

BMS DEVICE SETUP GUIDE



BENCHMARK SIMS

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FOREWORD

PURPOSE AND SCOPE

This document shall give you a quick overview on how to set up your input devices with DX bindings properly. It is addressed to the less experienced users. Experienced users who are familiar setting up their devices will likely not find any valuable information here.

The main purpose is to help beginners to set up their device with ready to use profiles, so they don't have to mess around with the setup for too long.

We will guide you through the setup process and will explain what to do if you intend to edit your key file. We also explain the functions used here.

Special thanks:

The following guys helped me a lot with testing this and giving me advices. Without your help this wouldn't be possible!

Ghostrider, Elmo, Floater, Kowalski, Snake, Cop, Buglar, xcom, vincent_dimicco, Red Beard, l3crusader and Dunc

HOW TO READ THIS DOCUMENT

To save you some time; it is not needed to read every single line of this manual. However, you might want to take a look at [chapter 2](#) first, which contains an overall introduction along with some FAQs.

For each device we offer illustrated step by step instructions in [chapter 3](#). Just read the chapter where your input device is addressed. You will be guided through the setup process and referred to other chapters if necessary.

If you need additional help you are referred to further instructions in [chapter 4](#). This chapter contains information applicable for all devices alike.

Specific Saitek related instructions can be found in [chapter 5](#). You don't need to read that chapter unless you want to setup your own .pr0 file.

A function reference can be found in [chapter 6](#). If you are not familiar with the functions / callbacks you should take a look there.

Last but not least we have prepared a small checklist with tasks you should consider before flying. See [chapter 7](#).





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2 INTRODUCTION

As mentioned in the foreword the purpose of this guide is to get you in the air as quick as possible. Depending on your device you should be able to set up your devices in less than 30 minutes. For each device you'll find illustrated instructions to guide you through the setup process.

The amount of work you need to do is minimal. In most cases you just have to load the corresponding key file, set up your axis correctly and (if applicable) load a device profile via your vendor's software (e.g. T.A.R.G.E.T or Saitek's Profile Launcher).

We will use DirectX (DX) as much as possible. However, for some devices we need other solutions in order to make it work properly. But the amount of keyboard keys is minimal. Also, all devices use the same set of functions. First, we aim a full real setup as much as feasible. Second, we use some other useful functions. In case a device offers additional switches and buttons (like the TM Warthog) we add a couple of functions to show the functionality. But this is just a proof of concept. It is up to you to change it to your liking once you are more familiar with how DX works.

This guide does not explain how to install drivers / programming software of your devices. Please refer to the vendors installation instructions.

2.1 PURPOSE OF THE PROVIDED FILES

All files for a device are stored in a corresponding folder. The files included are:

- The Key Files (.key)

The key files contain all keyboard and DX code lines. We offer two per device: One with the DX code lines included for the TM Cougar MFDs (ending on _MFD.key) and one without. All key files are based on the Basic key file. This simply means that the amount of functions is limited as most pilots don't need everything in most cases. The device specific key files are already stored in the .../User/Config/ folder. You can select one of them directly in the Setup – Controllers ui.



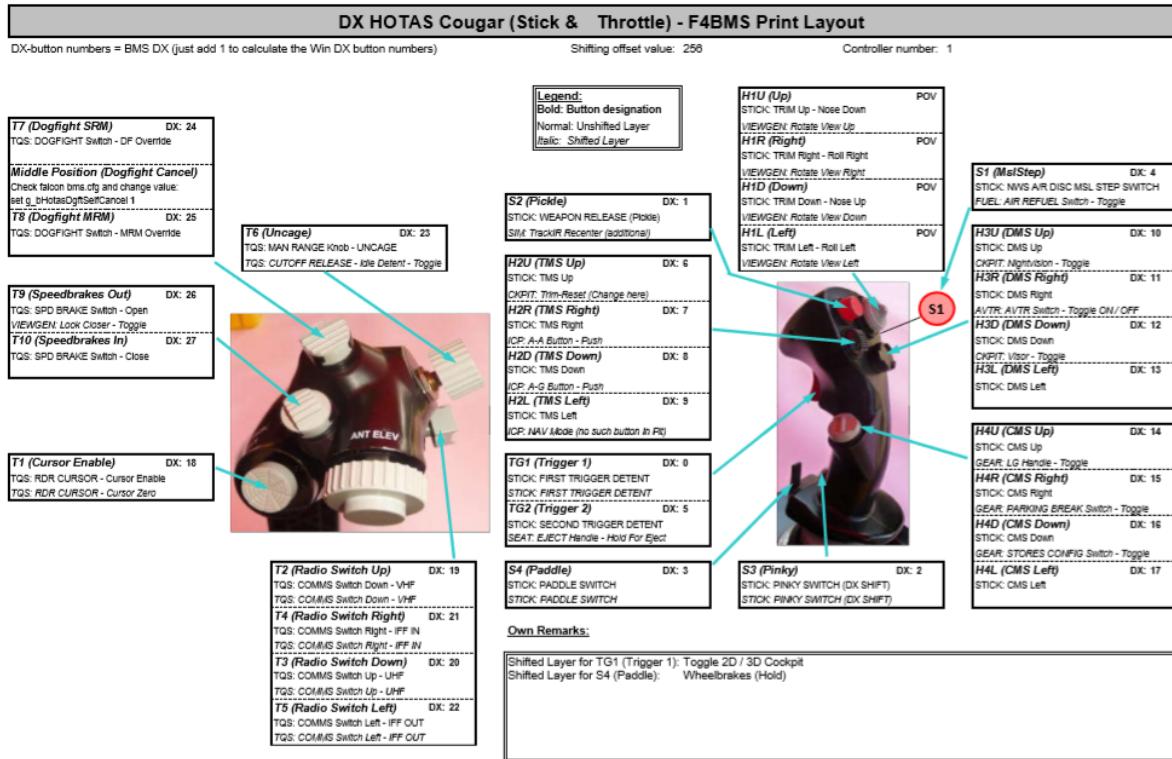
- **A DeviceSorting_Example.txt**
 - To make the key file (specifically: the DX code lines) work, a specific device order is necessary, otherwise you can run into trouble. As we do not know which, or how many devices you have installed, the DeviceSorting_Example.txt should give you a short overview of how the first code lines in your DeviceSorting.txt should look.

- **DX Code Lines.txt**

This file contains the same code lines as the DX section in the key file. The contents of this txt file are pasted at the end of the BMS_basic.key file to create the specific Cougar_DX basic key file. In other words, you can paste the contents of this file into any custom key file you may use to adapt your keyfile to the Cougar programming provided with BMS.

- **The HOTAS Print Layout**

This is a printable sheet with all the assigned functions. If you need an additional print layout for the keyboard please refer to ...\\Docs\\01 Input Devices\\01 Keyboard Layouts\\...



- **Device Profile (if applicable)**

Some devices need additional profiles to be loaded before BMS start.

- **Quick Setup Guide.txt**

These are simple short device setup instructions for advanced users.



2.2 FREQUENTLY ASKED QUESTIONS

2.2.1 What is a key file?

The key file defines all key mappings on a keyboard for the various functions we have in Falcon BMS. The functions are invoked via keystrokes, either a single key (e.g. "A") or a combination of modifier keys (Shift, Alt, Control) and a key (e.g. "Shift Alt A").

In addition to that they contain also all DirectX bindings to control input devices. A DirectX input device returns a button number which is recognized and interpreted by Falcon BMS. You can now say if I press button "A" on the device bind that to a specific function (e.g. fire the gun).

Key files are located in the .../User/Config folder. We have five different standard key files in Falcon BMS.

There are four different key file profiles which use the same keystrokes layout.

1. Full: BMS - Full.key

This is the full version of the key file with all callbacks.

2. Basic: BMS - Basic.key

This is the "light" version of the "Full" key file. All full state callbacks are removed. If you are not a pitbuilder and use cycle / toggle functions instead, this is the file for you.

3. Minimum: BMS - Minimum.key

This key file contains only a small number of callbacks which are essential plus some additional functions for comfort reasons. If you use the mouse in cockpit very often, this is most likely the right key file for you.

4. Blank: BMS - Blank.key

This is the full key file without any key assignments (except hardcoded stuff, general comms and exit sim).

However, there is a fifth one for the pitbuilders amongst us. This file has its own keyboard layout.

5. Pitbuilder: BMS - Pitbuilder.key

This version is for pit builders. All toggle / cycle callbacks for switches / knobs which have full state callbacks are removed.

The standard key files above do not contain DX bindings. This is because there are too many different devices with different button layouts out there. You need a specific solution for each device respectively.





2.2.2 What is a callback?

You often read the word “callback”. But what is it?

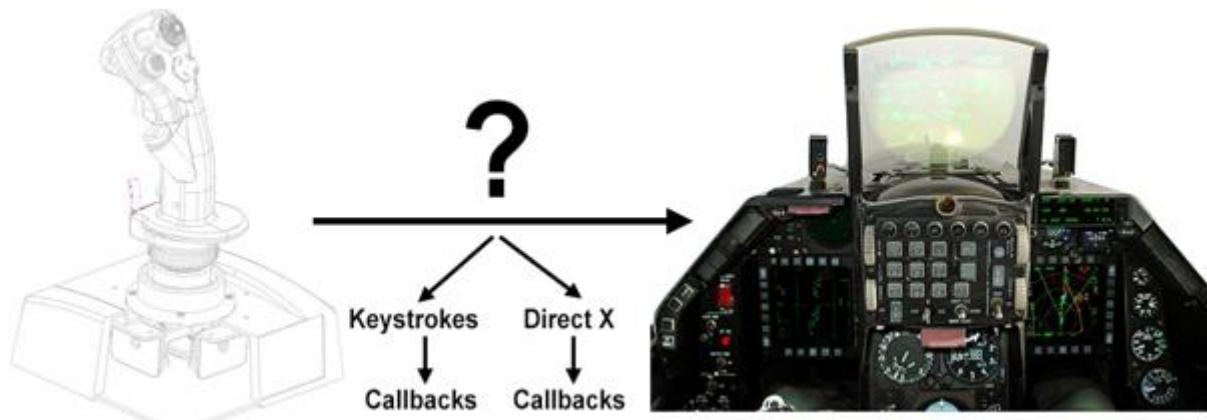
A callback is simply a name of a function. There are quite a lot of them (roughly 1.200). Each callback reflects a specific function or action to interact with the sim. To name a few examples there is a function to pause the sim (corresponding callback: “SimPause”) or one to set a switch in the cockpit to a specific position (e.g. Master Arm – On, callback: “SimArmMasterArm”).

Callbacks are invoked by a physical device button either directly via DirectX or a keyboard binding.

Joystick → Keystrokes → Callback → BMS Function

Or

Joystick → DirectX → Callback → BMS Function



So basically there are two ways to setup your devices.

You can either program the keystrokes via the vendors programming software (e.g. T.A.R.G.E.T for Thrustmaster products, SST for Saitek) or go the DirectX route. Pit-builders may see that differently but for the casual user with a stick and throttle (HOTAS) and maybe some additional devices like MFD frames or maybe an ICP the DX way is by far the easiest, fastest and most hassle-free way to setup your devices. We will describe how to setup your devices via DX as much as possible. If you intend to set it up using keystrokes, please refer to the vendors programming software manual.

2.2.3 How do I know which callback does what?

Each callback has an assigned short description (UI Name) which is displayed in the key file content list in the ui. Unfortunately the length of the description is limited. Therefor it was necessary work out some strict naming conventions to make it clear what the purpose of a function is. Even if there is no detailed description you should be able to get its purpose out of the context. If you want to learn more about that please refer to the BMS Technical Manual, chapter Key Files.

All cockpit related callbacks are addressed in the new BMS Cockpit Interaction Guide.

The various view functions are covered in the BMS Manual (chapter 9).

You can also have a look at chapter 6 of this manual where we describe the HOTAS and some other useful functions.



2.2.4 Where do I find a complete callback list?

A complete callback list along with all UI descriptions can be found in the Key File Editor.xls located in the ...\\Docs\\01 Input Devices\\02 Key File Editor directory. There is also a text file in the same folder containing all callbacks in alphabetic order (Complete Callback List.txt)

2.2.5 How can I set up my own device bindings?

Be advised that these instructions are just covering the very basics of this topic. Full detailed instructions can be found in **Key Files** section (chapter 10) in Technical Manual.

The procedures described here may be the ideal solution for newcomers and first-time BMS users. With your stick not programmed at all, but declared in the BMS UI you open the UI Setup Controllers page and click on the key relevant to the function you are about to program on your Stick using DirectX:

The keystroke becomes Cyan (SHF Home) in this example as we are programming the TMS up function.

CURRENT KEYFILE BMS - FULL	
KEY	MAPPING
Shift o	OXY: Setting 2 - Toggle (Pilot breathing)
No Key Assigned	OXY: Setting 2 - ON (Pilot breathing)
No Key Assigned	OXY: Setting 2 - OFF (Pilot breathing)
===== 5.11 FLIGHT STICK =====	
Shift Home	STICK: TMS Up
Shift End	STICK: TMS Down
Shift Delete	STICK: TMS Left
Shift PgDn	STICK: TMS Right
Ctrl Home	STICK: DMS Up
Ctrl End	STICK: DMS Down
Ctrl Delete	STICK: DMS Left
Ctrl PgDn	STICK: DMS Right
Alt Home	STICK: CMS Up
Alt End	STICK: CMS Down
Alt Delete	STICK: CMS Left
Alt PgDn	STICK: CMS Right
Ctrl Up Arrow	STICK: TRIM Up - Nose Down
Ctrl Dn Arrow	STICK: TRIM Down - Nose Up

ADVANCED **SAVE** **LOAD**

While the keystroke is selected (Cyan) hit the button you intend to program as TMS up on your joystick:

CURRENT KEYFILE BMS - FULL	
KEY	MAPPING
Shift o	OXY: Setting 2 - Toggle (Pilot breathing)
No Key Assigned	OXY: Setting 2 - ON (Pilot breathing)
No Key Assigned	OXY: Setting 2 - OFF (Pilot breathing)
===== 5.11 FLIGHT STICK =====	
Shift Home	STICK: TMS Up
Shift End	STICK: TMS Down
Shift Delete	STICK: TMS Left
Shift PgDn	STICK: TMS Right
Ctrl Home	STICK: DMS Up
Ctrl End	STICK: DMS Down
Ctrl Delete	STICK: DMS Left
Ctrl PgDn	STICK: DMS Right
Alt Home	STICK: CMS Up
Alt End	STICK: CMS Down
Alt Delete	STICK: CMS Left
Alt PgDn	STICK: CMS Right
Ctrl Up Arrow	STICK: TRIM Up - Nose Down
Ctrl Dn Arrow	STICK: TRIM Down - Nose Up

ADVANCED **SAVE** **LOAD**

INPUT Button 7
STICK: TMS Up

Nothing seems to have changed but look at the bottom of the window, the Input Button 7 is now assigned to STICK: TMS Up function.



3 HOTAS DEVICE SETUP GUIDES

On the following pages you find all relevant information to guide you through the setup process.

As of now the following devices are supported:

- [TM Cougar](#) (see page 3-13)
- [TM Warthog](#) (see page 3-24)
- **TM Combos**
 - o [Cougar Stick & TUSBA](#) (see page 3-32)
 - o [WH Stick & Cougar](#) (see page 3-40)
 - o [WH Stick & TUSBA](#) (see page 3-48)
- [CH FS&PT](#) (see page 3-56)
- [Saitek X45](#) (see page 3-68)
- [Saitek X-52](#) (see page 3-75)
- [Saitek X-52pro](#) (see page 3-83)
- [Saitek X-55](#) (see page 3-91)
- [Saitek X-65F](#) (see page 3-98)
- [TM Cougar MFDs](#) (see page 3-105)

It is likely that other ones will be added in the future. In the focus atm. are T.16000 series and Saitek X-56.

If your device is not listed here you may find a ready to use profile in the [public forum](#).

If you have suggestions or even found bugs please don't hesitate to give us an advice in the [public forum discussion here](#).





3.1 TM COUGAR (DUNC_DX) SETUP

3.1.1 Provided Files

This profile consists of the following components:

- Cougar_DX.tmm / Cougar_DX.tmj => Foxy profile files
- BMS - BasicDX TM Cougar_MFD.key => BMS key file with TM Cougar MFDs
- BMS - BasicDX TM Cougar.key => BMS key file without TM Cougar MFDs
- DeviceSorting_Example.txt => example of the DX device order
- HOTAS Print Layout.pdf => printable overview of assigned functions
- DX Code Lines.txt => DX code lines only (with MFDs)
- Quick Setup Guide.txt => Short device setup instructions

3.1.2 Device Setup

Driver and Software:

It is assumed that you already know how to setup your **TM Hotas Cougar** in general (i.e. performing manual/automatic calibration, load and compile Foxy profiles). It only covers necessary steps to get the provided files up and running.

This profile uses BMS DirectX shifting feature to avoid any emulated keyboard input whenever possible. However, we will provide some examples of simultaneous DX / key use later on.

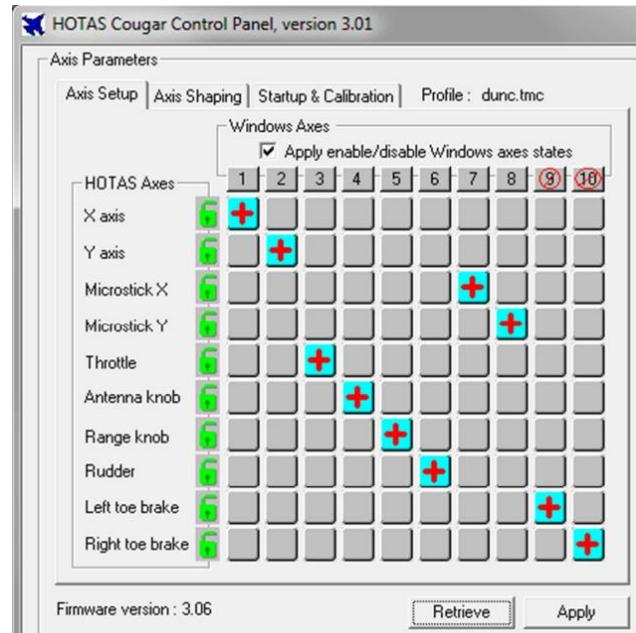
Apart from some minor changes (2 key settings, DX assignments on shifted layer, Foxy examples) this is is Dunc_DX.

CCP Settings:

In order for this profile to work, make sure that the axis mapping configuration within your TM Hotas Cougar CCP is setup like this (to ensure that we can use the microstick as analogue axis):

Cougar profile files:

Copy the **Cougar_DX.tmm** and **Cougar_DX.tmj** files to your Foxy files folder, open foxy, load the files, compile and download to the Cougar. Please note that you will not see anything happen in the Foxy keytester if you press Cougar buttons, as this profile uses DirectX buttons nearly exclusively.



Falcon BMS.cfg settings:

Open the Falcon BMS.cfg file which is located in your BMS User\Config folder with a text editor. Find the setting: **set g_bHotasDgftSelfCancel**. It's set to 0 by default, **please set it to 1**. Additionally, verify that the setting **set g_nHotasPinkyShiftMagnitude** is set to 256 (default).



3.1.3 Key File

Select one of the two provided key files located in the .../User/Config folder:

- BMS - BasicDX TM Cougar_MFD.key

Select this one if you have also TM Cougar MFDs. The MFD related DX bindings are already included.

- BMS - BasicDX TM Cougar.key

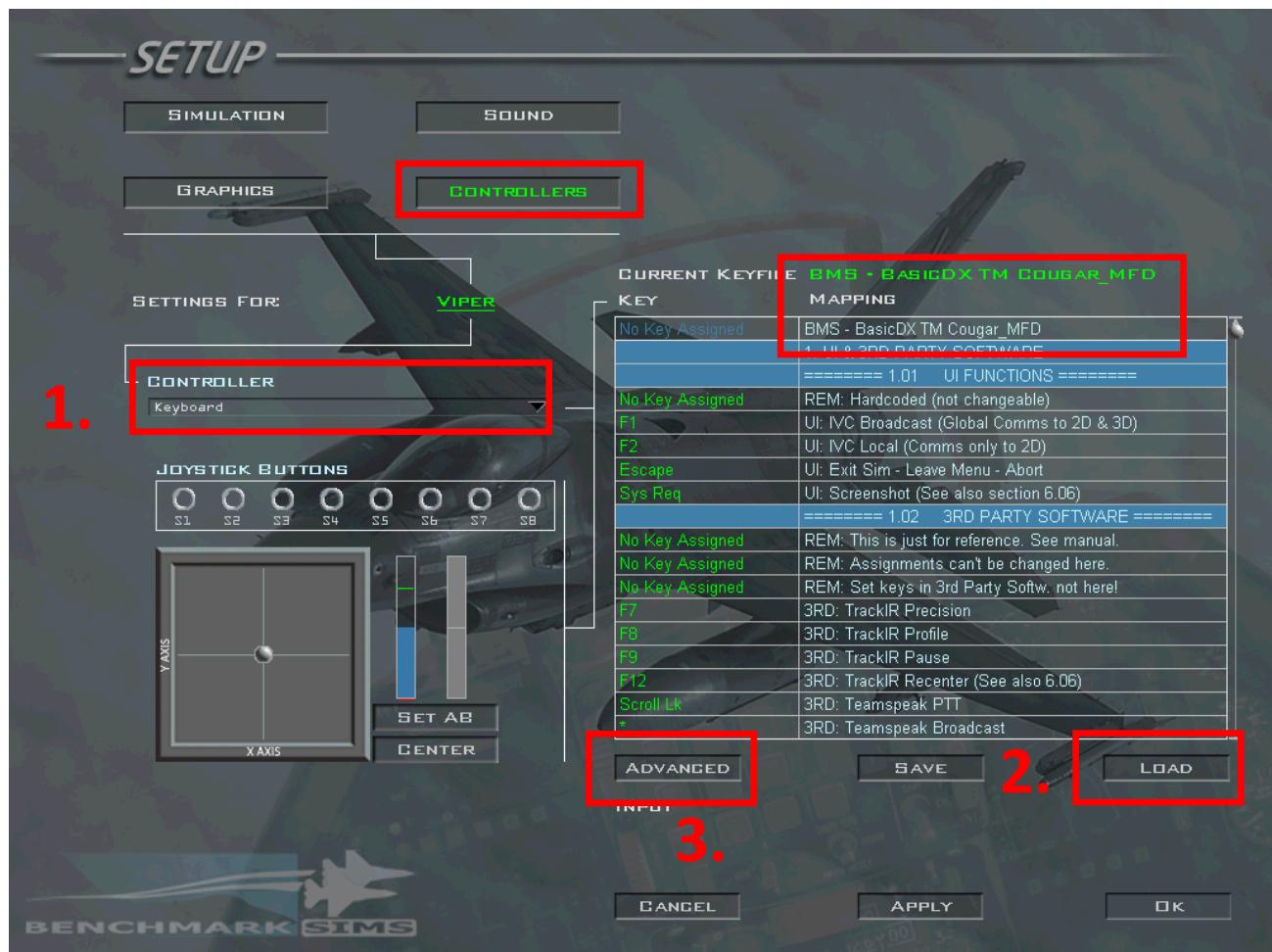
Select this one if you don't use TM Cougar MFDs.

3.1.4 BMS Setup

Start Falcon BMS and click on SETUP in the top right corner of the main ui:



Once in the setup screen hit the CONTROLLERS button. This opens the Controllers screen shown below:



In this screen you do three things:

- Select the Main Input Device

Select your main Input device from the drop down list. In this case “**Thrustmaster HOTAS Cougar**”.

If you need help with that or for further information see [chapter 4.1](#) of this manual.

- Load the Key File

Click on LOAD button and select the TM Cougar key file you just pasted to the User/Config folder.

You can verify that the correct key file is loaded on top of the key file content box next to CURRENT KEYFILE.

More information about loading key files can be found in [chapter 4.2](#) of this manual.

- Enter Advanced Options

This opens the Advanced Option pages. You can ignore the AUDIO CONTROL page here. Instead we focus on the VIEW CONTROL, FLIGHT CONTROL and AVIONICS CONTROL settings. In FLIGHT and AVIONICS CONTROL we will do our axis assignments.



VIEW CONTROL settings:

If you have no rudder device connected you should make sure that the “**Enable Roll-linked NWS**” checkbox is active. This will allow you to steer your aircraft on ground with roll axis (left / right) inputs on the stick.

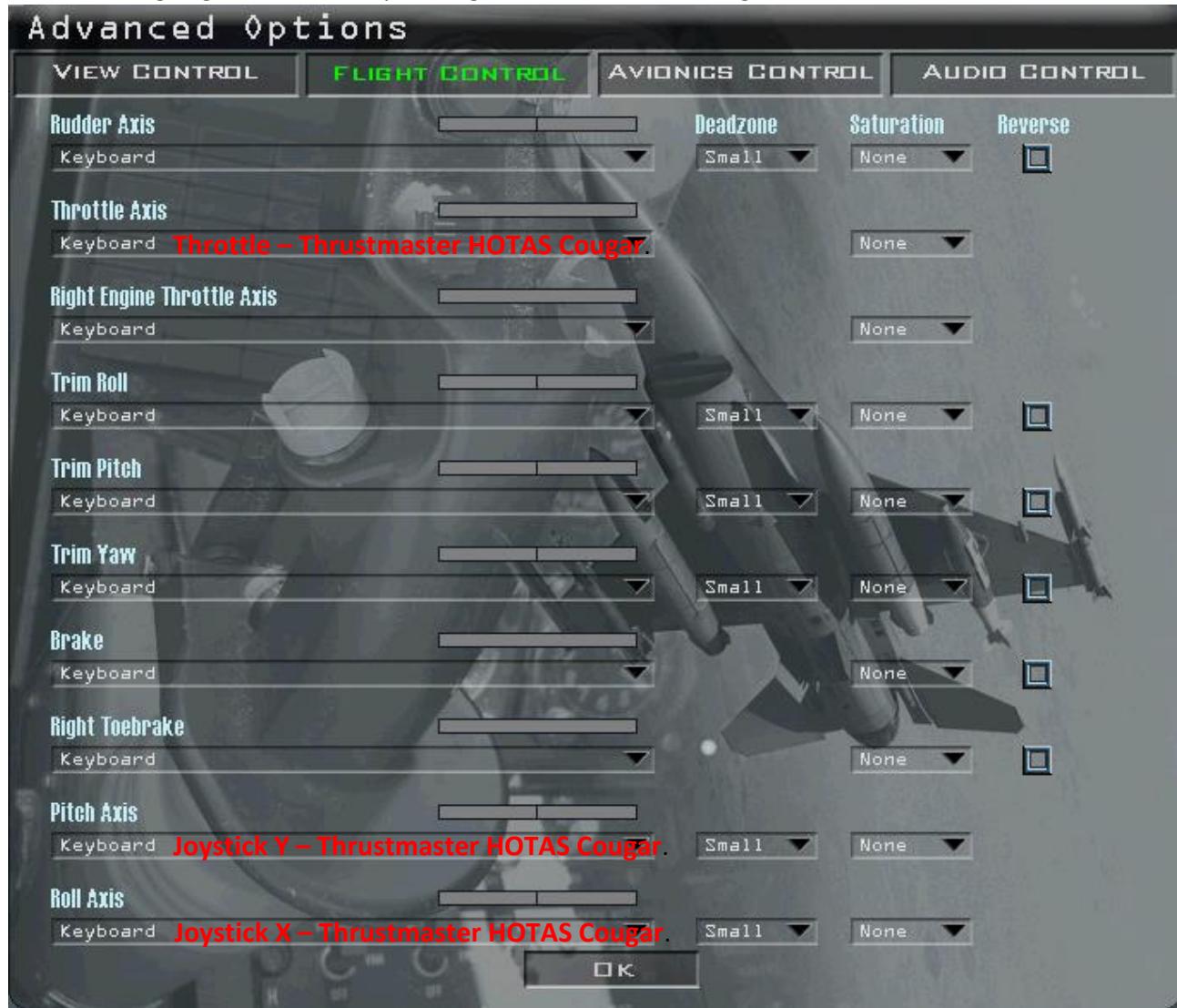


3.1.5 Axis Assignments

If you need help with that refer to [chapter 4.3](#) of this manual.

FLIGHT CONTROL settings:

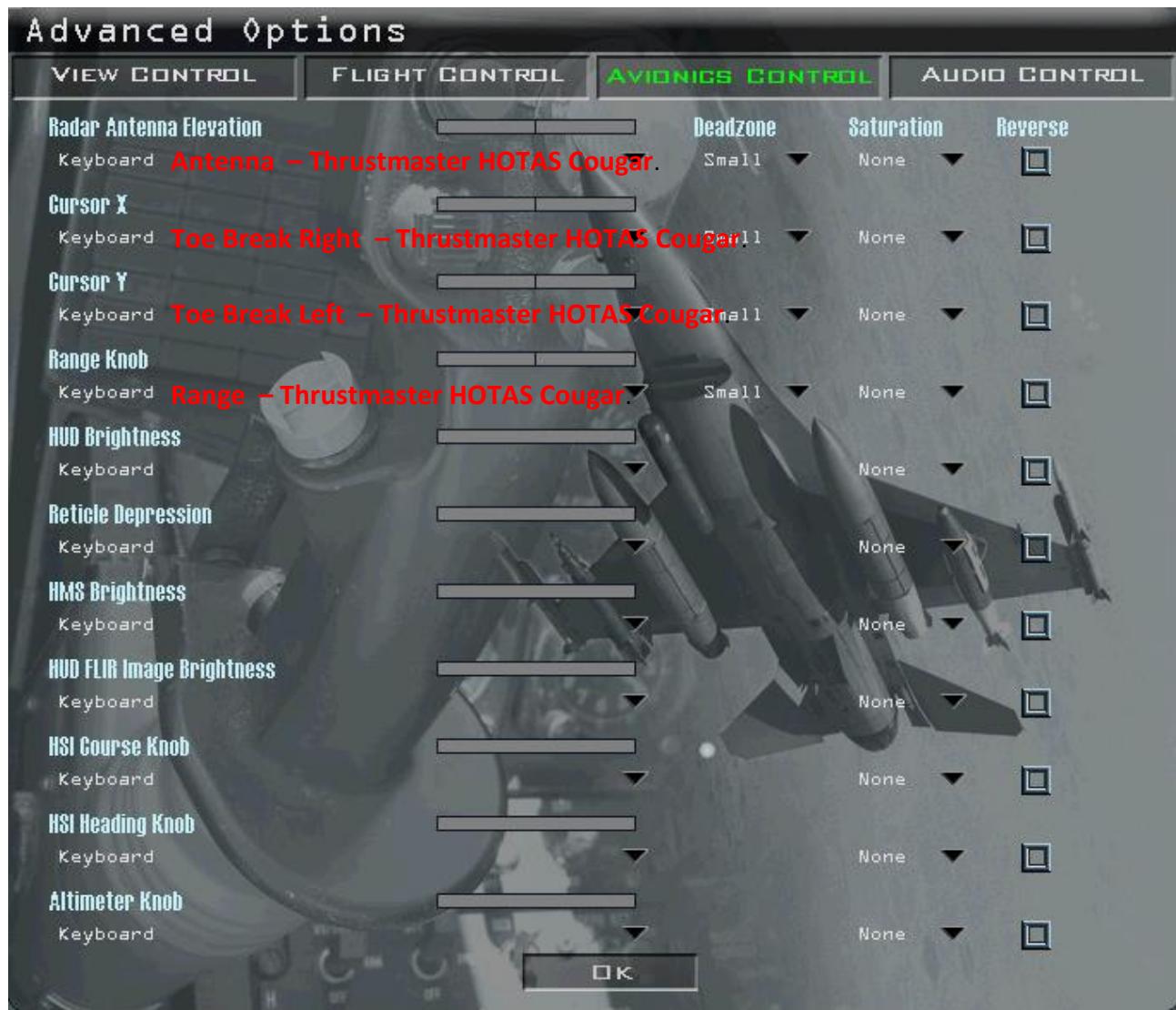
Set the axis of the device as shown in the picture below. You just have to select them from the dropdown list. After assigning an axis test it by moving the axis over its full range. Monitor the axis bar.





AVIONICS CONTROL settings:

Next go to the Avionics Control page and set the axis as shown below and test them.



If all axes have been assigned successfully hit the OK button which brings you back to the Setup – Controllers page.

If an axis is not available from the dropdown menu it is assigned somewhere else. In this case you have to take a look at the other Control pages first. What to do in this case is described in [chapter 4.4](#) of this manual.

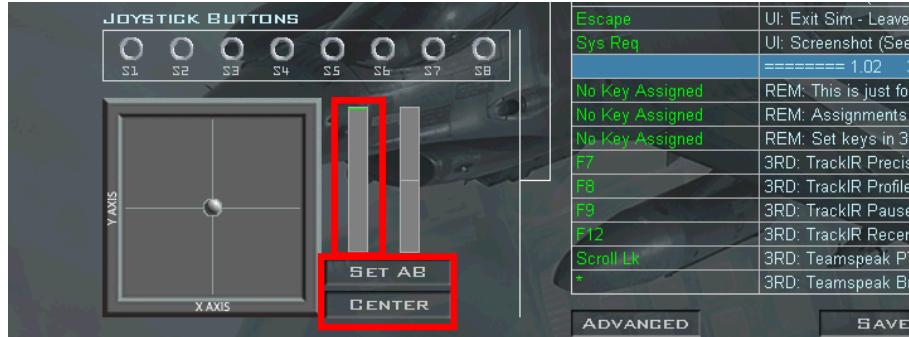
Set afterburner / Recenter:

After all axes have been assigned successfully you should define the afterburner detent. Without doing so you can't use the afterburner in the sim.

Like shown in the screenshot on the next page you have two axis bars. The right one is for the throttle axis. Move your throttle to a position where you want to set the afterburner detent. Then click on SET AB button. This defines the position on the throttle axis where the afterburner kicks in.



It is a good habit to recenter your device by releasing the controller and pressing the CENTER button. The pitch and roll axis of your main input device will then be centred to avoid unwanted shifts in the sim which makes flying the aircraft much more difficult.

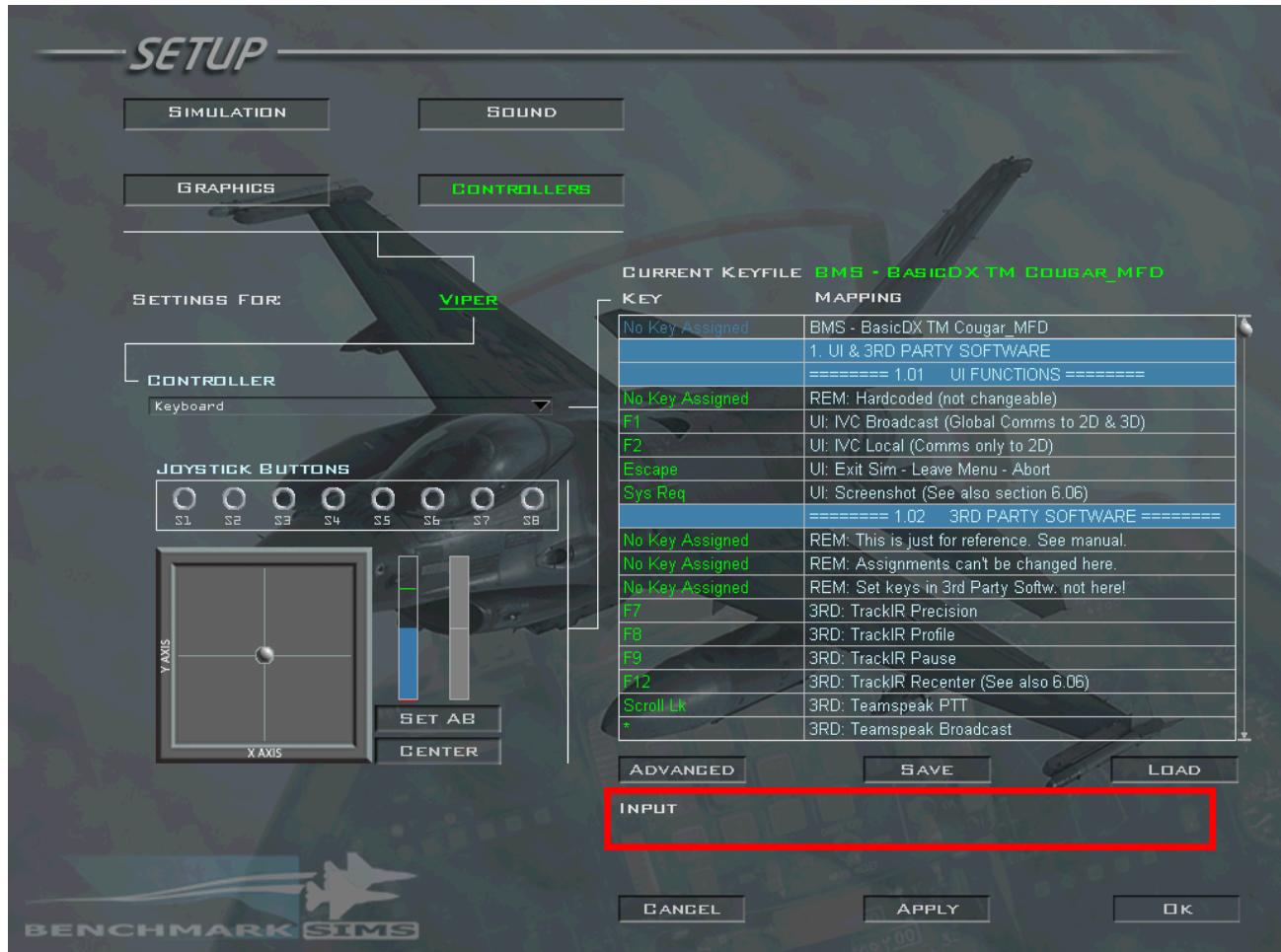


If you need help please refer to [chapter 4.5](#) of this manual.

3.1.6 Test the device buttons

Depending on how many devices you have connected, you should press one button on each device. We assume that you have connected your main device along with the 2 TM MFDs and use one of the default TM Cougar related key files.

Once you press a button the result will be displayed below the key file content list next to INPUT.



Test the main input device:



Press button „S2 (Pickle)“ on your stick.

The text should read:

INPUT Button 2

STICK: WEAPON RELEASE (Pickle)



Press button „T6 (Uncage)“ on your throttle.

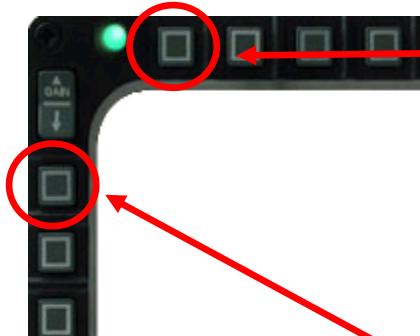
The text should read:

INPUT Button 24

TQS: MAN RANGE Knob - UNCAGE

Test TM Cougar MFDs

If you don't use the TM Cougar MFDs you can skip this part.



Press button „OSB1“ on left MFD.

The text next to INPUT should read:

INPUT Button 33

LMFD: OSB-1 Button - Push

Press button „OSB20“ on right MFD.

The text next to INPUT should read:

INPUT Button 84

RMFD: OSB-20 Button - Push

In case wrong button numbers / functions are shown it is likely that the device order is not recognized correctly by BMS. You can fix that by editing the DeviceSorting.txt located in your .../User/Config folder.

How this is done is described in [chapter 4.6](#) of this manual.

Once the device sorting is done repeat the steps on the previous page. If everything works correctly you are done here.

Test in 3d:

It is unfortunately not possible to test the shifted layer in the ui. You have to test them in 3d. The easiest way is to simply open the training mission 2 (Navigation) as the jet is already airborne.

You can repeat the same steps as shown on the previous page but this time with the functions on the shifted layer. In case you wonder how to activate the shifted layer please read [chapter 4.7](#) of this manual.

It is recommended to use an easy recognizable function e.g. night vision.

And here is the exercise:

Just open the HOTAS Print Layout.pdf look for the function CKPIT: Nightvision – Toggle and try it.

If everything works correctly you have finished your setup. Congratulations.

3.1.7 Troubleshooting

I want to learn more about DX Device buttons and layers:

Read [chapter 4.8](#).

What if I am not happy with the functions assigned to the device?

Read [chapter 4.9](#).

What If I don't have MFDs but other devices?

Read [chapter 4.10](#).

I have a stuck key / can't exit the shifted layer:

Read [chapter 4.11](#).

I want other functions on the POV hat:

Read [chapter 4.12](#).



3.1.8 Notes about the Cougar Files

Cougar_DX.tmm:

This macro file will only contain keyboard mappings. Everything that will be mapped by pure DirectX in the BMS key file will not show up here.

2D_Cockpit = 2

3D_Cockpit = 3

Wheelbrakes = k

Note: To avoid side effects, it is good practice to use SINGLE keystrokes for macros only.

So whenever possible, avoid doing things like "Shift + Key" and use only "Key" instead.

Cougar_DX.tmj:

Make sure to use the correct TMM file:

USE MDEF Cougar_DX.tmm

Disable any mouse functionality on the Cougar (e.g. microstick):

USE ZERO_MOUSE

DISABLE MOUSE

Map ALL Cougar buttons and hats to their default DirectX buttons:

USE ALL_DIRECTX_BUTTONS

By using ALL_DIRECTX_BUTTONS, the following DX values will get assigned: (this is purely Foxy functionality and has nothing to do with BMS)

TG1	=	DX1 (Trigger 1st Detent)	H3D	=	DX13 (DMS Down)
S2	=	DX2 (Pickle)	H3L	=	DX14 (DMS Left)
S3	=	DX3 (Pinky)	H4U	=	DX15 (CMS Up)
S4	=	DX4 (Paddle)	H4R	=	DX16 (CMS Right)
S1	=	DX5 (MSL Step)	H4D	=	DX17 (CMS Down)
TG2	=	DX6 (Trigger 2nd Detent)	H4L	=	DX18 (CMS Left)
H1U	=	POV Up	T1	=	DX19 (Cursor Enable)
H1R	=	POV Right	T3	=	DX20 (VHF)
H1D	=	POV Down	T2	=	DX21 (UHF)
H1L	=	POV Left	T4	=	DX22 (IFF In)
H2U	=	DX7 (TMS Up)	T5	=	DX23 (IFF Out)
H2R	=	DX8 (TMS Right)	T6	=	DX24 (Uncage)
H2D	=	DX9 (TMS Down)	T7	=	DX25 (DGF Override)
H2L	=	DX10 (TMS Left)	T8	=	DX26 (MSL Override)
H3U	=	DX11 (DMS Up)	T9	=	DX27 (Speedbrakes Open)
H3R	=	DX12 (DMS Right)	T10	=	DX28 (Speedbrakes Close)



Now, BMS can handle exactly one function for each button/hat position for the unshifted position (without Pinky/S3), and exactly one function for each button/hat position for the shifted position (with Pinky/S3).

So whenever we want to have only one function for each position, we don't need to do anything here in the Foxy profile anymore, we will cover that completely in the BMS key file.

All that we still need to cover here are special cases where we want to have e.g.:

1. Toggle/alternate between different functions (see example 1),
2. Use more than one function at the same time (see example 2),
3. Create functions that are not meant for BMS, but for other programs (e.g. TrackIR). We will not provide an example for this.

Note: Whenever we override one of the default ALL_DIRECTX_BUTTONS assignments, we need to make sure that we manually add the DX mapping again for the positions that we NOT want to override (because they are lost otherwise).

For example, if we only want to override e.g. a shifted position, we need to manually map the unshifted position back to whatever DX mapping was there by default. See the TG1 below for a complete example.

Example 1: toggle between two functions:

Trigger 1st Detent shifted (/I) should be used to toggle between Snap (2D) and Pan 3D cockpit view. As BMS cannot toggle, we need to create the toggle here as usual, using /I to indicate that this should be for the shifted layer, and then add the two toggle positions with /T.

However, as we now did override TG1 for /I, TG1 for /O will be reset to "nothing" automatically by Foxy. But we want to keep the default DX assignment, hence we need to add it back manually using /O /H and the DX mapping from the list above.

Additionally, we will keep the state of TG1 unshifted in a logical flag for TG2 (see below).

```
BTN TG1 /I /T 2D_Cockpit /T 3D_Cockpit
```

```
/O /H {DX1 X1}
```

Trigger 2nd Detent shifted (/I) should do nothing to avoid firing the guns accidentally while toggling between 2D and 3D cockpit view. Usually, we can map this in the BMS key file directly. However, as soon as we release the pinky switch, BMS will immediately detect that TG2 is pressed and start firing. So what we do here is make sure that BMS only sees TG2 when it has been reached by passing only over TG1 (and not Pinky+TG1) before.

```
BTN TG2 ^
```

```
DEF X2 TG2 AND X1
```

```
BTN X2 /H DX6
```



Example 2: More than one function at the same time:

The Paddle should do two things at the same time:

- a) The normal AP override (which is done by BMS DX assignment, hence we just use the default DX mapping from the list),
- b) Wheelbrakes

To make sure that both commands are done at the same time, we use the curly brackets to tie them together. Because we did not override /I or /O, we don't need to do anything else here, the rest will be in the BMS key file.

BTN S4 /H {DX4 Wheelbrakes}

Because we mapped the microstick (radar cursor) to use analog axis in the HOTAS CCP, the toe brake axis can only be used with digital statements now. Hence we will simply issue and hold a "Wheelbrake" keystroke whenever either of the toe brakes is pushed down more than 10%.

LBRK 5 2 (0 10 100) ^ (/H Wheelbrakes)

RBRK 5 2 (0 10 100) ^ (/H Wheelbrakes)



3.2 TM WARTHOG SETUP

3.2.1 Provided Files

This profile consists of the following components:

- BMS - BasicDX TM Warthog_MFD.key => BMS key file with TM Cougar MFDs
- BMS - BasicDX TM Warthog.key => BMS key file without TM Cougar MFDs
- DeviceSorting_Example.txt => example of the DX device order
- HOTAS Print Layout.pdf => printable overview of assigned functions
- DX Code Lines.txt => DX code lines only (with MFDs)
- Quick Setup Guide.txt => Short device setup instructions

3.2.2 Device Setup

Driver and Software:

Please make sure you have installed the latest drivers and software. We will not describe how to do this. Please refer to Thrustmaster's installation instructions.

It is assumed that you already know how to setup your **TM Warthog** in general. It only covers necessary steps to get the provided files up and running.

This profile uses BMS DirectX shifting feature to avoid any emulated keyboard input whenever possible.

This TM Warthog profile doesn't provide any .tmc files. All buttons are available via DX right away and we will assign all functions via DirectX exclusively. BMS recognizes both devices (stick and throttle) as two separate input devices. We don't have to care about T.A.R.G.E.T. programming in any way.

If you need / want additional functions provided by T.A.R.G.E.T you have to work it out on your own. It is way out of scope for what we try to achieve here.

Also note that not all switches on the throttle have functions assigned. This is by purpose to show the concept of DirectX.

3.2.3 Key File

Select one of the two provided key files located in the .../03 HOTAS Setup/TM Warthog folder:

- BMS - BasicDX TM Warthog_MFD.key
Select this one if you have also TM Cougar MFDs. The MFD related DX bindings are already included.
- BMS - BasicDX TM Warthog.key
Select this one if you don't use TM Cougar MFDs.

Copy the file of your choice and paste it to the .../User/Config folder.



