop' buttons. The bottom of the window has 'OK' and 'Cancel' buttons.

ConfigWizard

Sim Variable Compare Display Precondition

Choose your display type which is used for output from the list below.

Display type

Choose Output Device

Module MobiFlight MTU/ SN-3e9-036

Use type of LED / Output

Display settings

Select Pins

- ☐ Trimup
- ☒ Trimdown
- ☐ BACKLIGHT
- ☐ Parking LED
- ☐ Trim wheel up
- ☒ Trim wheel down

☒ select multiple

PWM Mode ☐ Enabled (Values 0-255)

Test current settings

Test Stop

OK Cancel

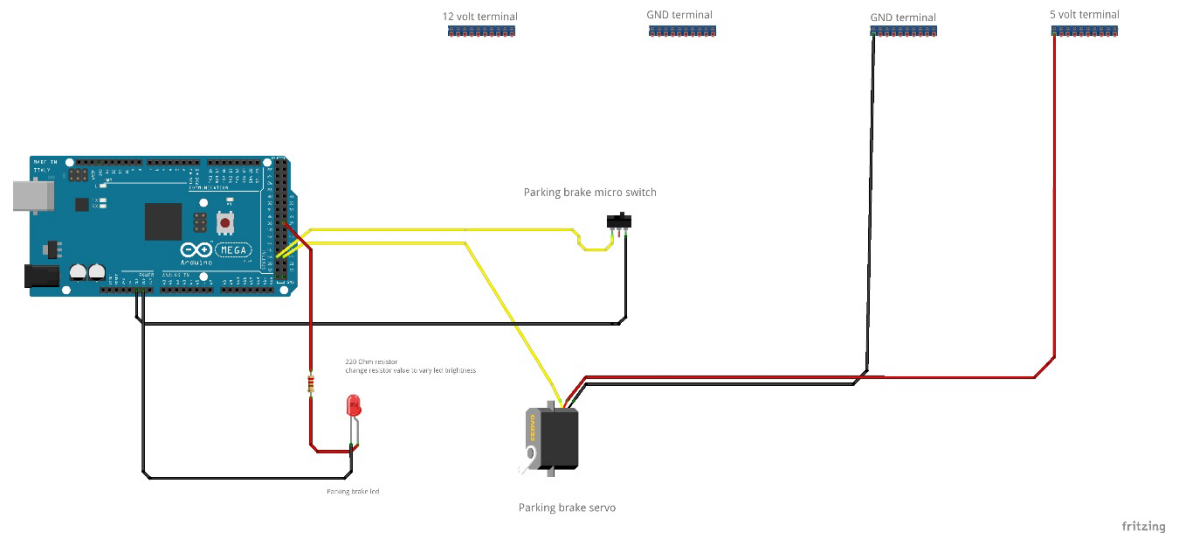
4) Upload the Arduino code to the Arduino nano for the trim wheels

- https://drive.google.com/file/d/1KOtntap_-0-REB7Zf7tvvtqA378o1q5Ff/view?usp=share_link

Step 7: Parking brake servo and light

5) Wiring diagram **Parking brake** via this link:

Power supply wiring is not complete. Check Eng1 diagram for full wiring of power supply



6) Create following devices in mobiflight modules:

- Servo: Name= Parking servo Pin= 49
- Button: Name= Parking switch Pin= 48
- LED/Output: Name= Parking LED Pin= 39

- 7) Create a new input called **Parking switch** with these settings:

The screenshot shows the 'MF InputConfigWizard' window with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'Parking switch'. The 'Input settings' section has 'On Press' selected, 'Action Type' set to 'Microsoft Flight Simulator 2020', and a custom code field. Below this is a 'Filter Preset List' with dropdowns for 'Vendor' (PMDG), 'Aircraft' (B737-700), and 'System' (Gear), along with a search field and a 'Reset' button. The 'Select Preset' section shows 'PMDG_B737-7_PARKING_BRAKE_ON' selected, with a description field and a 'Show Preset Code' checkbox. The window has 'OK' and 'Cancel' buttons at the bottom right.

