

OpusMSFS

Flight Simulator Interface for MSFS User Guide

Live View Multi-screen Networked Synchronised Displays



Landing Analysis and Flight Replay



GPS Simulator Interface

In-flight Moving Map



CPFlight MCP and EFIS Panel drivers

February 14, 2024

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OpusMSFS - Flight Simulator Interface for MSFS

Thank you for downloading our OpusMSFS Flight Simulator Interface.

The **OpusMSFS** Flight Simulator Interface for Microsoft MSFS incorporates,

- **Live View** for synchronized views, aircraft status, weather and cloud formations on multi-screen networks allowing one or more client MSFS systems with a MSFS server, or a mixture of client/server sims types using OpusFSI_v6. Ultra high performance IPC communications between networked systems.
- **Flight Planning** can be performed with or without the sim running. You can automatically import the current sim flight plan or manually import/create your flight plan with the addition of automatic/manual SID and STAR selection and custom user waypoints. Flight plan points that are suspected to be erroneous are highlighted in red and the **Auto Correct Errors** option simplifies the removal of all suspect points from the flight plan.
- **Weather Overview/Locator** can be used to either locate specific weather conditions on the map area that match your specified criteria, or obtain a Weather Overview of the general weather conditions.
- **In-Flight Moving Map** in satellite, terrain, or street map format superimposed with **Live Traffic**.
- **Landing analysis** with Popup window, Spy messages and user logging.
- **Flight Capture and Replay** feature which can automatically capture the final approach and landing phase of your flight. Alternatively, you may use the 'Start' and 'Stop' Capture buttons within the dialog to capture any phase of your flight.
- **Shortcut Controls** enable you to assign joystick button and keyboard keys to common actions or controls within the SERVER program.
- **GPS Simulator Interface** for navigation packages such as SkyDemon® and ForeFlight® GDL90 WIFI (iPad) interface.
- **ButtKicker®** Gamer 2 (or similar audio controlled) vibration device interface for added vibrational feedback.
- **FSC 737-TQ** Throttle Quadrant (motorised and unmotorised) driver.
- **CPFlight** MCP and EFIS (X2) panel support.

*The **OpusMSFS** interface is ideally suited for both **standalone** (single PC) and **networked** (multi-PC/Laptop) systems.*

On standalone systems, **OpusMSFS** incorporates the in-flight moving map with traffic **Landing Analysis, Flight Capture and Replay** function, GPS output, ButtKicker, FSC 737-TQ and CPFlight interface options.

On networked systems, irrespective of the size and complexity of your system, whether your system consists of a main 'flying' PC with a single networked laptop client, or a more elaborate multi-computer networked system; the **Live View** interface, with its **ultra high-performance IPC communications**, unique **Client Side Smoothing** software, and perfect synchronization of aircraft status, weather and cloud formations, will provide you with the highest possible networking performance. Whether you simply want an additional controllable display to provide further

scenic or external view options, or wish to create a multi-screened panorama for your MSFS experience, **Live View** offers you the ideal hassle free user-friendly solution.

You can have a mixture of MSFS, P3D and FSX based server and clients, for MSFS run OpusMSFS; for P3D/FSX you will have to purchase and run OpusFSI v6 (P3D only); or OpusFSI v5 (for P3D/FSX). Your main 'flying' server is the machine through which you control the aircraft. The networked client **MSFS** (or P3D/FSX using OpusFSI v6/5) systems are synchronised to the server through multiple ultra high-performance IPC links, the client systems are used primarily as view controllers. The networked systems allow you to create a multi-screened simulator system without placing the full workload and burden on your main system.

From this set up it therefore follows that all in-cockpit or instrument panel views used to control the aircraft must be displayed on the main server. All other views (scenic or external) can be offloaded onto the client systems. You can create wide panoramic vistas this way, or additional external aircraft views, without draining the resources on your main system or degrading its performance.

On networked systems you must install the sim and the **OpusMSFS** software on each of your client MSFS computer systems (laptops or PCs), along with all the scenery and airport addon packages. If you wish to display external aircraft views on the client computers you will also need to install all relevant aircraft addons. The **OpusMSFS** software does not need to be licensed on the client systems, the purchased license is only required for your main 'flying' server system. You may either copy or install the **OpusMSFS** software on each of your client systems, the **CLIENT** program that you will run on the client computers does not check for any licensing information. It simply connects to and receives all necessary data from your main server system.