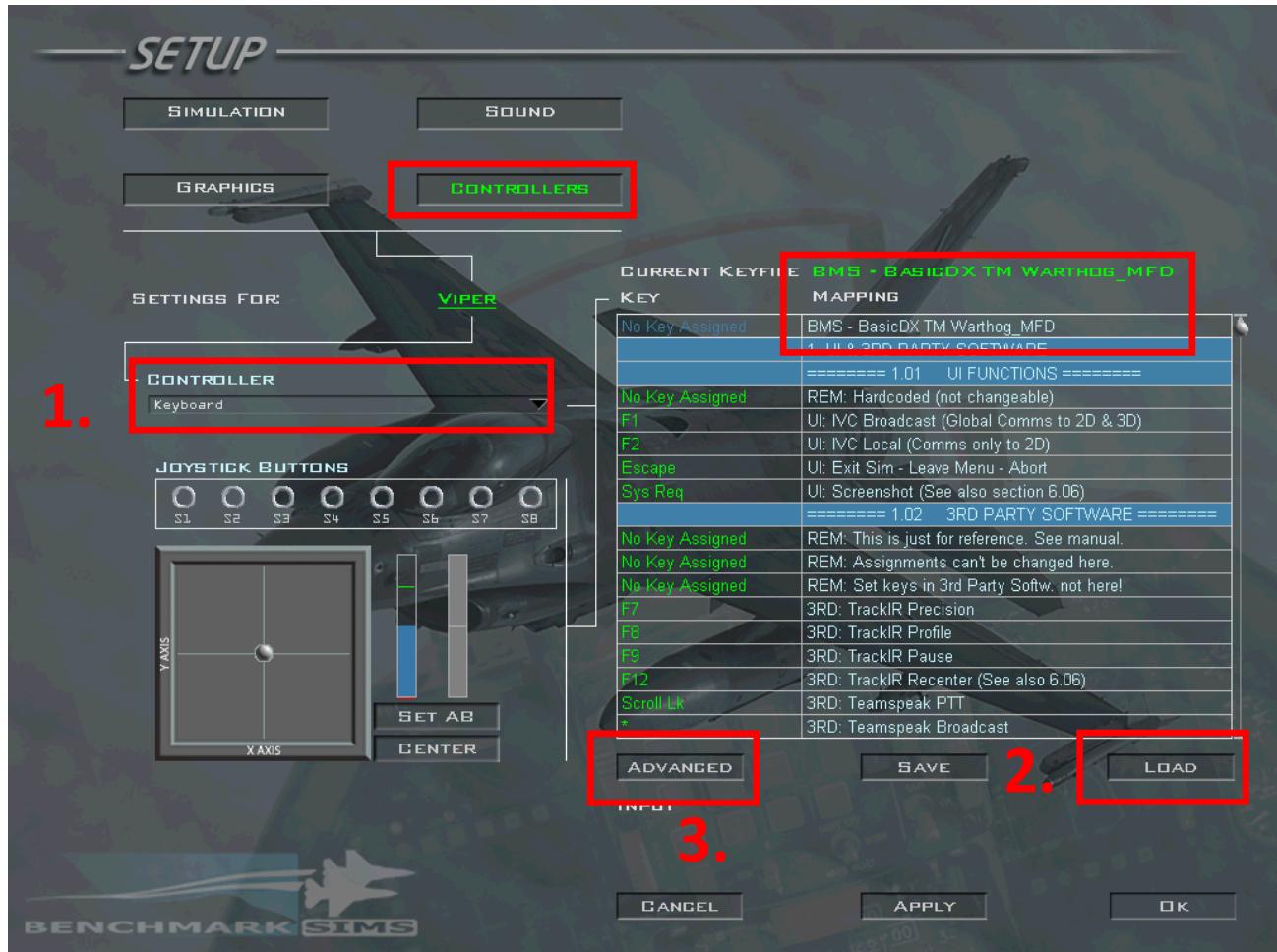


3.2.4 BMS Setup

Start Falcon BMS and click on SETUP in the top right corner of the main ui:



Once in the setup screen hit the CONTROLLERS button. This opens the Controllers screen shown below:



In this screen you do three things:

- Select the Main Input Device

Select your main Input device from the drop down list. In this case “**Joystick - HOTAS Warthog**”.

If you need help with that or for further information see [chapter 4.1](#) of this manual.

- Load the Key File

Click on LOAD button and select the TM Warthog key file you just pasted to the User/Config folder.

You can verify that the correct key file is loaded on top of the key file content box next to CURRENT KEYFILE.

More information about loading key files can be found in [chapter 4.2](#) of this manual.



3. Enter Advanced Options

This opens the Advanced Option pages. You can ignore the AUDIO CONTROL page here. Instead we focus on the VIEW CONTROL, FLIGHT CONTROL and AVIONICS CONTROL settings. In FLIGHT and AVIONICS CONTROL we will do our axis assignments.



VIEW CONTROL settings:

If you have no rudder device connected you should make sure that the “**Enable Roll-linked NWS**” checkbox is active. This will allow you to steer your aircraft on ground with roll axis (left / right) inputs on the stick.



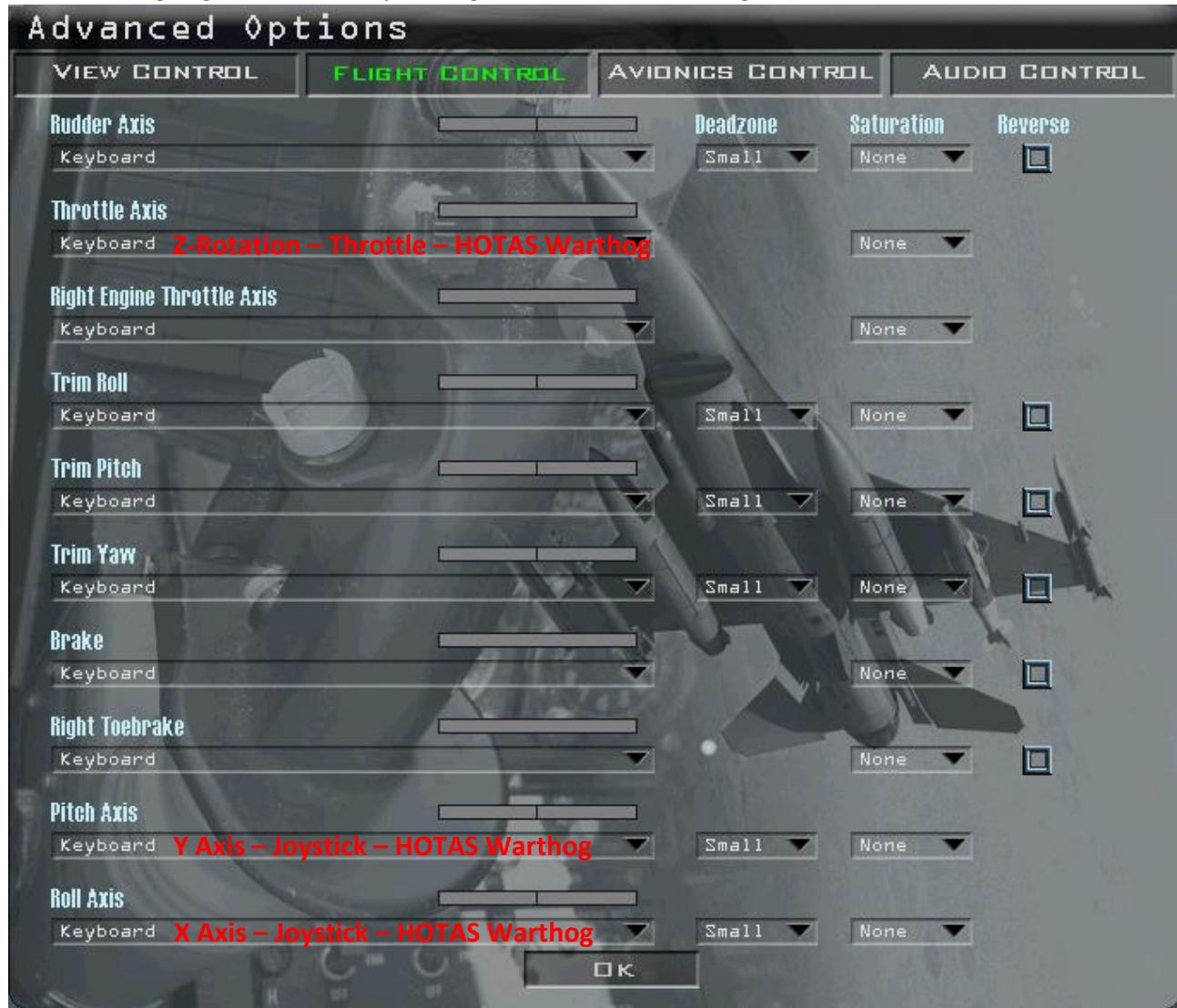


3.2.5 Axis Assignments

If you need help with that refer to [chapter 4.3](#) of this manual.

FLIGHT CONTROL settings:

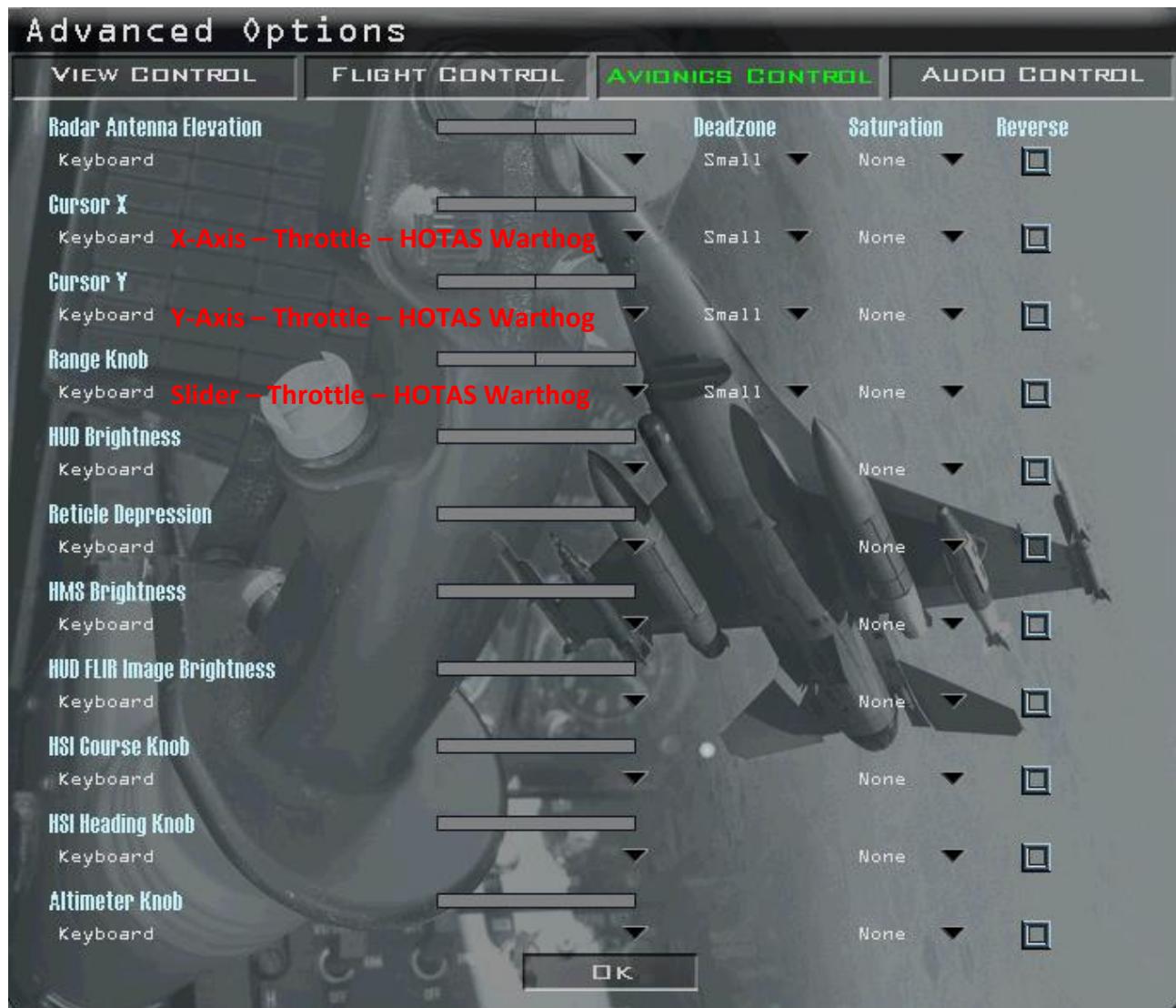
Set the axis of the device as shown in the picture below. You just have to select them from the dropdown list. After assigning an axis test it by moving the axis over its full range. Monitor the axis bar.





AVIONICS CONTROL settings:

Next go to the Avionics Control page and set the axis as shown below and test them.



If all axes have been assigned successfully hit the OK button which brings you back to the Setup – Controllers page.

If an axis is not available from the dropdown menu it is assigned somewhere else. In this case you have to take a look at the other Control pages first. What to do in this case is described in [chapter 4.4](#) of this manual.

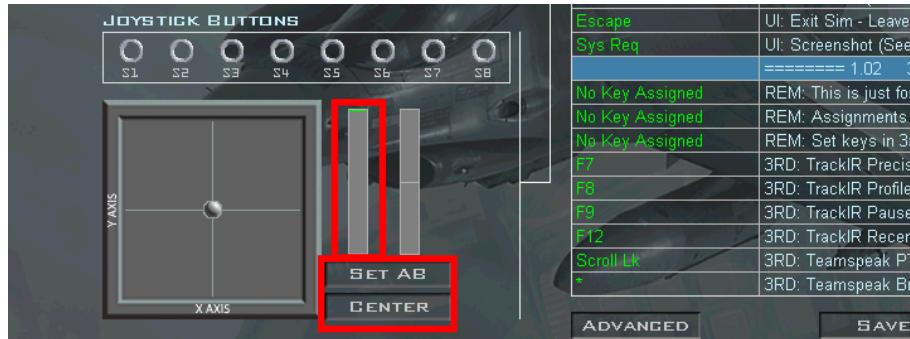
Set afterburner / Recenter:

After all axes have been assigned successfully you should define the afterburner detent. Without doing so you can't use the afterburner in the sim.

Like shown in the screenshot on the next page you have two axis bars. The right one is for the throttle axis. Move your throttle to a position where you want to set the afterburner detent. Then click on SET AB button. This defines the position on the throttle axis where the afterburner kicks in.



It is a good habit to recenter your device by releasing the controller and pressing the CENTER button. The pitch and roll axis of your main input device will then be centred to avoid unwanted shifts in the sim which makes flying the aircraft much more difficult.

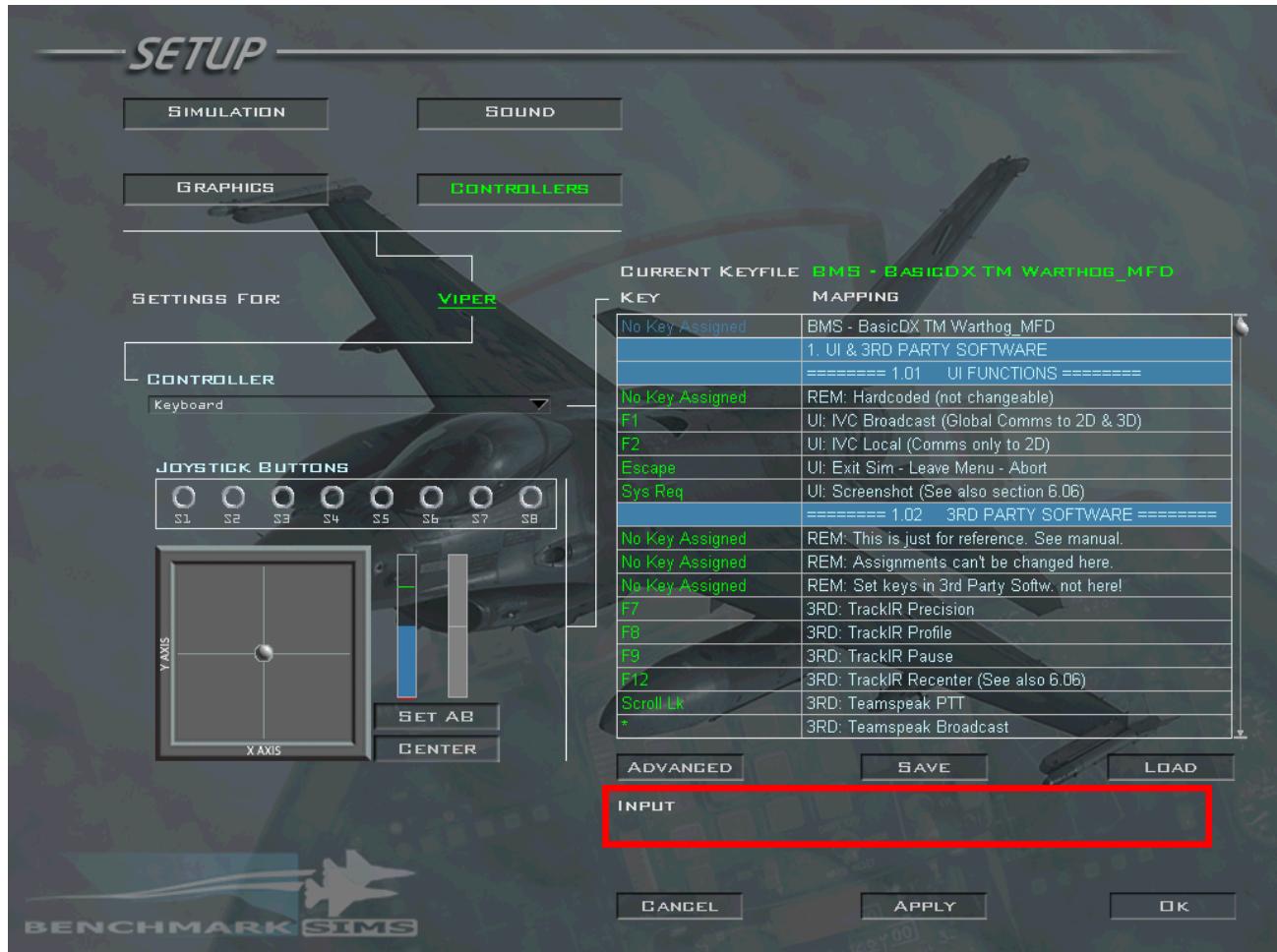


If you need help please refer to [chapter 4.5](#) of this manual.

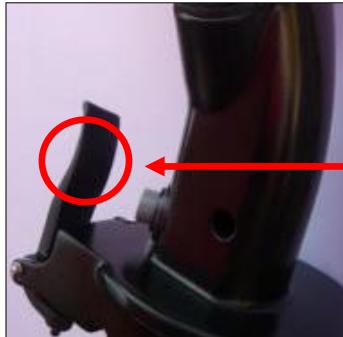
3.2.6 Test the device buttons

Depending on how many devices you have connected, you should press one button on each device. We assume that you have connected your main device along with the 2 TM MFDs and use one of the default TM Warthog related key files.

Once you press a button the result will be displayed below the key file content list next to INPUT.



Test the main input device:



Press button „S4“ on your stick.

The text should read:

INPUT Button 4

STICK: PADDLE SWITCH



Press button „LTB“ on your throttle.

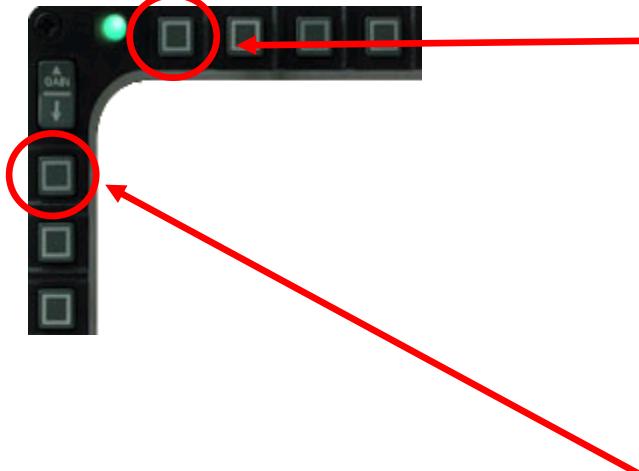
The text should read:

INPUT Button 47

TQS: MAN RANGE Knob - UNCAGE

Test TM Cougar MFDs

If you don't use the TM Cougar MFDs you can skip this part.



Press button „OSB1“ on left MFD.

The text next to INPUT should read:

INPUT Button 65

LMFD: OSB-1 Button - Push

Press button „OSB20“ on right MFD.

The text next to INPUT should read:

INPUT Button 116

RMFD: OSB-20 Button - Push

In case wrong button numbers / functions are shown it is likely that the device order is not recognized correctly by BMS. You can fix that by editing the DeviceSorting.txt located in your .../User/Config folder.

How this is done is described in [chapter 4.6](#) of this manual.

Once the device sorting is done repeat the steps on the previous page. If everything works correctly you are done here.

Test in 3d:

It is unfortunately not possible to test the shifted layer in the ui. You have to test them in 3d. The easiest way is to simply open the training mission 2 (Navigation) as the jet is already airborne.

You can repeat the same steps as shown on the previous page but this time with the functions on the shifted layer. In case you wonder how to activate the shifted layer please read [chapter 4.7](#) of this manual.

It is recommended to use an easy recognizable function e.g. night vision.

And here is the exercise:

Just open the HOTAS Print Layout.pdf look for the function CKPIT: Nightvision – Toggle and try it.

If everything works correctly you have finished your setup. Congratulations.

3.2.7 Troubleshooting

I want to learn more about DX Device buttons and layers:

Read [chapter 4.8](#).

What if I am not happy with the functions assigned to the device?

Read [chapter 4.9](#).

What If I don't have MFDs but other devices?

Read [chapter 4.10](#).

I have a stuck key / can't exit the shifted layer:

Read [chapter 4.11](#).

I want other functions on the POV hat:

Read [chapter 4.12](#).

How to use the new Idle Detent callbacks?

Read [chapter 4.13](#).



3.3 COUGAR STICK & TUSBA

3.3.1 Provided Files

This profile consists of the following components:

- Cougar_DX.tmm / Cougar_DX.tmj => Foxy profile files
- BMS - BasicDX Cougar_TUSBA_MFD.key => BMS key file with TM Cougar MFDs
- BMS - BasicDX Cougar_TUSBA.key => BMS key file without TM Cougar MFDs
- DeviceSorting_Example.txt => example of the DX device order
- HOTAS Print Layout.pdf => printable overview of assigned functions
- DX Code Lines.txt => DX code lines only (with MFDs)
- Quick Setup Guide.txt => Short device setup instructions

3.3.2 Device Setup

Driver and Software:

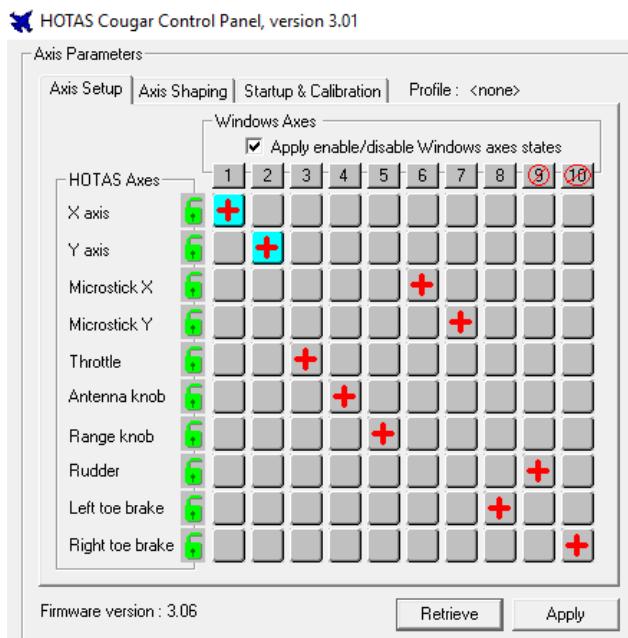
It is assumed that you already know how to setup your **TM Hotas Cougar** and **TUSBA R1/2** in general (i.e. performing manual/automatic calibration, load and compile Foxy profiles). It only covers necessary steps to get the provided files up and running.

This profile uses BMS DirectX shifting feature to avoid any emulated keyboard input whenever possible. However, we will provide some examples of simultaneous DX / key use later on.

The setup is based on the TM Cougar (Dunc_DX) profile. It works for both, TUSBA R1 & R2.

CCP Settings:

In order for this profile to work, make sure that the axis mapping configuration within your TM Hotas Cougar CCP is setup like this:



Cougar profile files:

Copy the **Cougar_DX.tmm** and **Cougar_DX.tmj** files to your Foxy files folder, open foxy, load the files, compile and download to the Cougar. Please note that you will not see anything happen in the Foxy keytester if you press Cougar buttons, as this profile uses DirectX buttons nearly exclusively.

For more information about the .tmm / .tmj files please refer to chapter [3.1.8 Notes about the Cougar Files](#).



3.3.3 Key File

Select one of the two provided key files located in the .../03 HOTAS Setup/TM Combos/01 Cougar Stick & TUSBA folder:

- BMS - BasicDX Cougar_TUSBA_MFD.key

Select this one if you have also TM Cougar MFDs. The MFD related DX bindings are already included.

- BMS - BasicDX Cougar_TUSBA.key

Select this one if you don't use TM Cougar MFDs.

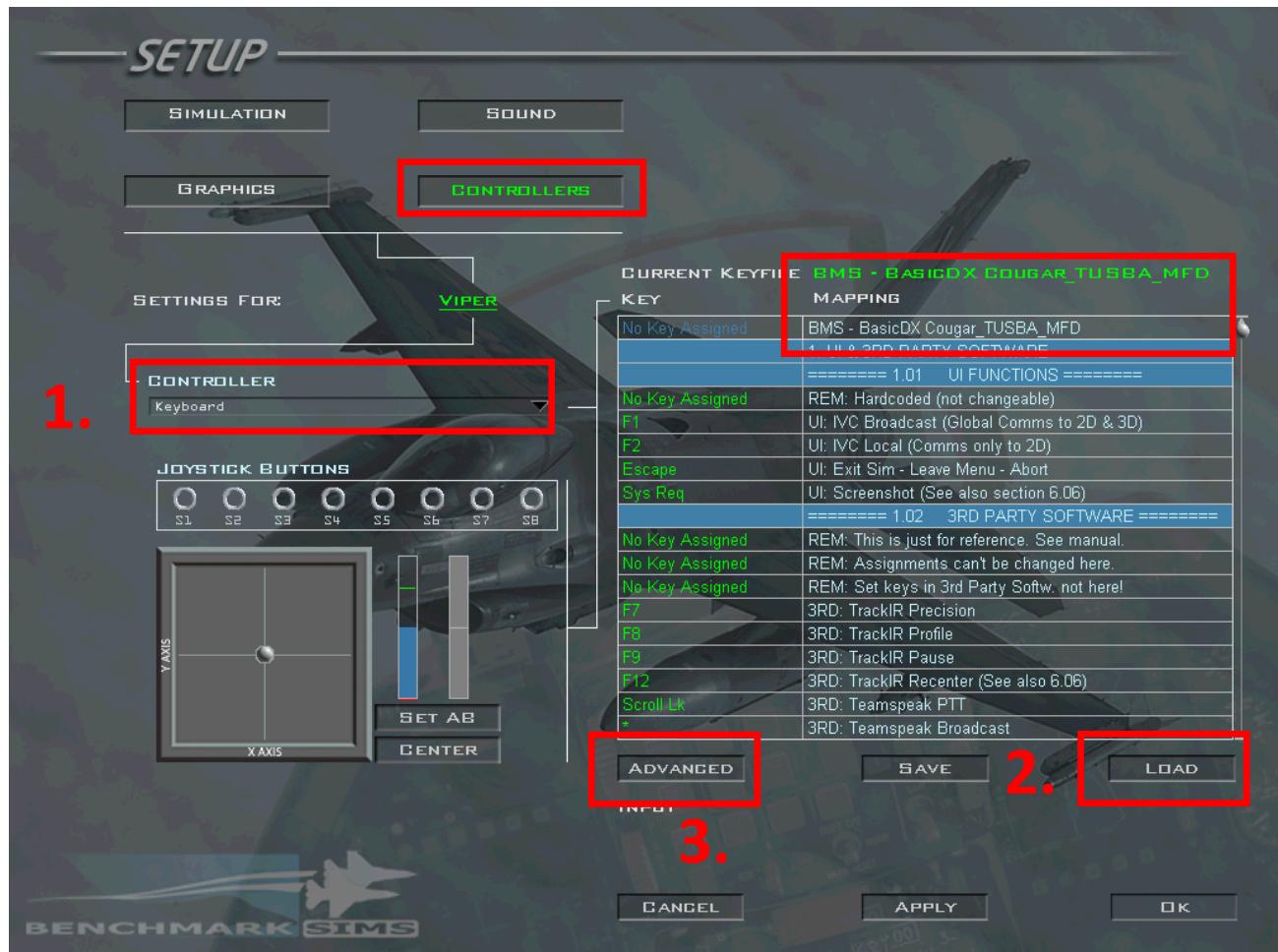
Copy the file of your choice and paste it to the .../User/Config folder.

3.3.4 BMS Setup

Start Falcon BMS and click on SETUP in the top right corner of the main ui:



Once in the setup screen hit the CONTROLLERS button. This opens the Controllers screen shown below:



In this screen you do three things:

- Select the Main Input Device

Select your main Input device from the drop down list. In this case “**Thrustmaster HOTAS Cougar**”.

If you need help with that or for further information see [chapter 4.1](#) of this manual.

- Load the Key File

Click on LOAD button and select the Cougar Stick & TUSBA key file you just pasted to the User/Config folder.

You can verify that the correct key file is loaded on top of the key file content box next to CURRENT KEYFILE.

More information about loading key files can be found in [chapter 4.2](#) of this manual.

- Enter Advanced Options

This opens the Advanced Option pages. You can ignore the AUDIO CONTROL page here. Instead we focus on the VIEW CONTROL, FLIGHT CONTROL and AVIONICS CONTROL settings. In FLIGHT and AVIONICS CONTROL we will do our axis assignments.



VIEW CONTROL settings:

If you have no rudder device connected you should make sure that the “**Enable Roll-linked NWS**” checkbox is active. This will allow you to steer your aircraft on ground with roll axis (left / right) inputs on the stick.

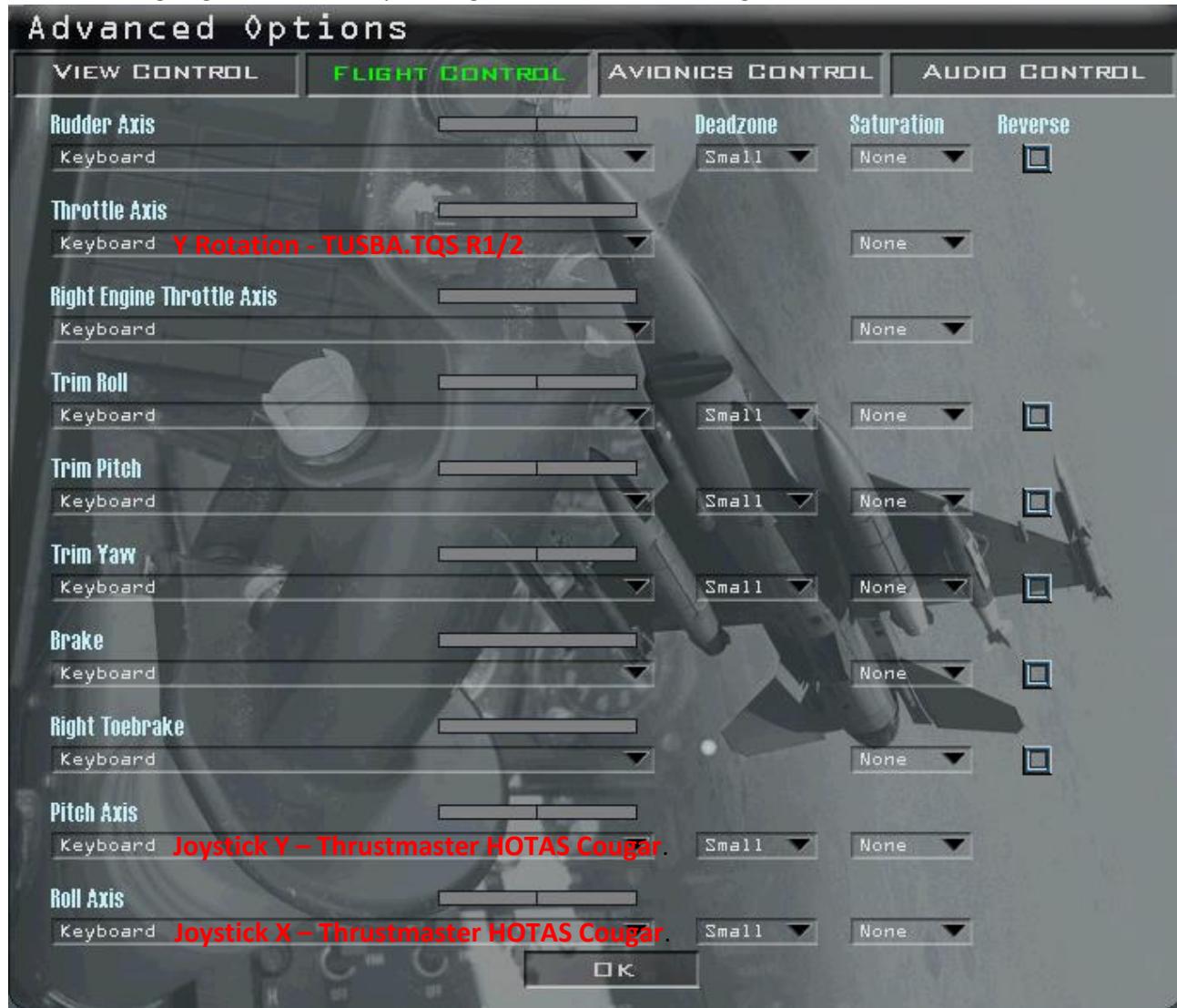


3.3.5 Axis Assignments

If you need help with that refer to [chapter 4.3](#) of this manual.

FLIGHT CONTROL settings:

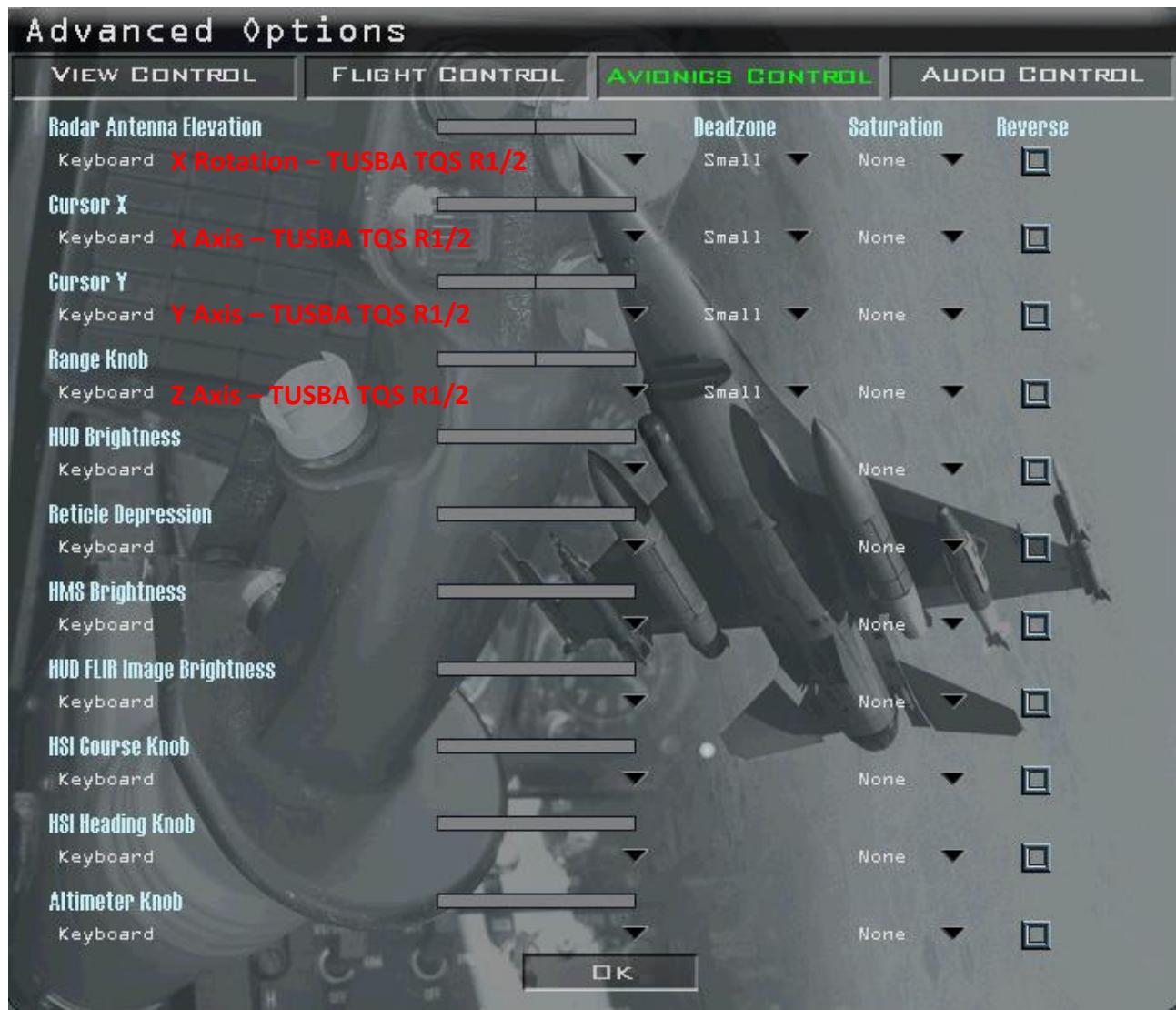
Set the axis of the device as shown in the picture below. You just have to select them from the dropdown list. After assigning an axis test it by moving the axis over its full range. Monitor the axis bar.





AVIONICS CONTROL settings:

Next go to the Avionics Control page and set the axis as shown below and test them.



If all axes have been assigned successfully hit the OK button which brings you back to the Setup – Controllers page.

If an axis is not available from the dropdown menu it is assigned somewhere else. In this case you have to take a look at the other Control pages first. What to do in this case is described in [chapter 4.4](#) of this manual.

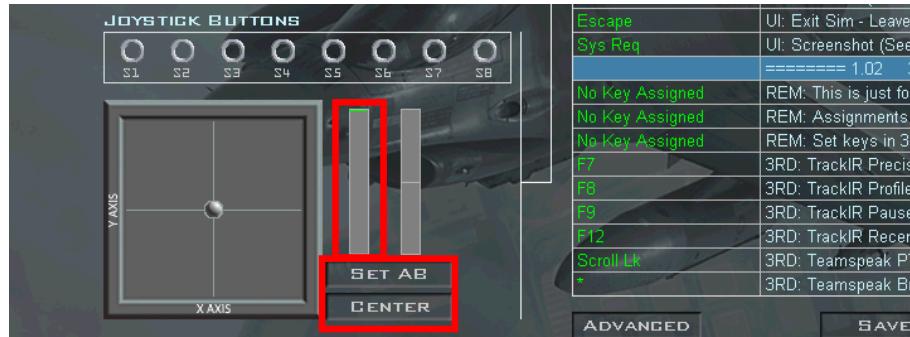
Set afterburner / Recenter:

After all axes have been assigned successfully you should define the afterburner detent. Without doing so you can't use the afterburner in the sim.

Like shown in the screenshot on the next page you have two axis bars. The right one is for the throttle axis. Move your throttle to a position where you want to set the afterburner detent. Then click on SET AB button. This defines the position on the throttle axis where the afterburner kicks in.



It is a good habit to recenter your device by releasing the controller and pressing the CENTER button. The pitch and roll axis of your main input device will then be centred to avoid unwanted shifts in the sim which makes flying the aircraft much more difficult.

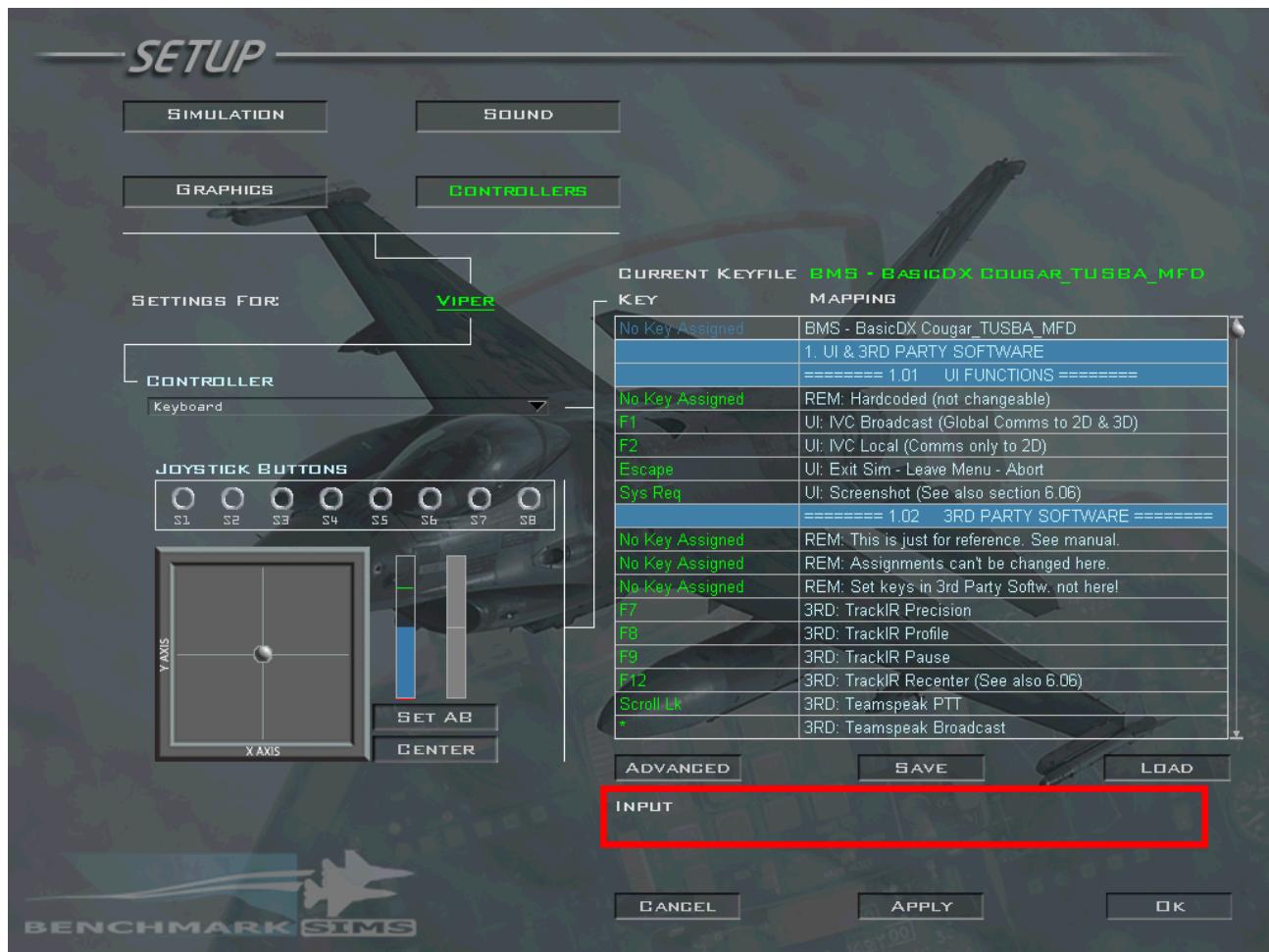


If you need help please refer to [chapter 4.5](#) of this manual.

3.3.6 Test the device buttons

Depending on how many devices you have connected, you should press one button on each device. We assume that you have connected your main device along with the 2 TM MFDs and use one of the default Cougar Stick & TUSBA related key files.

Once you press a button the result will be displayed below the key file content list next to INPUT.



Test the main input device:



Press button „S2 (Pickle)“ on your stick.

The text should read:

INPUT Button 2

STICK: WEAPON RELEASE (Pickle)



Press button „T6 (Uncage)“ on your throttle.

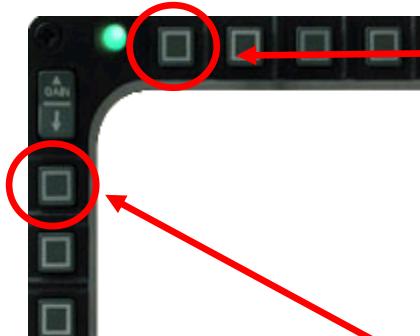
The text should read:

INPUT Button 44

TQS: MAN RANGE Knob - UNCAGE

Test TM Cougar MFDs

If you don't use the TM Cougar MFDs you can skip this part.



Press button „OSB1“ on left MFD.

The text next to INPUT should read:

INPUT Button 65

LMFD: OSB-1 Button - Push

Press button „OSB20“ on right MFD.

The text next to INPUT should read:

INPUT Button 116

RMFD: OSB-20 Button - Push

In case wrong button numbers / functions are shown it is likely that the device order is not recognized correctly by BMS. You can fix that by editing the DeviceSorting.txt located in your .../User/Config folder.

How this is done is described in [chapter 4.6](#) of this manual.

Once the device sorting is done repeat the steps on the previous page. If everything works correctly you are done here.

Test in 3d:

It is unfortunately not possible to test the shifted layer in the ui. You have to test them in 3d. The easiest way is to simply open the training mission 2 (Navigation) as the jet is already airborne.

You can repeat the same steps as shown on the previous page but this time with the functions on the shifted layer. In case you wonder how to activate the shifted layer please read [chapter 4.7](#) of this manual.

It is recommended to use an easy recognizable function e.g. night vision.

And here is the exercise:

Just open the HOTAS Print Layout.pdf look for the function CKPIT: Nightvision – Toggle and try it.

If everything works correctly you have finished your setup. Congratulations.

3.3.7 Troubleshooting

I want to learn more about DX Device buttons and layers:

Read [chapter 4.8](#).

What if I am not happy with the functions assigned to the device?

Read [chapter 4.9](#).

What If I don't have MFDs but other devices?

Read [chapter 4.10](#).

I have a stuck key / can't exit the shifted layer:

Read [chapter 4.11](#).

I want other functions on the POV hat:

Read [chapter 4.12](#).

3.4 WH STICK & COUGAR

3.4.1 Provided Files

This profile consists of the following components:

- BMS - BasicDX WH_Cougar_MFD.key => BMS key file with TM Cougar MFDs
- BMS - BasicDX WH_Cougar.key => BMS key file without TM Cougar MFDs
- DeviceSorting_Example.txt => example of the DX device order
- HOTAS Print Layout.pdf => printable overview of assigned functions
- DX Code Lines.txt => DX code lines only (with MFDs)
- Quick Setup Guide.txt => Short device setup instructions

3.4.2 Device Setup

Driver and Software:

Please make sure you have installed the latest drivers and software. We will not describe how to do this. Please refer to Thrustmaster's installation instructions.

It is assumed that you already know how to setup your **TM Warthog Stick & TM Cougar** in general. It only covers necessary steps to get the provided files up and running.

This profile uses BMS DirectX shifting feature to avoid any emulated keyboard input whenever possible.

We don't provide any profile files (.tmc/.tmm/.tmj). All buttons are available via DX right away and we will assign all functions via DirectX exclusively. BMS recognizes both devices (stick and throttle) as two separate input devices. We don't have to care about T.A.R.G.E.T. / Foxy programming in any way.

If you need / want additional functions provided by T.A.R.G.E.T / Foxy you have to work it out on your own. It is way out of scope for what we try to achieve here.

CCP Settings:

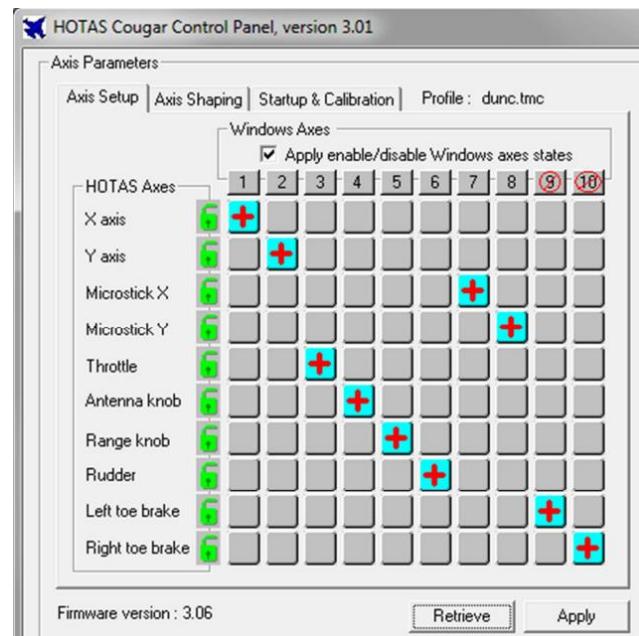
In order for this profile to work, make sure that the axis mapping configuration within your TM Hotas Cougar CCP is setup like this :

Falcon BMS.cfg settings:

Open the Falcon BMS.cfg file which is located in your BMS User\Config folder with a text editor.

Find the setting: **set g_bHotasDgftSelfCancel**. It's set to 0 by default, **please set it to 1**.

Additionally, verify that the setting set **g_nHotasPinkyShiftMagnitude** is set to 256 (default).





3.4.3 Key File

Select one of the two provided key files located in the .../03 HOTAS Setup/ 02 WH Stick & Cougar folder:

- BMS - BasicDX WH_Cougar_MFD.key

Select this one if you have also TM Cougar MFDs. The MFD related DX bindings are already included.

- BMS - BasicDX WH_Cougar.key

Select this one if you don't use TM Cougar MFDs.