MF InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) Scan for input

Device: Parking switch

Input settings

On Press On Release

Action Type: Microsoft Flight Simulator 2020 Copy Paste

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor: PMDG Aircraft: B737-700 System: Gear Search: Reset

Select Preset

PMDG_B737-7_PARKING_BRAKE_ON 25 matches found.

Description

Show Preset Code

OK Cancel

- 8) Create a new output called **Brake status** with these settings:

The screenshot shows the 'ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'SimConnect (MSFS2020)' selected. The 'MSFS2020 (WASM)' section is expanded, showing a search for 'BRAKE INDICATOR' with 65 matches found. The 'Description' field contains 'Brake on indication'. The 'More Options' section has 'Transform' checked with a '\$' symbol. The 'Config References' section is empty. The 'OK' and 'Cancel' buttons are at the bottom right.

ConfigWizard

Sim Variable | Compare | Display | Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor	Aircraft	System	Search
Microsoft	Generic	Controls	

Reset

Select Preset

BRAKE INDICATOR 65 matches found.

Description

Brake on indication

☐ Show Preset Code

More Options

☒ Transform \$

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☒ Apply comparison to modify the current value

If current value is

set it to


else set it to


Interpolation Settings

☐ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
0	0
1024	1024

 Add new

 Remove

OK

Cancel

MF

ConfigWizard

Sim Variable

Compare

Display

Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

Output Device

Module

MobiFlight MTU/ SN-3e9-036

Use type of

Servo

Display settings

Servo

Parking Servo

Min. value

0

Max. value

1

Max. rotation

20

%

Test current settings

▶ Test

■ Stop

OK

Cancel

- 9) Create a new output called **Parking servo open** with these settings:

ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor Aircraft System Search Reset

- show all - - show all - - show all -

Select Preset

- Select Preset - 3504 matches found.

Description

☐ Show Preset Code

More Options

☒ Transform A

Config References

Add references to other configs so that their values can be used in this config: Add Reference

☒ use Brake status as A X

OK Cancel

MF

ConfigWizard

Sim Variable

Compare

Display

Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

Output Device

Module

MobiFlight MTU/ SN-3e9-036

Use type of

Servo

Display settings

Servo

Parking Servo

Min. value

0

Max. value

1

Max. rotation

20

%

Test current settings

Test

Stop

OK

Cancel

10) Create a new output called **Parking brake light check** with these settings:

The screenshot shows the 'ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'SimConnect (MSFS2020)' selected. The 'MSFS2020 (WASM)' section is active, showing a filter preset list with 'Vendor' set to 'PMDG', 'Aircraft' set to 'B737-700', and 'System' set to 'Gear'. The 'Select Preset' section shows 'PMDG_B737_PARKING_BRAKE_LED' selected, with a description of 'Parking Brake Led State'. The 'More Options' section has 'Transform' checked. The 'Config References' section is empty. The 'Add Reference' button is visible. The 'OK' and 'Cancel' buttons are at the bottom right.

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor	Aircraft	System	Search
PMDG	B737-700	Gear	

Reset

Select Preset

PMDG_B737_PARKING_BRAKE_LED 10 matches found.

Description

Parking Brake Led State

☐ Show Preset Code

More Options

☒ Transform \$

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

11) Add the following preconditions:

a. Brake status

The image shows a 'ConfigWizard' dialog box with a title bar containing a logo and window controls. It has four tabs: 'Sim Variable', 'Compare', 'Display', and 'Precondition', with 'Precondition' being the active tab. The main text area contains instructions: 'Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped.' Below this is a 'Precondition list' section with a list of three items, each preceded by a checked checkbox and a red square icon. The items are: 'Config: Parking servo open = 0 (AND)', 'Config: Parking Brake light check = 0 (AND)', and 'Config: Ground speed < 5'. A dashed line connects the first two items. Below the list is a note: 'Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator.' At the bottom of the main area is a 'Precondition type' section with a label 'Use type of' and a dropdown menu currently showing 'none'. The dialog box has 'OK' and 'Cancel' buttons at the bottom right.

MF ConfigWizard

Sim Variable Compare Display Precondition

Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped.

Precondition list

- ☒ Config: Parking servo open = 0 (AND)
- ☒ Config: Parking Brake light check = 0 (AND)
- ☒ Config: Ground speed < 5

Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator.