Live View allows you to easily create multi-screen networked displays for your system.

OpusMSFS is fully compatible with Windows (7/8/10/11) operating systems, 64-bit versions. **OpusMSFS** does not require the Windows Server operating system to create or maintain the local area network links, and different operating systems may be utilized throughout the local area network.



Figure 1 - Live View Multi-Screen Networked Displays

Photo courtesy of the Human-Centered Design Institute, Florida Institute of Technology

System Requirements

- Microsoft MSFS simulator.
- Windows 11/10/8/7 (64-bit version) operating system.
- Microsoft .NET Framework v4.8
- 65 MB hard disk space.

Microsoft.NET

You need .NET v4.8, and SimConnect to be installed on your server system (and optional client systems) for OpusMSFS to work.

You can check what versions of .NET you have installed in Control Panel by selecting Settings, System, Apps and features, then search for .NET and a list of installed versions will be displayed. For older operating systems you can check what versions of .NET you have installed by checking your c:\Windows\Microsoft.NET\Framework or Framework64 folders. You should see a v4.0.xxxxx folder.

SimConnect

In the case of SimConnect, first make sure you have installed MSFS, SimConnect is usually installed automatically with it. If you have mislaid or corrupted your SimConnect then you can try re-installing it using the SimConnect.msi file within your c:\OpusMSFS folder.

Software Installation

Please refer to our **OpusMSFS_Getting_Started_Single_PC** document located in the **OpusMSFS** install folder, also available from our download page.

Setting up the Network

Please refer to our **OpusMSFS_Getting_Started_Networked_PCs** documents located in the **OpusMSFS** install folder, also available from our download page.

Setting Up MSFS

Please refer to our **OpusMSFS_Getting_Started_Single_PC.pdf** document located in the **OpusMSFS** installation folder, also available from our download page.

General Operation The Server Dialog



The **Operating Mode** should be “UNLIMITED MODE” for licensed systems or “DEMO MODE” for the limited demo evaluation mode.

If **Live View** is in operation then the **Client App Links** value indicates how many client links are open and **No. Connected** indicates how many clients are currently connected. In addition you may **View Client App Links** and **Spy** on the links (refer to our **OpusMSFS\OpusMSFS_Getting_Started_Networked_PCs.pdf** document).

The **Device Drivers** value indicates how many driver links are open and **No. Connected** indicates how many devices are currently connected. In addition you may **View Device Driver Links** and **Spy** on the links.

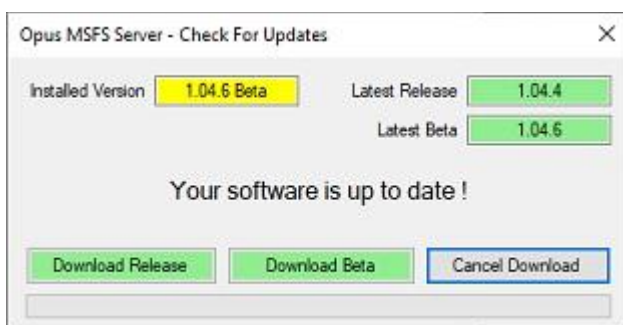
The **Configure** button opens the configuration dialog in order to configure options for Live View, the In-Flight map, device drivers (ButtKicker, FSC TQ control, CPFlight panels), GPS output options and Landing Analysis.

Toggle Spy toggles the Spy window. The Spy window is described in the Getting Started guides.