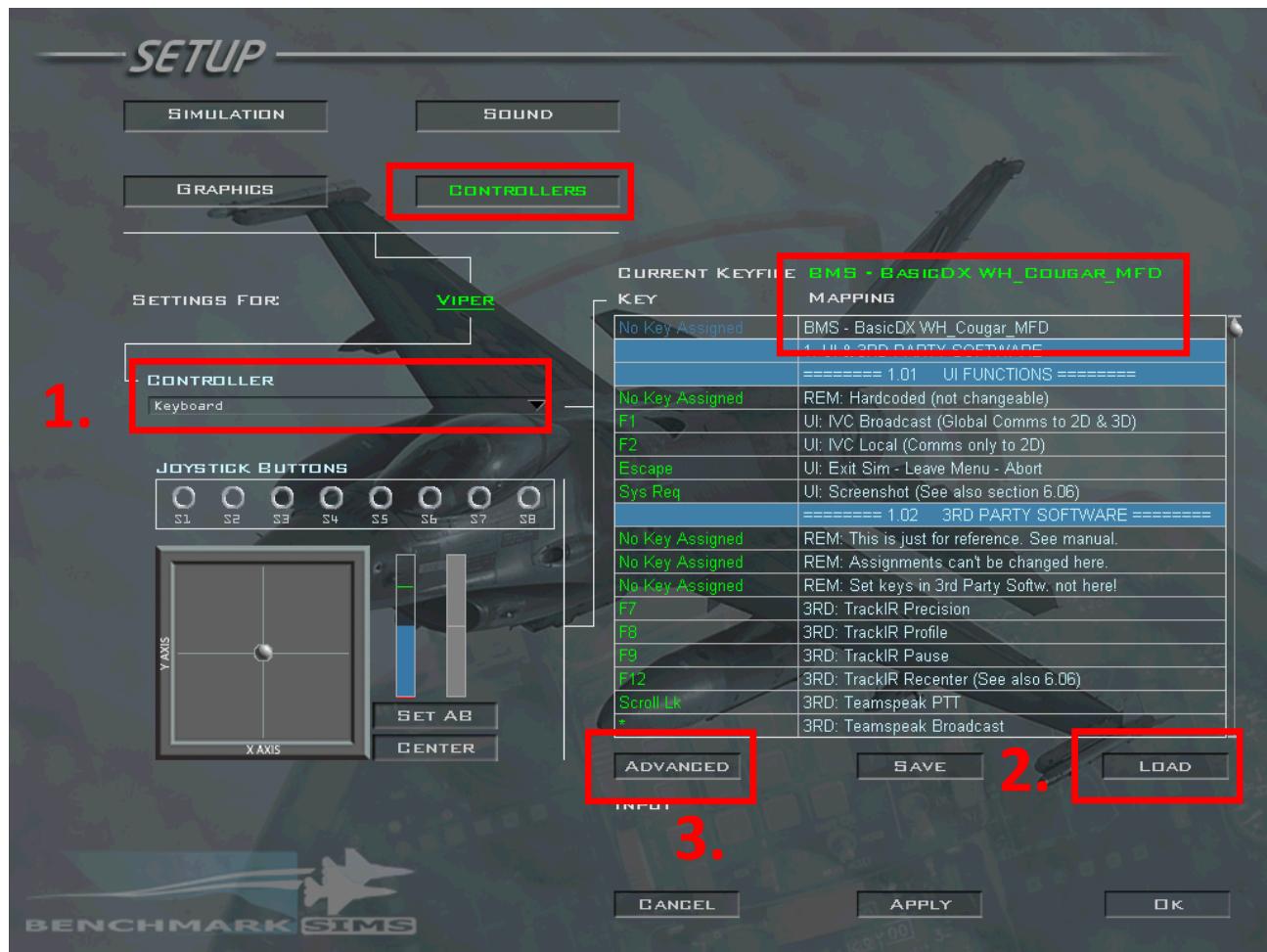
Copy the file of your choice and paste it to the .../User/Config folder.

3.4.4 BMS Setup

Start Falcon BMS and click on SETUP in the top right corner of the main ui:



Once in the setup screen hit the CONTROLLERS button. This opens the Controllers screen shown below:



In this screen you do three things:



1. Select the Main Input Device

Select your main Input device from the drop down list. In this case “**Joystick - HOTAS Warthog**”.

If you need help with that or for further information see [chapter 4.1](#) of this manual.

2. Load the Key File

Click on LOAD button and select the WH Stick & Cougar key file you just pasted to the User/Config folder.

You can verify that the correct key file is loaded on top of the key file content box next to CURRENT KEYFILE. More information about loading key files can be found in [chapter 4.2](#) of this manual.

3. Enter Advanced Options

This opens the Advanced Option pages. You can ignore the AUDIO CONTROL page here. Instead we focus on the VIEW CONTROL, FLIGHT CONTROL and AVIONICS CONTROL settings. In FLIGHT and AVIONICS CONTROL we will do our axis assignments.



VIEW CONTROL settings:

If you have no rudder device connected you should make sure that the “**Enable Roll-linked NWS**” checkbox is active. This will allow you to steer your aircraft on ground with roll axis (left / right) inputs on the stick.

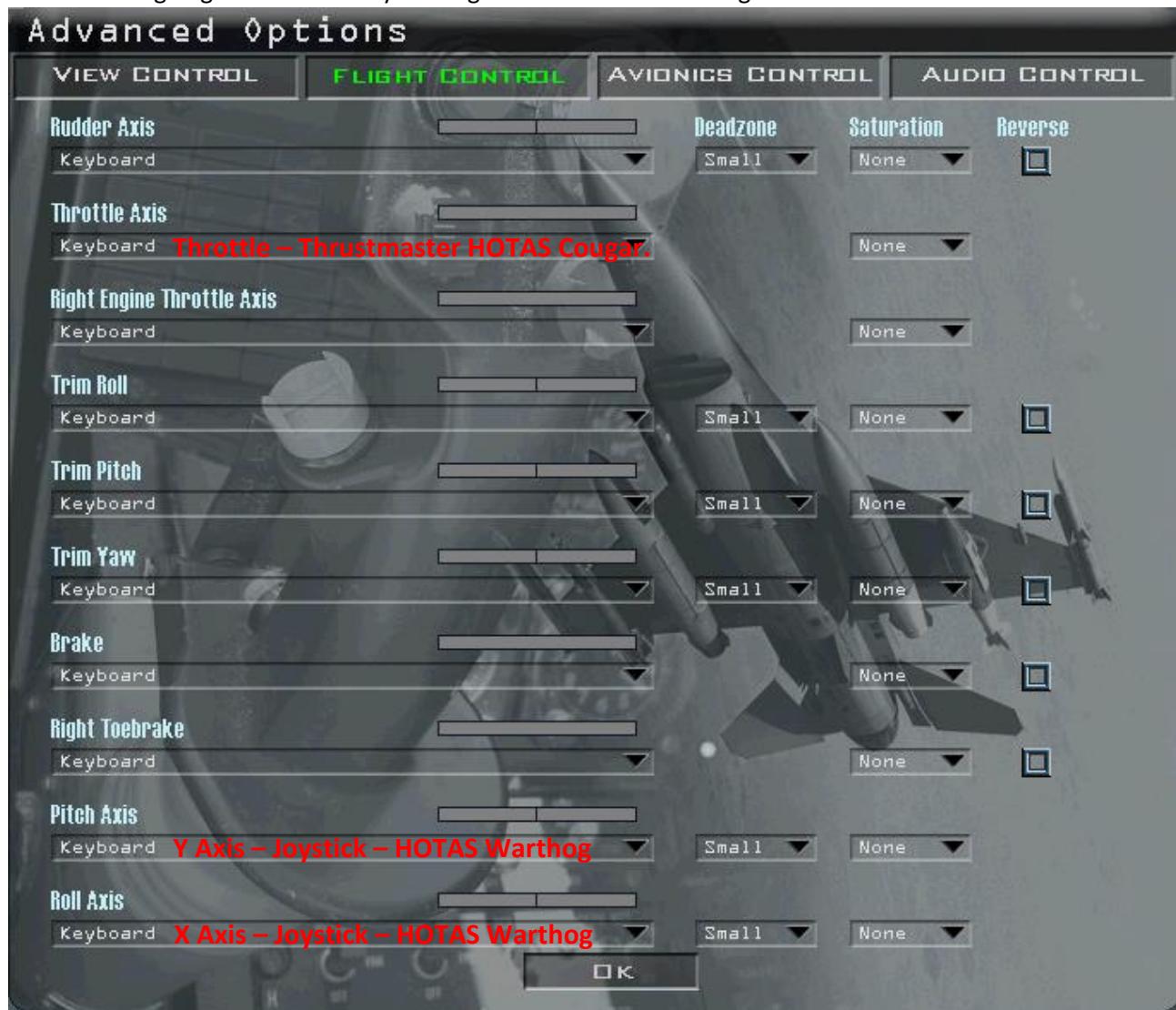


3.4.5 Axis Assignments

If you need help with that refer to [chapter 4.3](#) of this manual.

FLIGHT CONTROL settings:

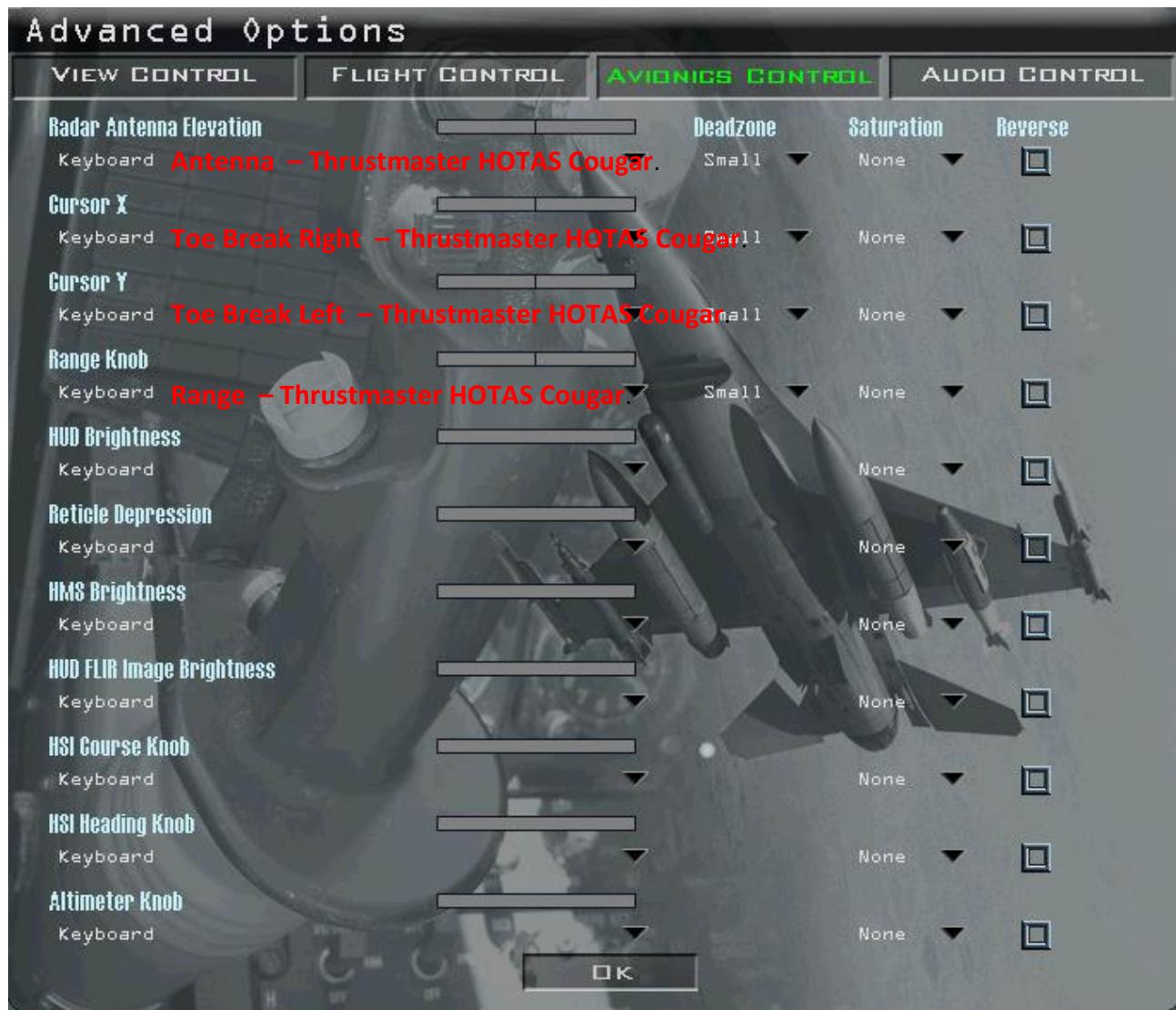
Set the axis of the device as shown in the picture below. You just have to select them from the dropdown list. After assigning an axis test it by moving the axis over its full range. Monitor the axis bar.





AVIONICS CONTROL settings:

Next go to the Avionics Control page and set the axis as shown below and test them.



If all axes have been assigned successfully hit the OK button which brings you back to the Setup – Controllers page.

If an axis is not available from the dropdown menu it is assigned somewhere else. In this case you have to take a look at the other Control pages first. What to do in this case is described in [chapter 4.4](#) of this manual.

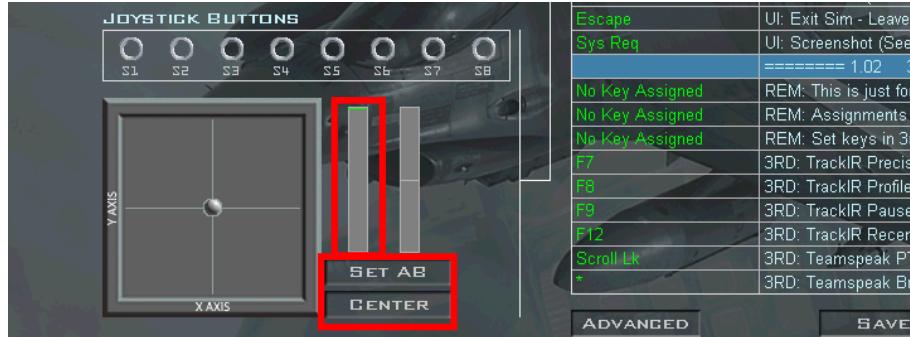
Set afterburner / Recenter:

After all axes have been assigned successfully you should define the afterburner detent. Without doing so you can't use the afterburner in the sim.

Like shown in the screenshot on the next page you have two axis bars. The right one is for the throttle axis. Move your throttle to a position where you want to set the afterburner detent. Then click on SET AB button. This defines the position on the throttle axis where the afterburner kicks in.



It is a good habit to recenter your device by releasing the controller and pressing the CENTER button. The pitch and roll axis of your main input device will then be centred to avoid unwanted shifts in the sim which makes flying the aircraft much more difficult.

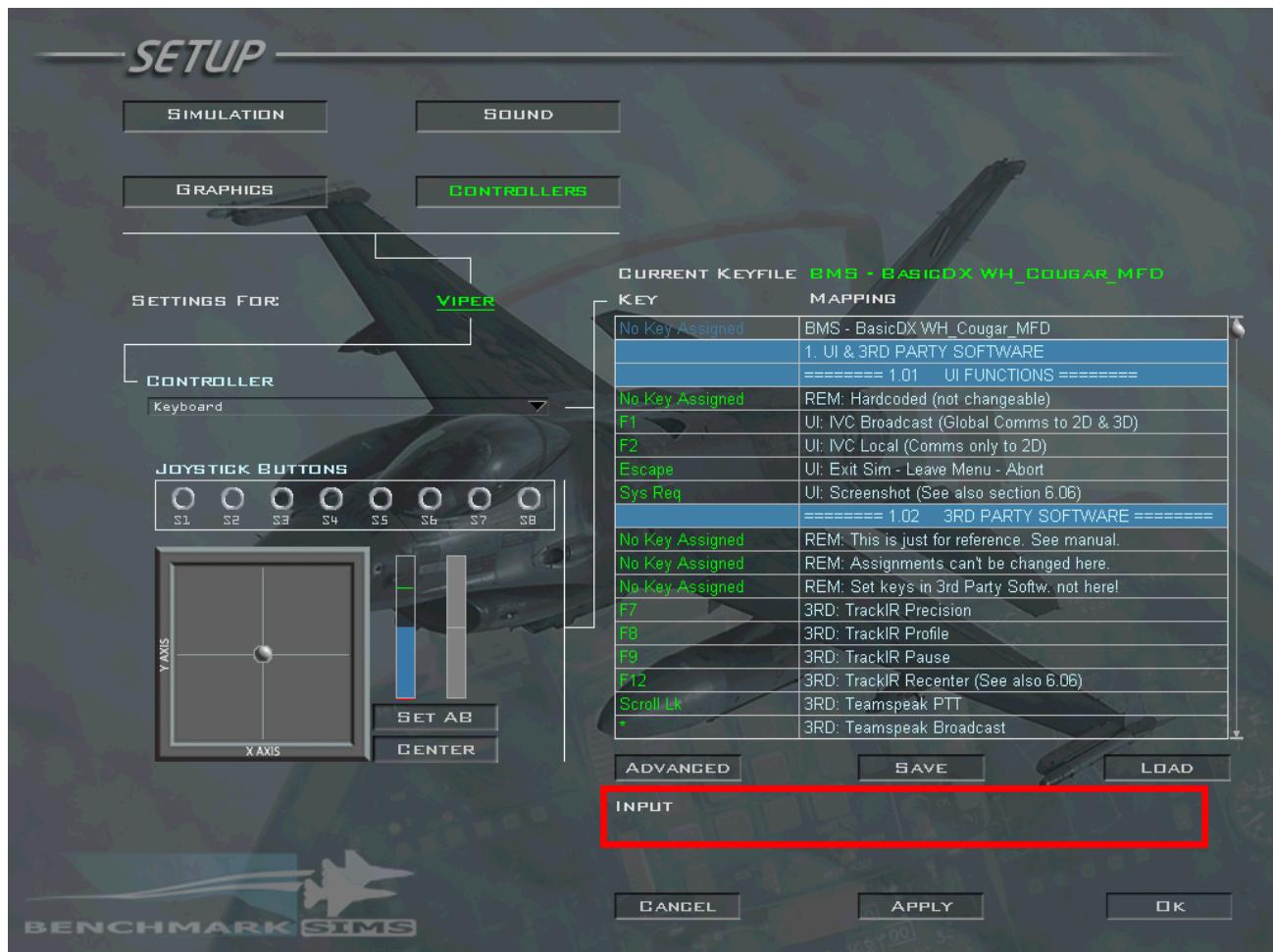


If you need help please refer to [chapter 4.5](#) of this manual.

3.4.6 Test the device buttons

Depending on how many devices you have connected, you should press one button on each device. We assume that you have connected your main device along with the 2 TM MFDs and use one of the default WH Stick & Cougar related key files.

Once you press a button the result will be displayed below the key file content list next to INPUT.



Test the main input device:



Press button „S4“ on your stick.

The text should read:

INPUT Button 4

STICK: PADDLE SWITCH



Press button „T6 (Uncage)“ on your throttle.

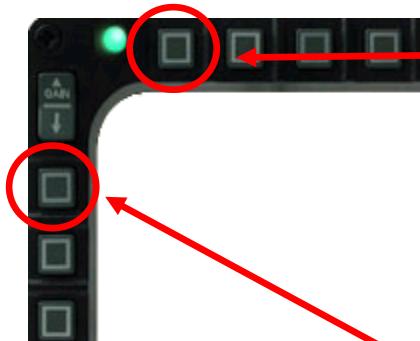
The text should read:

INPUT Button 56

TQS: MAN RANGE Knob - UNCAGE

Test TM Cougar MFDs

If you don't use the TM Cougar MFDs you can skip this part.



Press button „OSB1“ on left MFD.

The text next to INPUT should read:

INPUT Button 65

LMFD: OSB-1 Button - Push

Press button „OSB20“ on right MFD.

The text next to INPUT should read:

INPUT Button 116

RMFD: OSB-20 Button - Push

In case wrong button numbers / functions are shown it is likely that the device order is not recognized correctly by BMS. You can fix that by editing the DeviceSorting.txt located in your .../User/Config folder.

How this is done is described in [chapter 4.6](#) of this manual.

Once the device sorting is done repeat the steps on the previous page. If everything works correctly you are done here.

Test in 3d:

It is unfortunately not possible to test the shifted layer in the ui. You have to test them in 3d. The easiest way is to simply open the training mission 2 (Navigation) as the jet is already airborne.

You can repeat the same steps as shown on the previous page but this time with the functions on the shifted layer. In case you wonder how to activate the shifted layer please read [chapter 4.7](#) of this manual.

It is recommended to use an easy recognizable function e.g. night vision.

And here is the exercise:

Just open the HOTAS Print Layout.pdf look for the function CKPIT: Nightvision – Toggle and try it.

If everything works correctly you have finished your setup. Congratulations.

3.4.7 Troubleshooting

I want to learn more about DX Device buttons and layers:

Read [chapter 4.8](#).

What if I am not happy with the functions assigned to the device?

Read [chapter 4.9](#).

What If I don't have MFDs but other devices?

Read [chapter 4.10](#).

I have a stuck key / can't exit the shifted layer:

Read [chapter 4.11](#).

I want other functions on the POV hat:

Read [chapter 4.12](#).



3.5 WH STICK & TUSBA

3.5.1 Provided Files

This profile consists of the following components:

- BMS - BasicDX WH_TUSBA_MFD.key => BMS key file with TM Cougar MFDs
- BMS - BasicDX WH_TUSBA.key => BMS key file without TM Cougar MFDs
- DeviceSorting_Example.txt => example of the DX device order
- HOTAS Print Layout.pdf => printable overview of assigned functions
- DX Code Lines.txt => DX code lines only (with MFDs)
- Quick Setup Guide.txt => Short device setup instructions

3.5.2 Device Setup

Driver and Software:

Please make sure you have installed the latest drivers and software. We will not describe how to do this. Please refer to Thrustmaster's installation instructions.

It is assumed that you already know how to setup your **TM Warthog Stick & TUSBA R1/R2** in general. It only covers necessary steps to get the provided files up and running.

This profile uses BMS DirectX shifting feature to avoid any emulated keyboard input whenever possible.

We don't provide any profile files (.tmc/.tmm/.tmj). All buttons are available via DX right away and we will assign all functions via DirectX exclusively. BMS recognizes both devices (stick and throttle) as two separate input devices. We don't have to care about T.A.R.G.E.T. / Foxy programming in any way.

If you need / want additional functions provided by T.A.R.G.E.T / Foxy you have to work it out on your own. It is way out of scope for what we try to achieve here.

This profile works for both, TUSBA R1 & R2.

3.5.3 Key File

Select one of the two provided key files located in the .../03 HOTAS Setup/ 02 WH Stick & TUSBA folder:

- BMS - BasicDX WH_TUSBA_MFD.key
Select this one if you have also TM Cougar MFDs. The MFD related DX bindings are already included.
- BMS - BasicDX WH_TUSBA.key
Select this one if you don't use TM Cougar MFDs.

Copy the file of your choice and paste it to the .../User/Config folder.



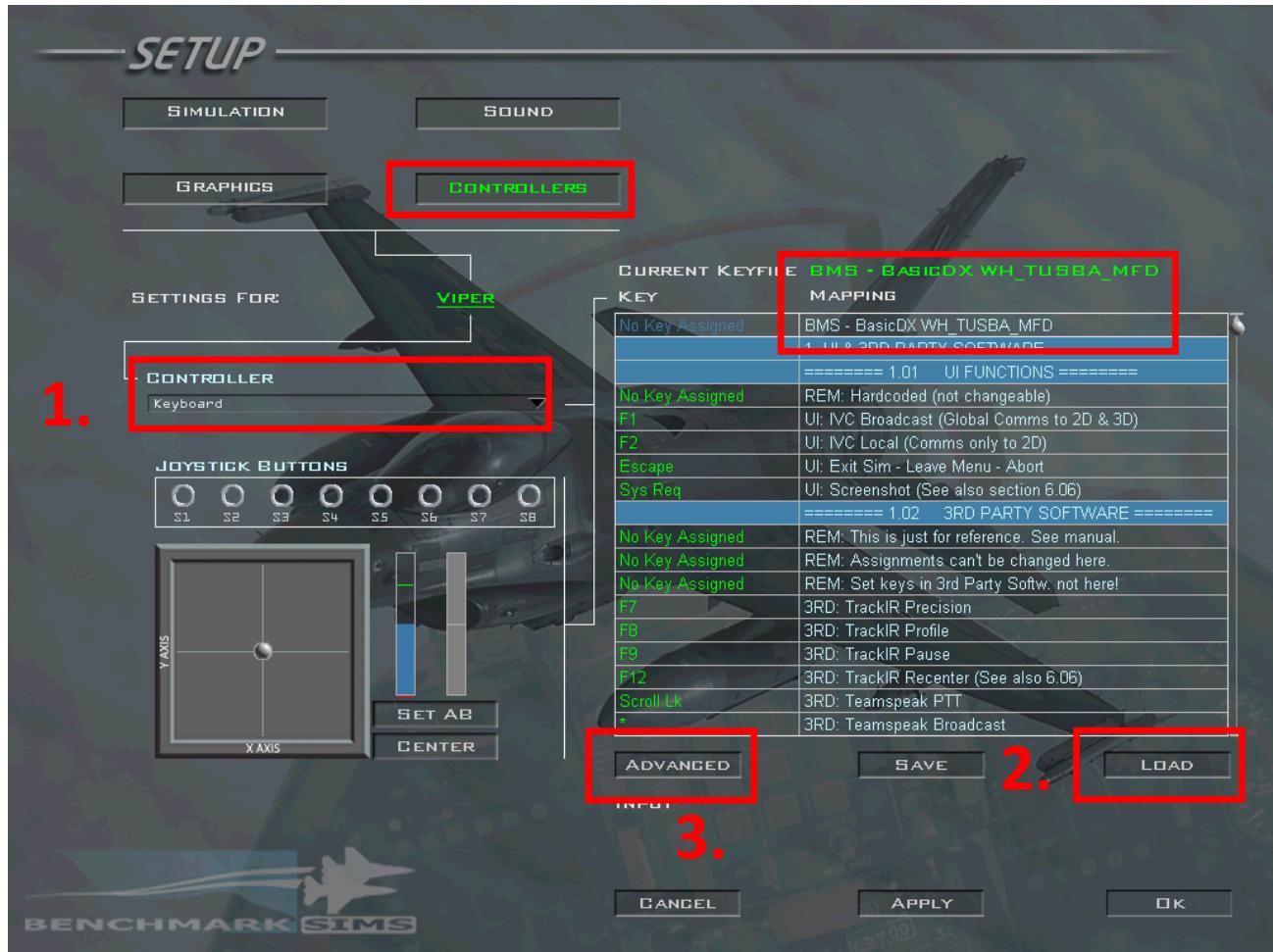


3.5.4 BMS Setup

Start Falcon BMS and click on SETUP in the top right corner of the main ui:



Once in the setup screen hit the CONTROLLERS button. This opens the Controllers screen shown below:



In this screen you do three things:

- Select the Main Input Device

Select your main Input device from the drop down list. In this case “**Joystick - HOTAS Warthog**”.

If you need help with that or for further information see [chapter 4.1](#) of this manual.

- Load the Key File

Click on LOAD button and select the WH Stick & TUSBA key file you just pasted to the User/Config folder.

You can verify that the correct key file is loaded on top of the key file content box next to CURRENT KEYFILE. More information about loading key files can be found in [chapter 4.2](#) of this manual.



6. Enter Advanced Options

This opens the Advanced Option pages. You can ignore the AUDIO CONTROL page here. Instead we focus on the VIEW CONTROL, FLIGHT CONTROL and AVIONICS CONTROL settings. In FLIGHT and AVIONICS CONTROL we will do our axis assignments.



VIEW CONTROL settings:

If you have no rudder device connected you should make sure that the “**Enable Roll-linked NWS**” checkbox is active. This will allow you to steer your aircraft on ground with roll axis (left / right) inputs on the stick.



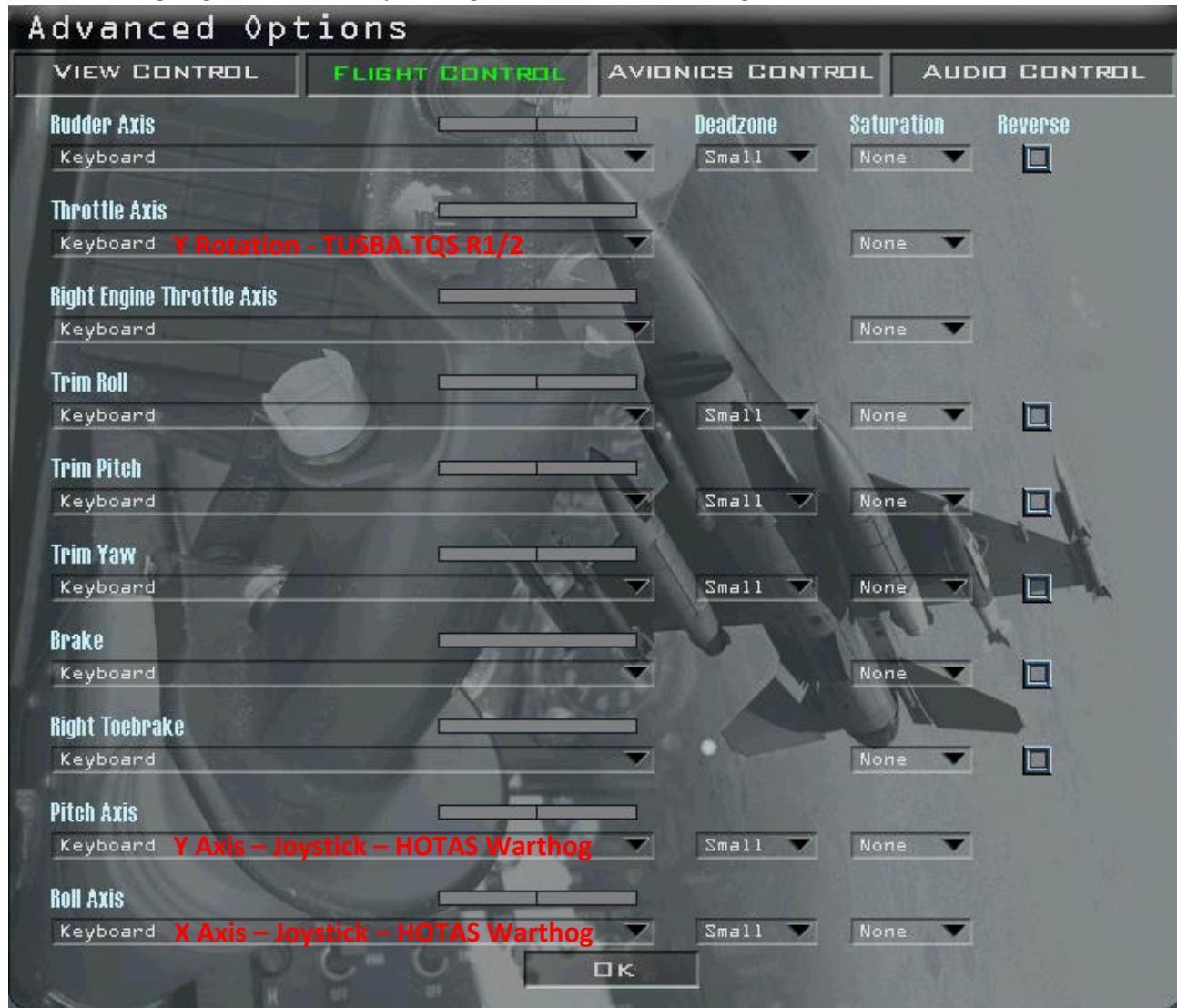


3.5.5 Axis Assignments

If you need help with that refer to [chapter 4.3](#) of this manual.

FLIGHT CONTROL settings:

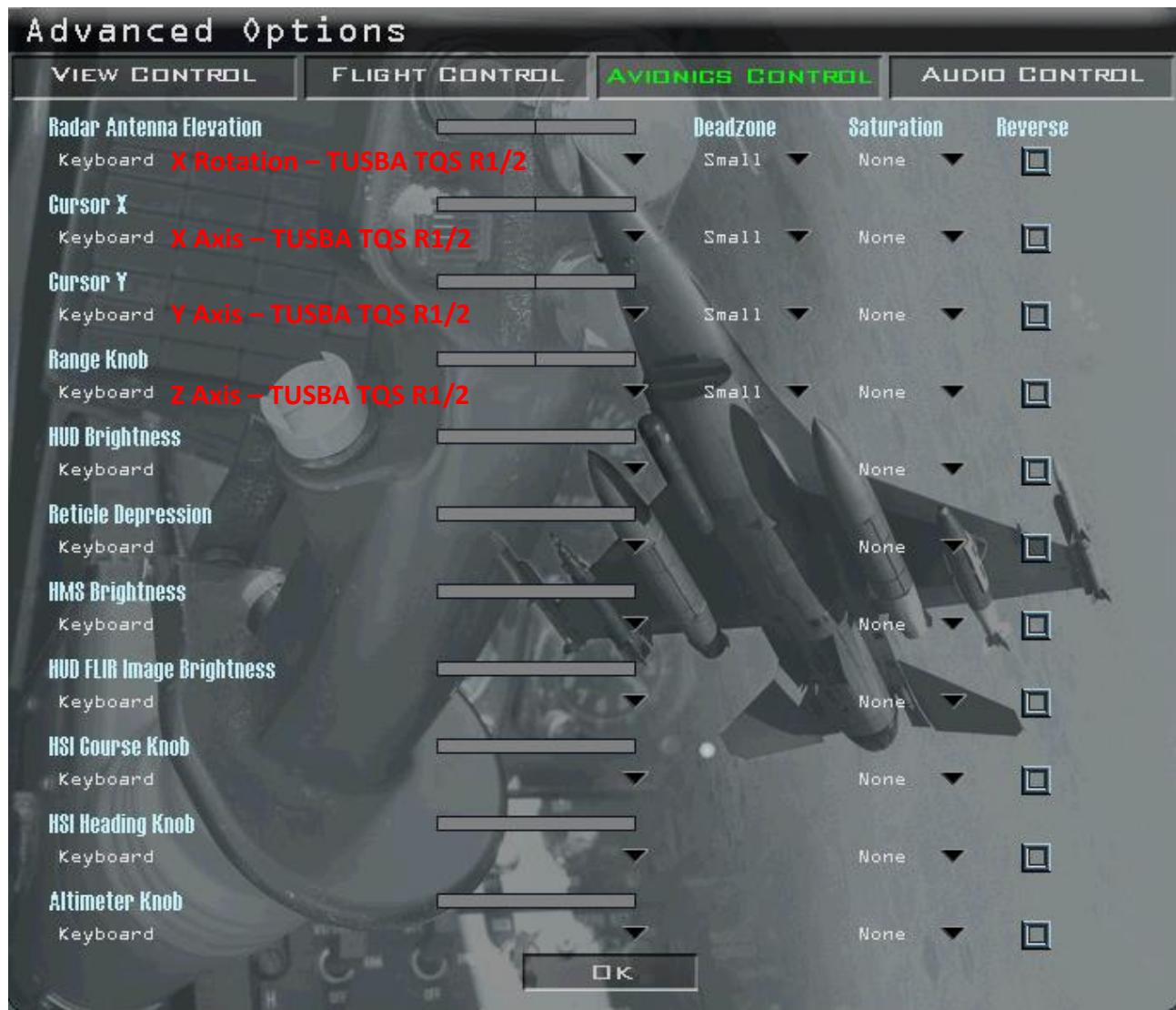
Set the axis of the device as shown in the picture below. You just have to select them from the dropdown list. After assigning an axis test it by moving the axis over its full range. Monitor the axis bar.





AVIONICS CONTROL settings:

Next go to the Avionics Control page and set the axis as shown below and test them.



If all axes have been assigned successfully hit the OK button which brings you back to the Setup – Controllers page.

If an axis is not available from the dropdown menu it is assigned somewhere else. In this case you have to take a look at the other Control pages first. What to do in this case is described in [chapter 4.4](#) of this manual.

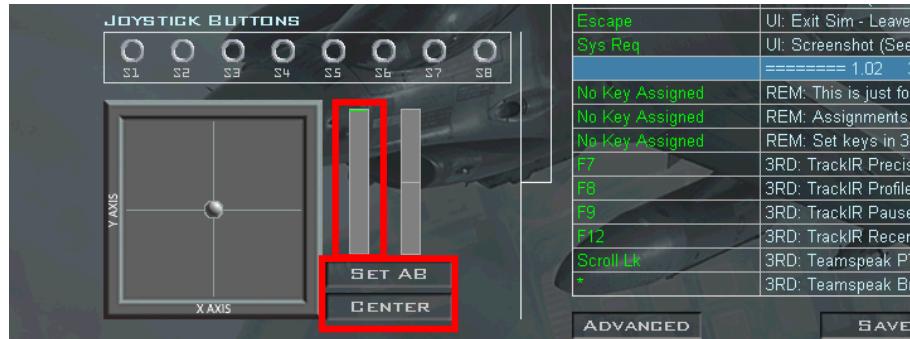
Set afterburner / Recenter:

After all axes have been assigned successfully you should define the afterburner detent. Without doing so you can't use the afterburner in the sim.

Like shown in the screenshot on the next page you have two axis bars. The right one is for the throttle axis. Move your throttle to a position where you want to set the afterburner detent. Then click on SET AB button. This defines the position on the throttle axis where the afterburner kicks in.



It is a good habit to recenter your device by releasing the controller and pressing the CENTER button. The pitch and roll axis of your main input device will then be centred to avoid unwanted shifts in the sim which makes flying the aircraft much more difficult.

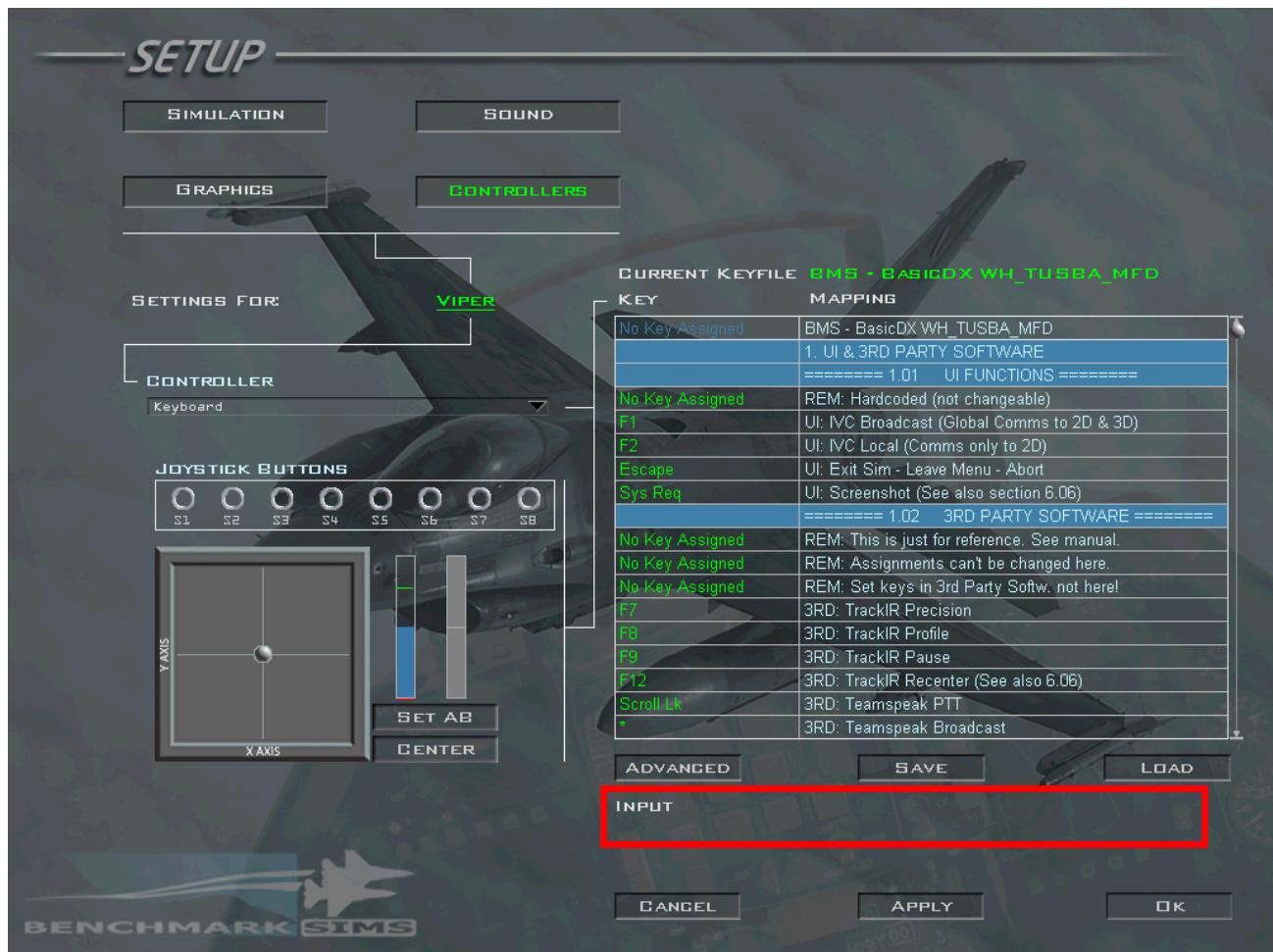


If you need help please refer to [chapter 4.5](#) of this manual.

3.5.6 Test the device buttons

Depending on how many devices you have connected, you should press one button on each device. We assume that you have connected your main device along with the 2 TM MFDs and use one of the default WH Stick & TUSBA related key files.

Once you press a button the result will be displayed below the key file content list next to INPUT.



Test the main input device:



Press button „S4“ on your stick.

The text should read:

INPUT Button 4

STICK: PADDLE SWITCH



Press button „Uncage“ on your throttle.

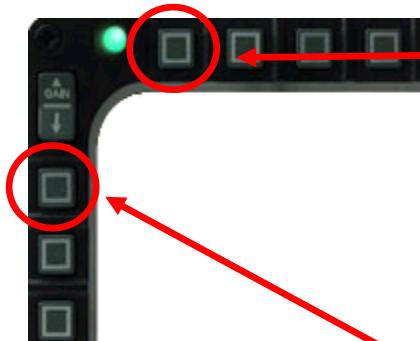
The text should read:

INPUT Button 44

TQS: MAN RANGE Knob - UNCAGE

Test TM Cougar MFDs

If you don't use the TM Cougar MFDs you can skip this part.



Press button „OSB1“ on left MFD.

The text next to INPUT should read:

INPUT Button 65

LMFD: OSB-1 Button - Push

Press button „OSB20“ on right MFD.

The text next to INPUT should read:

INPUT Button 116

RMFD: OSB-20 Button - Push

In case wrong button numbers / functions are shown it is likely that the device order is not recognized correctly by BMS. You can fix that by editing the DeviceSorting.txt located in your .../User/Config folder.

How this is done is described in [chapter 4.6](#) of this manual.

Once the device sorting is done repeat the steps on the previous page. If everything works correctly you are done here.

Test in 3d:

It is unfortunately not possible to test the shifted layer in the ui. You have to test them in 3d. The easiest way is to simply open the training mission 2 (Navigation) as the jet is already airborne.

You can repeat the same steps as shown on the previous page but this time with the functions on the shifted layer. In case you wonder how to activate the shifted layer please read [chapter 4.7](#) of this manual.

It is recommended to use an easy recognizable function e.g. night vision.

And here is the exercise:

Just open the HOTAS Print Layout.pdf look for the function CKPIT: Nightvision – Toggle and try it.

If everything works correctly you have finished your setup. Congratulations.

3.5.7 Troubleshooting

I want to learn more about DX Device buttons and layers:

Read [chapter 4.8](#).

What if I am not happy with the functions assigned to the device?

Read [chapter 4.9](#).

What If I don't have MFDs but other devices?

Read [chapter 4.10](#).

I have a stuck key / can't exit the shifted layer:

Read [chapter 4.11](#).

I want other functions on the POV hat:

Read [chapter 4.12](#).



3.6 CH FS&PT SETUP

3.6.1 Provided Files

This profile consists of the following components:

- BMS CH FS&PT_DX.cms/.map => CH Control Manager profile file
- BMS - BasicDX CH FS&PT_MFD.key => BMS key file with TM Cougar MFDs
- BMS - BasicDX CH FS&PT.key => BMS key file without TM Cougar MFDs
- DeviceSorting_Example.txt => example of the DX device order
- HOTAS Print Layout.pdf => printable overview of assigned functions
- DX Code Lines.txt => DX code lines only (with MFDs)
- Quick Setup Guide.txt => Short device setup instructions

3.6.2 Device Setup

Driver and Software:

Please make sure you have installed the latest drivers and CH Control Manager software. We will not describe how to do this. Please refer to CH's installation instructions.

It is assumed that you already know how to setup your CH FS&PT in general (i.e. load profiles). It only covers necessary steps to get the provided files up and running.

This profile uses BMS DirectX shifting feature to avoid any emulated keyboard input whenever possible.

Loading the device Profile:

Not all buttons are available as pure DX buttons right away, if you don't tell the device to handle them like that. In this case this is true for the POV hat on the throttle. So before the device can be set up with DX via the key file some profile settings have to be done first.

We provide .cms / .map files which include all necessary changes to run your device with DirectX bindings. Before you start BMS you must download the profile the **BMS CH FS&PT_DX.cms & .map** to the devices.

If you want to learn more about the specific settings in this profile please have a look at CH Device Specifics chapter later in this manual.

Important note:

CH Control Manager must be started and placed into mapped mode before starting Falcon BMS or Falcon BMS will forget axis assignments.

So, make sure this option is active before starting Falcon BMS. The button should look like this:



Please keep in mind that both controllers will be identified as CH Control Manager Device 1 (Fighterstick) and CH Control Manager Device 2 (Pro Throttle) rather than CH Fighterstick USB and CH Pro Throttle USB.





3.6.3 Key File

Select one of the two provided key files located in the .../03 HOTAS Setup/CH FS&PT folder:

- BMS - BasicDX CH FS&PT_MFD.key

Select this one if you have also TM Cougar MFDs. The MFD related DX bindings are already included.

- BMS - BasicDX CH FS&PT.key

Select this one if you don't use TM Cougar MFDs.

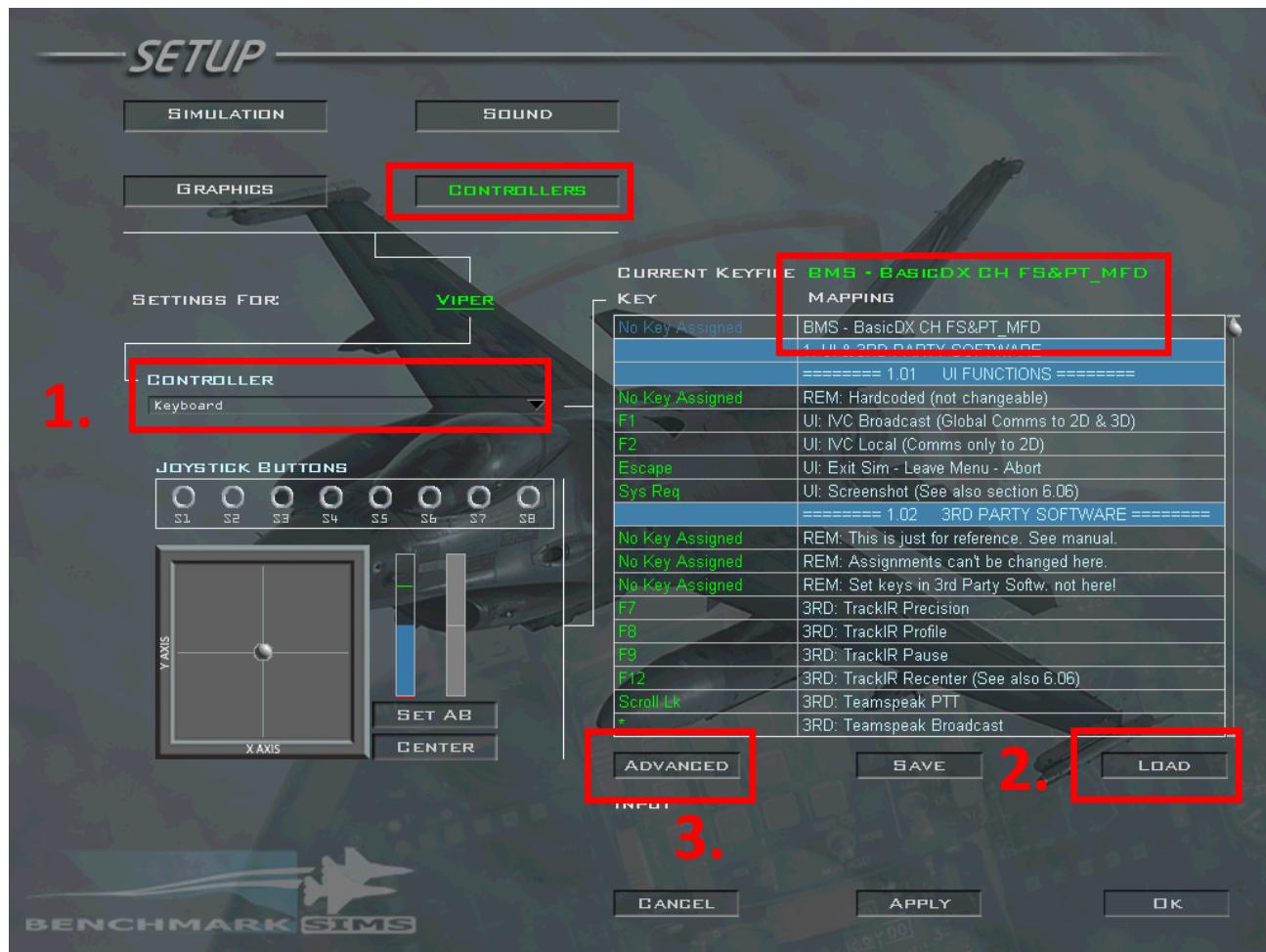
Copy the file of your choice and paste it to the .../User/Config folder.

