

BFF Motion Driver for Condor Soaring – 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 Condor version of the driver.

The V2.6+ version of the BFF Motion Driver for Condor 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 64/40SPU-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 Condor Soaring sim or on a LAN PC, for the latter the UDP output from Condor should be directed to the IP Address of the LAN PC running the motion driver.

There are one or two operational differences for the Condor motion driver and these are related to the more limited data set exported by Condor. 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.

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

Configuration – Condor

The motion driver uses the UDP data export from Condor. To set this up you will need to make some changes to the UDP.ini file in the Condor directory.

The contents of the UDP.ini file will typically be:

[General]

Enabled=1

[Connection]

Host=192.168.1.79

Port=48001

[Misc]

SendIntervalMs=10

ExtendedData=1

LogToFile=0

Host and Port refer to the remote PC on which the motion driver is running. If both are running on the same PC then set Host=127.0.0.1

I suggest SendIntervalMs is set to about 10ms. This will usually ensure that new data is ready each time the motion driver loops. However this depends to an extent on the MD_Delay parameter setting in the .bff config file and on your system specs. Decreasing MD_Delay from its 20ms default increases the driver loop speed and if it runs substantially

faster than the Condor UDP data refresh rate then there may be some loss of cue smoothness.

NOTE Make sure your version of Condor supports the extended UDP data output (V1.1.2 +)

Configuration – Motion Driver

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. Set to MEM for use with the PID Servo Controller.
Port=	to set the COM port if serial output or MEM to the PID Servo Controller is used.
Baud=	to set the baud rate.
PortS=	Receiving UDP Port number on motion driver PC, default is 48001
IPAddress=	IP Address of motion driver machine on the LAN. If the motion driver is running on the same PC as Condor set = 127.0.0.1, otherwise set to the LAN address (eg 192.168.1.64 or similar).

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. (These need to be updated for v26 which has added a number of new parameters.)

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.

UDP Data Forwarding

If you wish to use the Condor UDP data for another application the motion driver can be configured to pass the data on to another IP Address and Port. The other application can then be set to listen for the data at that location. The configuration settings in the .bff config file related to this are IP_F_this, IP_F_target= and PortF=:

;Condor UDP data forwarding

**;To send the Condor UDP data on to another application specify here the IP Address and Port for that
; application**

;To disable set IP_F_target=0.0.0.0, to send to same PC set IP_F_target=127.0.0.1

IP_F_target=192.168.1.79

PortF=48001

**;If UDP data forwarding is active and the IP address of the send network adaptor on this PC is
;different from IPAddress above then set it here.**

;This can be the case if IPAddress = 127.0.0.1 to run the motion software on the same PC as

;Condor, but you want to forward data to a remote PC for another application.

;If IP_F_this is not specified then it will be assumed to be the same as IPAddress

IP_F_this=192.168.1.73

The rate at which the UDP data is passed on will depend to an extent on the data loop time of the motion driver so the delays between the forwarded UDP data packets may not be as consistent as the direct output from Condor.

Operation

If running Condor and the motion driver on the same PC it is best to run Condor 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 if it is obscured by the Condor window. On my system Condor disables mouse operations outside the Condor window – so to interact with the motion driver on the same PC as Condor try hitting the “Windows” key and click on the driver window.

The motion driver can be started before or after Condor. If you start the driver first it will wait for Condor UDP data output to begin before it initialises – ie it will wait until a flight becomes active.

Use the Start button to activate the driver and then 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/park position, “Drive” sends the platform to pickup the current live output from the sim.

With the default hotkey programming \d and \h keystrokes 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. You may wish to change these as the H key is already programmed as a hot key for Condor functions. It is also possible to program joystick buttons to perform the

Drive and Hold actions.

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 Condor 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 UDP data flow from Condor – this will happen if Condor is paused, or if a flight is exited or otherwise interrupted. When the UDP data flow resumes the driver will send the cues back to the park/start position.

If you wish to return the platform to its parked position whilst Condor is paused and the driver is holding position then you can use the “Send to Hold” button on the PID Servo Controller.

I have added some crash detection to the motion driver, this is based on detecting excessive decelerations present during a crash impact. On sufficiently strong impacts the motion driver will send the platform to its parked position. However please note that an initial sharp reaction may be present in the position demand cue just before the driver detects the crash.

Condor Soaring Versions

I have checked the v2.6beta software with Condor v1.1.3

You will need to use Condor V1.1.2 or later to access the extended UDP data required for the motion software.

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 and associated software.