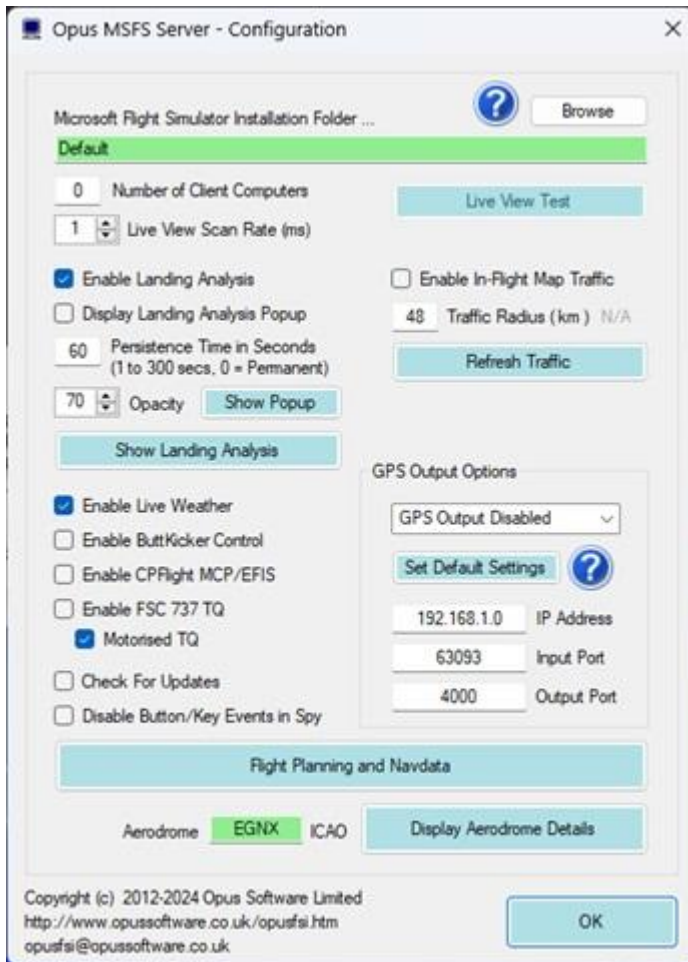
Toggle Map toggles the display of the In-Flight map. If 'Enable In-Flight Map Traffic' is enabled in the FSISERVER Configuration settings then the 'Toggle Map' button will remain greyed out until the traffic data has been fully initialised.

[Shortcut Controls](#) are described in this document.

Check for Updates will display a popup detailing your current OpusMSFS version and the latest Release and Betas versions available. The buttons at the bottom of the dialog enable you to download the latest software.



The Configuration Dialog



Enter your custom **Microsoft Flight Simulator Installation Folder** if you have installed anywhere other than the default location.

The **Number of Client Computers**, **Live View Scan Rate** and **Live View Test** button are related to Live View mode. Please refer to our [OpusMSFS_Getting_Started_Networked_PC's](#) guide.

To enable landing analysis tick the **Enable Landing Analysis** and the optional **Display Landing Analysis Popup** options and refer to the [Landing Analysis](#) section for further details.

If you are using a ButtKicker device then tick the **Enable ButtKicker Control** checkbox and refer to the [OpusMSFS_ButtKicker](#) guide for further details.

If you are using CPFlight MCP/EFIS 737 panels then tick the **Enable CPFlight Panels** checkbox and refer to the [CPflight MCP/EFIS 737 Panels](#) section for further details.

If you are using a FSC TQ throttle device then tick the **Enable FSC TQ Control** checkbox and refer to the [OpusMSFS_FSCTQ_User_Guide.pdf](#) guide in your installation folder for further details.

Check for Updates will display a popup detailing your current OpusMSFS version and the latest Release and Betas versions available. The buttons at the bottom of the dialog enable you to download the latest software.

Select **Disable Button/Key Events in Spy** if you don't want to see these events in the spy window.

Refer to the [In-flight Moving Map](#) section for details of the **Enable In-Flight Map Traffic, Traffic Radius, Refresh Traffic**, and **Weather Options** (Weather Engine and Weather Locator features included just in case people find the features (reports etc.) useful, and ready should MS and Asobo allow some form of supported weather injection in the future).

If you wish to enable output to a GPS package then tick then configure the **GPS Output Options** as described in the [GPS Output](#) section.

Refer to the [Flight Planning and Navigation Data](#) section for details of the Flight Planning and Navdata.

The **Aerodrome ICAO** text box and accompanying **Display Aerodrome Details** option can be used to display the internal OpusMSFS location and runway data on any aerodrome in the Spy window.

Standalone systems

If you have a standalone system then simply run the **SERVER** program on your MSFS computer system, the program should be run after MSFS.

Networked systems

The **OpusMSFS** network is created by running the **SERVER** program on the main (host) Flight Simulator PC, and running the **CLIENT** program on each client PC. Each of your computers must be able to 'see' each other over the local area network (refer to our **OpusMSFS_Getting_Started_Networked_PCs.pdf** document). The **OpusMSFS** software will make efficient use of any speed of network, but the faster the better.