3.6.4 BMS Setup

Start Falcon BMS and click on SETUP in the top right corner of the main ui:



Once in the setup screen hit the CONTROLLERS button. This opens the Controllers screen shown below:



In this screen you do three things:

- Select the Main Input Device

Select your main Input device from the drop down list. In this case “CH Control Manager Device 1”.

If you need help with that or for further information see [chapter 4.1](#) of this manual.

- Load the Key File

Click on LOAD button and select the CH FS&PT key file you just pasted to the User/Config folder.

You can verify that the correct key file is loaded on top of the key file content box next to CURRENT KEYFILE.

More information about loading key files can be found in [chapter 4.2](#) of this manual.

- Enter Advanced Options

This opens the Advanced Options pages. You can ignore the AUDIO CONTROL page here. Instead we focus on the VIEW CONTROL, FLIGHT CONTROL and AVIONICS CONTROL settings. In FLIGHT and AVIONICS CONTROL we will do our axis assignments.



VIEW CONTROL settings:

If you have no rudder device connected you should make sure that the “Enable Roll-linked NWS” checkbox is active. This will allow you to steer your aircraft on ground with roll axis (left / right) inputs on the stick.

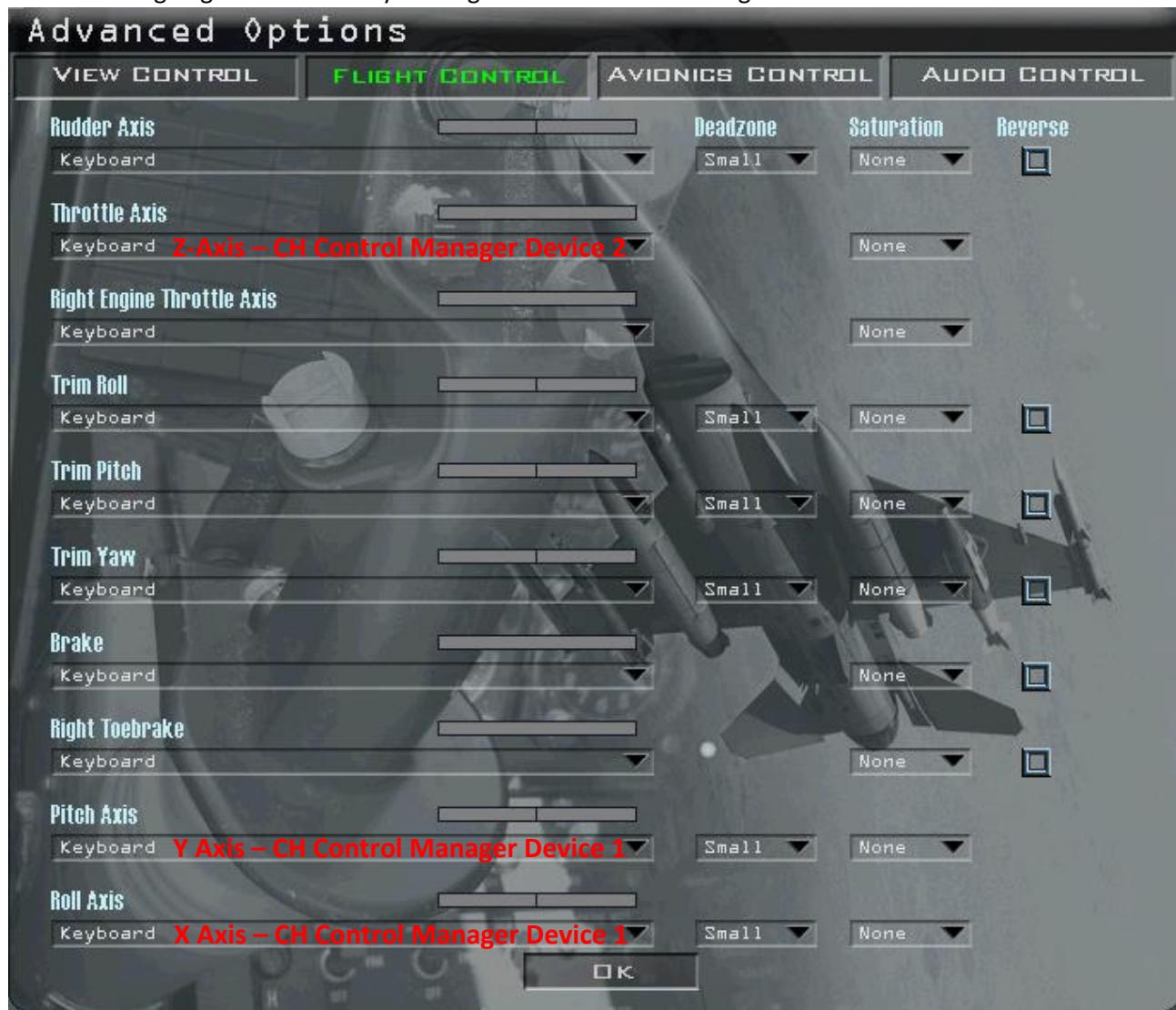


3.6.5 Axis Assignments

If you need help with that refer to [chapter 4.3](#) of this manual.

FLIGHT CONTROL settings:

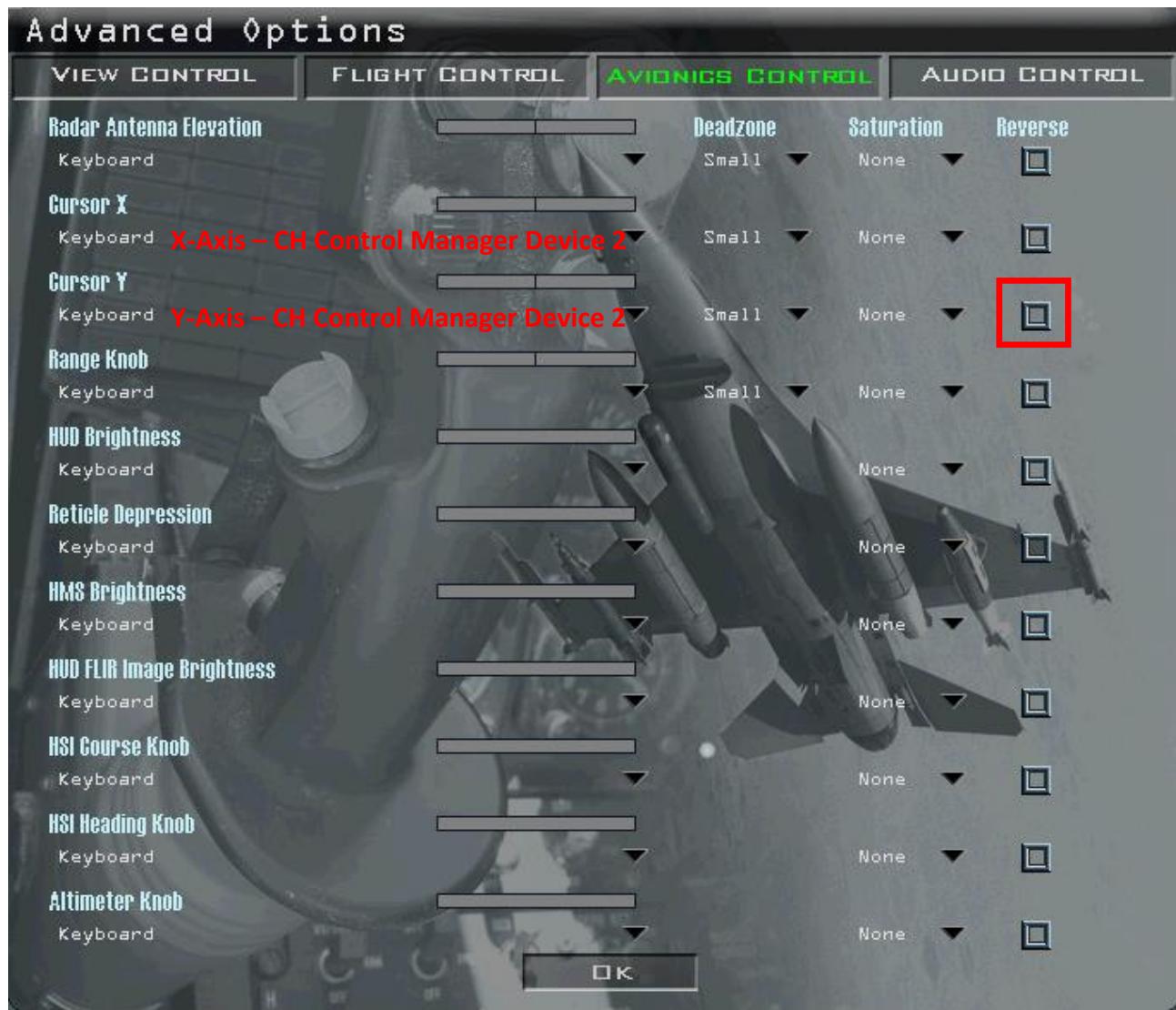
Set the axis of the device as shown in the picture below. You just have to select them from the dropdown list. After assigning an axis test it by moving the axis over its full range. Monitor the axis bar.





AVIONICS CONTROL settings:

Next go to the Avionics Control page and set the axis as shown below and test them.



For the y-axis you have to check the Reverse checkbox.

If all axes have been assigned successfully hit the OK button which brings you back to the Setup – Controllers page.

If an axis is not available from the dropdown menu it is assigned somewhere else. In this case you have to take a look at the other Control pages first. What to do in this case is described in [chapter 4.4](#) of this manual.

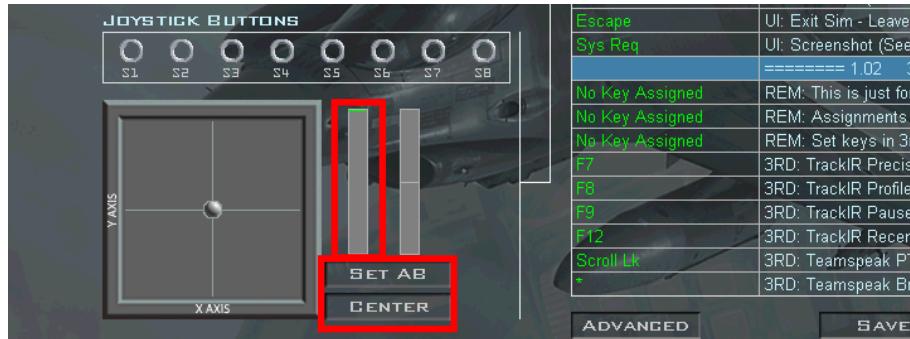
Set afterburner / Recenter:

After all axes have been assigned successfully you should define the afterburner detent. Without doing so you can't use the afterburner in the sim.

Like shown in the screenshot on the next page you have two axis bars. The right one is for the throttle axis. Move your throttle to a position where you want to set the afterburner detent. Then click on SET AB button. This defines the position on the throttle axis where the afterburner kicks in.



It is a good habit to recenter your device by releasing the controller and pressing the CENTER button. The pitch and roll axis of your main input device will then be centred to avoid unwanted shifts in the sim which makes flying the aircraft much more difficult.

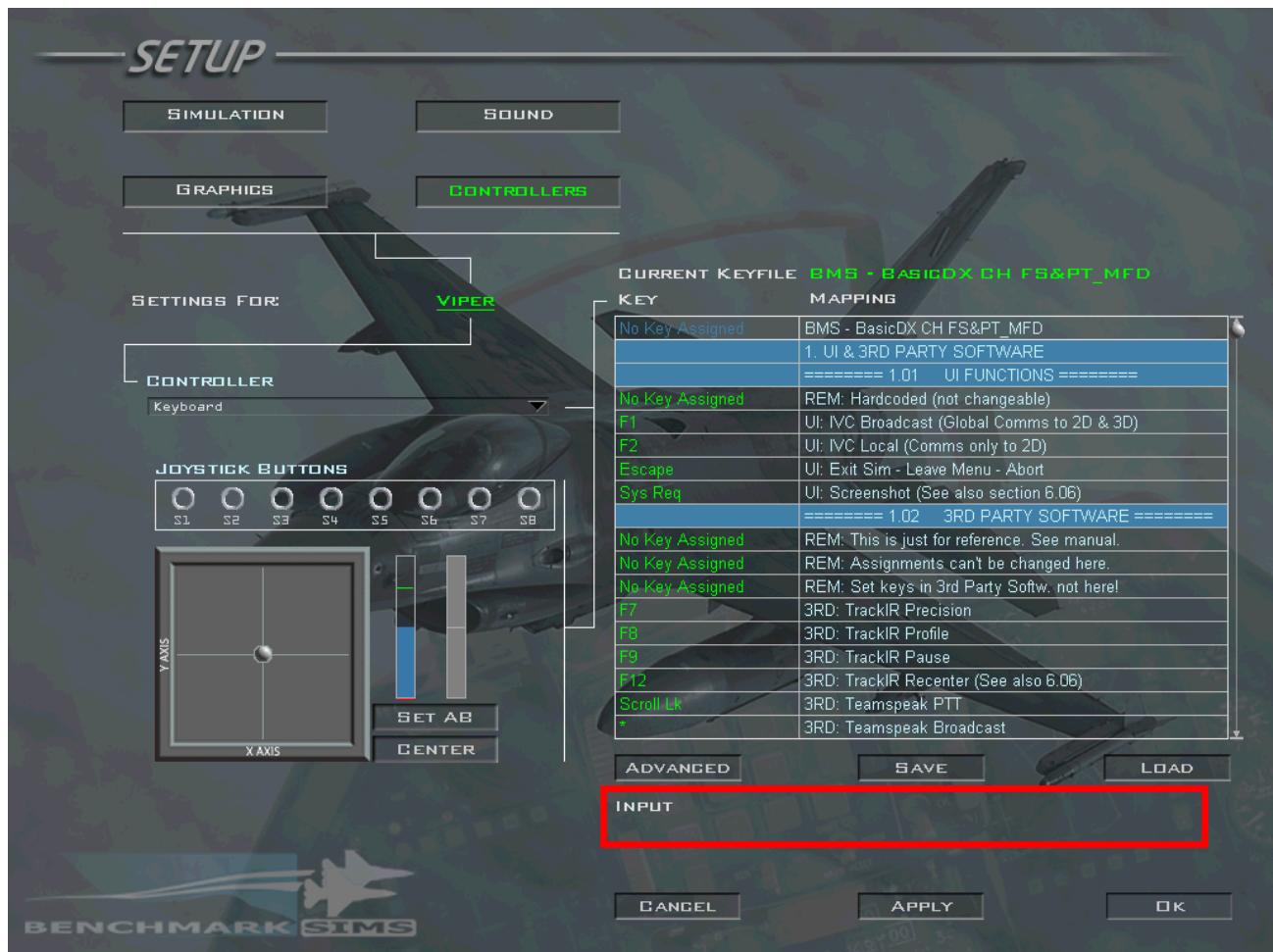


If you need help please refer to [chapter 4.5](#) of this manual.

3.6.6 Test the device buttons

Depending on how many devices you have connected, you should press one button on each device. We assume that you have connected your main device along with the 2 TM MFDs and use one of the default CH FS&PT related key files.

Once you press a button the result will be displayed below the key file content list next to INPUT.



Test the main input device:

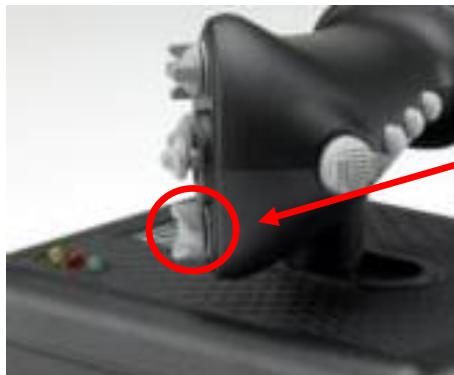


Press button „B2“ on your stick.

The text should read:

INPUT Button 2

STICK: WEAPON RELEASE (Pickle)



Press button „Hat 3 up“ on your throttle.

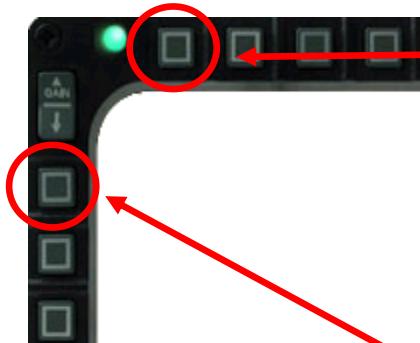
The text should read:

INPUT Button 48

TQS: MAN RANGE Knob - UNCAGE

Test TM Cougar MFDs

If you don't use the TM Cougar MFDs you can skip this part.



Press button „OSB1“ on left MFD.

The text next to INPUT should read:

INPUT Button 65

LMFD: OSB-1 Button - Push

Press button „OSB20“ on right MFD.

The text next to INPUT should read:

INPUT Button 116

RMFD: OSB-20 Button - Push

In case wrong button numbers / functions are shown it is likely that the device order is not recognized correctly by BMS. You can fix that by editing the DeviceSorting.txt located in your .../User/Config folder.

How this is done is described in [chapter 4.6](#) of this manual.

Once the device sorting is done repeat the steps on the previous page. If everything works correctly you are done here.

Test in 3d:

It is unfortunately not possible to test the shifted layer in the ui. You have to test them in 3d. The easiest way is to simply open the training mission 2 (Navigation) as the jet is already airborne.

You can repeat the same steps as shown on the previous page but this time with the functions on the shifted layer. In case you wonder how to activate the shifted layer please read [chapter 4.7](#) of this manual.

It is recommended to use an easy recognizable function e.g. night vision.

And here is the exercise:

Just open the HOTAS Print Layout.pdf look for the function CKPIT: Nightvision – Toggle and try it.

If everything works correctly you have finished your setup. Congratulations.

3.6.7 Troubleshooting

I want to learn more about DX Device buttons and layers:

Read [chapter 4.8](#).

What if I am not happy with the functions assigned to the device?

Read [chapter 4.9](#).

What If I don't have MFDs but other devices?

Read [chapter 4.10](#).

I have a stuck key / can't exit the shifted layer:

Read [chapter 4.11](#).

I want other functions on the POV hat:

Read [chapter 4.12](#).



3.6.8 Notes about CH Files

The following notes are basically a copy and paste from the CH Fighterstick and Pro Throttle HOTAS DX Setup guide written by **Red Beard** back in 2013. He provided all necessary files and instructions and allowed us to include his work to BMS back then. All credits should go to him.

Choosing a controller setup:

There are two options for setting up the controllers. The recommended option is to use the CH Control Manager to program the throttle so the POV hat may be used. The second option is to utilize the controllers without programming them. The default setup uses CH Control Manager.

Using a CH Control Manager profile has both good and bad points associated with it. On the good side, it makes the throttle POV hat available for use within Falcon BMS and this allows a more natural layout of functionality. On the bad side, it requires the CH Control Manager be started and placed in mapped mode prior to starting Falcon BMS. If this does not happen, Falcon BMS will forget the axis assignments for your controllers and you will have to redefine them after starting CH Control Manager and setting mapped mode.

It is quite possible to use the Fighterstick and ProThrottle without programming. On the good side, this is the easiest solution and offers a reliable setup you can depend on every time you start Falcon BMS. On the bad side, it has less buttons and hats that may be used to configure the throttle and some functionality will likely need to be moved to other, less natural locations.

The choice of setup is yours, though the default DX assignments expect to use the POV hat.

Option 1: Program the throttle using CH Control Manager:

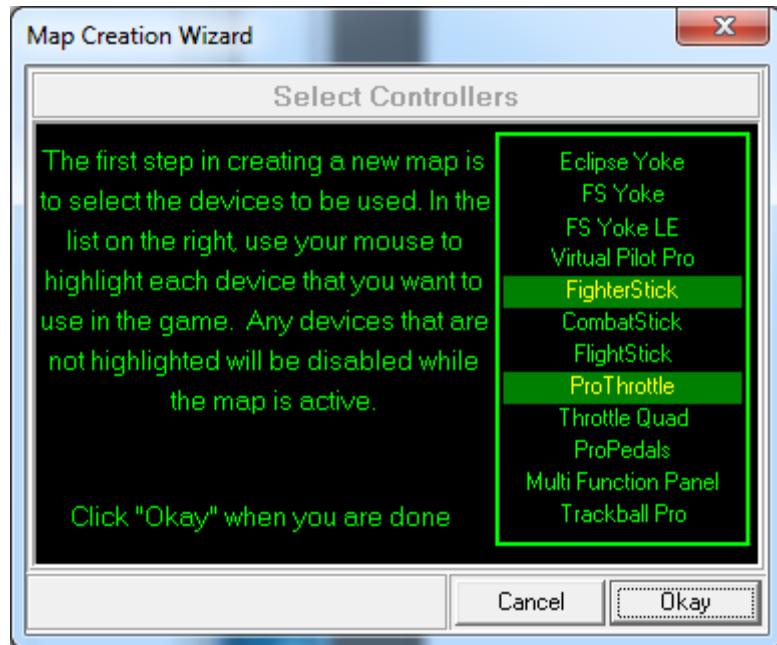
There is very little configuration required of the Fighterstick and Pro Throttle in order to use them as a HOTAS configuration in Falcon BMS. This section walks through the configuration.

If you do not already have CH Control Manager, it can be downloaded from the CH web site. As there is very little required of this profile, we will create it from scratch.

1. Start the CH Control Manager.



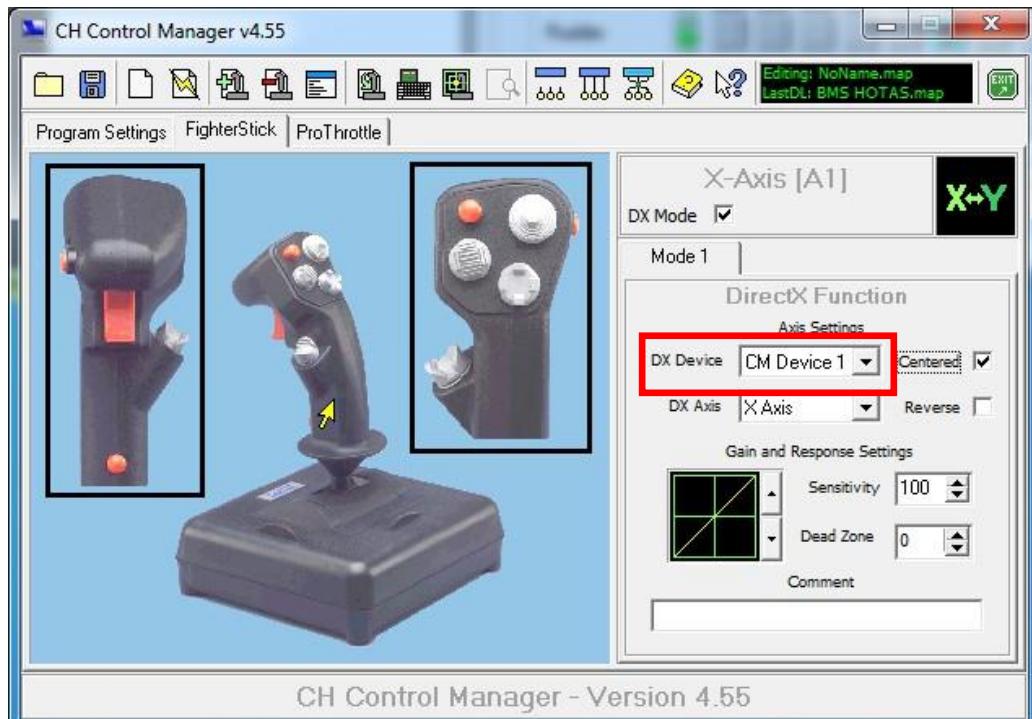
2. Click the Map Wizard tool (sheet with the lightning bolt). Then select the Fighterstick and Pro Throttle as your devices.

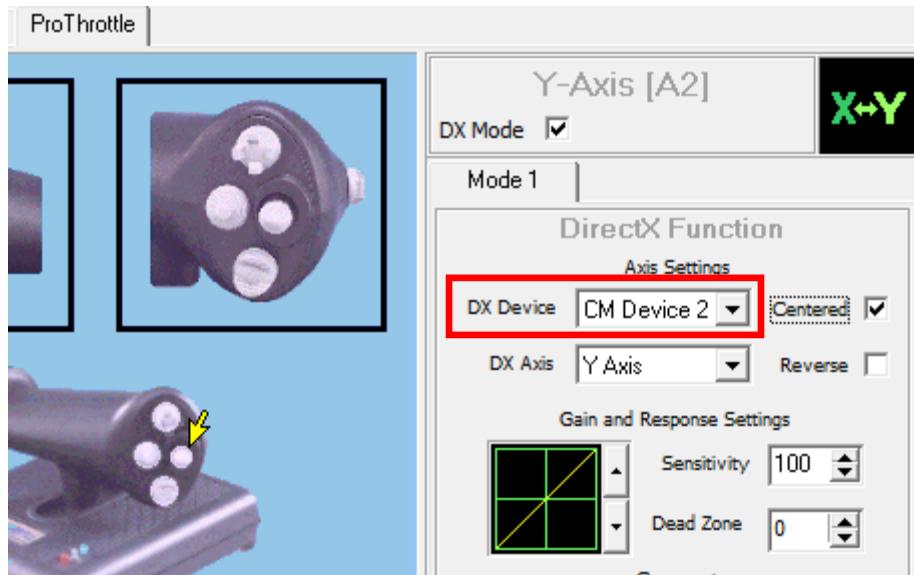


3. Click Okay
4. When asked about combining your controllers, click "No".
5. When asked about including CMS capability in this map, click "No". Scripting is not required, but if you want to add it, it will not hurt.
6. Click "Finish"

The end result is a map for both devices. The DX Device for the Fighterstick should be CM Device 1 and the Pro Throttle DX Device should be CM Device 2. Click the device tabs to validate this.

Stick:

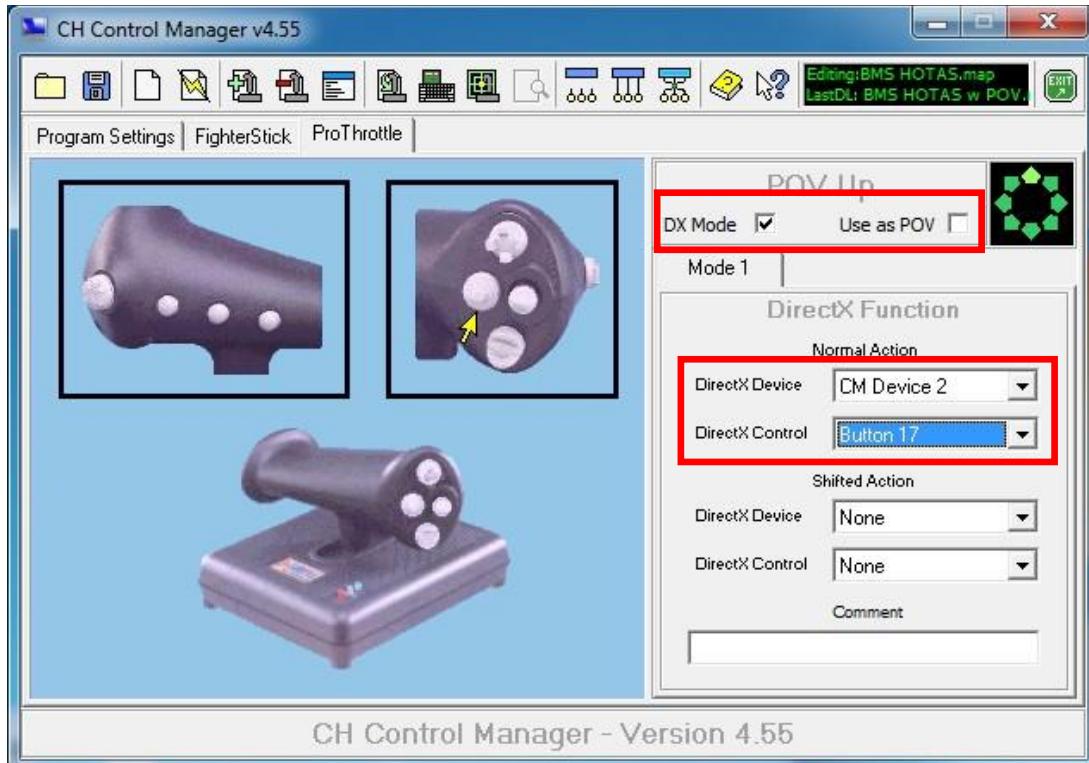


Throttle:

Whether or not you add CH Pro Pedals to the profile is more or less irrelevant at this point. The only noticeable difference will be the device name used in the BMS Setup GUI. If they are added, make sure the Pro Pedals use the DX Device setting of CM Device 3.

Now, we need to program the POV hat on the throttle. Start by clicking the throttle POV hat right. It will show the hat with "Use as POV" selected. You need to uncheck that box. Each direction of the POV hat will need to be programmed as a separate DX button and we need to start with the up direction first.

Click the Throttle POV hat up. Set the DirectX Device to CM Device 2 (same as the other buttons on the throttle). The first 16 buttons are already taken, so set DirectX Control to Button 17. It should now look like this:



Now click the POV hat to the upper right. Set the DirectX Device to CM Device 2 again and the DirectX Control to Button 18 (incrementing by one for each direction). Continue this process clockwise with each direction, ending with the upper left being Button 24. The number and direction here is important. If you do not get this right, it will not match the DX generation spreadsheet.

You can now save the profile as BMS HOTAS w POV.map. Save the map to your My Documents\CH Control Manager\Maps directory for future use.

Once saved, click the download tool in CH Control Manager to download the profile to the devices. Once the download has completed, place CH Control Manager in mapped mode before starting Falcon BMS.

Note: CH Control Manager must be started and placed into mapped mode before starting Falcon BMS or Falcon BMS will forget axis assignments.

Option 2: Use the controllers without programming:

This option uses the stick and throttle without programming. It is much easier to use, but it cramps the functionality of the throttle. The current DX generation assigns callbacks to hats and buttons with the Speedbrake and ANTENNA ELEV functionality going to the throttle POV hat. These functions will need to be moved elsewhere.

Falcon BMS Setup:

If you are using the CH Control Manager option, be sure to start it and place it in mapped mode before starting Falcon BMS. The option used to setup the controllers will affect the controller names and device order that Falcon BMS sees. Be sure you are using the correct names.

For the non-programmed option, the device names will be CH Fighterstick USB and CH Pro Throttle USB.

For the CH Control Manager option, the device names will be CH Control Manager Device 1 and CH Control Manager Device 2. The CH Control Manager wizard will make the Fighterstick the first device (CH Control Manager Device 1) and the throttle the second device (CH Control Manager Device 2).



3.7 SAITEK X-45 SETUP

3.7.1 Provided Files

This profile consists of the following components:

- | | |
|------------------------------|---|
| - BMS X-45_DX.pr0 | => SST profile file |
| - BMS - BasicDX X-45_MFD.key | => BMS key file <u>with</u> TM Cougar MFDs |
| - BMS - BasicDX X-45.key | => BMS key file <u>without</u> TM Cougar MFDs |
| - DeviceSorting_Example.txt | => example of the DX device order |
| - HOTAS Print Layout.pdf | => printable overview of assigned functions |
| - DX Code Lines.txt | => DX code lines only (with MFDs) |
| - Quick Setup Guide.txt | => Short device setup instructions |

3.7.2 Device Setup

Driver and Software:

Please make sure you have installed the latest drivers and SST software. We will not describe how to do this. Please refer to Saitek's installation instructions.

It is assumed that you already know how to setup your Saitek X-45 in general (i.e. load profiles). It only covers necessary steps to get the provided files up and running.

This profile uses BMS DirectX shifting feature to avoid any emulated keyboard input whenever possible.

Loading the device Profile:

Not all buttons are available as pure DX buttons right away, if you don't tell the device to handle them like that. Instead some buttons come with predefined functions. So before the device can be set up with DX via the key file some profile settings have to be done first.

We provide a .pr0 file which includes all necessary changes to run your device with DirectX bindings. Before you start BMS you must load the **BMS X-45_DX.pr0** with the Profile Launcher.

If you want to learn more about the specific settings in this profile please have a look at [chapter 5](#) of this manual.

3.7.3 Key File

Select one of the two provided key files located in the .../03 HOTAS Setup/Saitek X-45 folder:

- BMS - BasicDX X-45_MFD.key
Select this one if you have also TM Cougar MFDs. The MFD related DX bindings are already included.
- BMS - BasicDX X-45.key
Select this one if you don't use TM Cougar MFDs.

Copy the file of your choice and paste it to the .../User/Config folder.

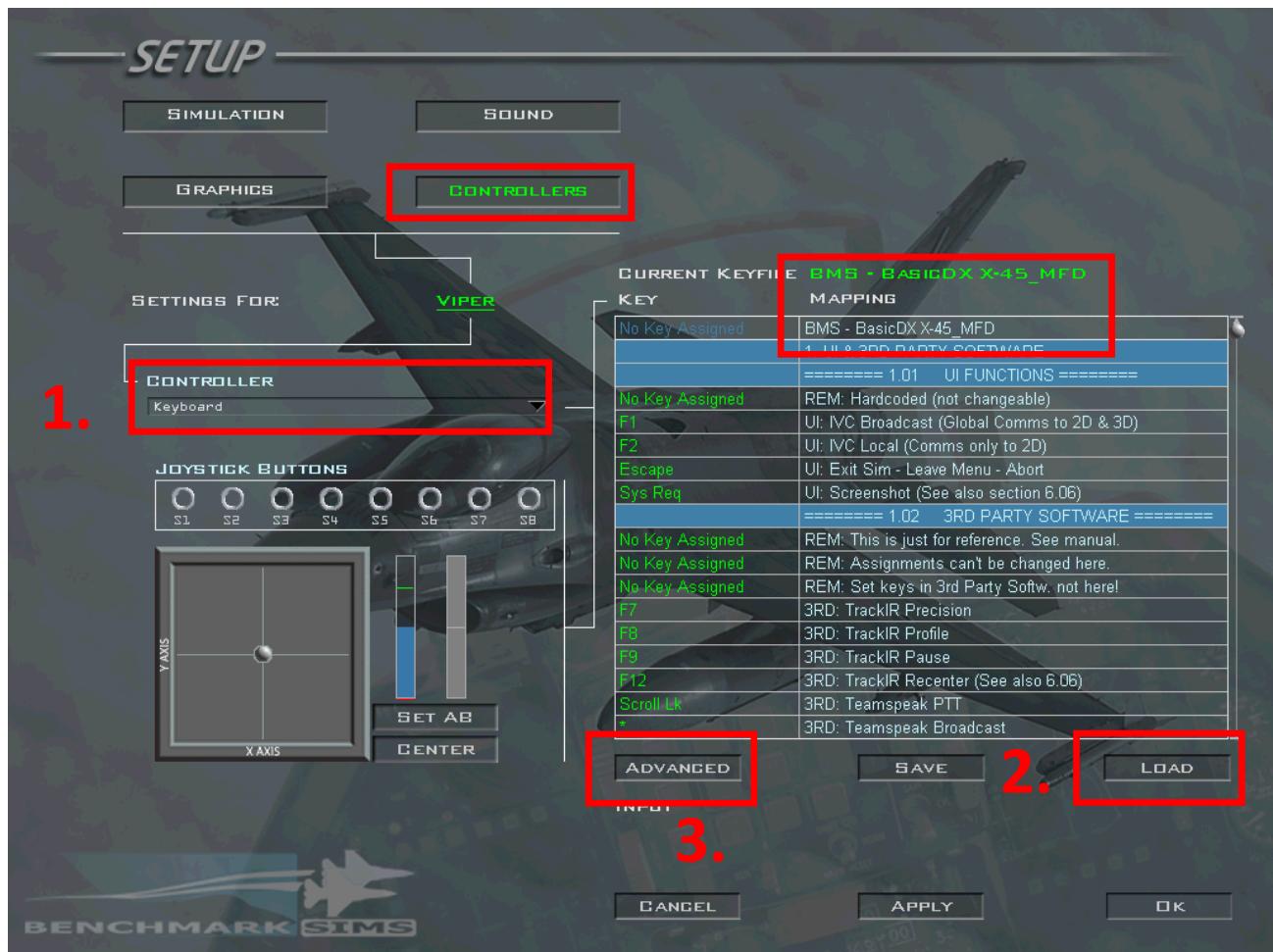


3.7.4 BMS Setup

Start Falcon BMS and click on SETUP in the top right corner of the main ui:



Once in the setup screen hit the CONTROLLERS button. This opens the Controllers screen shown below:



In this screen you do three things:

- Select the Main Input Device

Select your main Input device from the drop down list. In this case “**Saitek X45**”.

If you need help with that or for further information see [chapter 4.1](#) of this manual.

- Load the Key File

Click on LOAD button and select the X-45 key file you just pasted to the User/Config folder.

You can verify that the correct key file is loaded on top of the key file content box next to CURRENT KEYFILE.

More information about loading key files can be found in [chapter 4.2](#) of this manual.



3. Enter Advanced Options

This opens the Advanced Options pages. You can ignore VIEW CONTROL and AUDIO CONTROL pages here. Instead we focus on the FLIGHT CONTROL and AVIONICS CONTROL settings. Here we will do our axis assignments.

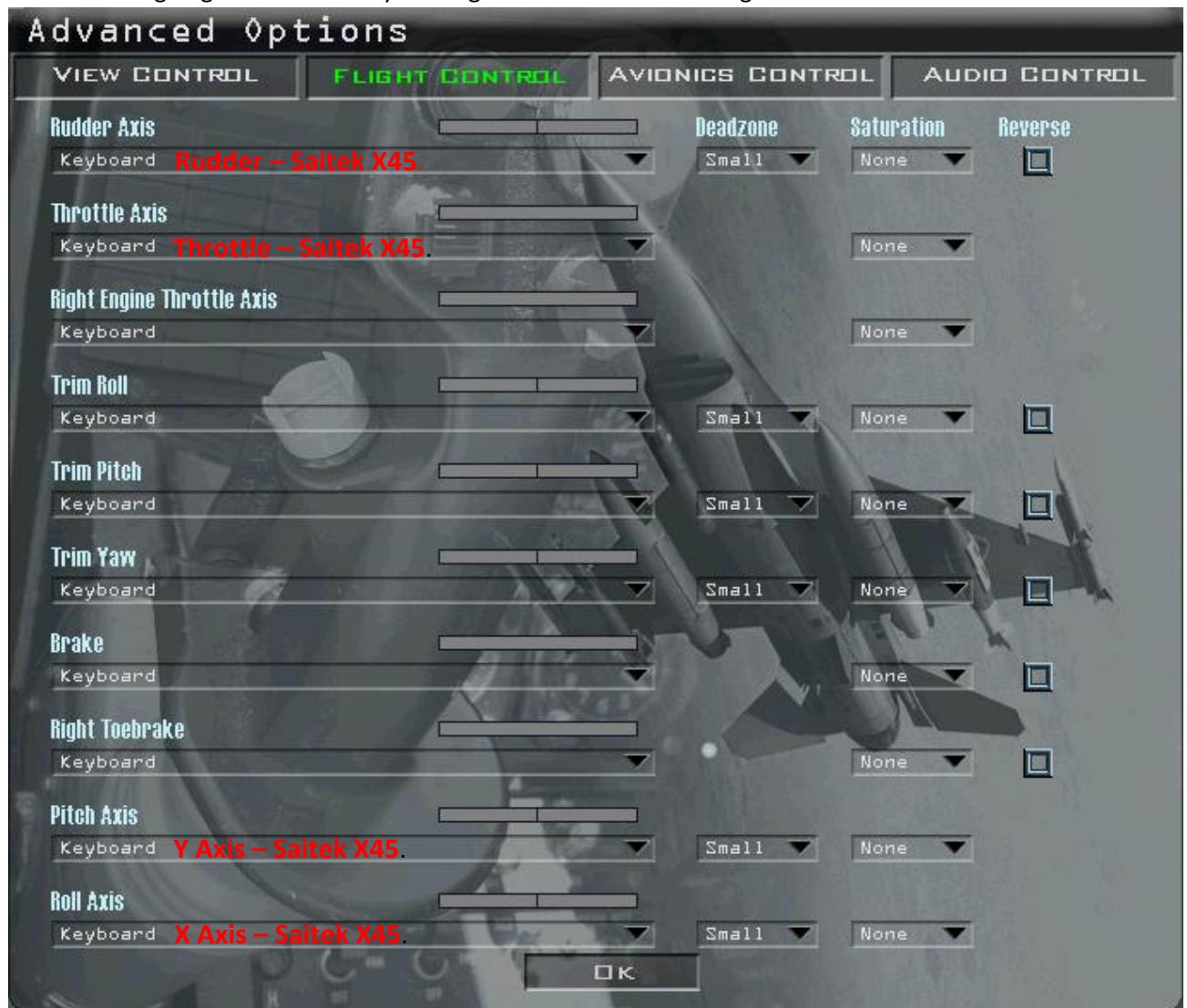


3.7.5 Axis Assignments

If you need help with that refer to [chapter 4.3](#) of this manual.

FLIGHT CONTROL settings:

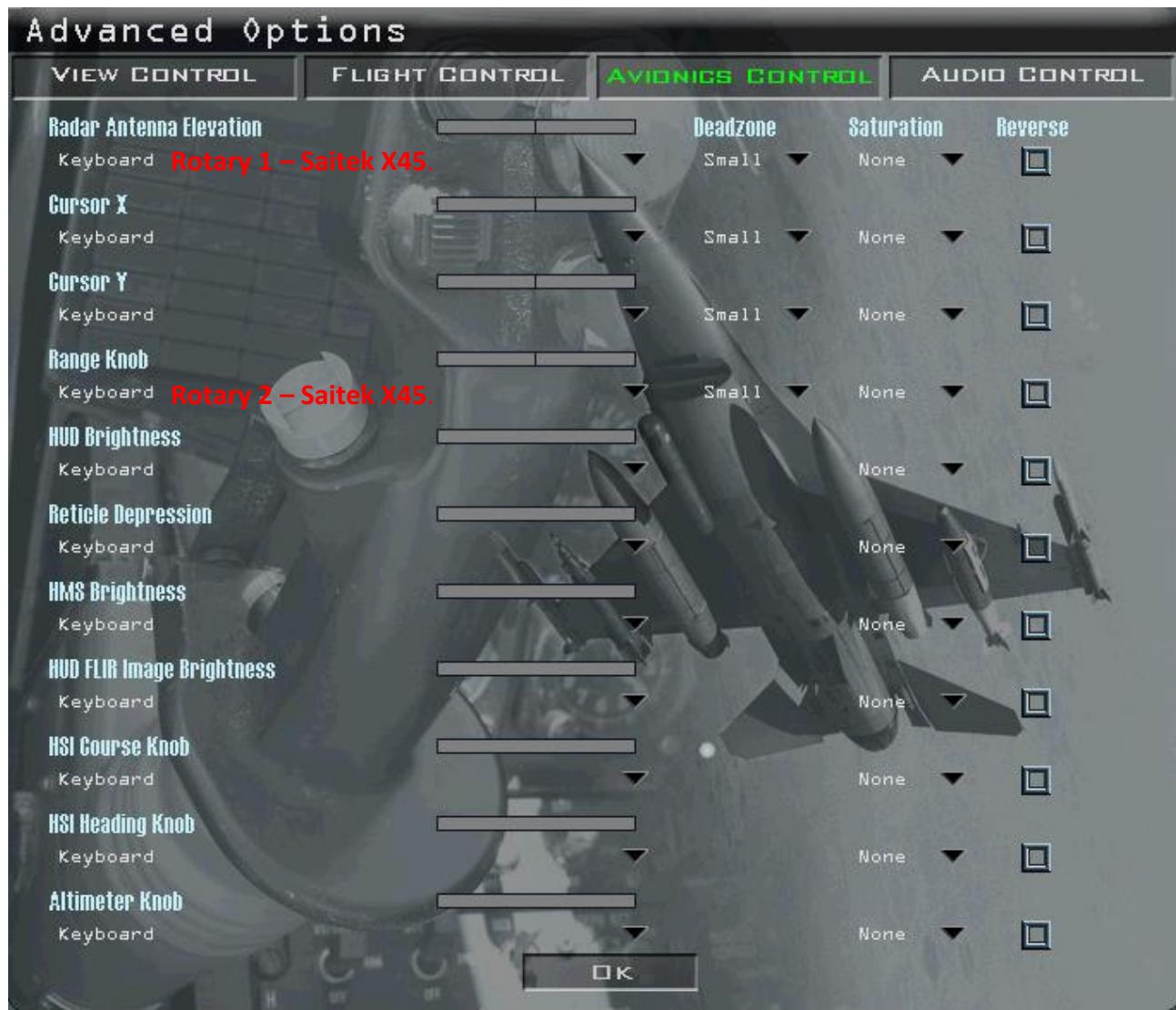
Set the axis of the device as shown in the picture below. You just have to select them from the dropdown list. After assigning an axis test it by moving the axis over its full range. Monitor the axis bar.





AVIONICS CONTROL settings:

Next go to the Avionics Control page and set the axis as shown below and test them.



If all axes have been assigned successfully hit the OK button which brings you back to the Setup – Controllers page.

If an axis is not available from the dropdown menu it is assigned somewhere else. In this case you have to take a look at the other Control pages first. What to do in this case is described in [chapter 4.4](#) of this manual.

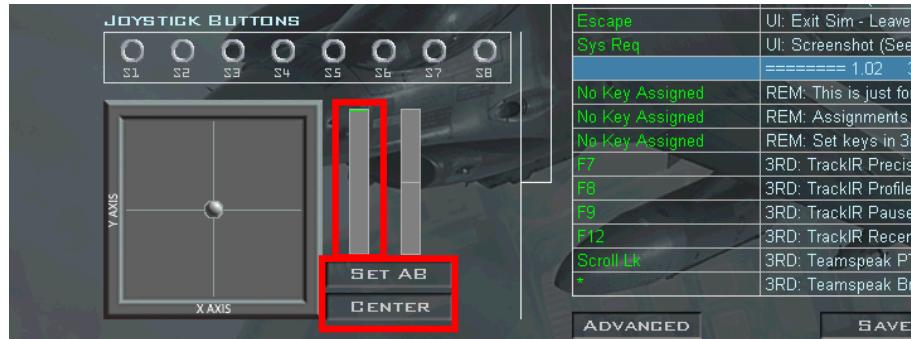
Set afterburner / Recenter:

After all axes have been assigned successfully you should define the afterburner detent. Without doing so you can't use the afterburner in the sim.

Like shown in the screenshot on the next page you have two axis bars. The right one is for the throttle axis. Move your throttle to a position where you want to set the afterburner detent. Then click on SET AB button. This defines the position on the throttle axis where the afterburner kicks in.



It is a good habit to recenter your device by releasing the controller and pressing the CENTER button. The pitch and roll axis of your main input device will then be centred to avoid unwanted shifts in the sim which makes flying the aircraft much more difficult.