Precondition type

Use type of none

OK Cancel

b. Parking servo open:




The image shows a 'ConfigWizard' dialog box with a title bar containing a logo and the text 'ConfigWizard'. It has four tabs: 'Sim Variable', 'Compare', 'Display', and 'Precondition', with 'Precondition' being the active tab. Below the tabs, there is a text instruction: 'Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped.' Below this is a 'Precondition list' section containing three items, each with a checked checkbox, a red square icon, and a text description: 'Config: Brake status = 1 (AND)', 'Config: Parking Brake light check = 0 (AND)', and 'Config: Ground speed < 5'. A dashed line connects the checkboxes of the first two items. Below the list is a text instruction: 'Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator.' Below this is a 'Precondition type' section with a label 'Use type of' and a dropdown menu currently showing 'none'. At the bottom right of the dialog are 'OK' and 'Cancel' buttons.

MF ConfigWizard

Sim Variable Compare Display Precondition

Define a precondition for this config. Your configuration will only be executed when the precondition is true. Otherwise, your config will be skipped.

Precondition list

- ☒  Config: Brake status = 1 (AND)
- ☒  Config: Parking Brake light check = 0 (AND)
- ☒  Config: Ground speed < 5

Click on item for editing. Use right-click to access context menu for adding more preconditions or changing the logical operator.

Precondition type

Use type of none

OK Cancel

12) Create a new output called **Parking brake LED output** with these settings:

The screenshot shows the 'MF ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'SimConnect (MSFS2020)' selected. The 'MSFS2020 (WASM)' section is active, showing a filter preset list with 'Vendor' set to 'PMDG', 'Aircraft' set to 'B737-700', and 'System' set to 'Gear'. The 'Select Preset' section shows 'PMDG_B737_PARKING_BRAKE_LED' selected, with a description of 'Parking Brake Led State'. The 'More Options' section has 'Transform' checked. The 'Config References' section is empty. The 'Add Reference' button is visible. The 'OK' and 'Cancel' buttons are at the bottom right.

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☒ SimConnect (MSFS2020) ☐ MobiFlight Variable ☐ FSUIPC Offset ☐ X-Plane DataRef

MSFS2020 (WASM)

Define the sim variable name that you would like to read from MSFS2020.

Filter Preset List

Vendor Aircraft System Search Reset

PMDG B737-700 Gear

Select Preset

PMDG_B737_PARKING_BRAKE_LED 10 matches found.

Description

Parking Brake Led State

☐ Show Preset Code

More Options

☒ Transform \$

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☒ Apply comparison to modify the current value

If current value is

set it to


else set it to


Interpolation Settings

☐ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
0	0
1024	1024

 Add new

 Remove

OK

Cancel

ConfigWizard

Sim Variable

Compare

Display

Precondition

Choose your display type which is used for output from the list below.

Display type

Choose

Output Device

Module

MobiFlight MTU/ SN-3e9-036

Use type of

LED / Output

Display settings

Select Pins

Parking LED

☐ select multiple

PWM Mode

☐ Enabled (Values 0-255)

Test current settings

Test

Stop

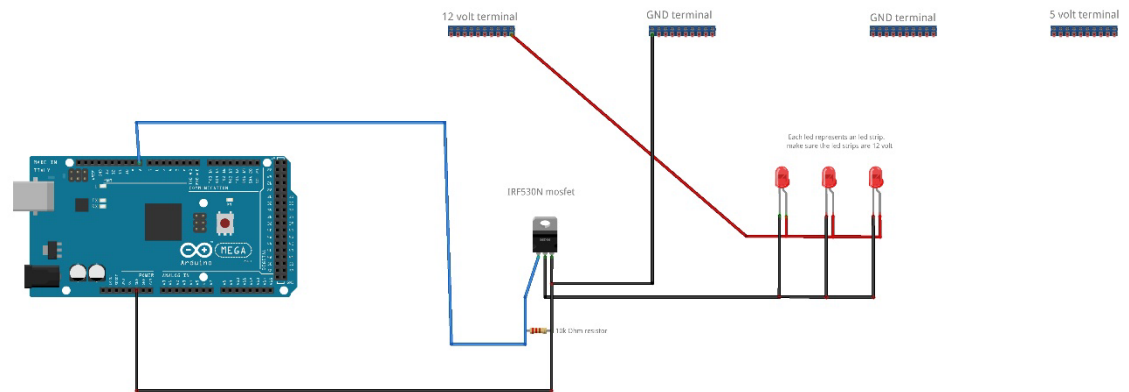
OK

Cancel

Step 8: Backlighting

1) Wiring diagram **Backlighting** via this link:

Power supply wiring is not complete. Check Eng1 diagram for full wiring of power supply



fritzing

2) Create following devices in mobiflight modules:

- LED/Output: Name= Backlight Pin= 8

- 3) Create a new output called **MTU backlight** with these settings:

The screenshot shows the 'ConfigWizard' dialog box with the 'Sim Variable' tab selected. The 'Select Variable Type' section has 'FSUIPC Offset' selected. The 'Define the necessary FSUIPC information' section includes a 'Load preset' dropdown and a 'use' button. The 'Base settings' section has 'Offset' set to '0x6C67', 'Value Type' set to 'Int', 'Size in Bytes' set to '1', and 'Mask value with' set to '0xFF'. The 'More Options' section has a 'Transform' checkbox and a value of '200'. The 'Config References' section has an 'Add Reference' button. The 'OK' and 'Cancel' buttons are at the bottom right.

MF ConfigWizard

Sim Variable Compare Display Precondition

Select Variable Type ☐ SimConnect (MSFS2020) ☐ MobiFlight Variable ☒ FSUIPC Offset ☐ X-Plane DataRef

Define the necessary FSUIPC information. Use an existing preset for common values.

Load preset

Use preset use

Base settings

Offset

Value Type Size in Bytes

Mask value with ... ☐ BCD Mode

More Options

☐ Transform

Config References

Add references to other configs so that their values can be used in this config:

Add Reference

OK Cancel

- a. Change the highlighted number between 0 and 255 depending on the desired maximum led brightness on the MTU

MF ConfigWizard

Sim Variable Compare Display Precondition

Often it is necessary to compare the current value to a certain other value - e.g. determine flaps extension - and sometimes even set to a different value - e.g. heading from 360 to 0.

Comparison Settings

☐ Apply comparison to modify the current value

If current value is set it to else set it to

Interpolation Settings

☒ Apply interpolation to modify the current value

Assign various input / output value mappings. Linear interpolation will be used between the values.

Input Value	Output Value
0	0
150	255

OK Cancel

ConfigWizard

Sim Variable Compare Display Precondition

Choose your display type which is used for output from the list below.

Display type

Choose Output Device

Module MobiFlight MTU/ SN-3e9-036

Use type of LED / Output

Display settings

Select Pins BACKLIGHT ☐ select multiple

PWM Mode ☒ Enabled (Values 0-255)

Test current settings

Test Stop

OK Cancel

The backlight is controlled by the center pedestal panel knob highlighted in the link



Step 9: Start levers

- 1) Create following devices in mobiflight modules:
 - a. Button: Name= Start lever 1 Pin= 9
 - b. Button: Name= Start lever 2 Pin= 11
- 2) For the wiring simply wire each start lever switch ground to a ground on the Arduino Mega and the output for each switch to the corresponding Arduino Mega pin (start lever 1 to pin 9 and start lever2 to pin 11).

- 3) Create a new input called **Start lever 1** with these settings:

The screenshot shows the 'MF InputConfigWizard' window with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'Start lever 1'. The 'Input settings' section has 'On Press' selected, 'Action Type' set to 'Microsoft Flight Simulator 2020', and 'Your Custom Code that will be executed in MSFS2020' is empty. The 'Filter Preset List' section shows 'Vendor' as 'PMDG', 'Aircraft' as 'B737-700', and 'System' as 'Fuel'. The 'Select Preset' section shows 'PMDG_B737-7_FUEL_CUT_OFF_LEVER1_DN' selected, with a description of 'left lever down' and '39 matches found.'.