You must install MSFS and the **OpusMSFS** software on each of your client computer systems (laptops or PCs), along with all the scenery and airport addon packages. If you wish to display external aircraft views on the client computers you will also need to install all relevant aircraft addons. The **OpusMSFS** software does not need to be licensed on the client systems, the purchased license is only required for your main 'flying' server system. You may either copy or install the **OpusMSFS** software on each of your client systems, the **CLIENT** program that you will run on the client computers does not check for any licensing information. It simply connects to and receives all necessary data from your main server system.

The recommended start up procedure for the **SERVER** and **CLIENT** programs are detailed in our **OpusMSFS_Getting_Started_Networked_PCs.pdf** document. You can monitor the connection status on the server program's Client App Link display and each of the **CLIENT** programs. In each case, the Application Links will turn green when a connection is made. Note, the server will allocate two links for each 'Live View' client, one link for each of the possible 'Live View' Position & Attitude connections.

Live View

Live View is a standard feature within the **OpusMSFS** Flight Simulator Interface; this feature provides a multi-screen networked display option for MSFS by synchronizing multiple networked PCs running copies of the simulator. The Live View server-client connection can be a mixed sim link. For example, using OpusFSI v6 and P3D on the server system and OpusMSFS with Microsoft's FS2020 on the client system(s).

With **Live View**, Opus Software have used their 30 year experience of developing high-performance real-time networked telemetry and data acquisition systems, to provide the networking software you need to create a multi-screened experience for the sim. No matter what complexity of system you intend to create, Live View will provide the ideal solution.

Live View is ideally suited to home cockpit builders and general enthusiasts alike.

The **Live View** multi-screen networked display feature allows the sim to be synchronized across multiple networked computer systems, including laptops. Live View can be used to create a variety of panoramic views or to simply provide additional views on separate 'client' computers.

A networked **Live View** system is created by activating the **SERVER** program on your main 'flying' computer, and running the **CLIENT** program on each of your connecting client systems (PCs or laptops). The programs can be activated in any order, with or without the sim, which greatly simplifies the set up of your system.

The configuration of the **Live View** system is simple to the extreme, just tell the main 'flying' server how many **Live View** clients you wish to support, and configure the server's computer name or IP address into each of the client systems, and away you go. You can sit back and watch your client systems connect and start communicating with the server. **Spy** buttons help you monitor the activity over all the networked links, or monitor the overall activity and operation of the **SERVER** and **CLIENT** programs.

The **OpusMSFS Getting Started Networked PCs** guide explains how to set up the OpusMSFS network and also includes some Live View FAQs.

The main features of **Live View** are,

- Live View synchronizes the aircraft's current position, attitude, landing gear, wheel movement, lighting, ailerons, elevator, rudder, flaps, spoilers (speed brakes), engine throttles, reversers and parking brake.
- Live View synchronizes the simulator's date and time, with either weather themes or the sim's live weather updates for the aircraft's surrounding area.
- Live View employs and optimizes multiple dedicated high-performance network links to provide the highest level of performance and the smoothest possible operation.
- Live View requires minimal set up and configuration to get up and running.

To ensure consistent views you should also have the same scenery, textures, and airport Add-ons installed on each MSFS system and the same MSFS sim settings.

Live View Weather Synchronization

The current version of the software supports synchronization of either Weather Themes or the sim's live weather.

In-Flight Moving Map with Live Traffic



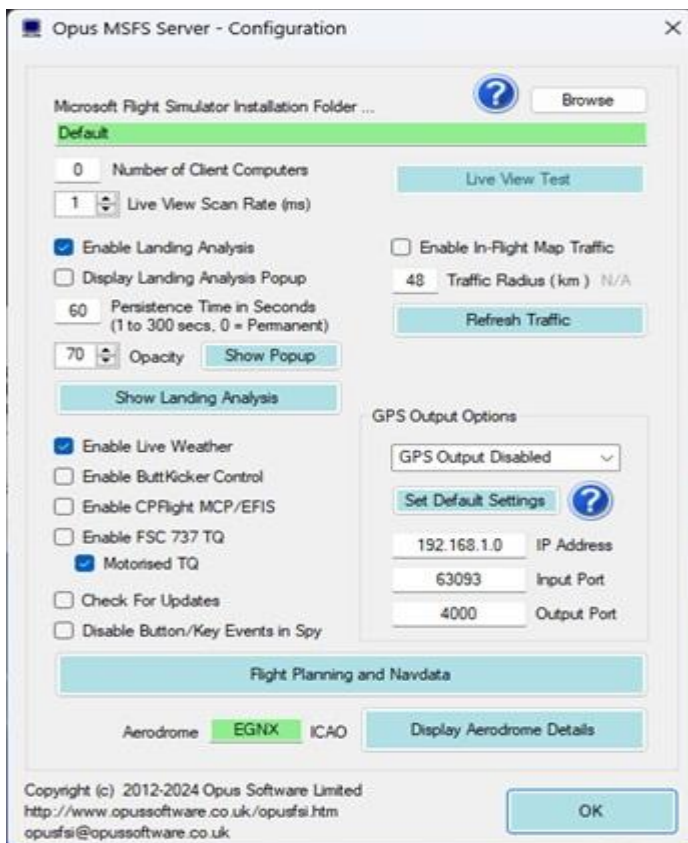
The OpusMSFS In-Flight Moving Map can be positioned and resized in the usual manner and is used to follow the flight across the terrain with the aircraft superimposed over the user selected satellite, terrain, or street map, 6 different map formats are available.