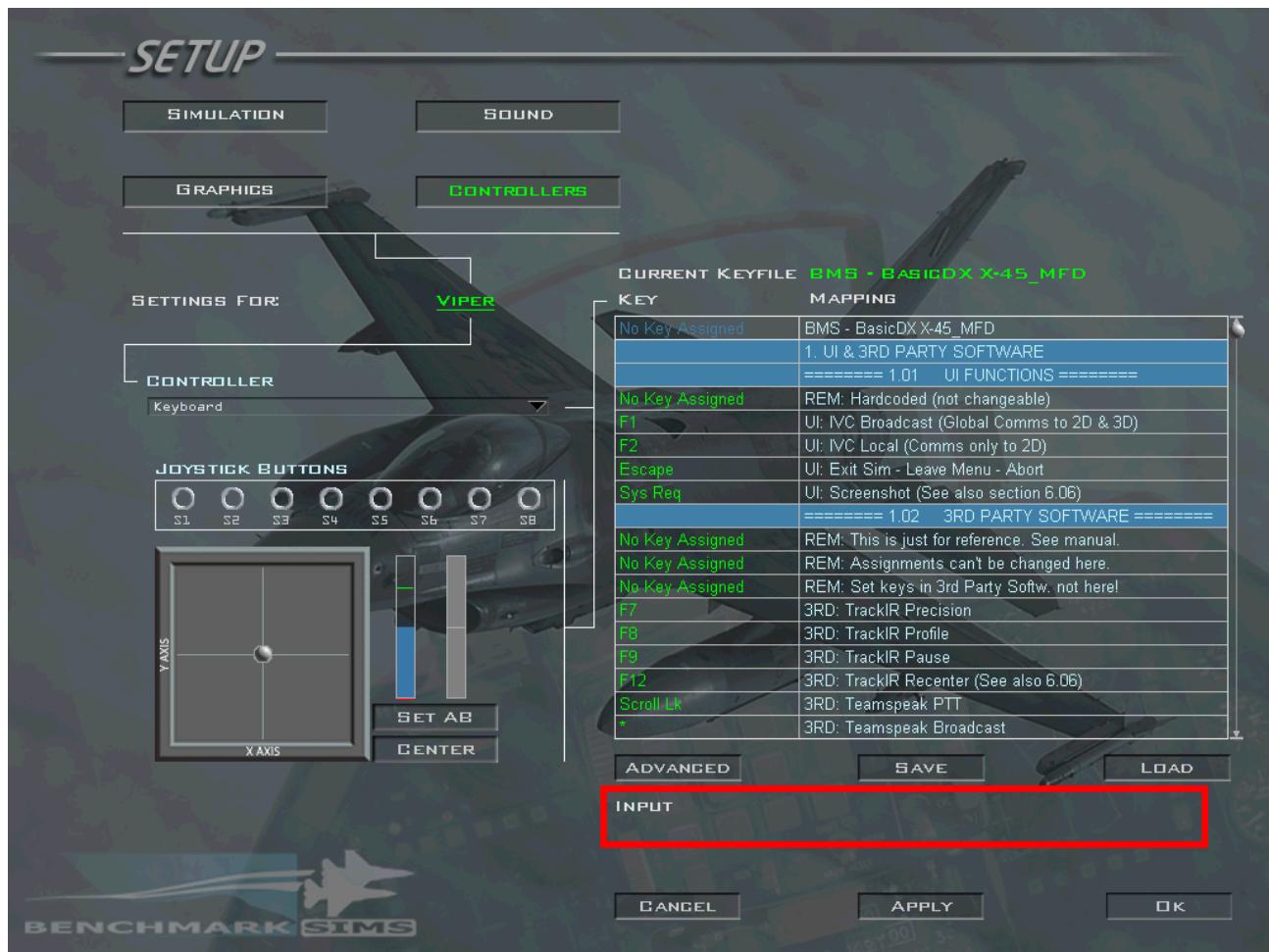


If you need help please refer to [chapter 4.5](#) of this manual.

3.7.6 Test the device buttons

Depending on how many devices you have connected, you should press one button on each device. We assume that you have connected your main device along with the 2 TM MFDs and use one of the default Saitek X-45 related key files.

Once you press a button the result will be displayed below the key file content list next to INPUT.



Test the main input device:



Press button „Fire A“ on your stick.

The text should read:

INPUT Button 2

STICK: PADDLE SWITCH



Press button „Fire D“ on your throttle.

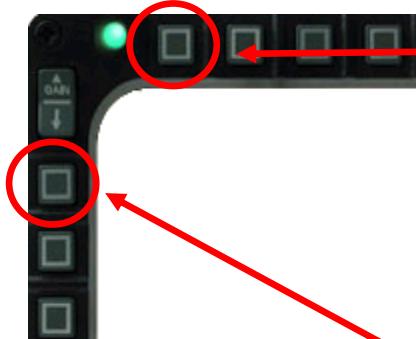
The text should read:

INPUT Button 5

TQS: MAN RANGE Knob - UNCAGE

Test TM Cougar MFDs

If you don't use the TM Cougar MFDs you can skip this part.



Press button „OSB1“ on left MFD.

The text next to INPUT should read:

INPUT Button 33

LMFD: OSB-1 Button - Push

Press button „OSB20“ on right MFD.

The text next to INPUT should read:

INPUT Button 84

RMFD: OSB-20 Button - Push

In case wrong button numbers / functions are shown it is likely that the device order is not recognized correctly by BMS. You can fix that by editing the DeviceSorting.txt located in your .../User/Config folder.

How this is done is described in [chapter 4.6](#) of this manual.

Once the device sorting is done repeat the steps on the previous page. If everything works correctly you are done here.

Test in 3d:

It is unfortunately not possible to test the shifted layer in the ui. You have to test them in 3d. The easiest way is to simply open the training mission 2 (Navigation) as the jet is already airborne.

You can repeat the same steps as shown on the previous page but this time with the functions on the shifted layer. In case you wonder how to activate the shifted layer please read [chapter 4.7](#) of this manual.

It is recommended to use an easy recognizable function e.g. night vision.

And here is the exercise:

Just open the HOTAS Print Layout.pdf look for the function CKPIT: Nightvision – Toggle and try it.

If everything works correctly you have finished your setup. Congratulations.

3.7.7 Troubleshooting

I want to learn more about DX Device buttons and layers:

Read [chapter 4.8](#).

What if I am not happy with the functions assigned to the device?

Read [chapter 4.9](#).

What If I don't have MFDs but other devices?

Read [chapter 4.10](#).

I have a stuck key / can't exit the shifted layer:

Read [chapter 4.11](#).

I want other functions on the POV hat:

Read [chapter 4.12](#).

3.8 SAITEK X-52 SETUP

3.8.1 Provided Files

This profile consists of the following components:

- BMS X-52_DX.pr0 => SST profile file
- BMS - BasicDX X-52_MFD.key => BMS key file with TM Cougar MFDs
- BMS - BasicDX X-52.key => BMS key file without TM Cougar MFDs
- DeviceSorting_Example.txt => example of the DX device order
- HOTAS Print Layout.pdf => printable overview of assigned functions
- DX Code Lines.txt => DX code lines only (with MFDs)
- Quick Setup Guide.txt => Short device setup instructions

3.8.2 Device Setup:

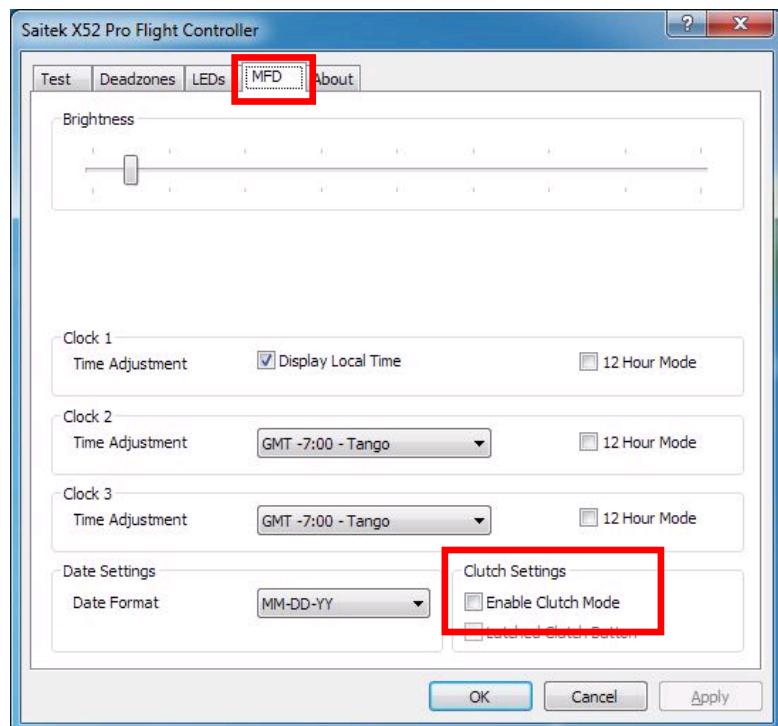
Driver and Software:

Please make sure you have installed the latest drivers and SST software. We will not describe how to do this. Please refer to Saitek's installation instructions. It is assumed that you already know how to setup your Saitek X-52 in general (i.e. load profiles). It only covers necessary steps to get the provided files up and running. This profile uses BMS DirectX shifting feature to avoid any emulated keyboard input whenever possible.

3.8.3 Control Panel Settings

We start with the clutch (i) button. The clutch button, when pressed, temporarily deactivates all other buttons by default. For more info about this feature please refer to Saitek's manual. Unfortunately we can't use the clutch button with DX as long as it has its default behavior. To change this you have to open the control panel and uncheck the "Enable Clutch Mode" option like shown in the image below.

Now we can use the clutch button as a DX button. Other settings are not mandatory and you can set them to your own liking.



Loading the device Profile:

Not all buttons are available as pure DX buttons right away, if you don't tell the device to handle them like that. Instead some buttons come with predefined functions. So before the device can be set up with DX via the key file some profile settings have to be done first. We provide a .pr0 file which includes all necessary changes to run your device with DirectX bindings. Before you start BMS you must load the **BMS X-52_DX.pr0** with the Profile Launcher. If you want to learn more about the specific settings in this profile please have a look at [chapter 5](#) of this manual.



3.8.4 Key File

Select one of the two provided key files located in the .../03 HOTAS Setup/Saitek X-52 folder:

- BMS - BasicDX X-52_MFD.key

Select this one if you have also TM Cougar MFDs. The MFD related DX bindings are already included.

- BMS - BasicDX X-52.key

Select this one if you don't use TM Cougar MFDs.

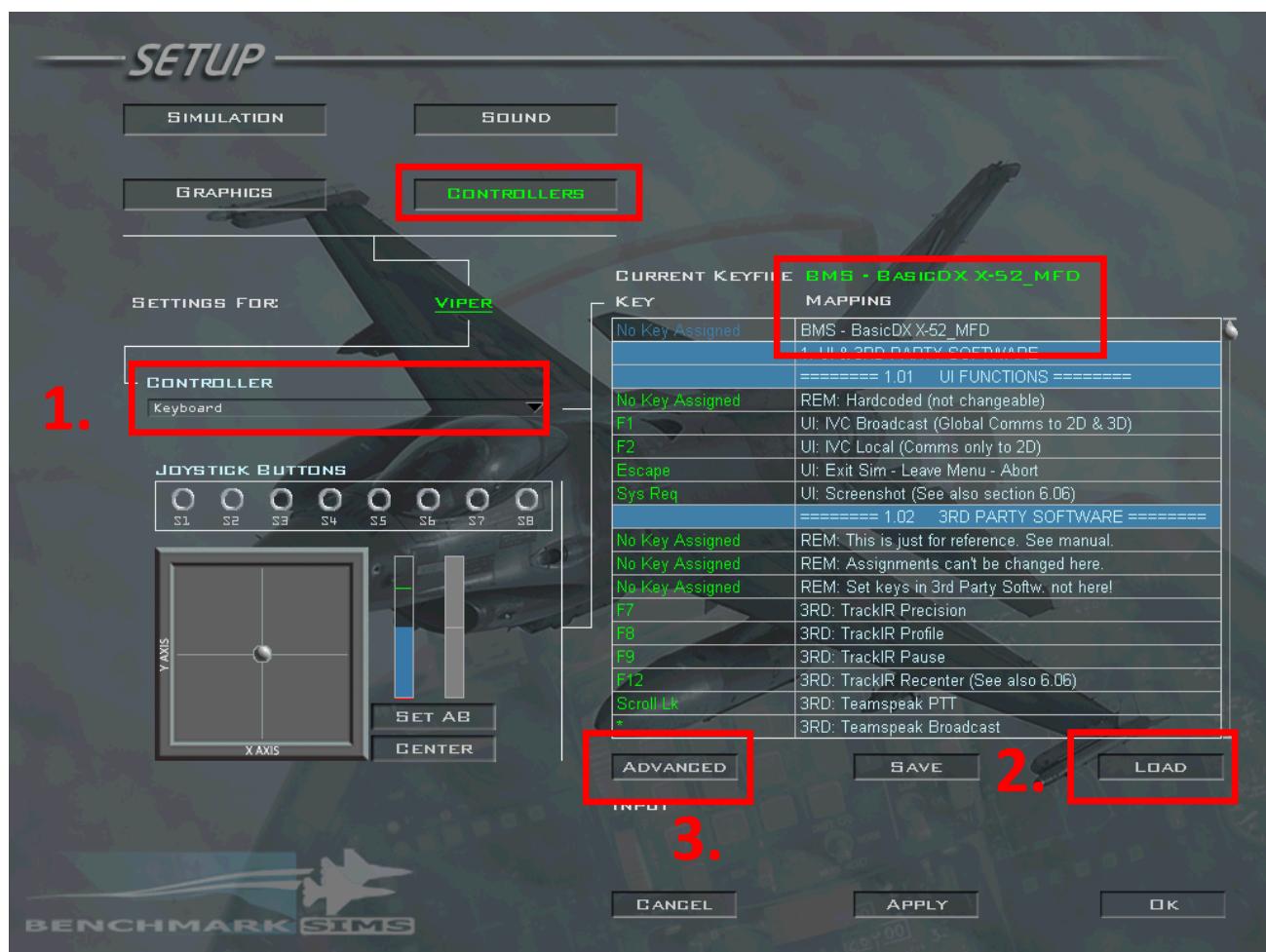
Copy the file of your choice and paste it to the .../User/Config folder.

3.8.5 BMS Setup

Start Falcon BMS and click on SETUP in the top right corner of the main ui:



Once in the setup screen hit the CONTROLLERS button. This opens the Controllers screen shown below:





In this screen you do three things:

1. Select the Main Input Device

Select your main Input device from the drop down list. In this case “**Saitek X52**”.

If you need help with that or for further information see [chapter 4.1](#) of this manual.

2. Load the Key File

Click on LOAD button and select the X-52 key file you just pasted to the User/Config folder.

You can verify that the correct key file is loaded on top of the key file content box next to CURRENT KEYFILE.

More information about loading key files can be found in [chapter 4.2](#) of this manual.

3. Enter Advanced Options

This opens the Advanced Options pages. You can ignore the AUDIO CONTROL page here. Instead we focus on the VIEW CONTROL, FLIGHT CONTROL and AVIONICS CONTROL settings. Here we will do our axis assignments.



3.8.6 Axis Assignments

If you need help with that refer to [chapter 4.3](#) of this manual.

VIEW CONTROL settings:

This is optional.

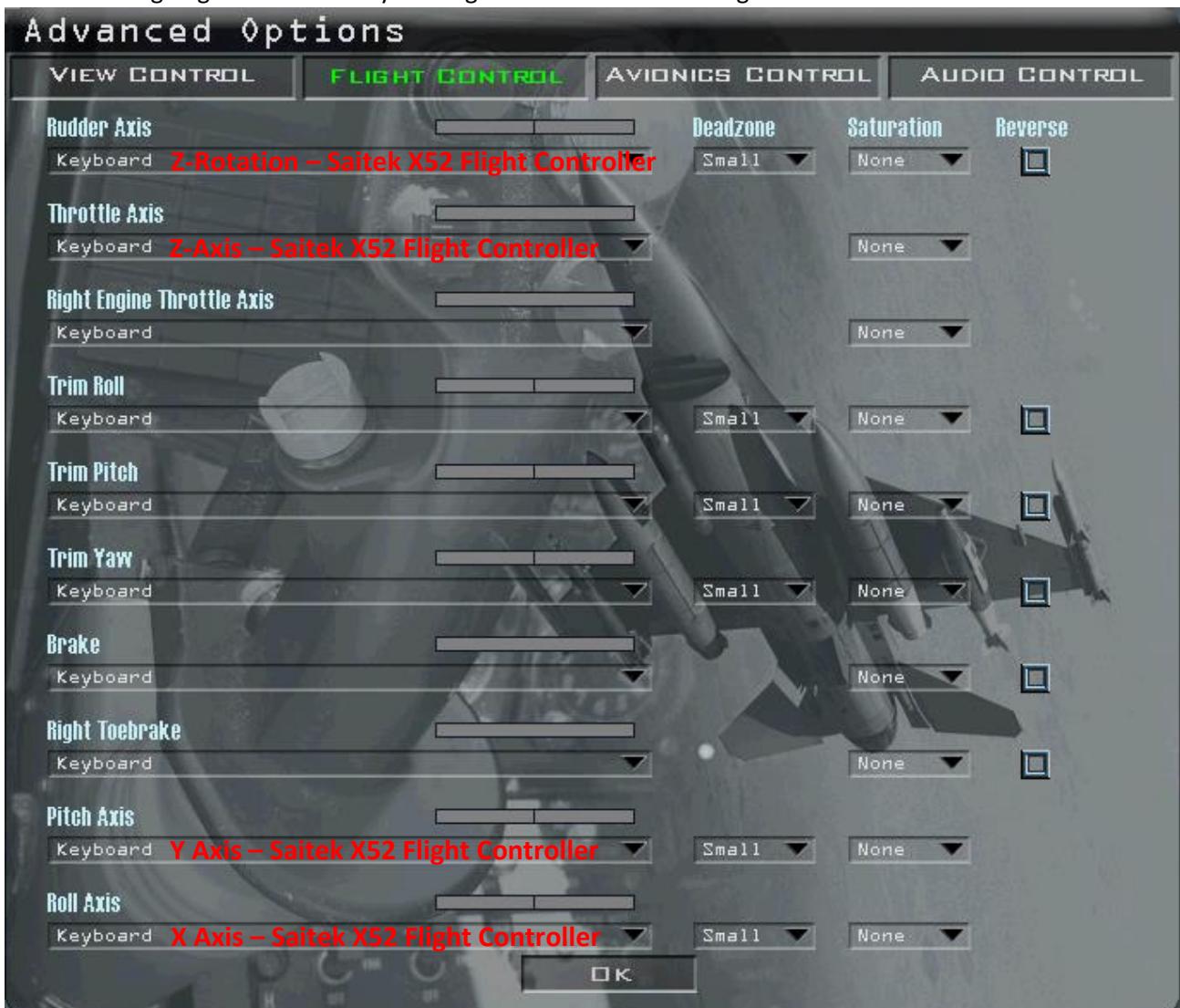
The Saitek X-52 offers a precision slider on the throttle. As this is one not used to for any of the real HOTAS axes you might want to assign it to something else. A good choice is the Field Of View. This offers you the opportunity to change the field of view (FOV) with an axis. If you decide to use your precision slider to change the Field Of View choose the slider axis from the dropdown menu and set it to “Reverse”.



Please note that all keyboard functions (e.g. "Look Closer" and FOV changes with the mouse wheel) are inoperative when assigning an axis to FOV.

FLIGHT CONTROL settings:

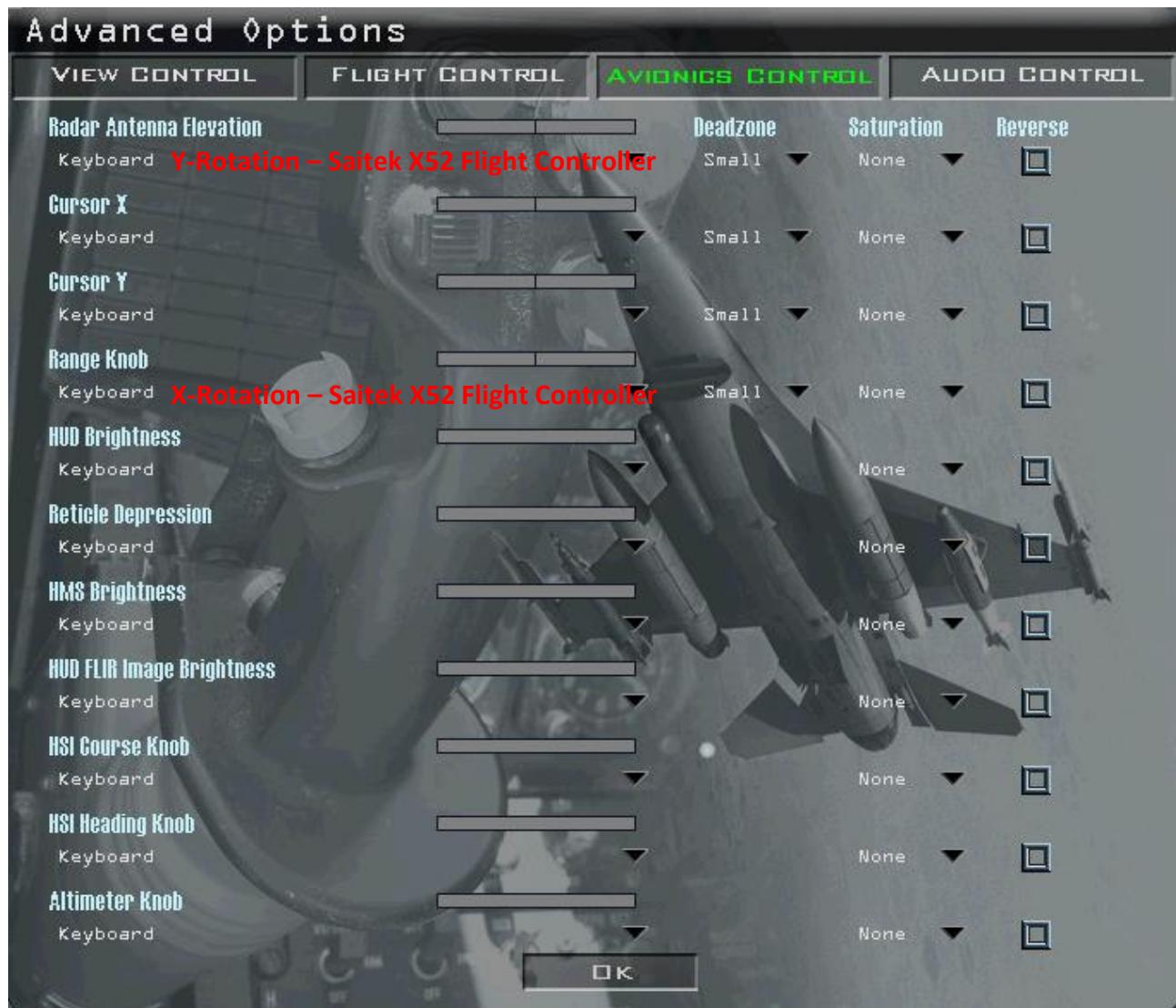
Set the axis of the device as shown in the picture below. You just have to select them from the dropdown list. After assigning an axis test it by moving the axis over its full range. Monitor the axis bar.





AVIONICS CONTROL settings:

Next go to the Avionics Control page and set the axis as shown below and test them.



If all axes have been assigned successfully hit the OK button which brings you back to the Setup – Controllers page.

If an axis is not available from the dropdown menu it is assigned somewhere else. In this case you have to take a look at the other Control pages first. What to do in this case is described in [chapter 4.4](#) of this manual.

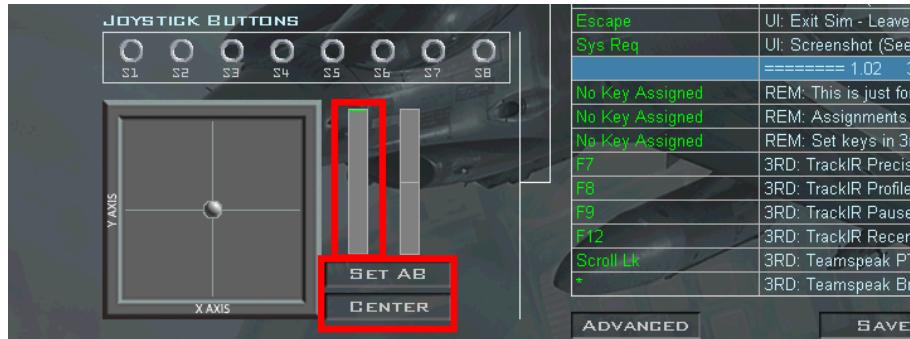
Set afterburner / Recenter:

After all axes have been assigned successfully you should define the afterburner detent. Without doing so you can't use the afterburner in the sim.

Like shown in the screenshot on the next page you have two axis bars. The right one is for the throttle axis. Move your throttle to a position where you want to set the afterburner detent. Then click on SET AB button. This defines the position on the throttle axis where the afterburner kicks in.



It is a good habit to recenter your device by releasing the controller and pressing the CENTER button. The pitch and roll axis of your main input device will then be centred to avoid unwanted shifts in the sim which makes flying the aircraft much more difficult.

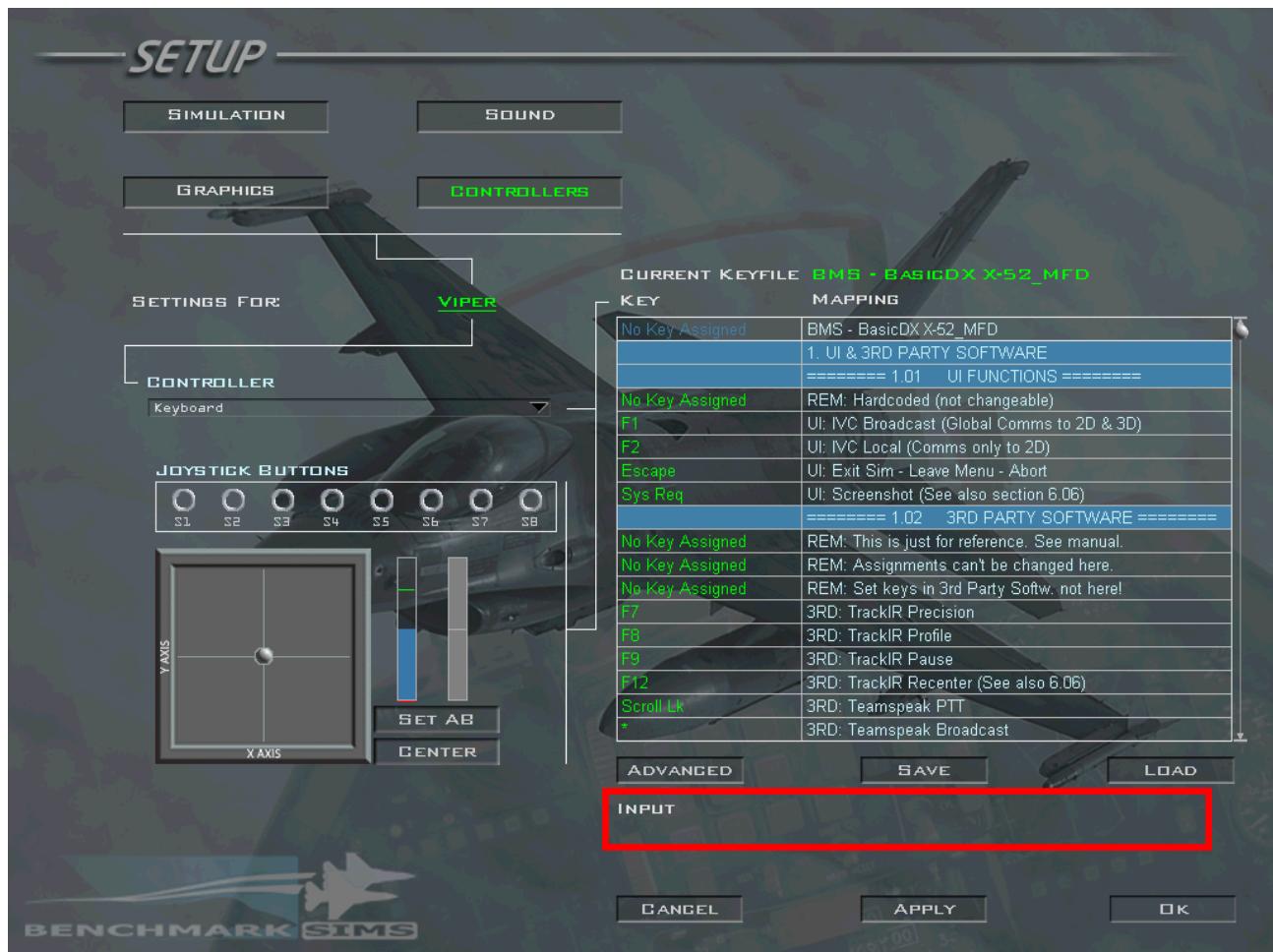


If you need help please refer to [chapter 4.5](#) of this manual.

3.8.7 Test the device buttons

Depending on how many devices you have connected, you should press one button on each device. We assume that you have connected your main device along with the 2 TM MFDs and use one of the default Saitek X-52 related key files.

Once you press a button the result will be displayed below the key file content list next to INPUT.



Test the main input device:



Press button „C“ on your stick.

The text should read:

INPUT Button 5

STICK: PADDLE SWITCH



Press button „E“ on your throttle.

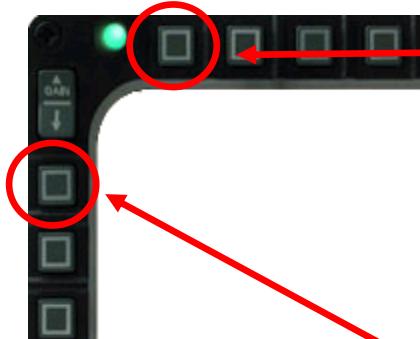
The text should read:

INPUT Button 8

TQS: MAN RANGE Knob - UNCAGE

Test TM Cougar MFDs

If you don't use the TM Cougar MFDs you can skip this part.



Press button „OSB1“ on left MFD.

The text next to INPUT should read:

INPUT Button 33

LMFD: OSB-1 Button - Push

Press button „OSB20“ on right MFD.

The text next to INPUT should read:

INPUT Button 84

RMFD: OSB-20 Button - Push

In case wrong button numbers / functions are shown it is likely that the device order is not recognized correctly by BMS. You can fix that by editing the DeviceSorting.txt located in your .../User/Config folder.

How this is done is described in [chapter 4.6](#) of this manual.

Once the device sorting is done repeat the steps on the previous page. If everything works correctly you are done here.

Test in 3d:

It is unfortunately not possible to test the shifted layer in the ui. You have to test them in 3d. The easiest way is to simply open the training mission 2 (Navigation) as the jet is already airborne.

You can repeat the same steps as shown on the previous page but this time with the functions on the shifted layer. In case you wonder how to activate the shifted layer please read [chapter 4.7](#) of this manual.

It is recommended to use an easy recognizable function e.g. night vision.

And here is the exercise:

Just open the HOTAS Print Layout.pdf look for the function CKPIT: Nightvision – Toggle and try it.

If everything works correctly you have finished your setup. Congratulations.

3.8.8 Troubleshooting

I want to learn more about DX Device buttons and layers:

Read [chapter 4.8](#).

What if I am not happy with the functions assigned to the device?

Read [chapter 4.9](#).

What If I don't have MFDs but other devices?

Read [chapter 4.10](#).

I have a stuck key / can't exit the shifted layer:

Read [chapter 4.11](#).

I want other functions on the POV hat:

Read [chapter 4.12](#).

3.9 SAITEK X-52PRO SETUP

3.9.1 Provided Files

This profile consists of the following components:

- BMS X-52pro_DX.pr0 => SST profile file
- BMS - BasicDX X-52pro_MFD.key => BMS key file with TM Cougar MFDs
- BMS - BasicDX X-52pro.key => BMS key file without TM Cougar MFDs
- DeviceSorting_Example.txt => example of the DX device order
- HOTAS Print Layout.pdf => printable overview of assigned functions
- DX Code Lines.txt => DX code lines only (with MFDs)
- Quick Setup Guide.txt => Short device setup instructions

3.9.2 Device Setup

Driver and Software:

Please make sure you have installed the latest drivers and SST software. We will not describe how to do this. Please refer to Saitek's installation instructions.

It is assumed that you already know how to setup your Saitek X-52pro in general (i.e. load profiles). It only covers necessary steps to get the provided files up and running.

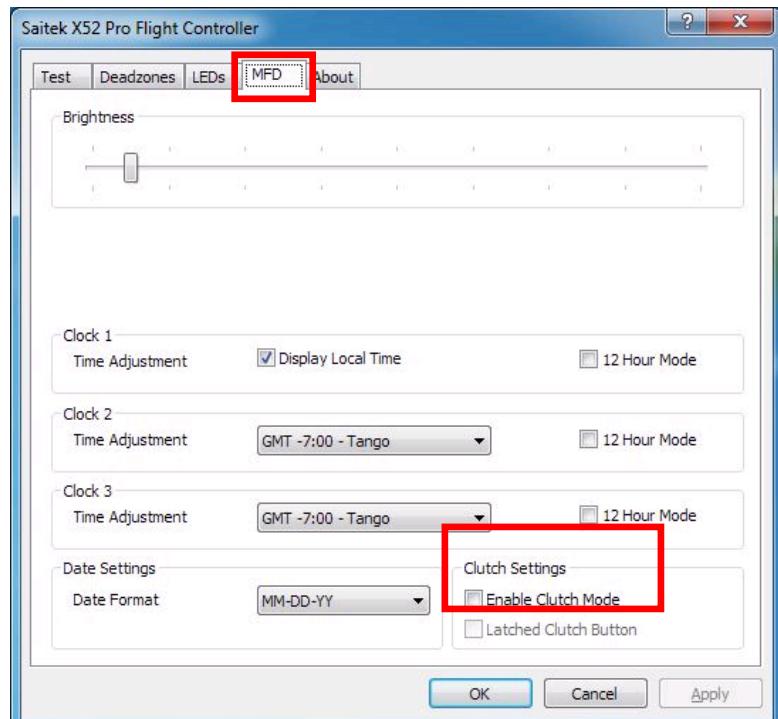
This profile uses BMS DirectX shifting feature to avoid any emulated keyboard input whenever possible.

3.9.3 Control Panel Settings:

We start with the clutch (i) button. The clutch button, when pressed, temporarily deactivates all other buttons by default. For more info about this feature please refer to Saitek's manual. Unfortunately we can't use the clutch button with DX as long as it has its default behavior. To change this you have to open the control panel and uncheck the "Enable Clutch Mode" option like shown in the image below.

Now we can use the clutch button as a DX button.

Other settings are not mandatory and you can set them to your own liking.



Loading the device Profile:

Not all buttons are available as pure DX buttons right away, if you don't tell the device to handle them like that. Instead some buttons come with predefined functions. So before the device can be set up with DX via the key file some profile settings have to be done first. We provide a .pr0 file which includes all necessary changes to run your device with DirectX bindings. Before you start BMS you must load the **BMS X-52pro_DX.pr0** with the Profile Launcher.

If you want to learn more about the specific settings in this profile please have a look at [chapter 5](#) of this manual.

3.9.4 Key File

Select one of the two provided key files located in the .../03 HOTAS Setup/Saitek X-52pro folder:

- BMS - BasicDX X-52pro_MFD.key

Select this one if you have also TM Cougar MFDs. The MFD related DX bindings are already included.

- BMS - BasicDX X-52pro.key

Select this one if you don't use TM Cougar MFDs.

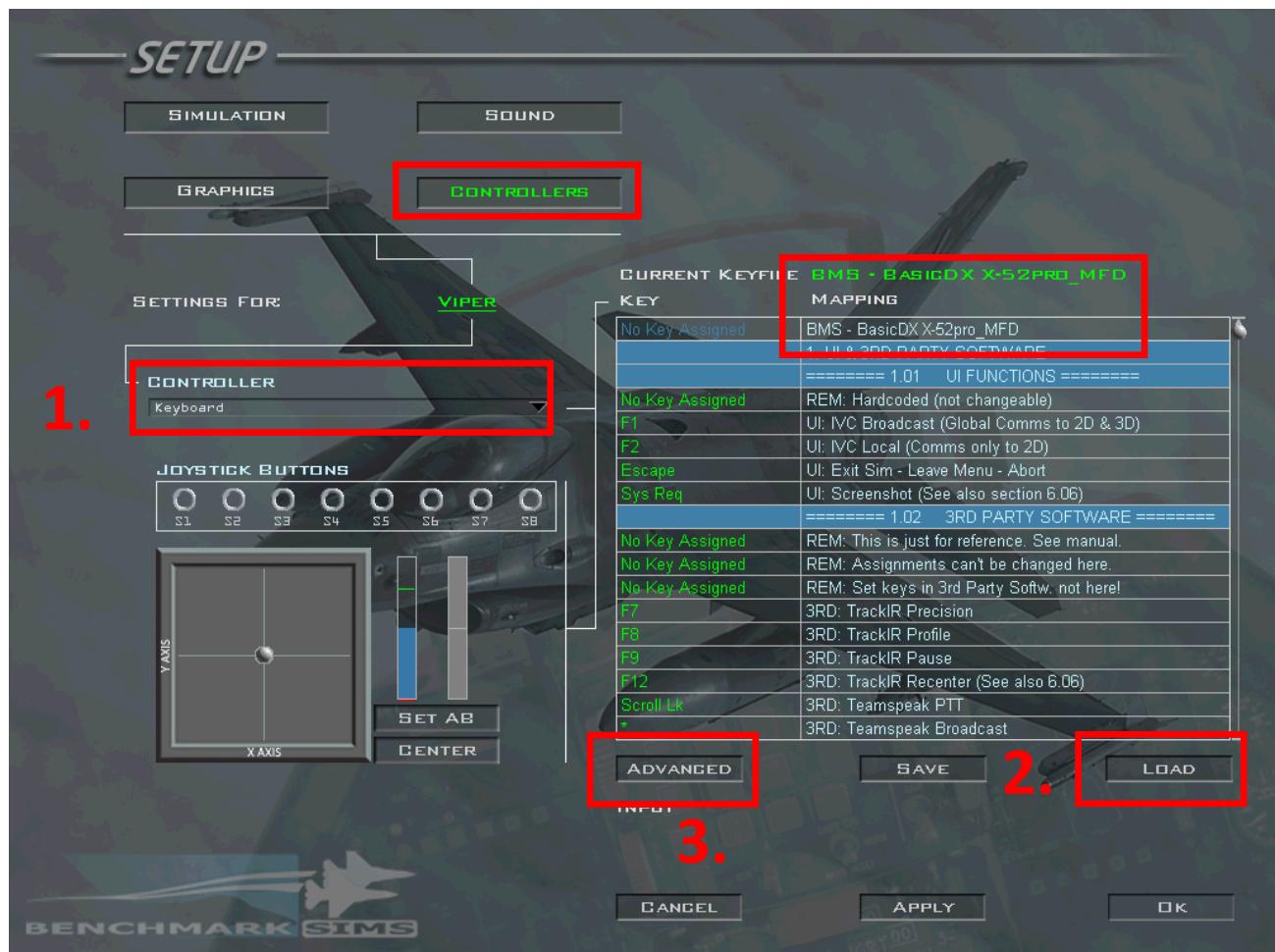
Copy the file of your choice and paste it to the .../User/Config folder.

3.9.5 BMS Setup

Start Falcon BMS and click on SETUP in the top right corner of the main ui:



Once in the setup screen hit the CONTROLLERS button. This opens the Controllers screen shown below:





In this screen you do three things:

1. Select the Main Input Device

Select your main Input device from the drop down list. In this case “**Saitek X52pro**”.

If you need help with that or for further information see [chapter 4.1](#) of this manual.

2. Select the Key File

Click on LOAD button and select the X-52pro key file you just pasted to the User/Config folder.

You can verify that the correct key file is loaded on top of the key file content box next to CURRENT KEYFILE.

More information about loading key files can be found in [chapter 4.2](#) of this manual.

3. Enter Advanced Options

This opens the Advanced Options pages. You can the AUDIO CONTROL page here. Instead we focus on the VIEW CONTROL, FLIGHT CONTROL and AVIONICS CONTROL settings. Here we will do our axis assignments.



3.9.6 Axis Assignments

If you need help with that refer to [chapter 4.3](#) of this manual.

VIEW CONTROL settings:

This is optional.

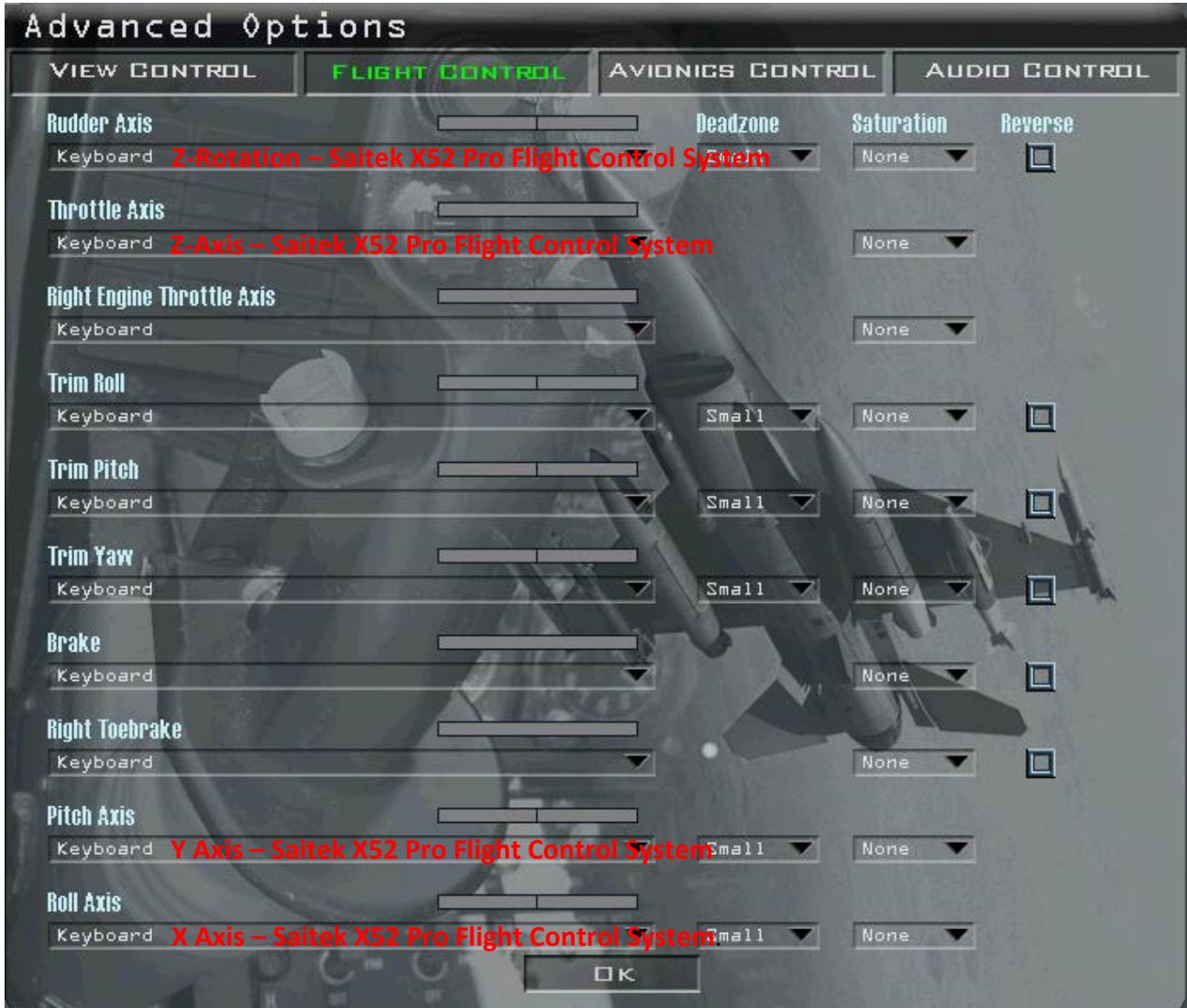
The Saitek X-52pro offers a precision slider on the throttle. As this is one not used to for any of the real HOTAS axes you might want to assign it to something else. A good choice is the Field Of View. This offers you the opportunity to change the field of view (FOV) with an axis. If you decide to use your precision slider to change the Field Of View choose the slider axis from the dropdown menu and set it to “Reverse”.



Please note that all keyboard functions (e.g. "Look Closer" and FOV changes with the mouse wheel) are inoperative when assigning an axis to FOV.

FLIGHT CONTROL settings:

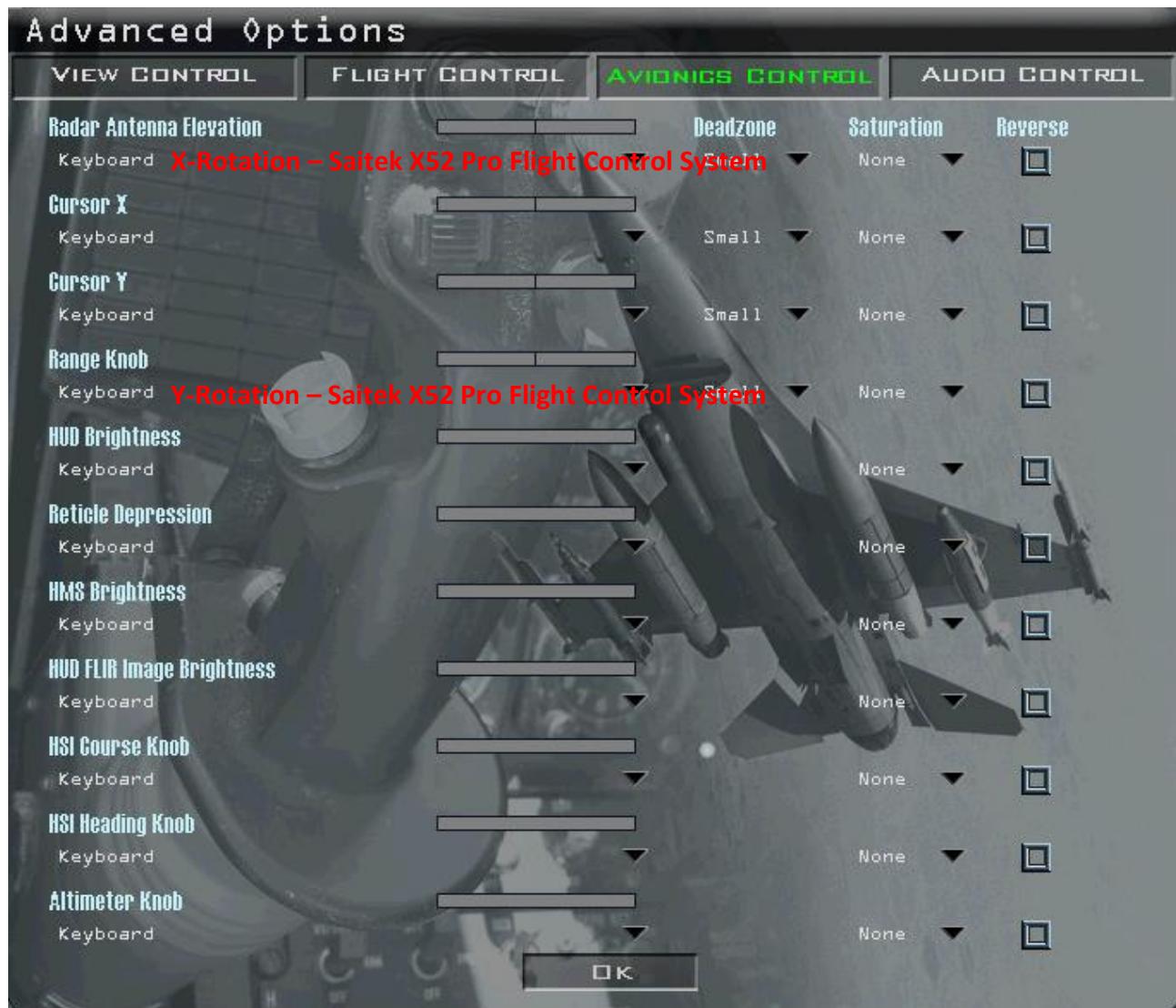
Set the axis of the device as shown in the picture below. You just have to select them from the dropdown list. After assigning an axis test it by moving the axis over its full range. Monitor the axis bar.





AVIONICS CONTROL settings:

Next go to the Avionics Control page and set the axis as shown below and test them.



If all axes have been assigned successfully hit the OK button which brings you back to the Setup – Controllers page.

If an axis is not available from the dropdown menu it is assigned somewhere else. In this case you have to take a look at the other Control pages first. What to do in this case is described in [chapter 4.4](#) of this manual.

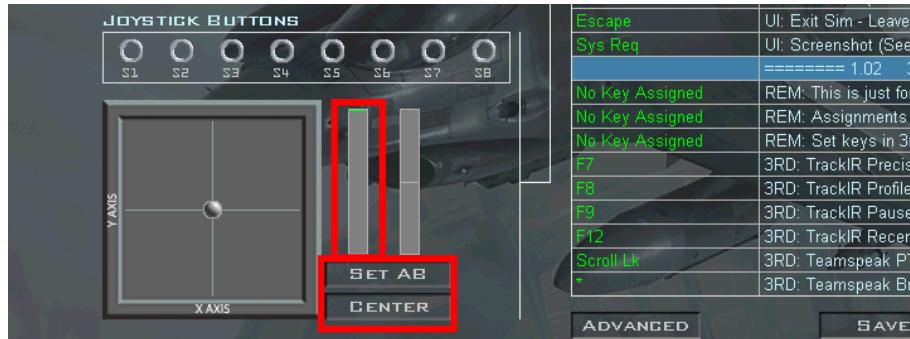
Set afterburner / Recenter:

After all axes have been assigned successfully you should define the afterburner detent. Without doing so you can't use the afterburner in the sim.