MF InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) Scan for input

Device: Start lever 1

Input settings

On Press On Release

Action Type: Microsoft Flight Simulator 2020 Copy Paste

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor: PMDG Aircraft: B737-700 System: Fuel Search: Reset

Select Preset

PMDG_B737-7_FUEL_CUT_OFF_LEVER1_DN 39 matches found.

Description: left lever down

Show Preset Code

OK Cancel

MF

InputConfigWizard

—□×

Input

Precondition

Config References

Choose your input from the list below.

Choose input

Module

MobiFlight MTU (COM7)

▼

Device

Start lever 1

▼

Scan for input

Input settings

On Press

On Release

Action Type

Microsoft Flight Simulator 2020

▼

Copy

Paste

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor

PMDG

▼

Aircraft

B737-700

▼

System

Fuel

▼

Search

Reset

Select Preset

PMDG_B737-7_FUEL_CUT_OFF_LEVER1_UP

▼

39 matches found.

Description

☐ Show Preset Code

OK

Cancel

- 4) Create a new input called **Start lever 2** with these settings:

The screenshot shows the 'InputConfigWizard' window with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'Start lever 2'. The 'Input settings' section has 'On Press' selected, 'Action Type' set to 'Microsoft Flight Simulator 2020', and a custom code field. The 'Filter Preset List' section shows filters for Vendor (PMDG), Aircraft (B737-700), and System (Fuel). The 'Select Preset' section shows a dropdown with 'PMDG_B737-7_FUEL_CUT_OFF_LEVER2_DN' selected, indicating 39 matches found. The 'Description' field is empty, and the 'Show Preset Code' checkbox is unchecked. The window has 'OK' and 'Cancel' buttons at the bottom right.

InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) Scan for input

Device: Start lever 2

Input settings

On Press On Release

Action Type: Microsoft Flight Simulator 2020 Copy Paste

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor: PMDG Aircraft: B737-700 System: Fuel Search: Reset

Select Preset

PMDG_B737-7_FUEL_CUT_OFF_LEVER2_DN 39 matches found.

Description

Show Preset Code

OK Cancel

InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) Scan for input

Device: Start lever 2

Input settings

On Press On Release

Action Type: Microsoft Flight Simulator 2020 Copy Paste

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor	Aircraft	System	Search
PMDG	B737-700	Fuel	

Reset

Select Preset

PMDG_B737-7_FUEL_CUT_OFF_LEVER2_UP 39 matches found.

Description

☐ Show Preset Code

OK Cancel

If the start levers work backwards simply swap the onpress and onrelease actions (up to down or down to up).

Step 10: Horn cutout

- 1) Create following devices in mobiflight modules:
 - a. Button: Name= Horn cutout Pin= 42
- 2) Wire the ground from the horn cutout to a ground on the Arduino Mega and the output to the corresponding Arduino Mega pin(pin42).

- 3) Create a new input called **Horn cutout** with these settings:

The screenshot shows the 'InputConfigWizard' window with the 'Input' tab selected. The 'Choose input' section has 'Module' set to 'MobiFlight MTU (COM7)' and 'Device' set to 'Horn cutout'. The 'Input settings' section has 'On Press' selected, 'Action Type' set to 'Microsoft Flight Simulator 2020', and a custom code field. Below this is a 'Filter Preset List' with dropdowns for 'Vendor' (PMDG), 'Aircraft' (B737-700), and 'System' (Gear), along with a search bar and a 'Reset' button. The 'Select Preset' section shows 'PMDG_B737-7_GEAR_HORN_CUTOUT' selected, with a description field and a 'Show Preset Code' checkbox. The window has 'OK' and 'Cancel' buttons at the bottom right.

MF InputConfigWizard

Input Precondition Config References

Choose your input from the list below.

Choose input

Module: MobiFlight MTU (COM7) Scan for input

Device: Horn cutout

Input settings

On Press On Release

Action Type: Microsoft Flight Simulator 2020 Copy Paste

Your Custom Code that will be executed in MSFS2020

Filter Preset List

Vendor: PMDG Aircraft: B737-700 System: Gear Search: Reset

Select Preset

PMDG_B737-7_GEAR_HORN_CUTOUT 25 matches found.

Description

☐ Show Preset Code

OK Cancel

Step 11: enjoy flying!!!