Live Traffic

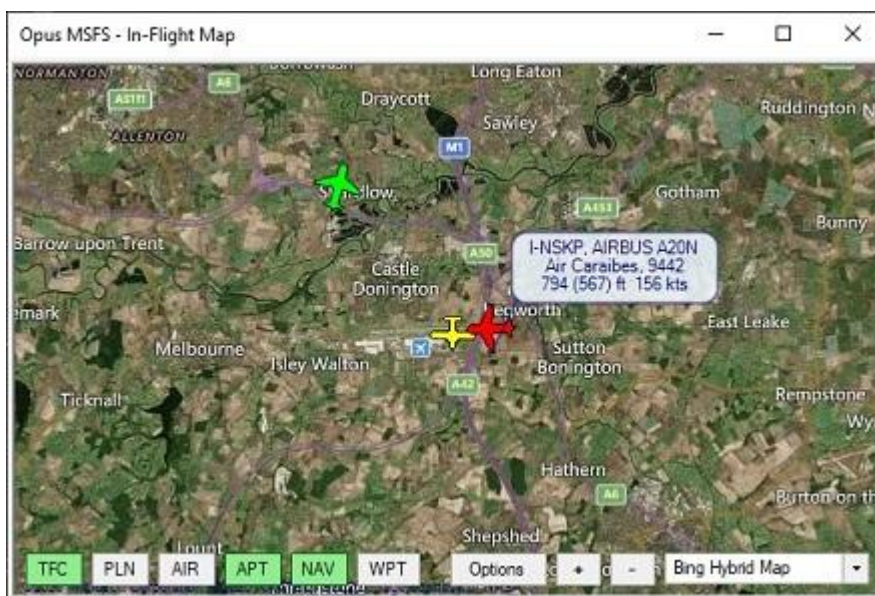
Traffic can be overlaid on the map by either setting the 'Traffic' (via map Option button) or using the 'Toggle In-Flight Map Traffic' Shortcut Control option. The display of live traffic is dependent on the 'Enable In-Flight Map Traffic' and associated 'Traffic Radius' Configuration settings.

N.B. The requested 'Traffic Radius' is presently ignored by the MSFS simulator. It is left an option just in case MS/Asobo correct the omission.