Like shown in the screenshot on the next page you have two axis bars. The right one is for the throttle axis. Move your throttle to a position where you want to set the afterburner detent. Then click on SET AB button. This defines the position on the throttle axis where the afterburner kicks in.



It is a good habit to recenter your device by releasing the controller and pressing the CENTER button. The pitch and roll axis of your main input device will then be centred to avoid unwanted shifts in the sim which makes flying the aircraft much more difficult.

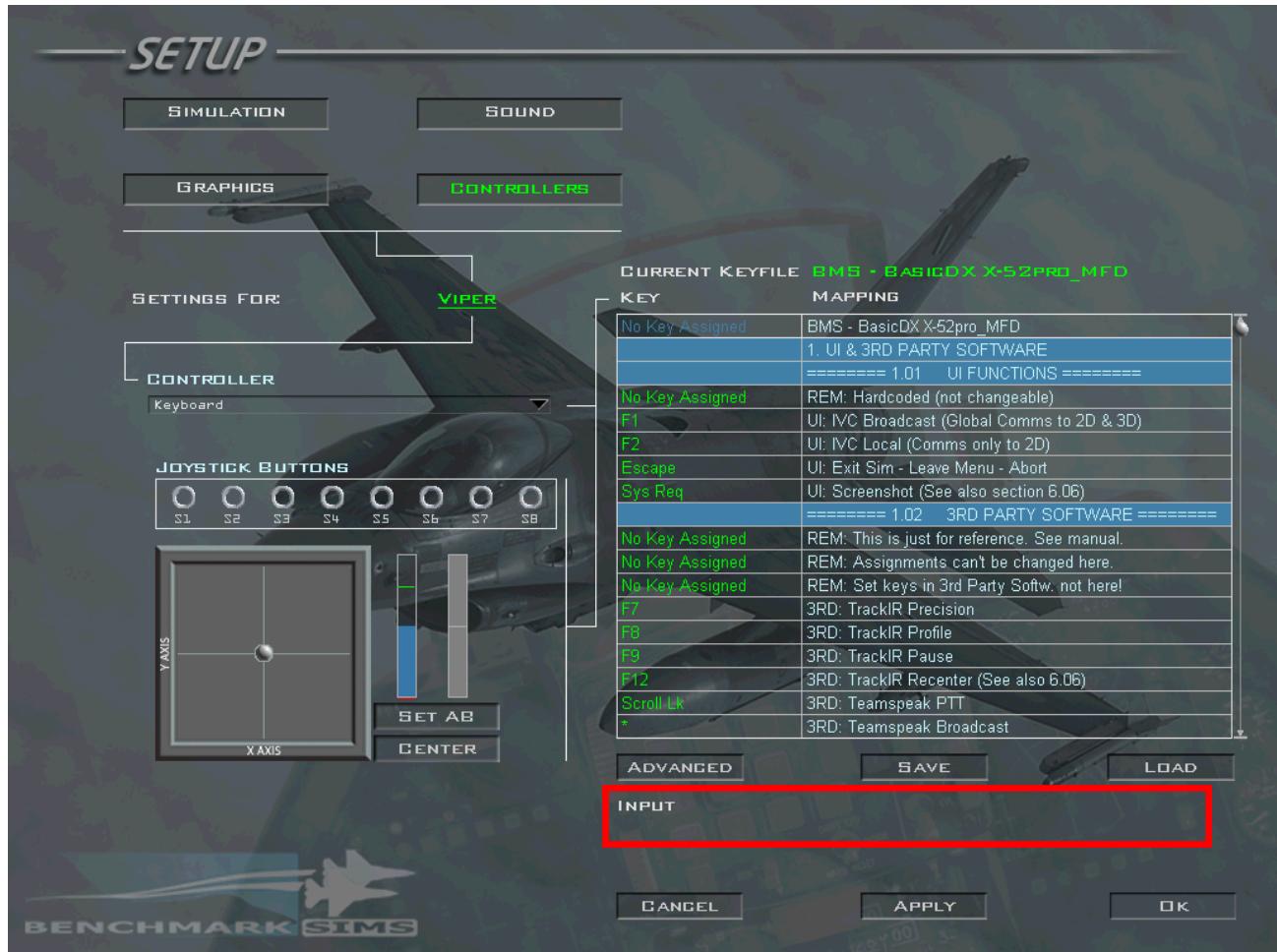


If you need help please refer to [chapter 4.5](#) of this manual.

3.9.7 Test the device buttons

Depending on how many devices you have connected, you should press one button on each device. We assume that you have connected your main device along with the 2 TM MFDs and use one of the default Saitek X-52pro related key files.

Once you press a button the result will be displayed below the key file content list next to INPUT.



Test the main input device:



Press button „C“ on your stick.

The text should read:

INPUT Button 5

STICK: PADDLE SWITCH



Press button „Fire E“ on your throttle.

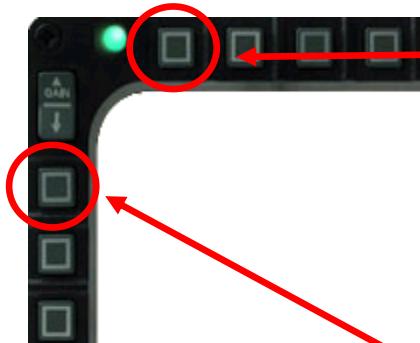
The text should read:

INPUT Button 8

TQS: MAN RANGE Knob - UNCAGE

Test TM Cougar MFDs

If you don't use the TM Cougar MFDs you can skip this part.



Press button „OSB1“ on left MFD.

The text next to INPUT should read:

INPUT Button 33

LMFD: OSB-1 Button - Push

Press button „OSB20“ on right MFD.

The text next to INPUT should read:

INPUT Button 84

RMFD: OSB-20 Button - Push



In case wrong button numbers / functions are shown it is likely that the device order is not recognized correctly by BMS. You can fix that by editing the DeviceSorting.txt located in your .../User/Config folder.

How this is done is described in [chapter 4.6](#) of this manual.

Once the device sorting is done repeat the steps on the previous page. If everything works correctly you are done here.

Test in 3d:

It is unfortunately not possible to test the shifted layer in the ui. You have to test them in 3d. The easiest way is to simply open the training mission 2 (Navigation) as the jet is already airborne.

You can repeat the same steps as shown on the previous page but this time with the functions on the shifted layer. In case you wonder how to activate the shifted layer please read [chapter 4.7](#) of this manual.

It is recommended to use an easy recognizable function e.g. night vision.

And here is the exercise:

Just open the HOTAS Print Layout.pdf look for the function CKPIT: Nightvision – Toggle and try it.

If everything works correctly you have finished your setup. Congratulations.

3.9.8 Troubleshooting

I want to learn more about DX Device buttons and layers:

Read [chapter 4.8](#).

What if I am not happy with the functions assigned to the device?

Read [chapter 4.9](#).

What If I don't have MFDs but other devices?

Read [chapter 4.10](#).

I have a stuck key / can't exit the shifted layer:

Read [chapter 4.11](#).

I want other functions on the POV hat:

Read [chapter 4.12](#).



3.10 SAITEK X-55 SETUP

3.10.1 Provided Files

This profile consists of the following components:

- | | |
|------------------------------|---|
| - BMS X-55_DX.pr0 | => SST profile file |
| - BMS - BasicDX X-55_MFD.key | => BMS key file <u>with</u> TM Cougar MFDs |
| - BMS - BasicDX X-55.key | => BMS key file <u>without</u> TM Cougar MFDs |
| - DeviceSorting_Example.txt | => example of the DX device order |
| - HOTAS Print Layout.pdf | => printable overview of assigned functions |
| - DX Code Lines.txt | => DX code lines only (with MFDs) |
| - Quick Setup Guide.txt | => Short device setup instructions |

3.10.2 Device Setup

Driver and Software:

Please make sure you have installed the latest drivers and SST software. We will not describe how to do this. Please refer to Saitek's installation instructions. It is assumed that you already know how to setup your Saitek X-55 in general (i.e. load profiles).

It only covers necessary steps to get the provided files up and running. This profile uses BMS DirectX shifting feature to avoid any emulated keyboard input whenever possible.

Loading the device Profile:

Not all buttons are available as pure DX buttons right away, if you don't tell the device to handle them like that. Instead some buttons come with predefined functions. So before the device can be set up with DX via the key file some profile settings have to be done first.

We provide a .pr0 file which includes all necessary changes to run your device with DirectX bindings. Before you start BMS you must load the **BMS X-55_DX.pr0** with the Profile Launcher. **Please note that you always must use "Mode 1"!**

If you want to learn more about the specific settings in this profile please have a look at [chapter 5](#) of this manual.

3.10.3 Key File

Select one of the two provided key files located in the .../03 HOTAS Setup/Saitek X-55 folder:

- BMS - BasicDX X-55_MFD.key
Select this one if you have also TM Cougar MFDs. The MFD related DX bindings are already included.
- BMS - BasicDX X-55.key
Select this one if you don't use TM Cougar MFDs.

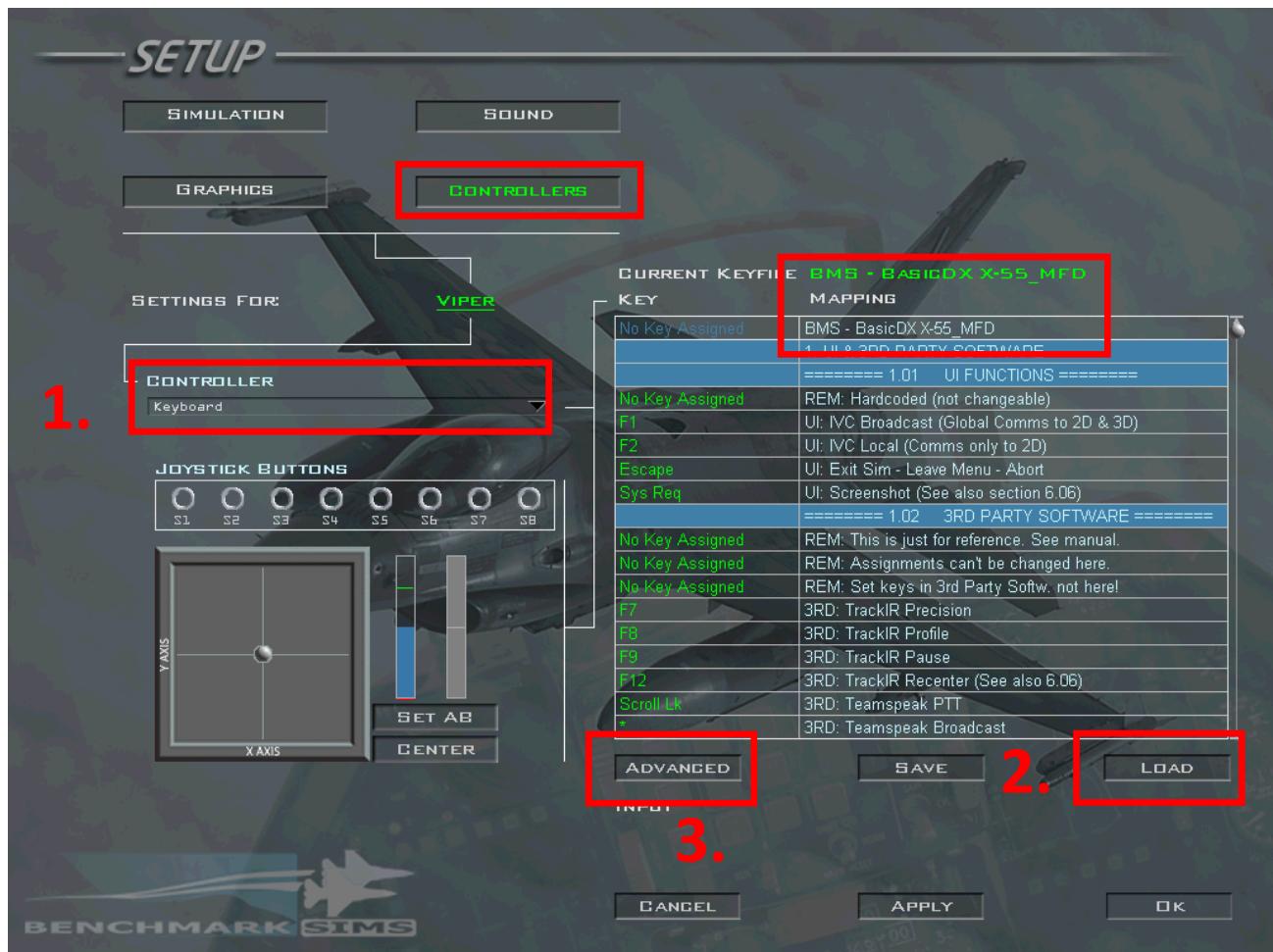
Copy the file of your choice and paste it to the .../User/Config folder.

3.10.4 BMS Setup

Start Falcon BMS and click on SETUP in the top right corner of the main ui:



Once in the setup screen hit the CONTROLLERS button. This opens the Controllers screen shown below:



In this screen you do three things:

- Select the Main Input Device

Select your main Input device from the drop down list. In this case “**Saitek X55**”.

If you need help with that or for further information see [chapter 4.1](#) of this manual.

- Load the Key File

Click on LOAD button and select the X-55 key file you just pasted to the User/Config folder.

You can verify that the correct key file is loaded on top of the key file content box next to CURRENT KEYFILE.

More information about loading key files can be found in [chapter 4.2](#) of this manual.



3. Enter Advanced Options

This opens the Advanced Options pages. You can ignore VIEW CONTROL and AUDIO CONTROL pages here. Instead we focus on the FLIGHT CONTROL and AVIONICS CONTROL settings. Here we will do our axis assignments.



3.10.5 Axis Assignments

If you need help with that refer to [chapter 4.3](#) of this manual.

FLIGHT CONTROL settings:

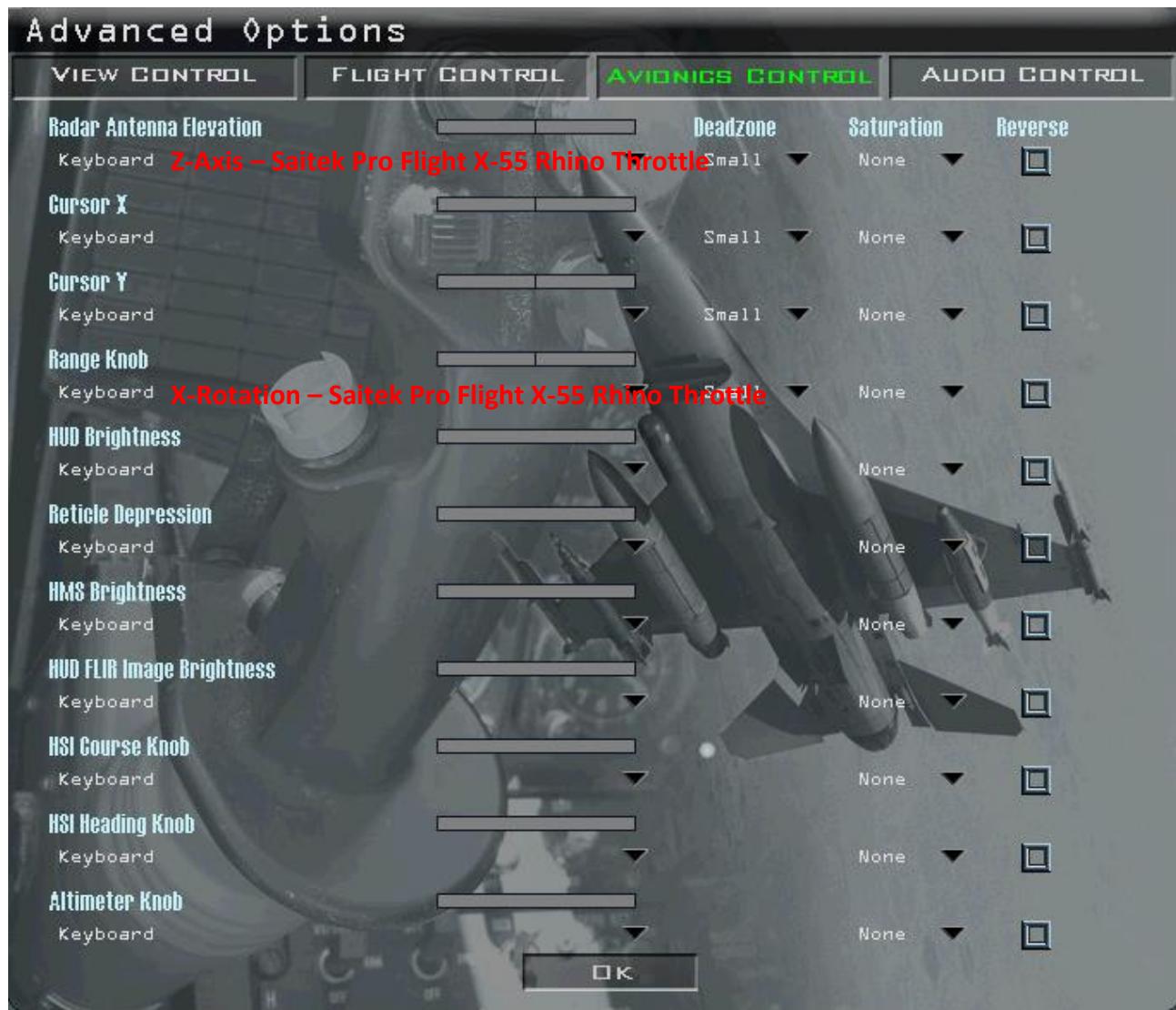
Set the axis of the device as shown in the picture below. You just have to select them from the dropdown list. After assigning an axis test it by moving the axis over its full range. Monitor the axis bar.





AVIONICS CONTROL settings:

Next go to the Avionics Control page and set the axis as shown below and test them.



If all axes have been assigned successfully hit the OK button which brings you back to the Setup – Controllers page.

If an axis is not available from the dropdown menu it is assigned somewhere else. In this case you have to take a look at the other Control pages first. What to do in this case is described in [chapter 4.4](#) of this manual.

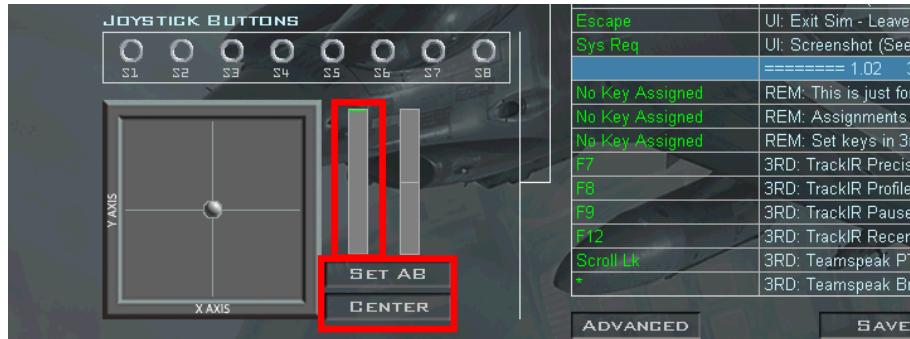
Set afterburner / Recenter:

After all axes have been assigned successfully you should define the afterburner detent. Without doing so you can't use the afterburner in the sim.

Like shown in the screenshot on the next page you have two axis bars. The right one is for the throttle axis. Move your throttle to a position where you want to set the afterburner detent. Then click on SET AB button. This defines the position on the throttle axis where the afterburner kicks in.



It is a good habit to recenter your device by releasing the controller and pressing the CENTER button. The pitch and roll axis of your main input device will then be centred to avoid unwanted shifts in the sim which makes flying the aircraft much more difficult.

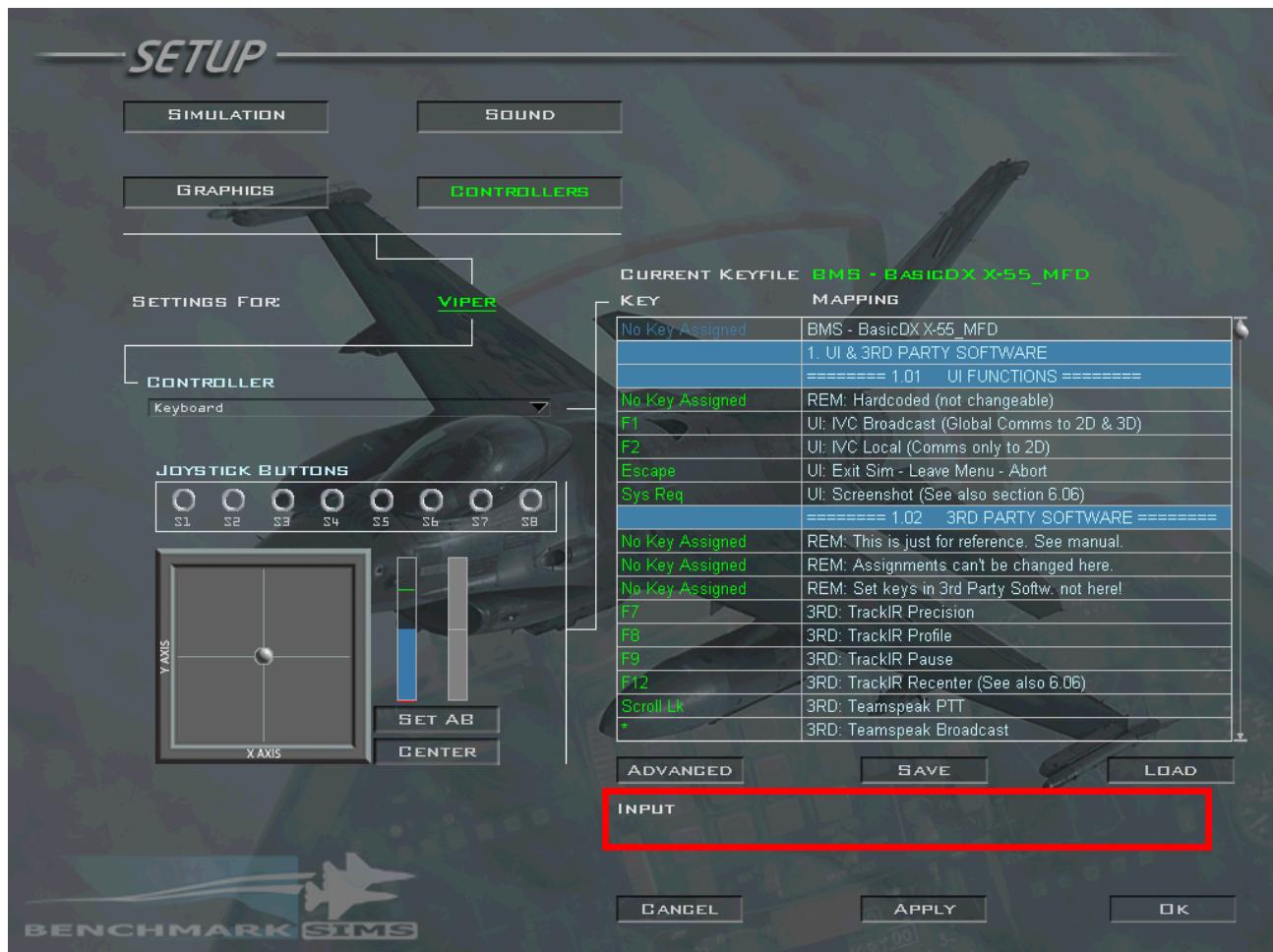


If you need help please refer to [chapter 4.5](#) of this manual.

3.10.6 Test the device buttons

Depending on how many devices you have connected, you should press one button on each device. We assume that you have connected your main device along with the 2 TM MFDs and use one of the default Saitek X-55 related key files.

Once you press a button the result will be displayed below the key file content list next to INPUT.



Test the main input device:



Press button „Pinky“ on your stick.

The text should read:

INPUT Button 6

STICK: PADDLE SWITCH



Press button „E“ on your throttle.

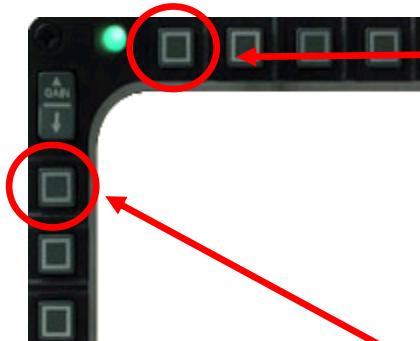
The text should read:

INPUT Button 34

TQS: MAN RANGE Knob - UNCAGE

Test TM Cougar MFDs

If you don't use the TM Cougar MFDs you can skip this part.



Press button „OSB1“ on left MFD.

The text next to INPUT should read:

INPUT Button 65

LMFD: OSB-1 Button - Push

Press button „OSB20“ on right MFD.

The text next to INPUT should read:

INPUT Button 116

RMFD: OSB-20 Button - Push



In case wrong button numbers / functions are shown it is likely that the device order is not recognized correctly by BMS. You can fix that by editing the DeviceSorting.txt located in your .../User/Config folder.

How this is done is described in [chapter 4.6](#) of this manual.

Once the device sorting is done repeat the steps on the previous page. If everything works correctly you are done here.

Test in 3d:

It is unfortunately not possible to test the shifted layer in the ui. You have to test them in 3d. The easiest way is to simply open the training mission 2 (Navigation) as the jet is already airborne.

You can repeat the same steps as shown on the previous page but this time with the functions on the shifted layer. In case you wonder how to activate the shifted layer please read [chapter 4.7](#) of this manual.

It is recommended to use an easy recognizable function e.g. night vision.

And here is the exercise:

Just open the HOTAS Print Layout.pdf look for the function CKPIT: Nightvision – Toggle and try it.

If everything works correctly you have finished your setup. Congratulations.

3.10.7 Troubleshooting

I want to learn more about DX Device buttons and layers:

Read [chapter 4.8](#).

What if I am not happy with the functions assigned to the device?

Read [chapter 4.9](#).

What If I don't have MFDs but other devices?

Read [chapter 4.10](#).

I have a stuck key / can't exit the shifted layer:

Read [chapter 4.11](#).

I want other functions on the POV hat:

Read [chapter 4.12](#).



3.11 SAITEK X-65F SETUP

3.11.1 Provided Files

This profile consists of the following components:

- | | |
|-------------------------------|---|
| - BMS X-65F_DX.pr0 | => SST profile file |
| - BMS - BasicDX X-65F_MFD.key | => BMS key file <u>with</u> TM Cougar MFDs |
| - BMS - BasicDX X-65F.key | => BMS key file <u>without</u> TM Cougar MFDs |
| - DeviceSorting_Example.txt | => example of the DX device order |
| - HOTAS Print Layout.pdf | => printable overview of assigned functions |
| - DX Code Lines.txt | => DX code lines only (with MFDs) |
| - Quick Setup Guide.txt | => Short device setup instructions |

3.11.2 Device Setup

Driver and Software:

Please make sure you have installed the latest drivers and SST software. We will not describe how to do this. Please refer to Saitek's installation instructions.

It is assumed that you already know how to setup your Saitek X-65F in general (i.e. load profiles). It only covers necessary steps to get the provided files up and running.

This profile uses BMS DirectX shifting feature to avoid any emulated keyboard input whenever possible.
Please note that you always must use "Mode 1"!

Loading the device Profile:

Not all buttons are available as pure DX buttons right away, if you don't tell the device to handle them like that. Instead some buttons come with predefined functions. So before the device can be set up with DX via the key file some profile settings have to be done first.

We provide a .pr0 file which includes all necessary changes to run your device with DirectX bindings. Before you start BMS you must load the **BMS X-65F_DX.pr0** with the Profile Launcher.

If you want to learn more about the specific settings in this profile please have a look at [chapter 5](#) of this manual.

3.11.3 Key File

Select one of the two provided key files located in the .../03 HOTAS Setup/Saitek X-65F folder:

- BMS - BasicDX X-65F_MFD.key
Select this one if you have also TM Cougar MFDs. The MFD related DX bindings are already included.
- BMS - BasicDX X-65F.key
Select this one if you don't use TM Cougar MFDs.

Copy the file of your choice and paste it to the .../User/Config folder.



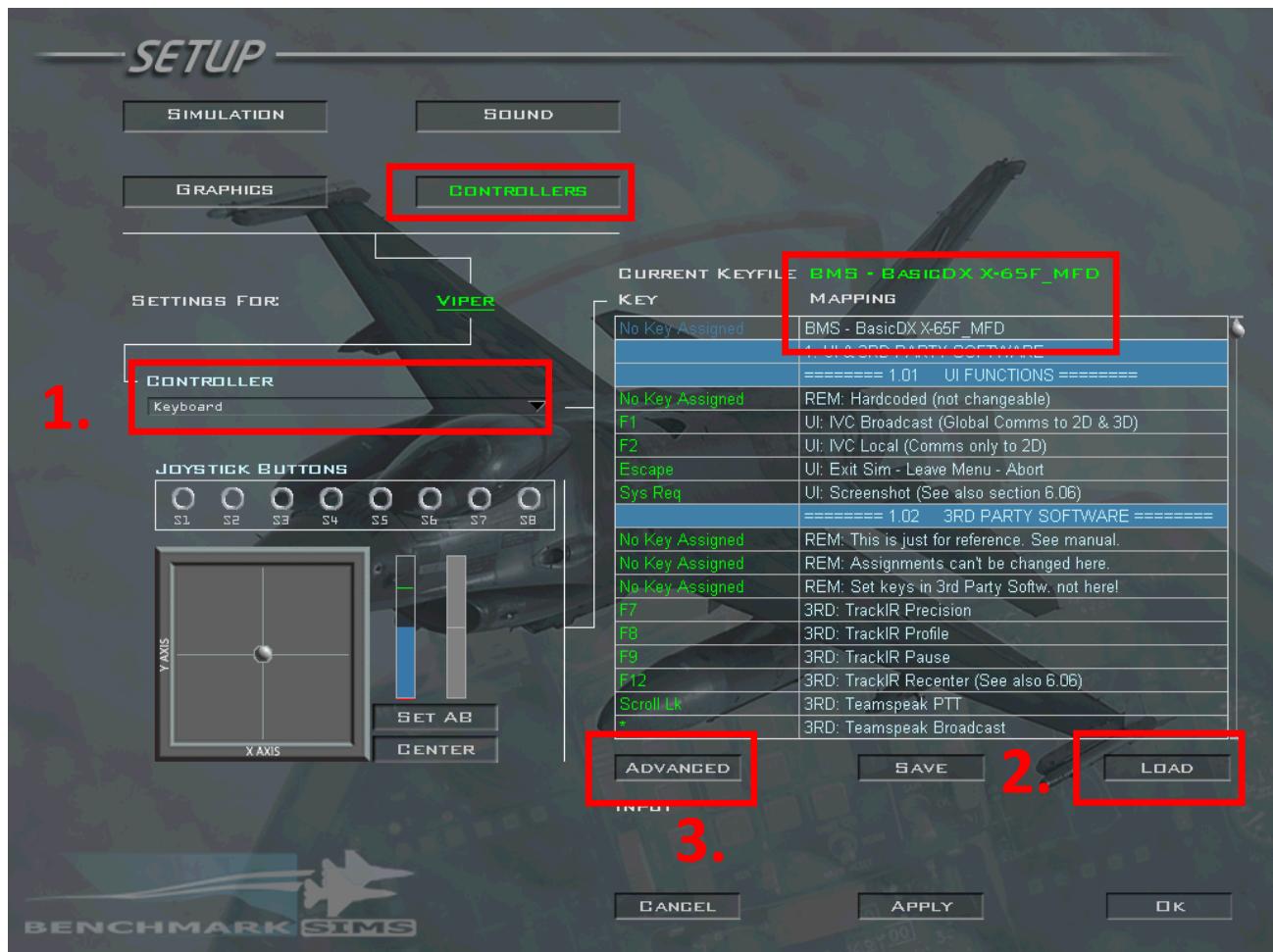


3.11.4 BMS Setup

Start Falcon BMS and click on SETUP in the top right corner of the main ui:



Once in the setup screen hit the CONTROLLERS button. This opens the Controllers screen shown below:



In this screen you do three things:

- Select the Main Input Device

Select your main Input device from the drop down list. In this case “**Pro Flight X65 Control System**”.

If you need help with that or for further information see [chapter 4.1](#) of this manual.

- Load the Key File

Click on LOAD button and select the X-65F key file you just pasted to the User/Config folder.

You can verify that the correct key file is loaded on top of the key file content box next to CURRENT KEYFILE.

More information about loading key files can be found in [chapter 4.2](#) of this manual.



3. Enter Advanced Options

This opens the Advanced Options pages. You can ignore VIEW CONTROL and AUDIO CONTROL pages here. Instead we focus on the FLIGHT CONTROL and AVIONICS CONTROL settings. Here we will do our axis assignments.



3.11.5 Axis Assignments

If you need help with that refer to [chapter 4.3](#) of this manual.

FLIGHT CONTROL settings:

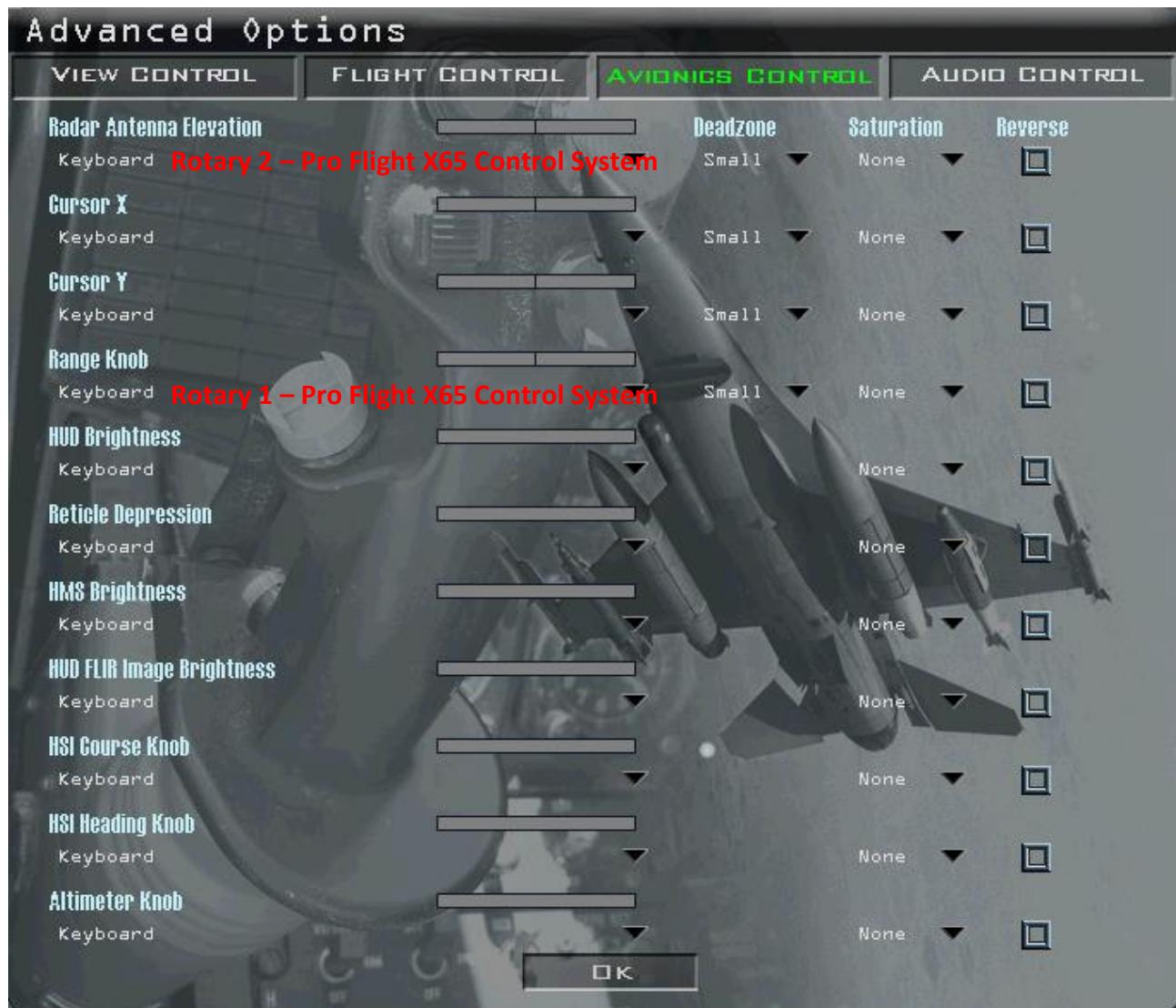
Set the axis of the device as shown in the picture below. You just have to select them from the dropdown list. After assigning an axis test it by moving the axis over its full range. Monitor the axis bar.





AVIONICS CONTROL settings:

Next go to the Avionics Control page and set the axis as shown below and test them.



If all axes have been assigned successfully hit the OK button which brings you back to the Setup – Controllers page.

If an axis is not available from the dropdown menu it is assigned somewhere else. In this case you have to take a look at the other Control pages first. What to do in this case is described in [chapter 4.4](#) of this manual.

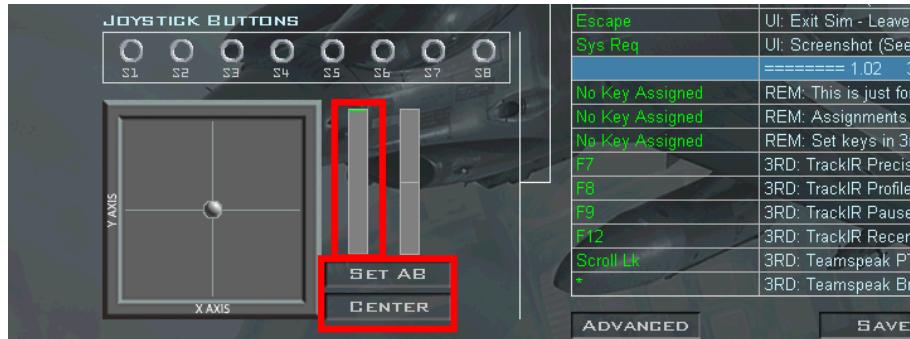
Set afterburner / Recenter:

After all axes have been assigned successfully you should define the afterburner detent. Without doing so you can't use the afterburner in the sim.

Like shown in the screenshot on the next page you have two axis bars. The right one is for the throttle axis. Move your throttle to a position where you want to set the afterburner detent. Then click on SET AB button. This defines the position on the throttle axis where the afterburner kicks in.



It is a good habit to recenter your device by releasing the controller and pressing the CENTER button. The pitch and roll axis of your main input device will then be centred to avoid unwanted shifts in the sim which makes flying the aircraft much more difficult.

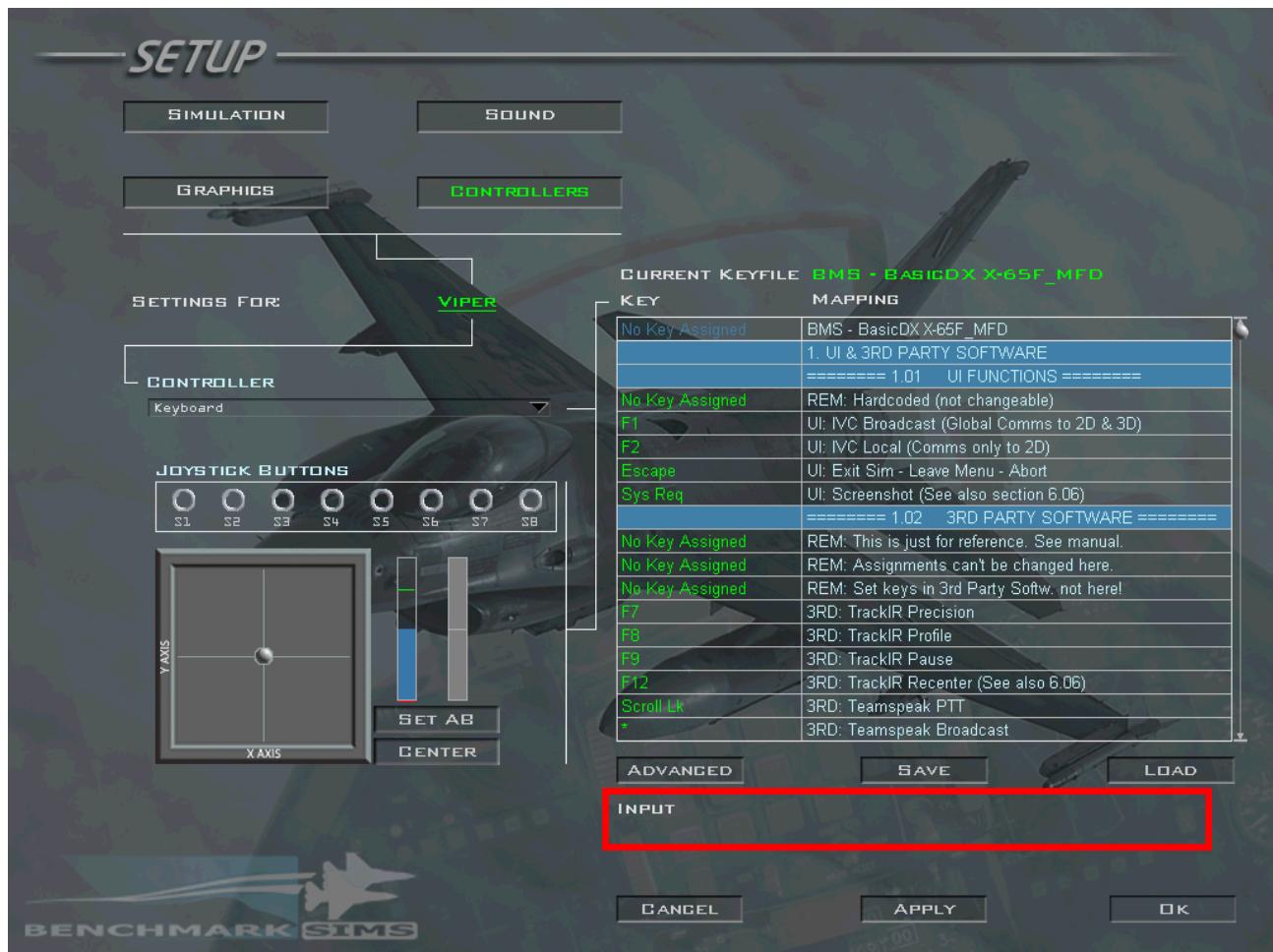


If you need help please refer to [chapter 4.5](#) of this manual.

3.11.6 Test the device buttons

Depending on how many devices you have connected, you should press one button on each device. We assume that you have connected your main device along with the 2 TM MFDs and use one of the default Saitek X-65F related key files.

Once you press a button the result will be displayed below the key file content list next to INPUT.





Test the main input device:



Press button „Pinky“ on your stick.

The text should read:

INPUT Button 5

STICK: PADDLE SWITCH

Press button „E“ on your throttle.

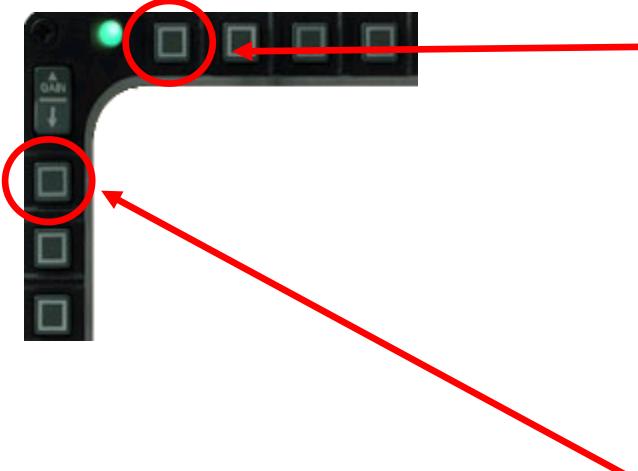
The text should read:

INPUT Button 7

TQS: MAN RANGE Knob - UNCAGE

Test TM Cougar MFDs

If you don't use the TM Cougar MFDs you can skip this part.



Press button „OSB1“ on left MFD.

The text next to INPUT should read:

INPUT Button 33

LMFD: OSB-1 Button - Push

Press button „OSB20“ on right MFD.

The text next to INPUT should read:

INPUT Button 84

RMFD: OSB-20 Button - Push

In case wrong button numbers / functions are shown it is likely that the device order is not recognized correctly by BMS. You can fix that by editing the DeviceSorting.txt located in your .../User/Config folder.

How this is done is described in [chapter 4.6](#) of this manual.

Once the device sorting is done repeat the steps on the previous page. If everything works correctly you are done here.

Test in 3d:

It is unfortunately not possible to test the shifted layer in the ui. You have to test them in 3d. The easiest way is to simply open the training mission 2 (Navigation) as the jet is already airborne.

You can repeat the same steps as shown on the previous page but this time with the functions on the shifted layer. In case you wonder how to activate the shifted layer please read [chapter 4.7](#) of this manual.

It is recommended to use an easy recognizable function e.g. night vision.

And here is the exercise:

Just open the HOTAS Print Layout.pdf look for the function CKPIT: Nightvision – Toggle and try it.

If everything works correctly you have finished your setup. Congratulations.

3.11.7 Troubleshooting

I want to learn more about DX Device buttons and layers:

Read [chapter 4.8](#).

What if I am not happy with the functions assigned to the device?

Read [chapter 4.9](#).

What If I don't have MFDs but other devices?

Read [chapter 4.10](#).

I have a stuck key / can't exit the shifted layer:

Read [chapter 4.11](#).

I want other functions on the POV hat:

Read [chapter 4.12](#).



3.12 TM COUGAR MFDs SETUP

3.12.1 Provided Files

This profile consists of the following components:

- DeviceSorting_Example.txt => example of the DX device order
- MFD Print Layout.pdf => printable overview of assigned functions
- DX Code Lines 2&3.txt => DX code lines only (with MFDs)
- DX Code Lines 3&4.txt => DX code lines only (with MFDs)

3.12.2 Device Setup

Driver and Software:

In order to make the MFDs work you don't have to install any software (e.g. T.A.R.G.E.T) or drivers. The MFDs work right out of the box. Just plug them in and the rest is done via DirectX assignments in the key file.

3.12.3 BMS Setup

As you have noticed there are no key files for the MFDs. The reason is that you have to connect a main input device (a joystick) to your computer. Offering key files for MFDs only makes just no sense. The devices covered in this manual have already a key file with the MFD code lines integrated.

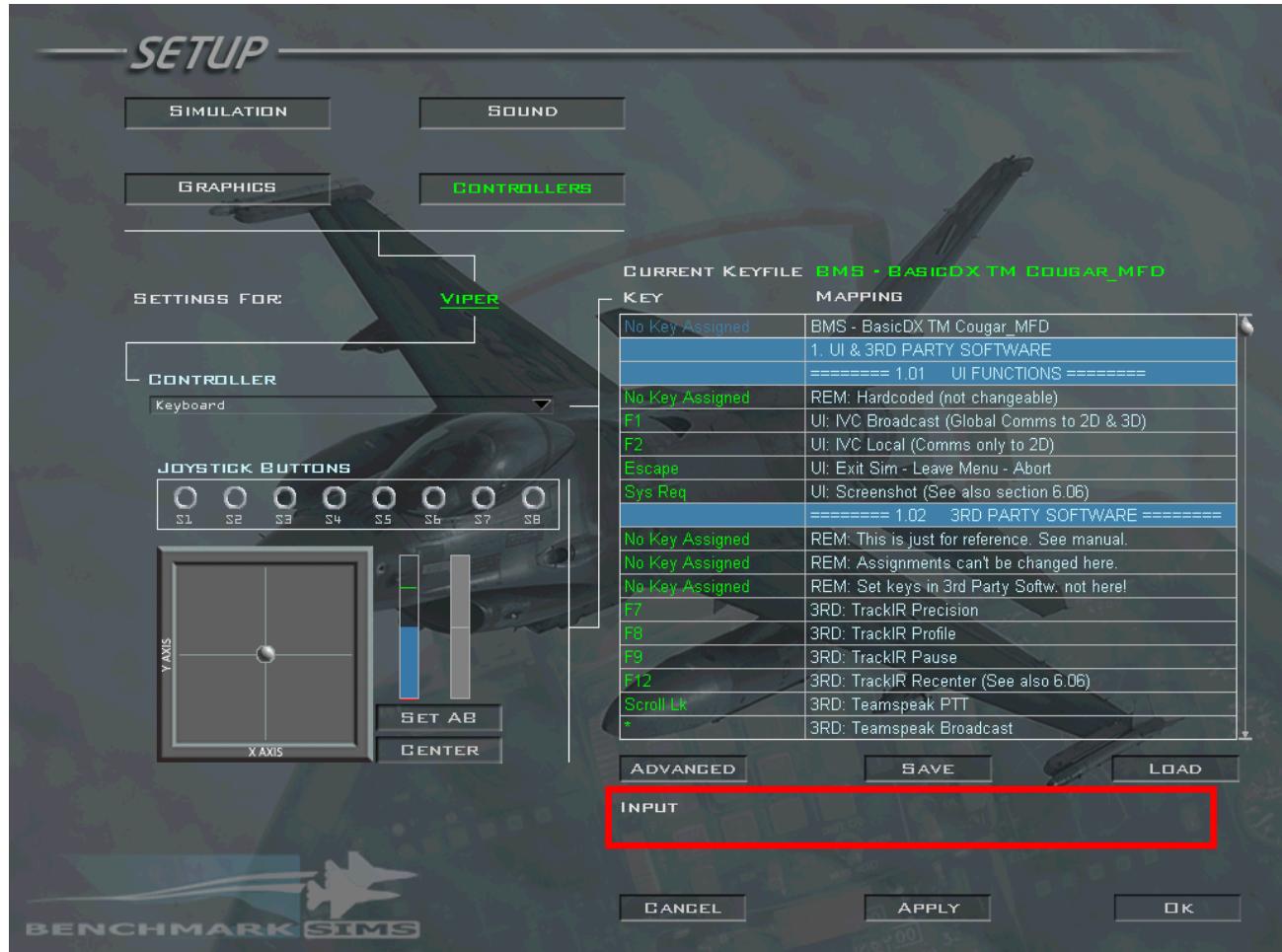
If have another input device not covered here but want to use the MFDs as well we offer two solutions:

1. Your main input device is one single unit with stick and throttle (e.g. TM Cougar, Saitek X-52)
We assume this device is the 1st DX controller in the DeviceSorting.txt (check [chapter 4.6](#) if you don't know what that is).
If you have connected the MFDs make sure, they are the 2nd and 3rd controller in the list. All you have to do is open your key file and paste the entire content of **DX Code Lines 2&3.txt** to the end of that file. Now the DX code lines are included the MFDs should work with BMS.
2. Your main input device is the stick and you have in addition another device as throttle (e.g. TM Warthog, Saitek X-55)
In this case we assume that your stick and throttle are the first both controllers in the DeviceSorting.txt. Make sure the MFDs are on the positions 3 and 4. Open your key file and paste the entire content of **DX Code Lines 3&4.txt** to the end of that file.

