

# **BFF Motion Driver for Falcon F4 – v2.6 Quick Intro**

## ***General***

The BFF Motion Driver is a 3 degree of freedom driver handling pitch, roll and heave motion. The option to substitute Yaw for Heave is not available in the Falcon version of the driver.

The V2.6+ version of the BFF Motion Driver for Falcon F4 supports the same range of motion data output modes as the MSFS and X-Plane versions. These include binary and HEX2 data COM port output, shared memory (for use with the 40SPU-1), Galil controller and SCN5 linear actuator outputs. Check the full user manual for details of these and the SCN5 quick start guide for use with Dyadic SCN5 actuators on Termi-BUS.

The driver can be run on the same PC as the Falcon sim or on a LAN PC, for the latter the BFF Motion Bridge application must be installed and run on the sim PC to export data to the motion driver PC – again see the user manual for details.

There are one or two operational differences for the Falcon motion driver and these are related to the rather limited data set exported by Falcon F4. More on these later, but one in particular is that the data set does not yet allow support for the Articulated Projector Drive – so projector motion output is disabled in this version of the BFF Motion Driver. I'll reinstate it as soon as I can see a way of generating the required flight data.

The motion driver can output both flight acceleration force cues and aircraft orientation following cues with or without noise filtering and washout.

## ***Configuration***

As with the other driver versions configurations are defined in .bff config files. These are simple text files and there are a few sample config files in the driver zip package. Use these as your start point and adjust the settings to tune the configurations to suit your set up.

Read the notes in the sample files and check the full user manual for details of the configuration parameters, however here are a few important ones that will need to be adjusted for your system:

Rig\_Type= to set the type of motion platform – this is important as it determines the way the output position demands are mixed to generate demands for each actuator/motor. Rig\_Type=0 sets un-mixed outputs – one each for Pitch, Roll and Heave. =1 sets mixed (coupled) outputs – one for each actuator in a 3-point support type arrangement.

Mode= to set the data output mode. Set this to Mode=NONE to test the driver with no output.

Port= to set the COM port if serial output is used.

Baud= to set the baud rate.

Several important parameters must also be set to define the working range of the movement (referred to the 0-255 position feedback device working range). For Rig\_Type=0 platforms the max and min position limits for each motor are defined. For

Rig\_Type=1 platforms the actuator working range is set by a common stroke length and individual mid positions on the 0-255 range. These are important – they constrain the position demand output to the actual working range of your platform, so they must be set properly. See the manual and read the comments in the .bff config files.

The start/park position for each output must also be set to suit your system. This is done by setting either an absolute position for Rig\_Type=0 platforms or a relative (% stroke) position for Rig\_Type=1 platforms. This defines the position to which the outputs will be set initially and to where the platform will be sent when the motion driver is in “Hold” mode.

There are several other parameters, many of which you will probably want to adjust to tune the feel of the motion, however the above are the basic set that must be defined before you can move on to using the driver.

My preferred method of adjustment is to open the .bff config file in a text editor and to adjust the setting manually. However there are two set up applications (one for each type of rig) which can be used to adjust the most commonly changed parameters through a window user interface. See the zip package contents.

The third option is to use the P, R, H & M buttons on the motion driver main window to make “live” adjustments to selected motion parameters from the driver interface. This is convenient for testing and tuning.

## ***Operation***

It is best to run Falcon F4 in windowed mode to start with to allow you to see the motion driver window and to gain familiarity with its operation. There are hot keys programmed to allow the driver to be moved between park and drive modes when it is obscured by the Falcon window in full screen mode.

The motion driver can be started before or after Falcon. If you start the driver first it will wait for a Falcon session to begin before it initialises.

Use the Start button to activate the driver and select your .bff config file. Once initialised the Hold\_Start\_Pos and Drive buttons will become active. “Hold” returns the position demand to the specified start position, “Drive” sends the platform to pickup the current live output from the sim.

With the default hotkey programming \d and \h can be used to drive and hold respectively. These can be changed using the Key\_Drive and Key\_Hold parameters in the .bff config file.

See the user manual for full explanation of the various buttons on the driver GUI.

## ***Flight Sim Pauses – how the motion driver handles them.***

One important problem with the limited data set exported by Falcon F4 in comparison to MSFS and X-Plane is the lack of information about the active state of the simulator. It is important that the motion driver does not continue to export live positions if the sim goes into a paused, crashed or exit state.

The motion driver will hold current position if it detects that there is no change to the aircraft total fuel load AND no change to the aircraft velocity. So, unless the engines are on OR the aircraft is moving the motion driver will assume the flight is not active and it will hold position. If this hold condition persists for approximately 30 seconds the motion driver will automatically send the platform back to the start/park position where it will wait for further user input.

This return to start feature is required to ensure that the driver is not active if the detected flight pause is due to a crash – unfortunately the driver has no way of telling if the pause is a simple in-game pause, or the unexpected sudden termination of the flight! The data exported by the sim after a flight has exited and before a new one is started is unpredictable and if the driver remains active during this period the motion platform might jump sharply as erratic data is exported by the sim.

**As a matter of good practice wait until your flight is active and you are ready to commence taxiing or flying BEFORE setting the motion driver to “Drive”.**

### ***Falcon Versions***

I have checked the v2.6beta software with Falcon F4. I expect there will be some small differences in the shared memory data structure area between the F4 version and other available versions (eg OpenFalcon) which might affect the behaviour of the motion driver. Indeed the driver might not be able to detect other Falcon versions.

If you have one of the other versions and would like to use the motion driver then email me and we can run some tests.

### ***WARNING***

**Motion platforms can be dangerous – make sure you are fully familiar with the operation of the BFF Motion Driver and with your platform hardware before operating your platform. See the License file contained in the motion driver zip package for full details of the terms and conditions of use of the BFF Motion Driver.**

Ian Hopper (Bff Design Ltd), Jan 2010