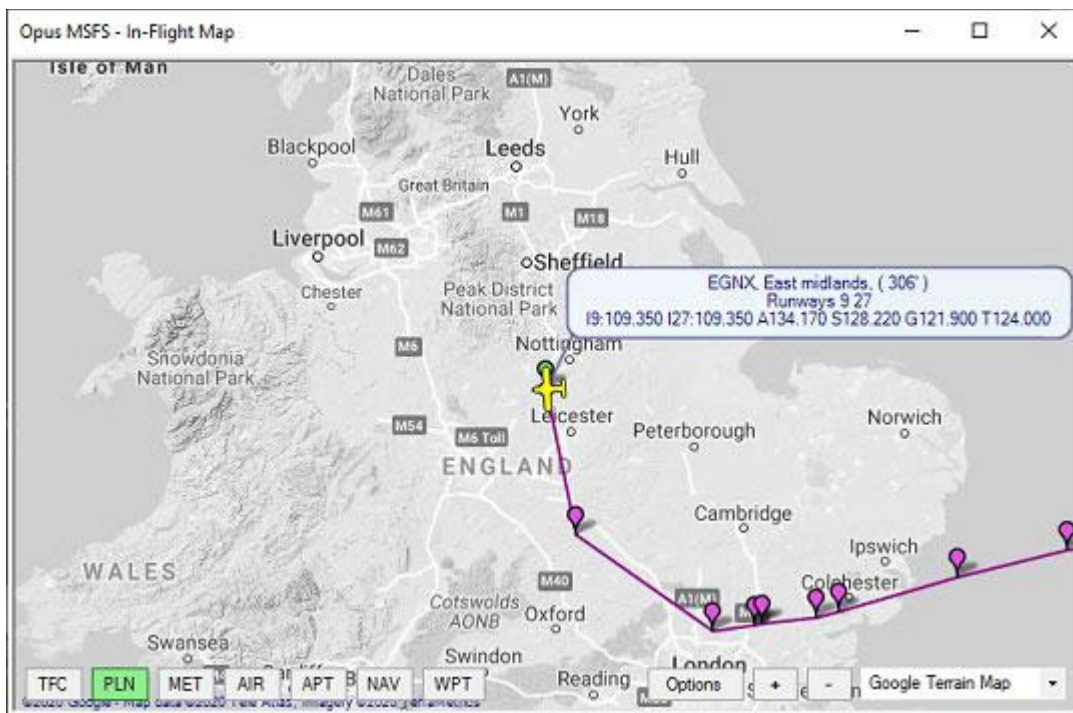
All traffic overlaid on the In-Flight Map is depicted using an appropriate Jet, Piston, Rotorcraft, or custom symbol. The symbol also reflects the current heading of the traffic and is colour coded. Traffic depicted in Grey refers to traffic currently parked up on the ground and White depicts taxiing aircraft. Traffic depicted in Green are airborne. Traffic depicted in Red are airborne and within 2000 feet of your current altitude, hence, may pose a threat.



Hovering the mouse cursor over an aircraft symbol on the map will display information about the traffic. For example, aircraft callsign, type, model, airline, flight number, current altitude in feet and airspeed in knots.



Hovering over an aerodrome marker will display the airport's key information, including its ICAO code, Name, Elevation in feet, all available Runways, and all relevant COM frequencies.

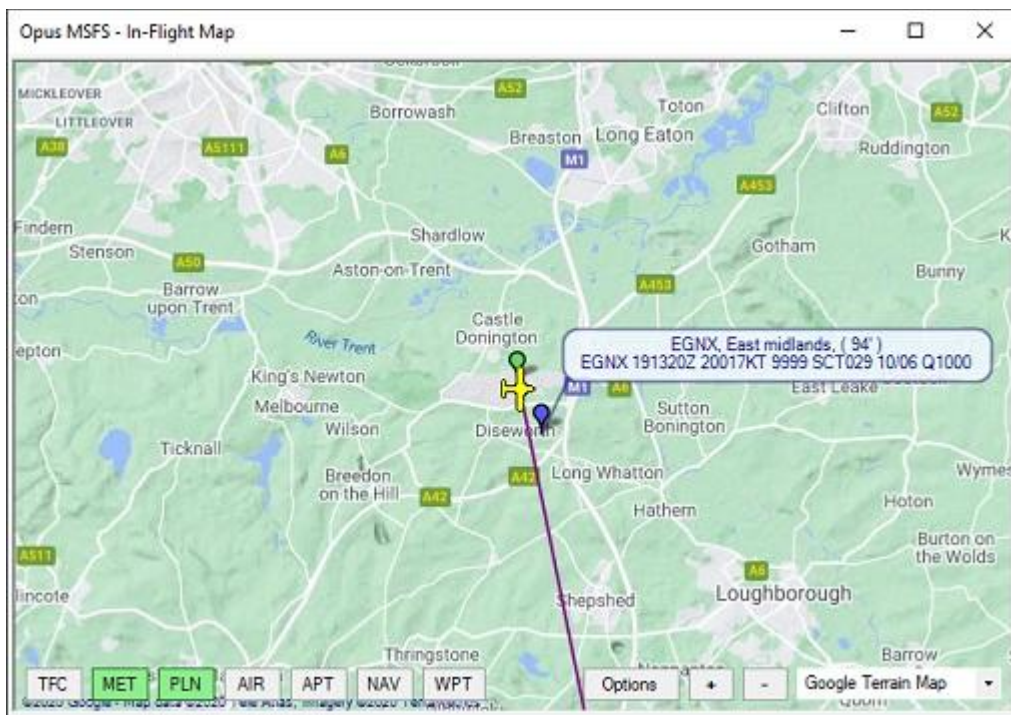


Each COM frequency is displayed in the form <code><freq>.