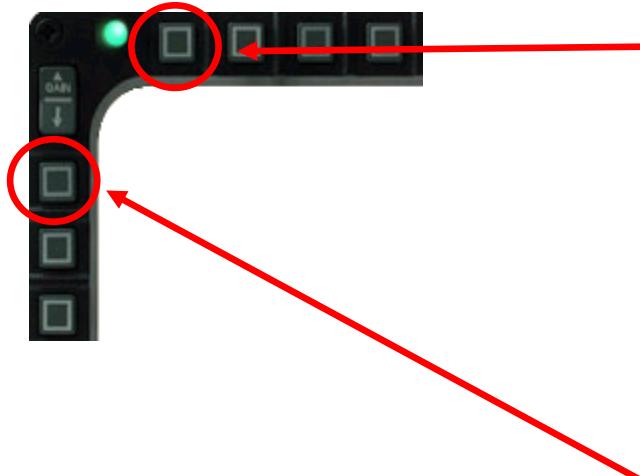
3.12.4 Test the device buttons

Once you press a button the result will be displayed below the key file content list next to INPUT (see next page).





This is what you should see: (the first number is for MFDs as 2nd and 3rd device, in brackets for 3rd and 4th)



Press button „OSB1“ on left MFD.

The text next to INPUT should read:

INPUT Button 33 (65)

LMFD: OSB-1 Button - Push

Press button „OSB20“ on right MFD.

The text next to INPUT should read:

INPUT Button 84 (116)

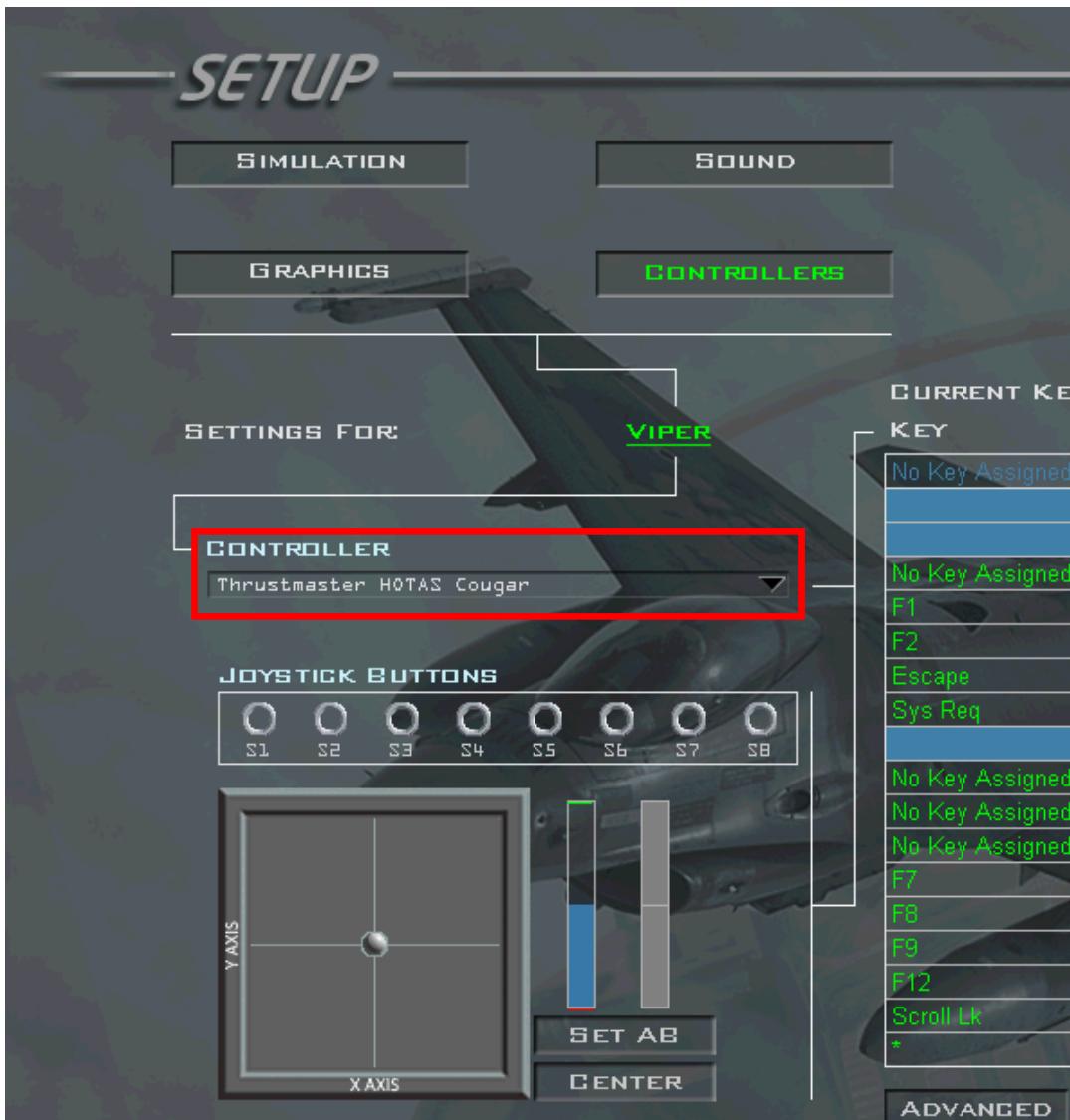
RMFD: OSB-20 Button - Push

4 GENERAL NOTES:

This chapter addresses some general information applicable for all DX devices. We will refer to this chapter when necessary. So, in order to save you some time you can skip it for now, and only read it if you need to.

4.1 SELECT THE MAIN INPUT DEVICE:

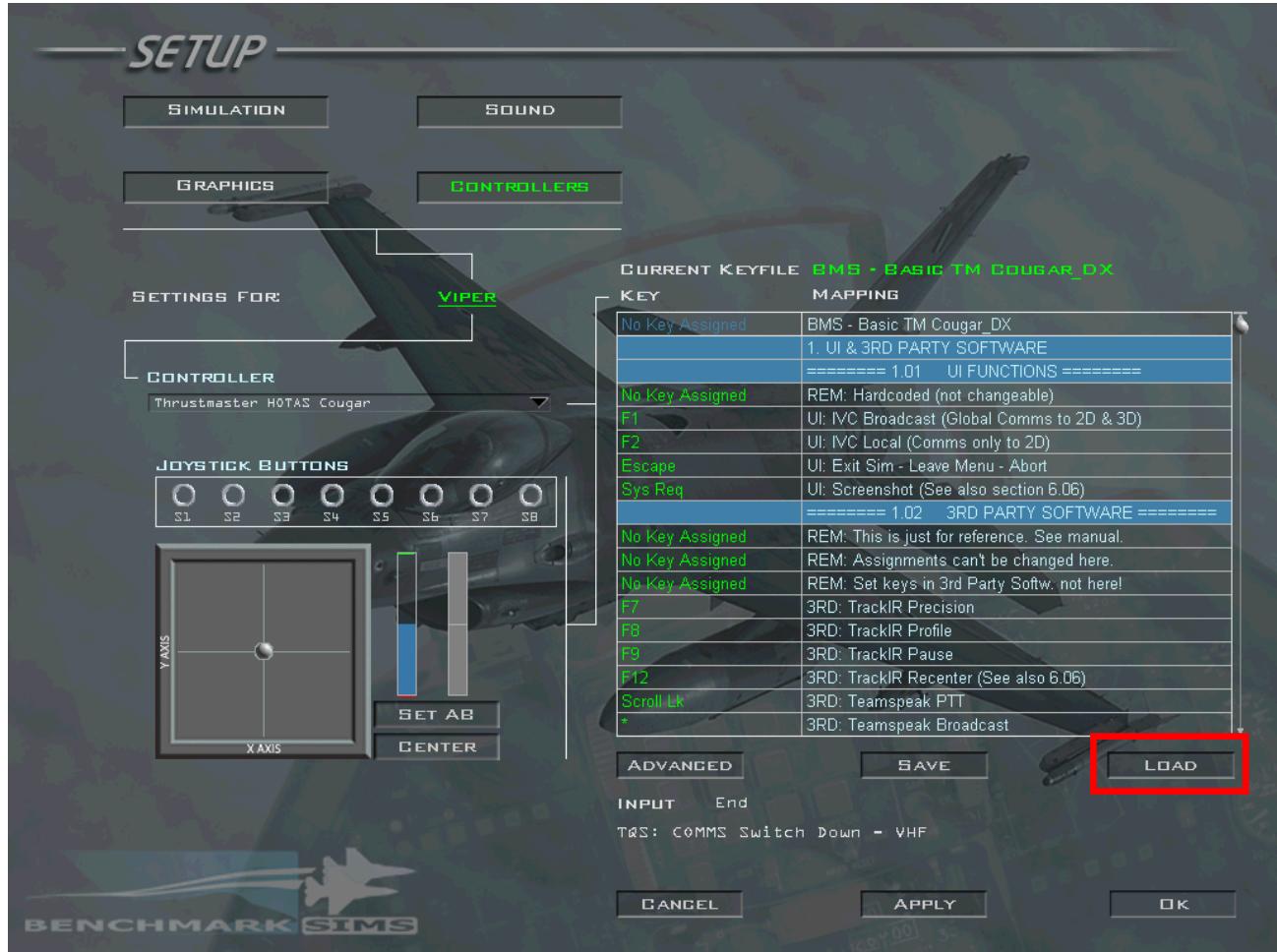
The main Input device is always the controller providing axis for pitch and roll input, namely the Stick. There are HOTAS versions out there which provide a combined unit of Stick and Throttle, e.g. the Saitek X-45 or the TM Cougar. In this case you must select the X-45 or Cougar as your main input device in the Setup Controllers screen in BMS, as shown in the picture below:



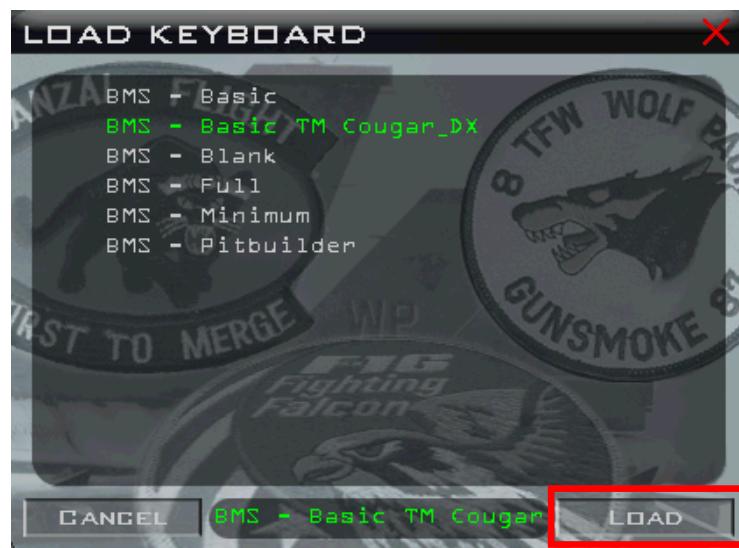
On the other hand there are also HOTAS systems which have two controller units (Stick and Throttle), as is the case for TM Warthog. In this case you must select the Stick.

4.2 How Do I Load A Key File?

Open the Setup – Controllers page. On the right hand side you find the currently loaded key file. To load a new one just hit the Load button on the bottom of the key file content list.



This opens a select dialog where you can pick your key file from the list (In this case it is assumed you have copied BMS – Basic TM Cougar_DX.key to the ...User/Config folder).



Click on LOAD button.

Verify that the correct key file is loaded. You can see the currently loaded key file on top of the content list.



4.3 ASSIGNING AXIS:

Axis can be set in the Advanced options of the Setup – Controllers page.



You can reach this screen by clicking the ADVANCED button located beneath the key mappings.



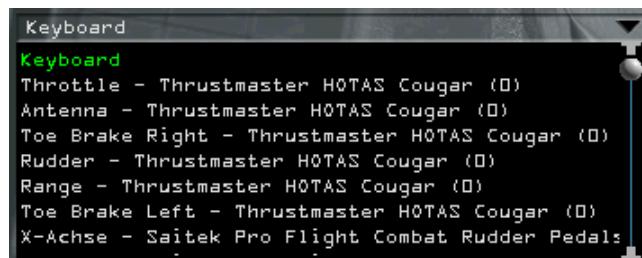
This window has 4 tabs (categories) named VIEW CONTROL, FLIGHT CONTROL, AVIONICS CONTROL and AUDIO CONTROL.



Before these tabs are described in detail, however, some words about analogue axis handling in Falcon BMS are in order.

General notes about axis assignment

BMS detects the analogue axes from all connected devices. They can be selected from a dropdown menu. You will only be able to map one in-game axis to one 'physical' analogue axis, so if you have already mapped the mouse wheel axis to the view zoom axis, you will not be able to use it to control FOV too!



Axes Properties

Axes in Falcon have three properties that may be configured in the UI by the user:

Note: not all axes have these options.

These tabs provide a list of all available in-game axes. Depending of the nature of the axis, each of these axes may have one of the following controls:

- A dropdown box where you can select the physical axis you want to map it to. (1)
- A 'value bar' (located to the right of the axis name) that shows the current value of the analogue axis. (2)
- A dead zone dropdown box with 4 options: 'None', 'Small', 'Medium' and 'Large'. (3)

A dead zone is a region around the centre position of the axis in which motion is ignored. The axis always reports '0' in a dead zone. Dead zones are symmetrical around the centre point of an axis.

- 'None' means exactly that, no dead zone is applied to the physical axis.
- 'Small' applies a dead zone 1% the size of the physical travel to either side of the '0' point.
- 'Medium' enlarges that size to 5%.
- 'Large' applies a 10% dead zone.

- A saturation drop down box that contains 4 options: 'None', 'Small', 'Medium' and 'Large'. (4)

A saturation zone is a zone of tolerance at the minimum and maximum of an axis. An axis value within this zone is reported as the minimum or maximum value. The purpose of this is to allow for axes (usually of the cheaper ilk) that report values less (or greater) than their maximum (or minimum) value, even if their physical 'throw' is already at the maximum (or minimum). An example might be a throttle slider that just cannot report 100% thrust even at its maximum possible travel. Saturation zones are always symmetrical, that is the zones at the maximum and minimum ends of an axis are of the same size.

You can set a dead zone or saturation from a dropdown menu.

Your options are None, Small, Medium and Large.

- 'Small' specifies a saturation zone size of 1% of the physical travel.
- 'Medium' sets 5%.
- 'Large' applies 10%.



- A Reverse button. (5)

By activating this option you can reverse an axis. It then reports its minimum value while at its maximum physical travel and vice versa; useful for some configurations such as toe brakes.



4.4 WHAT IF I CAN'T SELECT AN AXIS?

As a consequence of the 'one physical axis per in-game axis' rule, the availability of axes in the list boxes gets smaller the more axes you map. It might happen that an axis is not available at the corresponding drop down list simply because it simply is assigned somewhere else.

Let's take an example:

You want to assign the throttle axis of your input device by selecting it in the "Throttle Axis" drop down list.

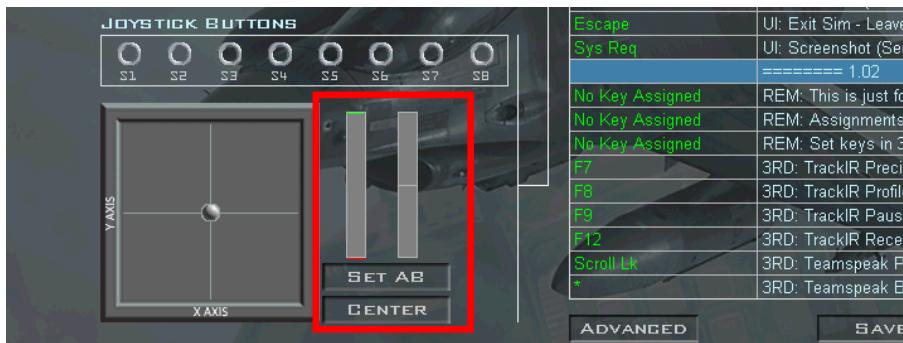
You learn that your throttle axis is not available there. That means the throttle axis has been assigned somewhere else. The only way to solve that is to go through all four control setting pages and search for the throttle axis.

If you want to exchange the mappings of two axes you will have to temporarily map one of them to the keyboard, in order to be able to select it in the other list box.

4.5 SET AFTERBURNER DETENT

You can set detents on your throttle axis to define the positions of the Idle and Afterburner detents (these detents apply to all engines when flying multi-engine aircraft in BMS).

This can be done in the Setup – Controllers page:



By default no detents are set. Instead the markers are at the top (green) and bottom (red) of the axis as shown in the screenshot above. This means basically that no detents are defined.

Afterburner and Idle detents can be set as follows:

- Left-click on SET AB = Set Afterburner detent (green).
- Right-click on SET AB = Set Idle detent (red).



You will see that the green and red bars are now set accordingly on the throttle range.



Some devices have a hardware detent (you feel a little resistance when moving the throttle up). You should aim to set the detent to that position.

The most important setting here is the afterburner (AB) detent. Without setting it you won't be able to use the afterburner!

The IDLE detent is optional. We recommend skipping it for now as this setting is not really needed and due to hardware limitation of most devices very tricky to use.



4.6 DX DEVICE SORTING:

BMS sees exactly the same order of connected DX devices as Windows does. To make the key files work it is always assumed that the first controller in that device order is the main input device. However, in some occasions this might not work without hassle. Windows is a bit touchy at times and tends to shuffle the devices, mainly if you plug in and out devices regularly. If this happens the DX assignments in your key file might not work anymore.

For that reason you can define a fixed order via the DeviceSorting.txt. That file is located in your .../User/Config/... folder. It can be edited with any text editor, like e.g. notepad.

Once you have plugged in your controllers and started BMS the DeviceSorting.txt will be filled with a list of these controllers. After shutting down BMS you can edit the txt file.

In the key files we provide it is always assumed that you have connected (in order)

- the main controller (Stick)
- the second HOTAS controller (if applicable)
- the left TM MFD
- the right TM MFD

We also provide a DeviceSorting_Example.txt to show you how the order should look in your DeviceSorting.txt. However, depending on the controllers in use this may vary from user to user. For more information about the DeviceSorting.txt please refer to the BMS Technical Manual, chapter 10.7.2.

4.7 How Do I ENTER THE SHIFTED LAYER?

Every device has a range of 32 DX buttons. This is by design and cannot be altered.

BMS provides two DX layers: The unshifted and the shifted layer. This in fact doubles the amount of possible function assignments to your device. Shifting is done via the "SimHotasPinkyShift" callback. It is named as **STICK: PINKY SWITCH (DX SHIFT)** in the key files and the devices print layouts.

The "SimHotasPinkyShift" callback has basically two functions:

1. On a short button press (>200ms) it functions normally as the Pinky button on the stick.
2. On a long button press (<200ms) it gives you access to the shifted layer.

When shifting is active (the corresponding button is pressed and held longer than 200ms) it shifts all connected devices simultaneously. So, if you have mapped that function to your stick it invokes the shifted layer on other devices (like MFDs and such) as well.

For more information about device buttons and layer read the next chapter.

Note: Some users report having troubles using DirectX shifting. If this is the case please refer [to chapter 4.11.](#)





4.8 DX DEVICE BUTTONS AND LAYERS:

BMS counts the numbers in a different way than Windows does. The BMS DX button number is always -1.

For the DX shifting to work properly, you have to make sure that the Falcon BMS.cfg file includes the following setting:

```
set g_nHotasPinkyShiftMagnitude 256
```

The default value is 256. This simply means that the DX button number is shifted by that value.

Example: BMS DX **1** (unshifted layer) + **256** (Shift magnitude) = BMS DX **257** (shifted layer)

The shifted layer is accessed by using the callback "SimHotasPinkyShift". This callback has the same functionality as "SimHotasPinky" on a short button press while offering the opportunity to access the shifted layer on a long button press.

It is essential that "SimHotasPinkyShift" is set to the one and the same DX button in both, the unshifted and the shifted layer. Otherwise you'll end up being stuck in the shifted layer without a chance to get back to the functions assigned on the unshifted layer.

Example:

If the callback "SimHotasPinkyShift" is assigned to BMS DX Btn. # 4 than you have to make sure it is assigned to BMS DX Btn. # 260 as well!

Shifted buttons that should do the same as the unshifted ones do not need to be mapped at all.

Shifted buttons that should do nothing at all (hence only work as unshifted buttons) need to be mapped to "SimDoNothing".

If you don't need a shifted layer you could also use "SimHotasPinky" instead.

The following list shows all DX button numbers for the first 8 devices with a shifting magnitude set to (default) 256:

Device #	WIN DX Btn. #	BMS DX Btn. #	BMS Shifted DX Btn. #
Device # 1	1 - 32	0 - 31	256 - 287
Device # 2	33 - 64	32 - 63	288 - 319
Device # 3	65 - 96	64 - 95	320 - 351
Device # 4	97 - 128	96 - 127	352 - 383
Device # 5	129 - 160	128 - 159	384 - 415
Device # 6	161 - 192	160 - 191	416 - 447
Device # 7	193 - 224	192 - 223	448 - 479
Device # 8	225 - 256	224 - 255	480 - 511

Note: Since 4.36 BMS also supports devices with up to 128 buttons. Please refer to the Technical manual, chapter 10.

4.9 How To CHANGE DX ASSIGNMENTS?

There are various ways to change DX assignments. They are explained in the BMS Technical Manual, chapter 10 - Key Files.

Here, we want to focus on editing the key files directly. The example is shown for the TM Cougar but applies to all other devices the same way.

In the DX section of the TM Cougar key file we find the following code lines for the shifted layer:

```
SimDoNothing -1 0 0xFFFFFFFF 0 0 0 -2 "===== HOTAS SHIFTED ====="
# TG1 (Win DX1 = BMS DX0+256 = BMS DX256)
SimTriggerFirstDetent 256 -1 -2 0 0x0 -1

# Pickle/S2 (Win DX2 = BMS DX1+256 = BMS DX257)
RecenterTrackIR 257 -1 -2 0 0x0 -1

# Pinky/S3 (Win DX3 = BMS DX2+256 = BMS DX258)
SimHotasPinkyShift 258 -1 -2 0 0x0 -1
```

Let's assume you want to change the yellow marked function to something else. The callback SimTriggerFirstDetent is the same as on the unshifted layer. So pressing the button TG1 on the TM Cougar does exactly the same in both layers, hence you want to change that.

All you need to do is to replace the first part of the code line, the callback, with another one. Let's assume you just want to recenter your joystick when pressing TG1 in the shifted layer.

The code would then look like this:

```
SimDoNothing -1 0 0xFFFFFFFF 0 0 0 -2 "===== HOTAS SHIFTED ====="
# TG1 (Win DX1 = BMS DX0+256 = BMS DX256)
RecenterJoystick 256 -1 -2 0 0x0 -1
```

Make sure to keep the space between the callback and the DX Btn. # (256 in this case).

4.10 WHAT IF I DON'T USE THE TM COUGAR MFDs?

If the main input device is the only one you use in Falcon BMS you can simply ignore them. This is also the case if you use rudder pedals. If you use another device which provides DX input buttons you simply can pick the key file without “_MFD”. This file doesn't contain any of the MFD related code lines.

However, this means that you have to do the programming of the devices not covered here yourself. Either you use your vendors programming software or you go down the full DX path.

How DX devices are programmed via the key file is explained in the BMS Technical Manual, briefly in Chapter 2, and in more depth in Chapter 10.

We'd like to remind you that this is advanced stuff. On the other hand, if understood, it is really not a difficult thing to do.

One tool to help you set up your devices using the full DX path is the Key File Editor, located in the .../Docs/01 Input Devices folder.

4.11 STUCK KEYS AKA CAN'T RELEASE THE SHIFTED LAYER:

This can have various causes.

1. "*SimHotasPinkyShift*" is not set correctly:

It is essential that "*SimHotasPinkyShift*" is set to the one and the same DX button in both, the unshifted and the shifted layer. Otherwise you'll end up being stuck in the shifted layer without a chance to get back to the functions assigned on the unshifted layer.

Example:

If the callback "*SimHotasPinkyShift*" is assigned to BMS DX Btn. # 4 than you have to make sure it is assigned to BMS DX Btn. # 260 as well!

2. Wrong press / release sequence:

This issue has been seen quite often in the forum. A stuck key issue appears when you are using shifted functions. In this case it doesn't matter if you are using the shifted function with your keyboard (key with modifier/s) or with your DX input device (Pinky Shift with DX button). A popular example is the TRIM function.

The reason for a stuck key is a mishandling of the key press sequence. Here is the way how to do it properly:

1. Press and hold modifier key (keyboard) / Pinky switch (DX Shift)
2. Press keyboard key / DX button and hold it
3. Continue holding both (1 & 2) as long as desired
4. Release keyboard key / DX button
5. Release modifier key (keyboard) / Pinky switch_(DX Shift)

If you release #4 & #5 in the wrong order the key(s) / function will most likely stuck. To prevent this either use the correct order stated above or try to avoid using shifted functions.

At this point this already reflects 99% of all causes. But in theory there is another one.

3. Hardware malfunction:

This is rare but can happen of course. In this case you should try to set the "*SimHotasPinkyShift*" callback to another button. Just to cross check.

If the issue persists and you can rule out #1, #2 and #3 please feel free to report your problem, preferable in this [public forum](#) thread.



4.12 WHAT IF I DON'T HAVE A TRACKIR AND WANT VIEWS ON THE POV HAT?

If you want to change this (unshifted: POV / shifted: Trim) you should do the following:

Open your currently used key file located in the .../Users/Config folder with a text editor of your choice. Search for the following code lines:

```
### We map TRIM for the UNSHIFTED layer here.
AEElevatorTrimUp 0 -1 -3 0 0x0 -1
SimDoNothing 0 -1 -3 1 0x0 -1
AFAileronTrimRight 0 -1 -3 2 0x0 -1
SimDoNothing 0 -1 -3 3 0x0 -1
AEElevatorTrimDown 0 -1 -3 4 0x0 -1
SimDoNothing 0 -1 -3 5 0x0 -1
AFAileronTrimLeft 0 -1 -3 6 0x0 -1
SimDoNothing 0 -1 -3 7 0x0 -1
```

Delete the yellow marked part and replace it with the following code lines:

```
OTWViewUp 0 -1 -3 0 0x0 0
SimDoNothing 0 -1 -3 1 0x0 0
OTWViewRight 0 -1 -3 2 0x0 0
SimDoNothing 0 -1 -3 3 0x0 0
OTWViewDown 0 -1 -3 4 0x0 0
SimDoNothing 0 -1 -3 5 0x0 0
OTWViewLeft 0 -1 -3 6 0x0 0
SimDoNothing 0 -1 -3 7 0x0 0
```

Do the same for the shifted layer. Replace the yellow part

```
### The POV hat has its own syntax.
### We map POV change for the SHIFTED layer here.
OTWViewUp 2 -1 -3 0 0x0 -1
SimDoNothing 2 -1 -3 1 0x0 -1
OTWViewRight 2 -1 -3 2 0x0 -1
SimDoNothing 2 -1 -3 3 0x0 -1
OTWViewDown 2 -1 -3 4 0x0 -1
SimDoNothing 2 -1 -3 5 0x0 -1
OTWViewLeft 2 -1 -3 6 0x0 -1
SimDoNothing 2 -1 -3 7 0x0 -1
```

with the following code lines:

```
AEElevatorTrimUp 2 -1 -3 0 0x0 0
SimDoNothing 2 -1 -3 1 0x0 0
AFAileronTrimRight 2 -1 -3 2 0x0 0
SimDoNothing 2 -1 -3 3 0x0 0
AEElevatorTrimDown 2 -1 -3 4 0x0 0
SimDoNothing 2 -1 -3 5 0x0 0
AFAileronTrimLeft 2 -1 -3 6 0x0 0
SimDoNothing 2 -1 -3 7 0x0 0
```

If you would like to add other functions just replace the bolded callbacks by other callbacks of your choice.

In most cases, the up-right, down-right, down-left and up-left positions of the 8-way POV hat are not needed. The SimDoNothing callbacks are used to act the POV as a 4-way Coolie Hat AND to avoid unwanted actions, because the POV may have some default functions for the up-right...etc. positions. So it is always a good idea to set ALL unused DX buttons (shifted and unshifted) to SimDoNothing!

If you don't need a shifted layer at all (aka unshifted and shifted layer should do the same) you can simply delete the POV code lines from the shifted layer section of the key file.

4.13 HOW TO USE THE NEW IDLE DETENT CALLBACKS.

To supplement the existing SimThrottleIdleDetent function we have a set of new callbacks. Although they are specifically designed for TM Warthog users they also may be used with other HOTAS devices as well. In the following examples the use of TM Warthog Throttle as 2nd DX Input device is assumed.

1. SimThrottleIdleDetentForward / SimThrottleIdleDetentBack

This is mainly for single engine jets but could also be used for dual engine jets. In case you fly a dual engine jet please note that the second (right) engine is triggered simultaneously. We need the special Press / Release code (left engine) while the right engine is set to SimDoNothing.

```
# IDLERON (Idle detent right - Back) (Win DX61 = BMS DX60)
```

```
SimThrottleIdleDetentBack 60 -2 -2 0 0x0 314
```

```
# IDLERON (Fwd from - Back)
```

```
SimThrottleIdleDetentForward 60 -2 -2 0x42 0x0 314
```

```
# IDLELON (Idle detent left - Back) (Win DX62 = BMS DX61)
```

```
SimDoNothing 61 -2 -2 0 0x0 -1
```

```
# IDLELON (Fwd from Back)
```

```
SimDoNothing 61 -2 -2 0x42 0x0 -1
```

2. SimThrottleIdleDetentLeft / SimThrottleIdleDetentRight

These are designed for dual engine jets. You can put both engines from cutoff to idle position and vice versa independently. This is how the code should look like:

```
# IDLERON (Idle detent right) (Win DX61 = BMS DX60)
```

```
SimThrottleIdleDetentRight 60 -1 -2 0 0x0 314
```

```
# IDLELON (Idle detent left) (Win DX62 = BMS DX61)
```

```
SimThrottleIdleDetentLeft 61 -1 -2 0 0x0 314
```

Note: We don't use the specific press / release events here.

5 SAITEK PROFILE SPECIFICS:

In this chapter we describe some specifics for the Saitek products. It is not essential to read this chapter as the provided profile files (.pr0) for the Saitek devices have these manual changes built in already. It just shows what you have to take into account if you want to set up your own profile. You can use the ones we provide as a template for your own profiles.

But be advised: If you program buttons manually (assigning keys to them) you will lose their DX functionality. Keep that in mind when editing these files.

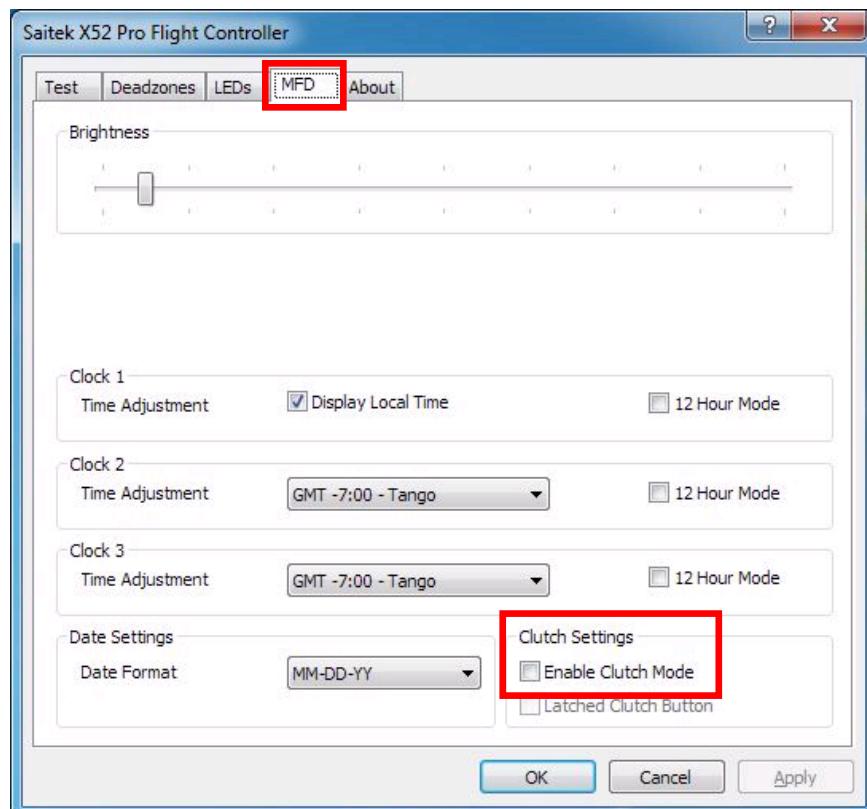
As we aim for a full DX setup we have to do some settings first. Not all buttons are available as DX buttons right away, if you don't tell the device to handle them like that. Instead some buttons come with predefined functions. These buttons can't be accessed with DX. How this can be changed is described below.

Note: All screenshots are taken using the Saitek X-52 but they apply to other Saitek products as well.

5.1 CLUTCH BUTTON:

Applies to: Saitek X-52, Saitek X-52pro

The clutch (i) button, when pressed, temporarily deactivates all other buttons by default. For more info about this feature please refer to Saitek's manual. Unfortunately we can't use the clutch button with DX as long as it has its default behavior. To change this you have to open the control panel - MFD page - and uncheck the "Enable Clutch Mode" option like shown in the image below.

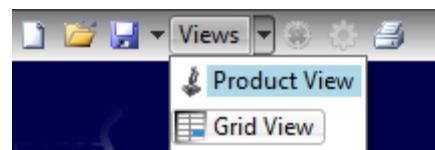


Now we can use the clutch button as a DX button. Other settings are not mandatory and you can set them to your own liking.

5.2 MODE SELECTOR SWITCH:

Applies to: Saitek X-45, Saitek X-52, Saitek X-52pro

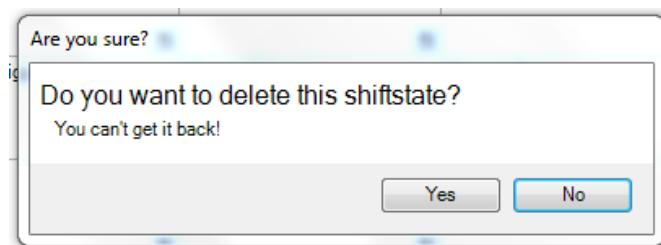
We have overall six modes by default. The Mode buttons 1 – 3 are greyed out; hence they are not available as DX buttons. First enter the Programming page and select the Grid View.



Now all modes are available for editing.

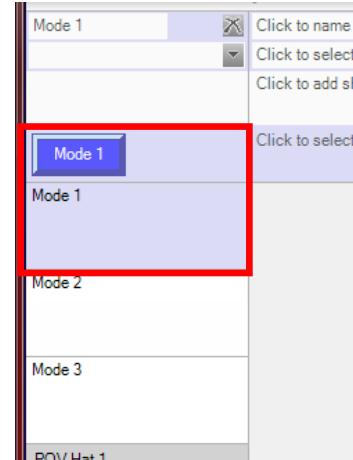
Mode 1	Mode 2	Mode 3	Mode 1 + Pinkie	Mode 2 + Pinkie	Mode 3 + Pinkie	
Mode 1	Mode 1	Mode 1	Mode 1	Mode 2	Mode 3	
Mode 1	Mode 2	Mode 3	Mode 1	Pinkie Switch	Mode 2	Pinkie Switch
Mode 2	Mode 2	Mode 2	Mode 2	Mode 2	Mode 2	Mode 2
Mode 3	Mode 3	Mode 3	Mode 3	Mode 3	Mode 3	Mode 3
POV Hat 1	POV Hat 1	POV Hat 1	POV Hat 1	POV Hat 1	POV Hat 1	POV Hat 1

To use the mode 1-3 selector as DX buttons we have to delete five of them first. Just click on the “X” on the top right corner of each mode (We suggest to start with mode 2 and go to the right from there) and confirm by clicking on “Yes”.

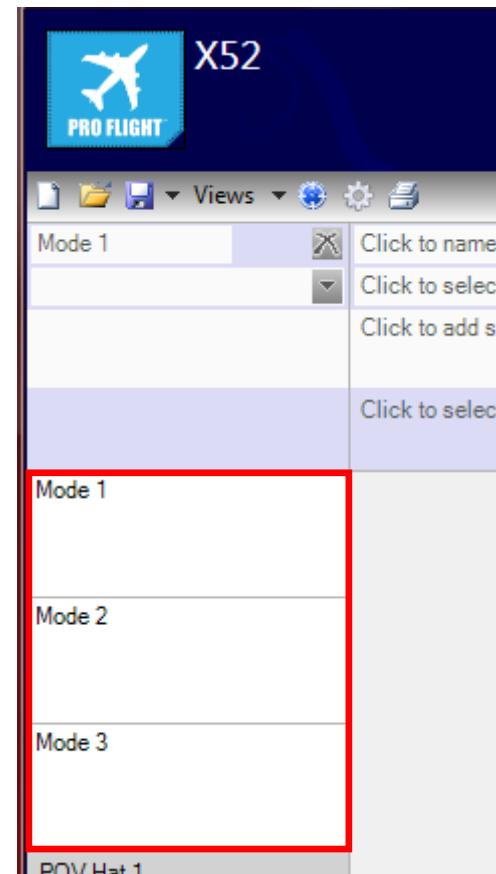
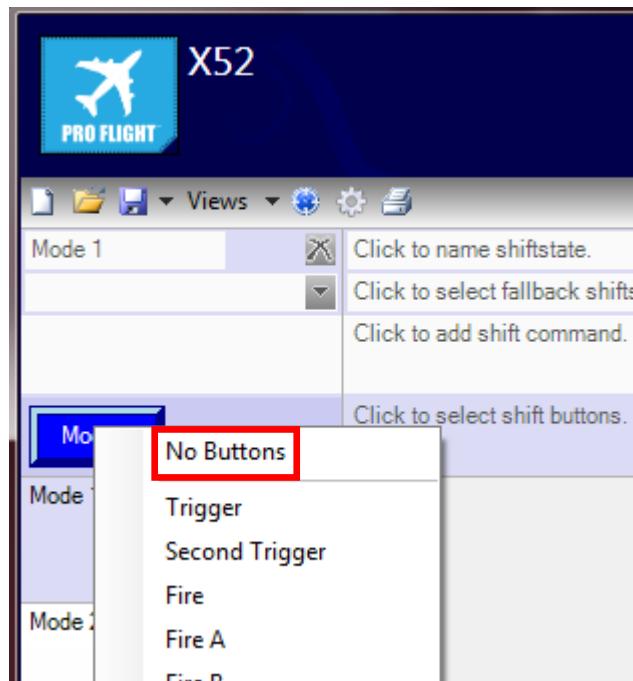


Now we have “freed” Modes 2 and 3 from its default behavior (acting as a mode selector).

But as shown in the image the Mode 1 is still greyed out.



What we need to do here is a right click on the blue “Mode 1” button and select “No Buttons”. This deletes the last mode and we can use all three modes with DX.

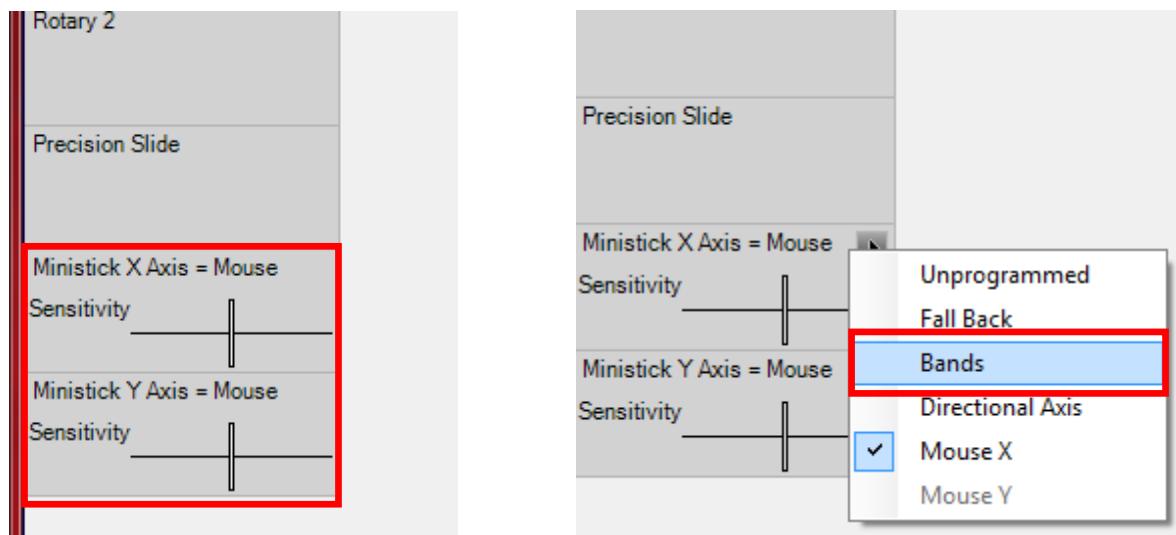


It's done. All 3 modes are available for DX programming now.

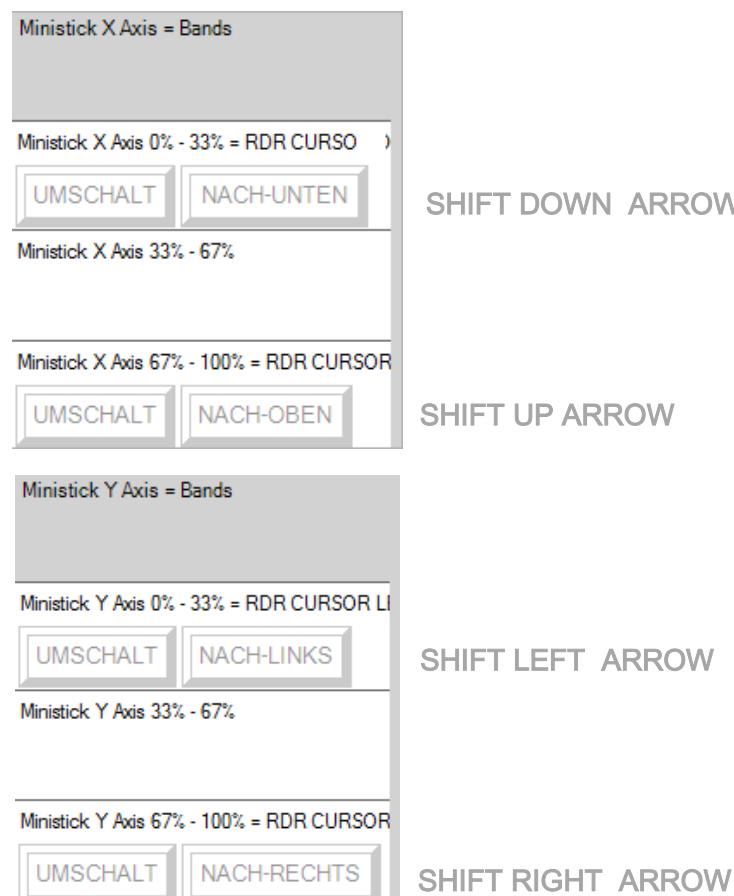
5.3 MOUSE CURSOR / MINISTICK:

Applies to: Saitek X-52, Saitek X-52pro, Saitek X-55, Saitek X-65F

As we can't assign the ministick as an axis in BMS setup menu we have to assign them manually with keyboard keys. On the left image below you see the default settings of the ministick. It is assigned as a mouse. First, we have to assign both x- and y-axis as "Bands" (right image). This opens the option of assigning keys to them.



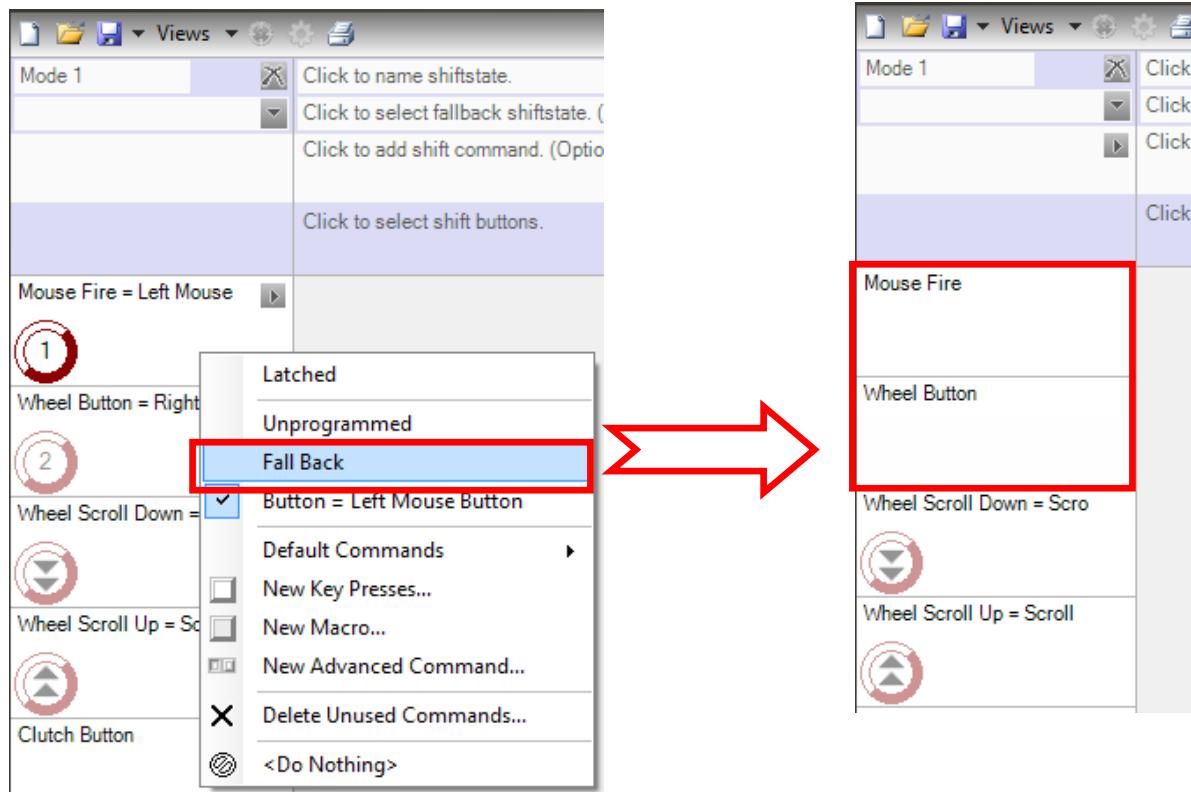
The first third (0-33%) and the last third (67-100%) of the overall axis range of the ministick can be set to keys now, while the middle part stays untouched. This is a dead zone, so to speak. In this example we assigned the keys for the radar cursor with the arrow keys in combination with the SHIFT modifier.



5.4 MOUSE BUTTON / WHEEL BUTTON:

Applies to: Saitek X-52, Saitek X-52pro

By default they are assigned as left and right mouse buttons. To change this right click on both and select "Fall Back". Now you can assign DX functions to them.



5.5 PRECISION SLIDER (OPTIONAL):

Applies to: Saitek X-52, Saitek X-52pro

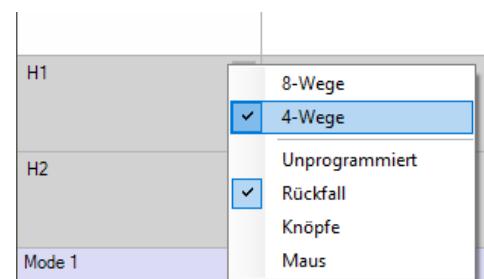
We could also set keys to the precision slider here. It works the same way as described above by setting it to "Bands" and then assigning keys to it.

You could also decide to use it as an axis. Setting it to Field Of View (FOV) in BMS setup menu would be an adoptable option. In this case stay with the option "Fall Back" (default). If doing so you have to change the default behavior of the scroll wheel. It is set to Scroll up / down which also changes the FOV. You can assign keys to it by setting it to "Fall Back".

5.6 HATS:

Applies to: Saitek X-55

The hats H1, H2 (both on stick), H3 and H4 (both on throttle) must be set to 4-way.





6 CALLBACK REFERENCE:

On the following pages you find some information about the functions / callbacks which are used in the ready to use profiles and key files. Please note that we don't get into detail here as the corresponding callbacks are explained in other manuals as well. It's just to give you a basic idea about what they do.

This chapter is divided into three parts. First, as we aim for a full real HOTAS setup, we will explain in short the main HOTAS functions. Then step after step the other functions as well. Last not least you find a chapter with an overview about how and which functions are assigned to the various input devices.

We will guide you to the corresponding chapters in other manuals as well, specifically to the TO-BMS1F-16CM-1 (Dash-1) where the functions are explained in detail and the BMS Training Manual to guide you to the practice lessons.

Please note that the chapters you are referred to are by no means a complete list of what to read about a specific topic. They have to be understood as a quick reference to guide you to detailed information in case you want to learn more.

6.1 THE HOTAS FUNCTIONS:

The HOTAS functions are by far the most important. Thus we'd like to go into more detail here.

6.1.1 Stick functions

Pickle (WPN REL)	
SimPickle	WEAPON RELEASE (Pickle)

TRIM Button	
<i>AEElevatorTrimUp</i>	TRIM Up – Trim Nose Down
<i>AEElevatorTrimDown</i>	TRIM Down - Trim Nose Up
<i>AFAileronTrimLeft</i>	TRIM Left – Trim Roll Left
<i>AFAileronTrimRight</i>	TRIM Right – Trim Roll Right



Target Management Switch (TMS)	
<i>SimTMSUp</i>	TMS Up
<i>SimTMSSDown</i>	TMS Down
<i>SimTMSLeft</i>	TMS Left
<i>SimTMSRight</i>	TMS Right

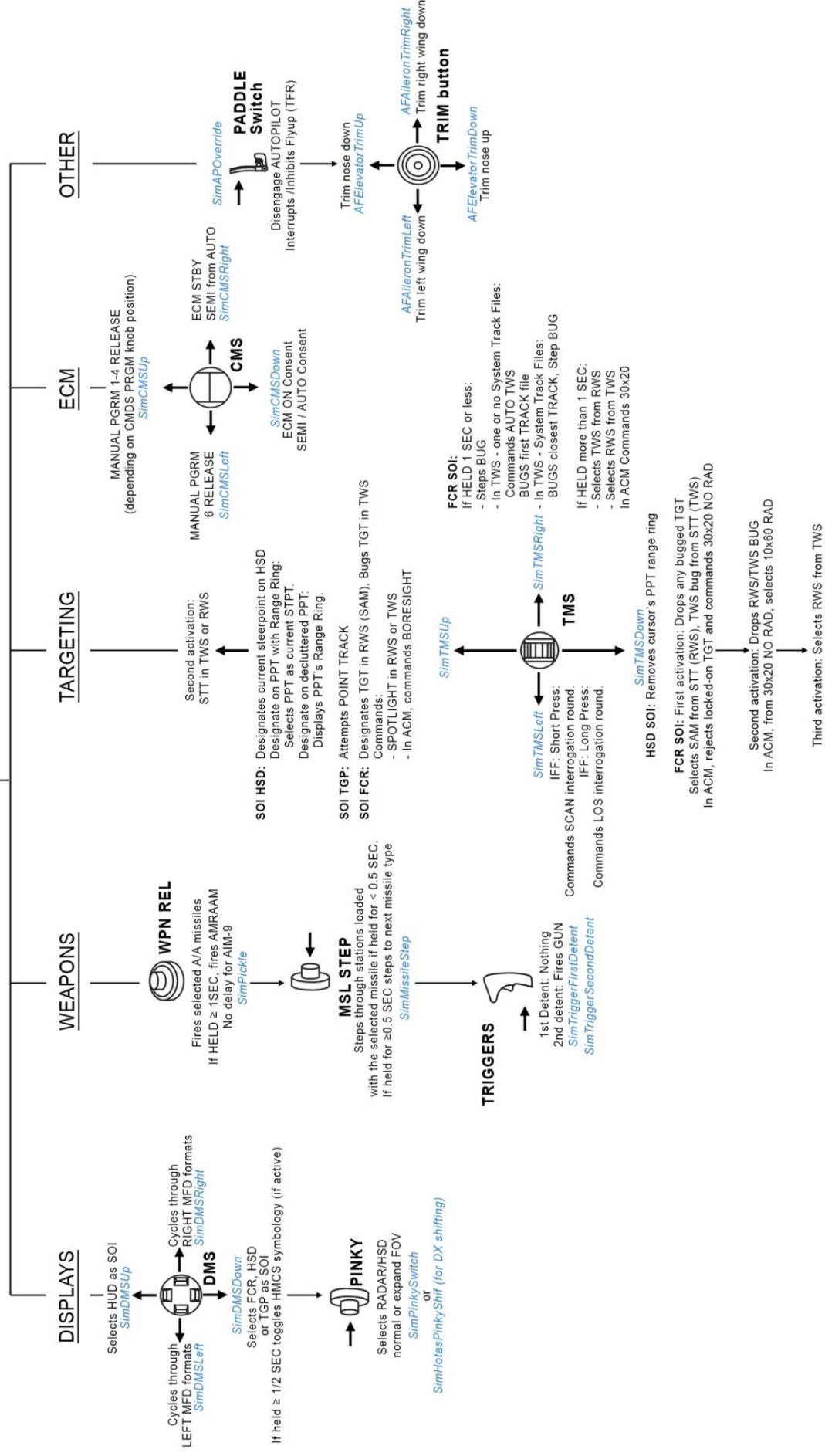
Display Management Switch (DMS)	
<i>SimDMSUp</i>	DMS Up
<i>SimDMSDown</i>	DMS Down
<i>SimDMSLeft</i>	DMS Left
<i>SimDMSRight</i>	DMS Right

Countermeasures Management Sw. (CMS)	
<i>SimCMSUp</i>	CMS Up
<i>SimCMSSDown</i>	CMS Down
<i>SimCMSLeft</i>	CMS Left
<i>SimCMSRight</i>	CMS Right

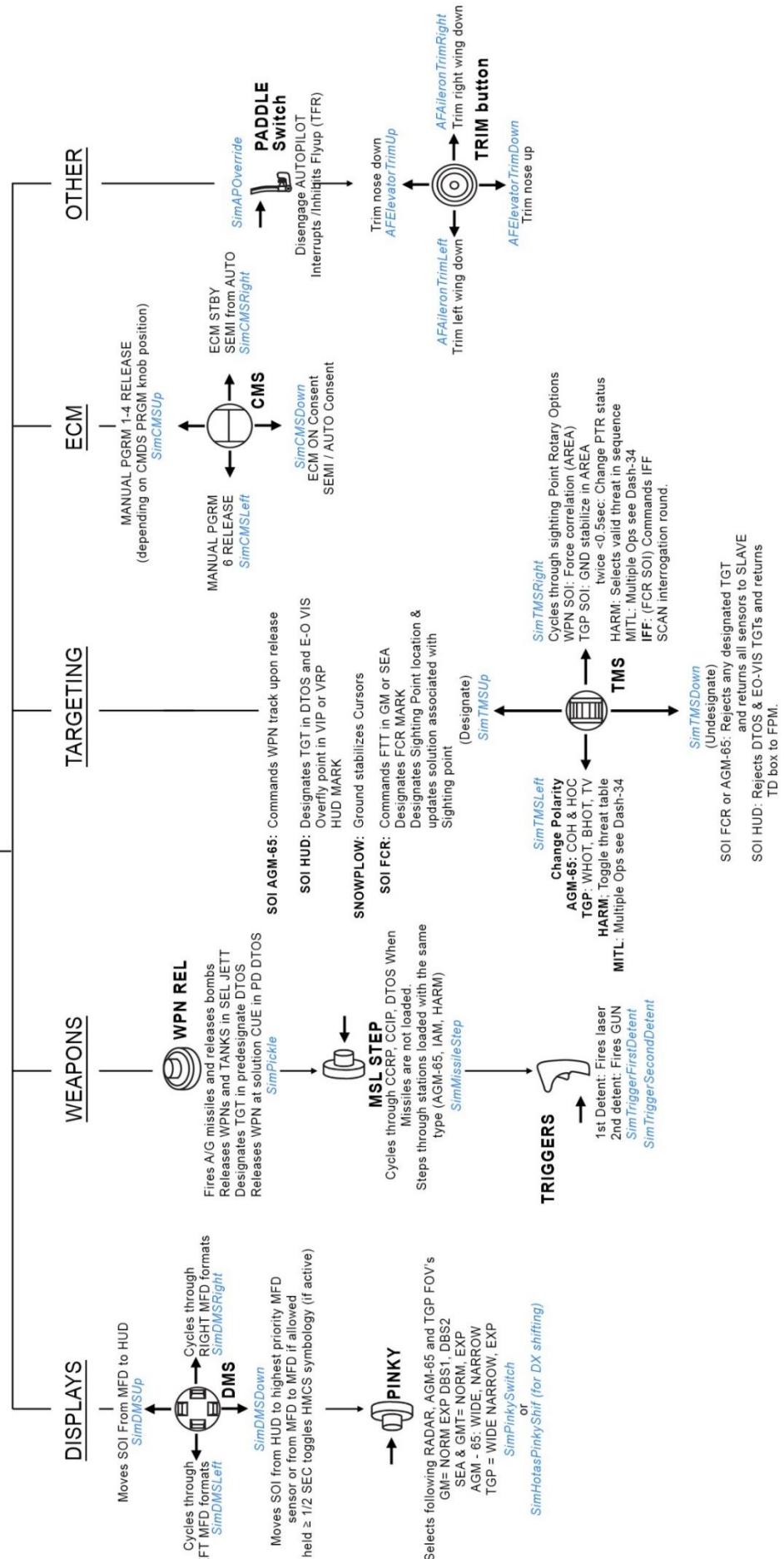
Trigger	
<i>SimTriggerFirstDetent</i>	FIRST TRIGGER DETENT
<i>SimTriggerSecondDetent</i>	SECOND TRIGGER DETENT

Paddle Switch	
<i>SimAPOOverride</i>	PADDLE SWITCH

**HANDS-ON CONTROLS
AIR TO AIR MISSION
SIDE STICK CONTROLLER
A-A, MSL OVRD, DGFT**



HANDS-ON CONTROLS AIR TO GROUND MISSION SIDE STICK CONTROLLER A-G (& NAV) MASTERMODE



**Trigger:**

The stick offers a two stage trigger with two detents. The 1st detent fires the laser in Air to Ground (AG) mode. The 2nd detent fires the gun. It triggers also an ACMI (Air Combat Maneuvering Instrumentation) record if the AVTR (Audiovisual Tape Recorder) switch is set to "Auto".

Callback Name	UI Name	
SimTriggerFirstDetent	STICK: FIRST TRIGGER DETENT	
SimTriggerSecondDetent	STICK: SECOND TRIGGER DETENT	

References:	
TO-BMS1F-16CM-1	TBD
BMS Training:	Mission 11: Laser Guided Bombs Mission 19: Guns & HMCS

Pickle:

The pickle button fires air to air / air to ground missiles and drop bombs. Depending on the weapon in use a long or a short press is required. It also drops stores (Selected Jettison). It triggers also an ACMI record if the AVTR switch is set to "Auto".

Callback Name	UI Name	
SimPickle	STICK: WEAPON RELEASE (Pickle)	

References:	
TO-BMS1F-16CM-1	TBD
BMS Training:	Mission 10: Air to Ground GP Bombs Mission 11: Laser Guided Bombs (11.2) Mission 12: AGM-88 Harms Mission 13 +14: AGM-65 Mavericks Mission 15: Inertially Aided Munitions Mission 16: Spice Mission 17: IR Missiles Mission 18: Radar Missiles Mission 19: Guns & HMCS Mission 20: AGM-84A Harpoon

**Pinky Switch:**

The pinky switch changes the FOV (Field of View) of the radar, HSD (Horizontal Situation Display), TGP (Targeting Pod) and AGM-65 Maverick weapon depending on the master mode. It can be understood as a zoom function.

Callback Name	UI Name	
SimPinkySwitch	STICK: PINKY SWITCH	
SimHotasPinkyShift	STICK: PINKY SWITCH (DX SHIFT)	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	Mission 12: AGM-88 Harms Mission 13 + 14: AGM-65 Mavericks	

Paddle Switch:

The paddle switch temporarily disengages the autopilot (if engaged) as long as the paddle is depressed. It also interrupts / inhibits Flyup in TFR (Terrain Following Radar) operations.

Callback Name	UI Name	
SimAPOVERRIDE	STICK: PADDLE SWITCH	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	Mission 8: Low Level Navigation Mission 13 + 14: AGM-65 Mavericks	



MSL Step Switch:

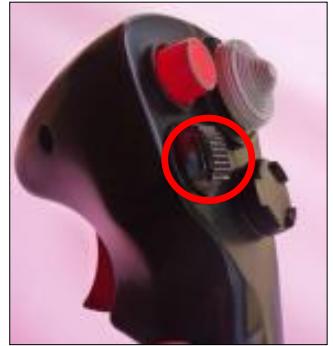
This switch has basically three functions:

- MSL STEP:** In air to ground mode it cycles through bomb delivery modes (CCIP, CCRP, DTOS) and cycles through weapon stations for missiles of the same type (e.g. AGM-65 Maverick). In air to air mode it cycles through the weapon stations on a short press (< 0.5 sec.) and steps to the next missile type on a long press.
- NWS:** On ground it engages / disengages the NWS (Nose Wheel Steering)
- A/R DISC:** Disconnects manually from the boom while air refueling.

Callback Name	UI Name	
SimMissileStep	STICK: NWS A/R DISC MSL STEP SWITCH	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	Mission 5: Air to air refuel (A/R DISC) Mission 10: Air to Ground GP Bombs (MSL STEP) Mission 12: AGM-88 Harms (MSL STEP) Mission 13 + 14: AGM-65 Mavericks (MSL STEP) Mission 16: Spice (MSL STEP) Mission 17: IR Missiles (MSL STEP)	 Not shown on the pic. Button is located on the rights side of the stick.

TMS (Target Management Switch) - 4-way switch:

Be warned. This is probably one of the most complicated input buttons in BMS as it includes so many different functions depending on master modes, long / short press, weapons, SOI etc. So, we cover just the easy and probably most interesting part for you: TMS up designates a target, TMS down drops it. Sounds easy, no? Not at all, unfortunately. If we need one example why this is a study sim, here it is. Hence you have to read and learn a lot.

Callback Name	UI Name	
SimTMSUp	STICK: TMS Up	
SimTMSSRight	STICK: TMS Right	
SimTMSDown	STICK: TMS Down	
SimTMSLeft	STICK: TMS Left	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	Mission 10: Air to Ground GP Bombs Mission 11: Laser Guided Bombs Mission 12: AGM-88 Harms Mission 13 + 14: AGM-65 Mavericks Mission 17: IR Missiles Mission 19: Guns & HMCS	



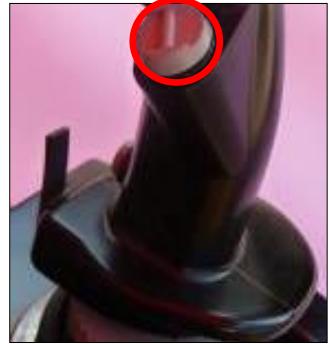
CMS (Countermeasures Management Switch) - 4-way switch:

The CMS switch controls the jammer and the release of counter measures (Chaffs / Flares). CMS right turns the Jammer on, CMS down turns it off (assuming the jet is carrying a Jamming Pod).

There are 6 different release modes. Modes 1 to 4 are released with CMS up depending on the PGRM knob position on the CMDS panel. CMS left releases program # 6.

The CMS does the same in all master modes.

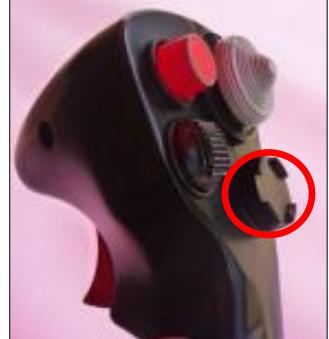
Callback Name	UI Name	
SimCMSUp	STICK: CMS Up	
SimCMSSRight	STICK: CMS Right	
SimCMSSDown	STICK: CMS Down	
SimCMSSLeft	STICK: CMS Left	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	None yet	



DMS (Display Management Switch) - 4-way switch:

The DMS switch manages the both MFDs (Multi Function Displays) and selects the SOI (Sensor of Interest). It combines multiple functions depending on the master mode. DMS left cycles through the pages on the left MFD, DMS right does that for the right MFD. On a long press (> 0.5 sec.) DMS down toggles HMCS (Helmet Mounted Cueing System) symbology on / off (if the aircraft is equipped with that). DMS down (short press) and DMS up are managing the SOI.

Callback Name	UI Name	
SimDMSUp	STICK: DMS Up	
SimDMSSRight	STICK: DMS Right	
SimDMSSDown	STICK: DMS Down	
SimDMSSLeft	STICK: DMS Left	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	Mission 8: Low Level Navigation (8.4) Mission 11: Laser Guided Bombs (11.2)	






TRIM button (POV hat) - 4-way Switch:

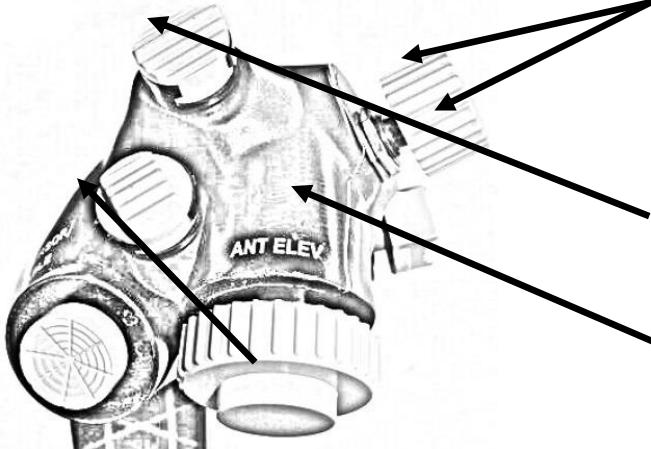
With the TRIM button you can apply trimming on the pitch (nose up / down) and roll (left / right wing down) axis. This is especially necessary if you have an asymmetrical loadout (e.g. you dropped a single bomb on a right wing station) or the fuel system is imbalanced. Note that trimming the jet via the stick is only available when no autopilot is engaged and the TRIM/AP DISC switch on the Manual Trim panel is set to the NORM position.

Callback Name	UI Name	
AFElevatorTrimUp	STICK: TRIM Up - Nose Down	
AFAileronTrimRight	STICK: TRIM Right - Roll Right	
AFElevatorTrimDown	STICK: TRIM Down - Nose Up	
AFAileronTrimLeft	STICK: TRIM Left - Roll Left	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	Mission 11: Laser Guided Bombs (11.2)	



6.1.2 Throttle functions:

Dogfight Switch	
<i>SimSelectSRMOverride</i>	DOGFIGHT Switch - DF Override
<i>SimSelectMRMOVERRIDE</i>	DOGFIGHT Switch - MRM Override
<i>SimDeselectOverride</i>	DOGFIGHT Switch - MRM/DF Cancel



Manual Range knob	
<i>SimRangeKnobUp</i>	MAN RANGE Knob - Up
<i>SimRangeKnobDown</i>	MAN RANGE Knob - Down
<i>SimToggleMissileCage</i>	MAN RANGE Knob - UNCAGE

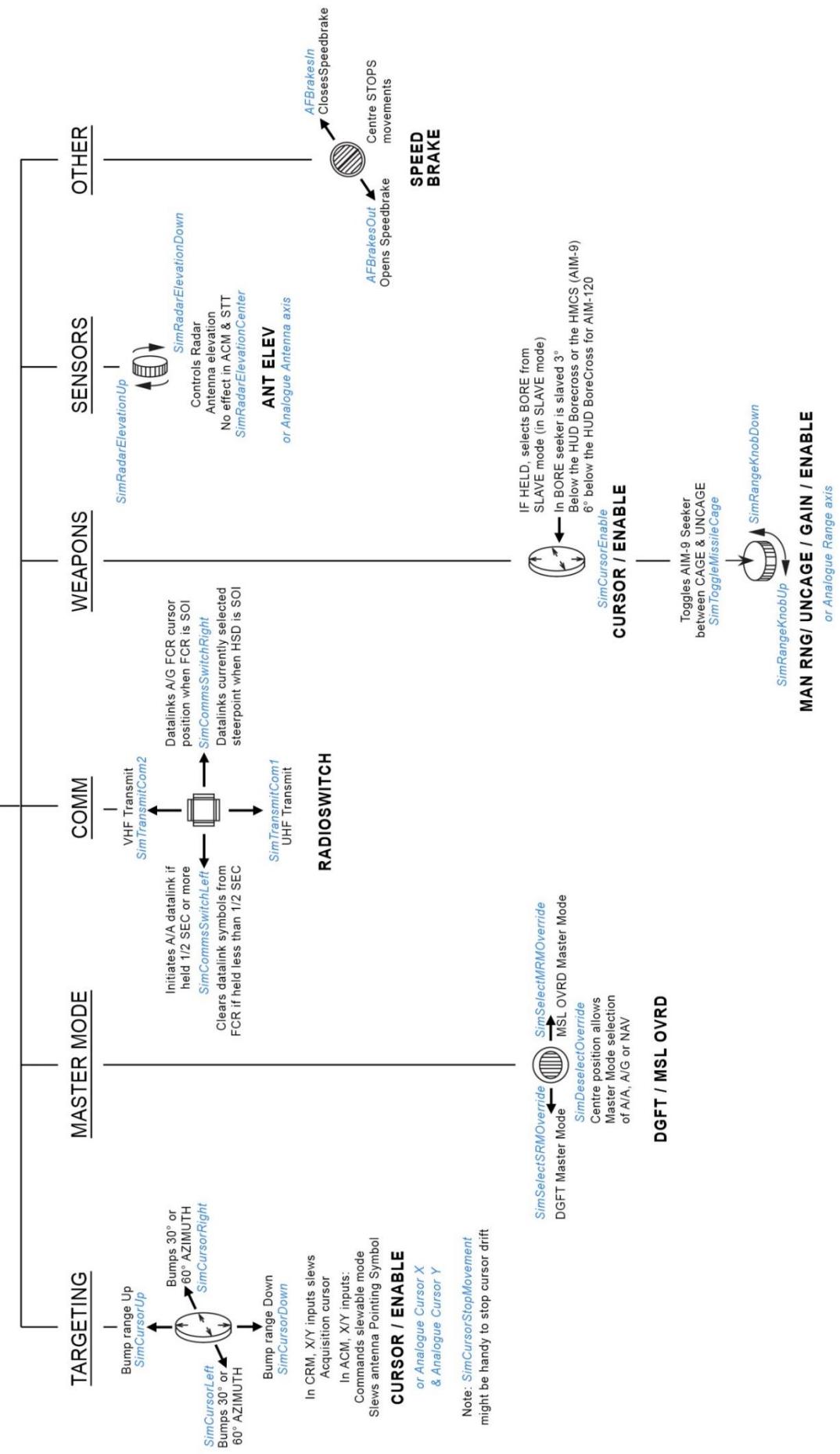
Comms Switch	
<i>SimTransmitCom1</i>	COMMS Switch Up - UHF
<i>SimTransmitCom2</i>	COMMS Switch Down - VHF
<i>SimCommsSwitchLeft</i>	COMMS Switch Left - IFF OUT
<i>SimCommsSwitchRight</i>	COMMS Switch Right - IFF IN

Speed Brake Switch	
<i>AFBrakesToggle</i>	SPD BRAKE Switch - Toggle
<i>AFBrakesOut</i>	SPD BRAKE Switch - Open
<i>AFBrakesIn</i>	SPD BRAKE Switch - Close

Radar Cursor	
<i>SimCursorUp</i>	RDR CURSOR - Up
<i>SimCursorDown</i>	RDR CURSOR - Down
<i>SimCursorLeft</i>	RDR CURSOR - Left
<i>SimCursorRight</i>	RDR CURSOR - Right
<i>SimCursorEnable</i>	RDR CURSOR - Cursor Enable

Antenna Elevation Knob	
<i>SimRadarElevationUp</i>	ANT ELEV Knob - Tilt Up
<i>SimRadarElevationCenter</i>	ANT ELEV Knob - Center
<i>SimRadarElevationDown</i>	ANT ELEV Knob - Tilt Down

HANDS-ON CONTROLS
AIR TO AIR MISSION
THROTTLE
A-A, MSL OVRD, DGFT MASTERMODE

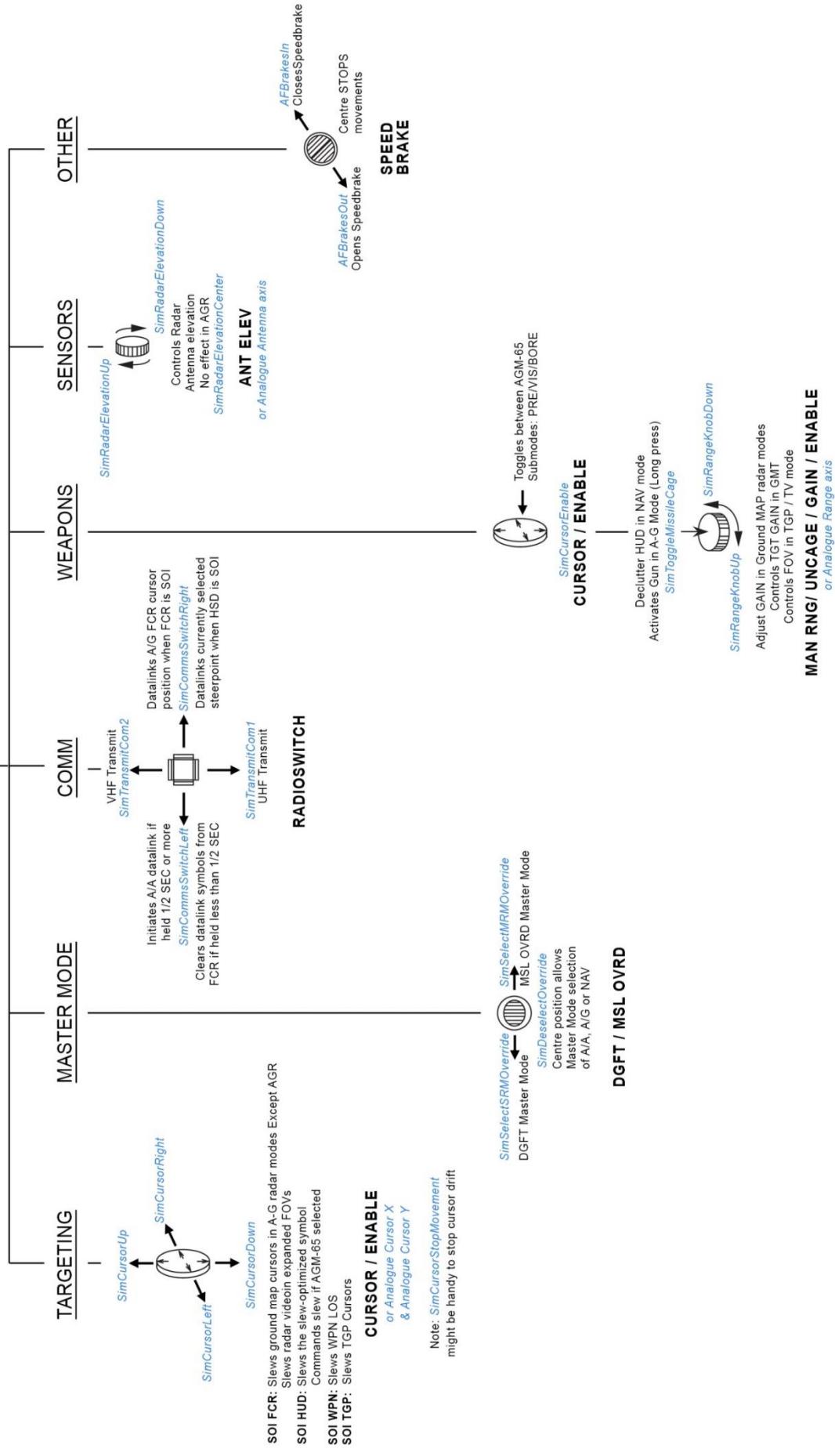


HANDS-ON CONTROLS

AIR TO GROUND MISSION

THROTTLE

A-G (& NAV) MASTERMODE





MAN Range (Manual Range/ Uncage) Knob:

The MAN RNG knob includes a button (Uncage). When the button is depressed it can do a couple of things: It removes the protective cover from Maverick seekers, toggles the seeker of an AIM-9 (Infrared air to air missile) between Cage and Uncage (uncage allows the seeker to move and track targets) and it can declutter the HUD in Nav (Navigation) master mode.

The knob changes the terrain intensity (gain) in A-G radar modes and the FoV in TGP TV mode.

Callback Name	UI Name	
SimToggleMissileCage	TQS: MAN RANGE Knob – UNCAGE	
SimRangeKnobUp	TQS: MAN RANGE Knob – Up	
SimRangeKnobDown	TQS: MAN RANGE Knob - Down	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	Mission 11: Laser Guided Bombs (11.2) Mission 13 + 14: AGM-65 Mavericks Mission 17: IR Missiles Mission 19: Guns & HMCS	

Dogfight Switch – 3-way Switch:

The dogfight switch offers you a quick way to go to air to air combat no matter in which situation you are. For example it is the fastest way to get from air to ground combat to air to air. The dogfight switch offers two air to air master modes. On the aft position you get into the dogfight mode which is for close combat situations. The forward position brings you into the MRM (Medium Range Missile) mode which is your choice in medium to long range combat scenarios. The middle position cancels either of the both modes.

Callback Name	UI Name	
SimSelectSRMOVERRIDE	TQS: DOGFIGHT Switch - DF Override	
SimDeselectOverride	TQS: DOGFIGHT Switch - MRM/DF Cancel	
SimSelectMRM_OVERRIDE	TQS: DOGFIGHT Switch - MRM Override	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	Mission 17: IR Missiles Mission 19: Guns & HMCS	



RDR CURSOR (Radar Cursor / Cursor Enable):

The RDR Cursor includes a button (Cursor Enable). When the button is depressed it toggles between AGM-65 Maverick submodes or sets the air to air missile to Bore (Boresight = Weapon seeker) or Slave (radar).

The cursor slews the radar cursor and seekers (e.g. Maverick, TGP).

Callback Name	UI Name	
SimCursorEnable	TQS: RDR CURSOR - Cursor Enable	
SimCursorUp	TQS: RDR CURSOR – Up	
SimCursorRight	TQS: RDR CURSOR – Right	
SimCursorDown	TQS: RDR CURSOR – Down	
SimCursorLeft	TQS: RDR CURSOR - Left	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	Mission 8: Low Level Navigation Mission 10: Air to Ground GP Bombs Mission 11: Laser Guided Bombs (11.2) Mission 12: AGM-88 Harms Mission 13 +14: AGM-65 Mavericks Mission 17: IR Missiles Mission 19: Guns & HMCS	

ANT ELEV (Antenna Elevation) Knob:

The Antenna Elevation tilts the radar elevation up / down. You can change the search altitude at the radar cursor position defined by an upper and a lower elevation.

Callback Name	UI Name	
SimRadarElevationUp	TQS: ANT ELEV Knob - Tilt Up	
SimRadarElevationDown	TQS: ANT ELEV Knob - Tilt Down	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	None yet.	

SPD BRK (Speedbrake) Switch:

This simply opens (aft position) and closes (fwd position) the speedbrake boards on the jet. It takes about two seconds to open and six seconds to close them.

Callback Name	UI Name	
AFBrakesToggle	TQS: SPD BRAKE Switch - Toggle	
AFBrakesOut	TQS: SPD BRAKE Switch - Open	
AFBrakesIn	TQS: SPD BRAKE Switch - Close	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	Mission 3: Landing Mission 1: Ground Ops	

Comms Switch - 4-way Switch:

When moving the switch to the up / down positions you transmit either on UHF (up) or VHF (down). The left / right positions manage the datalink.

Callback Name	UI Name	
SimTransmitCom1	TQS: COMMS Switch Up - UHF	
SimTransmitCom2	TQS: COMMS Switch Down - VHF	
SimCommsSwitchLeft	TQS: COMMS Switch Left - IFF OUT	
SimCommsSwitchRight	TQS: COMMS Switch Right - IFF IN	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	None yet.	



6.2 MISCELLANEOUS FUNCTIONS:

6.2.1 Cockpit Functions

Reset Trim:

There is no such function in the cockpit. In real life you would have to set the trimming back manually (the same way you trimmed the jet). However, this is a pure user convenience function to give you a quick way to reset the trimming without much hassle.

Callback Name	UI Name	
AFResetTrim	CKPIT: Trim-Reset (Change here)	

Eject:

Do we really need to explain that? ☺

However, this function requires a long button press (>1 sec.) to trigger the event. You also have to verify that your seat is armed. Happy parachuting!

Callback Name	UI Name	
SimEject	SEAT: EJECT Handle - Hold For Eject	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	Parachuting training? Not planned ☺ But just in case: Mission 1: Ground Ops Mission 7: Flameout Landing	

Idle Detent:

The Idle detent puts your throttle position from Cutoff (engine off) to Idle (Engine idle) position and vice versa. It is important to stick to the correct procedure to avoid problems while starting the engine.

Callback Name	UI Name	
SimThrottleIdleDetent	TQS: CUTOFF RELEASE - Idle Detent - Toggle	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	Mission 1: Ground Ops Mission 3: Landing (3.3)	

**ACMI Recorder:**

ACMI (Air Combat Maneuvering Instrumentation) is an important tool to review your mission and your own pilot performance. It records every detail of a flight and allows you to analyse it. ACMIs are stored in the .../User/ACMI folder.

Callback Name	UI Name	
SimAVTRToggle	AVTR: AVTR Switch - Toggle ON / OFF	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	It is a good idea to always make an ACMI tape of your training flights for later inspection!	

Wheel Brakes:

Unless you are not using decent rudder pedals which give you the opportunity of using differential breaking you can use this callback for that. Note that differential breaking is not available then.

Callback Name	UI Name	
SimWheelBrakes	CKPIT: Wheel Brakes - Hold	
References:		
TO-BMS1F-16CM-1	TBD	

Slap Switch:

The slap switch runs countermeasures program 5. It sits next to the throttle.

Callback Name	UI Name	
SimSlapSwitch	LEFT WALL: SLAP Switch (ECM-PGRM # 5)	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	None yet.	





Reset Radar Cursor:

When you slew the ground cursor it will also shift the position of all steerpoints. To reset that you have to use Cursor Zero, this is usually done by pressing OSB #9 in the A-G FCR. However, you can do this also with this callback.

Callback Name	UI Name	
SimRadarCursorZero	TQS: RDR CURSOR - Cursor Zero	
References:		
TO-BMS1F-16CM-1	TBD	
BMS Training:	Mission 11: Laser Guided Bombs (11.2) Mission 13 + 14: AGM-65 Mavericks	

Landing Gear Handle:

This lowers (AFGearDown) and retracts (AFGearUp) the landing gear. There is also a toggle available to do this.

Callback Name	UI Name	
AFGearToggle	GEAR: LG Handle – Toggle	
AFGearUp	GEAR: LG Handle – UP	
AFGearDown	GEAR: LG Handle - DN	
References:		
TO-BMS1F-16CM-1	TBD	

Parking Brake Switch:

This sets the parking brake (discrete on/off or toggle) of the jet. The parking brake is automatically released above roughly 83% RPM (Revolutions per Minute).

Callback Name	UI Name	
SimParkingBrakeToggle	GEAR: PARKING BRAKE Switch – Toggle	
SimParkingBrakeOn	GEAR: PARKING BRAKE Switch – ON	
SimParkingBrakeOff	GEAR: PARKING BRAKE Switch - OFF	
References:		
TO-BMS1F-16CM-1	TBD	

**Stores Config Switch:**

This switch in CAT III position sets an AOA (Angle of Attack) limit depending on the loadout (e.g. bombs, wing tanks are carried) to prevent damage to the jet. CAT I is for pure A-A loadout and has no limits.

Callback Name	UI Name	
SimCATSwitch	GEAR: STORES CONFIG Switch – Toggle	
SimCATI	GEAR: STORES CONFIG Switch - CAT I	
SimCATIII	GEAR: STORES CONFIG Switch - CAT III	
References:		
TO-BMS1F-16CM-1	TBD	

Refuel Door:

This opens / closes the refuel door.

Callback Name	UI Name	
SimFuelDoorToggle	FUEL: AIR REFUEL Switch – Toggle	
SimFuelDoorOpen	FUEL: AIR REFUEL Switch – OPEN	
SimFuelDoorClose	FUEL: AIR REFUEL Switch – CLOSE	

ICP Modes:

With these you can enter the A-A / A-G and Nav master modes.

Callback Name	UI Name	
SimICPAA	ICP: A-A Button – Push	
SimICPAG	ICP: A-G Button – Push	
SimICPNav	ICP: NAV Mode (no such button In Pit)	
References:		
TO-BMS1F-16CM-1	TBD	

6.2.2 Other Functions**Snap / Pan Cockpit Views:**

In the “Pan” cockpit you can smoothly rotate the view while in the “Snap” pit you have fixed snapviews.

Callback Name	UI Name	
OTWSelect3DCockpitMode	VIEWINT: Pan (3D) Cockpit	
OTWSelect2DCockpitMode	VIEWINT: Snap (3D) Cockpit	
References:		
BMS Manual	9.4.2 & 9.4.3	



**View Rotation Functions:**

These are callbacks to rotate the view. It does work in 3d pit and in external views. Note that if you use a TrackIR the view can't be changed with these callbacks.

Callback Name	UI Name	
OTWViewUp	VIEWGEN: Rotate View Up	
OTWViewRight	VIEWGEN: Rotate View Right	
OTWViewDown	VIEWGEN: Rotate View Down	
OTWViewLeft	VIEWGEN: Rotate View Left	
References:		
BMS Manual	9.2.1 & 9.2.2	

Nightvision Goggles:

Toggles Night Vision Goggles on / off.

Callback Name	UI Name	
ToggleNVGMode	CKPIT: Nightvision - Toggle	
References:		
BMS Manual	9.6.2	

Helmet Visor:

This toggles the Helmet Visor up / down.

Callback Name	UI Name	
SimVisorToggle	CKPIT: Visor - Toggle	
References:		
BMS Manual	9.6.3	

Look Closer:

This changes the FOV (Field of View) to 20°. It can be considered as a zoom function.

Callback Name	UI Name	
FOVToggle	VIEWGEN: Look Closer - Toggle	
References:		
BMS Manual	9.3	

**Recenter TrackIR:**

Usually the TrackIR is recentered with the key “F12”. BMS offers you a callback which can be mapped to a physical device button. It works independent from the default “F12” key.

Callback Name	UI Name	
RecenterTrackIR	SIM: TrackIR Recenter (additional)	

SimDoNothing:

As the callback name suggests this does simply nothing. This can be used to avoid unwanted actions e.g. suppress default device functions.

Callback Name	UI Name	
SimDoNothing		





6.3 DEVICE ASSIGNMENT OVERVIEW:

Here is an overview about all callbacks / functions / axes assigned to the various devices.

X	=	Callback assignment
Axis	=	Axis assignment
Tmm/tmj, .pr0	=	Device profile assignment
Roll-linked	=	Roll-linked NWS checkbox active
via .cfg	=	set g_bHotasDgftSelfCancel is set to "1" in Falcon BMS.cfg

6.3.1 HOTAS – Stick:

Axis / Callbacks	TM Cougar	TM Warthog	CH FS & PT	Saitek X-45	Saitek X-52	Saitek X-52pro	Saitek X-55	Saitek X-65F
Trigger:								
SimTriggerFirstDetent	X	X	X	X	X	X	X	X
SimTriggerSecondDetent	X	X	X	X	X	X	X	X
Pickle:								
SimPickle	X	X	X	X	X	X	X	X
Pinky:								
SimPinkySwitch								
SimHotasPinkyShift	X	X	X	X	X	X	X	X
Paddle:								
SimAPOOverride	X	X	X	X	X	X	X	X
MSL Step:								
SimMissileStep	X	X	X	X	X	X	X	X
TMS:								
SimTMSUp	X	X	X	X	X	X	X	X
SimTMSRight	X	X	X	X	X	X	X	X
SimTMSDown	X	X	X	X	X	X	X	X
SimTMSLeft	X	X	X	X	X	X	X	X
CMS:								
SimCMSUp	X	X	X	X	X	X	X	X
SimCMSSRight	X	X	X	X	X	X	X	X
SimCMSSDown	X	X	X	X	X	X	X	X
SimCMSSLeft	X	X	X	X	X	X	X	X
DMS:								
SimDMSUp	X	X	X	X	X	X	X	X
SimDMSSRight	X	X	X	X	X	X	X	X
SimDMSSDown	X	X	X	X	X	X	X	X
SimDMSSLeft	X	X	X	X	X	X	X	X
TRIM:								
AFElevatorTrimUp	X	X	X	X	X	X	X	X
AFAileronTrimRight	X	X	X	X	X	X	X	X
AFElevatorTrimDown	X	X	X	X	X	X	X	X
AFAileronTrimLeft	X	X	X	X	X	X	X	X



6.3.2 HOTAS – Throttle:

Axis / Callbacks	TM Cougar	TM Warthog	CH FS & PT	Saitek X-45	Saitek X-52	Saitek X-52pro	Saitek X-55	Saitek X-65F
Uncage:								
SimToggleMissileCage	X	X	X	X	X	X	X	X
Cursor Enable:								
SimCursorEnable	X	X	X	X	X	X	X	X
Dogfight:								
SimDeselectOverride	via .cfg	X	X	X	X	X	X	X
SimSelectSRMOverride	X	X	X	X	X	X	X	X
SimSelectMRMOverride	X	X	X	X	X	X	X	X
Comms:								
SimTransmitCom2	X	X	X	X	X	X	X	X
SimTransmitCom1	X	X	X	X	X	X	X	X
SimCommsSwitchRight	X	X	X	X	X	X	X	X
SimCommsSwitchLeft	X	X	X	X	X	X	X	X
Speedbrake:								
AFBrakesToggle								
AFBrakesOut	X	X	X	X	X	X	X	X
AFBrakesIn	X	X	X	X	X	X	X	X

6.3.3 Axes:

Axis / Callbacks	TM Cougar	TM Warthog	CH FS & PT	Saitek X-45	Saitek X-52	Saitek X-52pro	Saitek X-55	Saitek X-65F
Pitch Axis	axis	axis	axis	axis	axis	axis	axis	axis
Roll Axis	axis	axis	axis	axis	axis	axis	axis	axis
Throttle Axis	axis	axis	axis	axis	axis	axis	axis	axis
Rudder Axis	Roll-linked	Roll-linked	Roll-linked	axis	axis	axis	axis	axis
Radar Antenna Elevation Axis:								
SimRadarElevationUp	axis	X	X	axis	axis	axis	axis	axis
SimRadarElevationDown	axis	X	X	axis	axis	axis	axis	axis
Range Knob Axis:								
SimRangeKnobUp	axis	axis	X	axis	axis	axis	axis	axis
SimRangeKnobDown	axis	axis	X	axis	axis	axis	axis	axis
Radar Cursor Axis								
SimCursorUp	axis	axis	axis	X	.pr0	.pr0	.pr0	.pr0
SimCursorRight	axis	axis	axis	X	.pr0	.pr0	.pr0	.pr0
SimCursorDown	axis	axis	axis	X	.pr0	.pr0	.pr0	.pr0
SimCursorLeft	axis	axis	axis	X	.pr0	.pr0	.pr0	.pr0





6.3.4 Miscellaneous:

Axis / Callbacks	TM Cougar	TM Warthog	CH FS & PT	Saitek X-45	Saitek X-52	Saitek X-52pro	Saitek X-55	Saitek X-65F
Reset Trim:								
AFResetTrim	X	X	X	X	X	X	X	X
Eject:								
SimEject	X	X	X	X	X	X	X	X
Idle Detent:								
SimThrottleIdleDetent	X	X	X		X	X	X	X
Wheelbrakes:								
SimWheelBrakes	tmm/tmj	X	X	X	X	X	X	X
ACMI:								
SimAVTRToggle	X	X	X	X	X	X	X	X
Slap Switch:								
SimSlapSwitch		X	X					
Reset Radar Cursor:								
SimRadarCursorZero	X	X	X	X	X	X	X	X
Landig Gear:								
AFGearToggle	X		X	X				X
AFGearUp		X			X	X	X	
AFGearDown		X			X	X	X	
Parking Break:								
SimParkingBrakeCycle	X		X	X	X	X	X	X
SimParkingBrakeUp		X						
SimParkingBrakeDown		X						
Stores Config:								
SimCATSwitch	X		X	X				X
SimCATI		X			X	X	X	
SimCATIII		X			X	X	X	
Refuel Door:								
SimFuelDoorToggle	X		X	X	X	X	X	X
SimFuelDoorOpen		X						
SimFuelDoorClose		X						
ICP Modes:								
SimICPAA	X	X	X		X	X		X
SimICPAG	X	X	X		X	X		X
SimICPNav	X	X	X		X	X		X
Snap / Pan Cockpit Views:								
OTWSelect3DCockpitMode	tmm/tmj	X	X	X	X	X	X	X
OTWSelect2DCockpitMode	tmm/tmj	X	X	X	X	X	X	X
View Rotation:								
OTWViewUp	X	X	X	X	X	X	X	X
OTWViewRight	X	X	X	X	X	X	X	X
OTWViewDown	X	X	X	X	X	X	X	X
OTWViewLeft	X	X	X	X	X	X	X	X
Helmet Visor:								
SimVisorToggle	X	X	X	X	X	X	X	X
Nightvision:								
ToggleNVGMode	X	X	X	X	X	X	X	X
Look Closer:								
FOVToggle	X	X	X	X	X	X	X	X
Recenter TrackIR:								
RecenterTrackIR	X	X	X	X	X	X	X	X
SimDoNothing:								
SimDoNothing	X	X	X	X	X	X	X	X





7 PRIOR FLIGHT CHECKLIST:

In order to have a hassle-free Falcon BMS experience we recommend doing the following steps before you enter the 3d world and Falcon BMS respectively! It takes less than three minutes but avoids detecting problems when already in the sim.

7.1 BEFORE BMS START:

1. Verify that all devices are connected to your computer. In case you have to, power them up to make sure they are detected as input devices.
2. Load profiles if applicable. E.g. you have to select and load the necessary profile files via Saitek's Profile Launcher.
3. Start additional tools or software, e.g. TrackIR, RTTServer, RTTClient and such. In case of TrackIR you should also verify that your device is working properly.

7.2 AFTER BMS START

Enter SETUP and do the following:

4. Verify you have selected the right pilots profile in the logbook -> SETTINGS FOR: *Callsign*
5. Verify you have loaded the right key file.
6. Verify that the devices buttons are working as expected. Just press one button per device no matter if they are two separate DirectX devices (e.g. the Warthog) or combined (e.g. Cougar). Do this for all devices connected.
7. Test all axes and verify they are working correctly.

Once you have done this a couple of times you'll see it is not much effort. As said before, it is a good habit to do this before every flight. If you learn about things not working in 3d it is already too late. Especially if you are doing some multiplayer flights online and you have to back out to fix it. This is simply annoying for other pilots.

Many happy landings.