The following codes and display formats are employed,

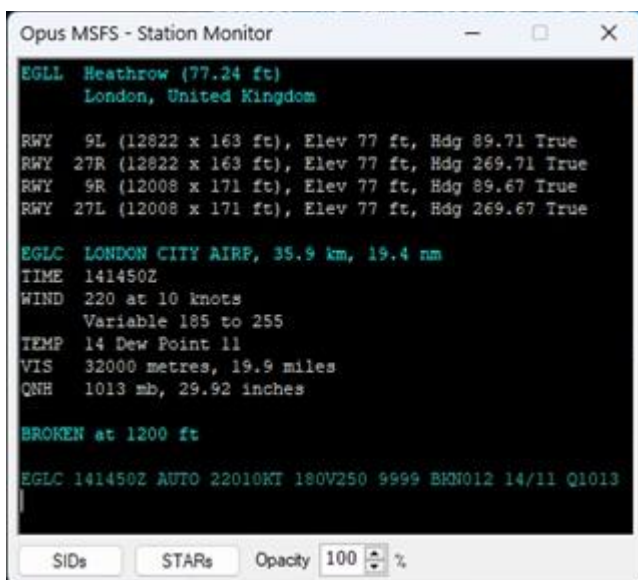
I = ILS	I<runway>:<freq>
A = APPROACH	A<freq>
T = TOWER	T<freq>
G = GROUND	G<freq>
C = COM	C<freq>
S = ATIS	S<freq>

Hovering over a MET station marker will display the airport's key METAR information, including its ICAO code, Name, Elevation in feet, and METAR weather data. The METAR weather data is downloaded in accordance with the configured '**Weather Data**' settings via the **Configure** dialog.



The Marker range is 320km (200 miles) for all In-Flight Map markers (e.g. airports, met stations, etc.).

The Station Monitor window is displayed by double-clicking on the base of the required Airport/Aerodrome marker in the In-Flight Map.



The Station Monitor can be toggled on and off display either via the Options dialog or by assigning an OpusMSFS Shortcut in the Shortcut Controls. The Station Monitor window aids flying the FS2020 sim by allowing the Destination (or Departure) to be monitored, showing all known details about the airport, including available runways and all communication frequencies, along with any nearby Met Station data (METAR) if one exists. The data associated with the closest Met Station

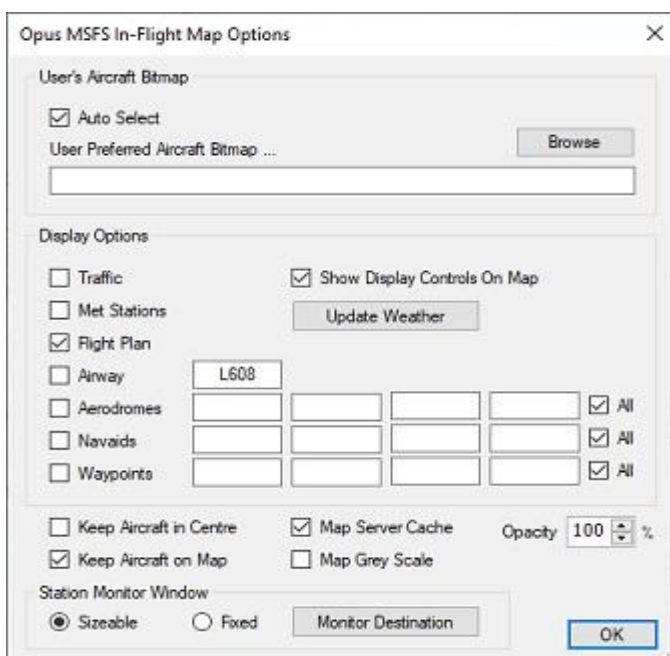
within 64 km (40 miles) will be displayed. All Met Station data is updated whenever new METARs are downloaded.

On start up and after the In-Flight Map has been displayed for the first time (initialised) the Station Monitor will be automatically primed with the destination airport as defined within the current flight plan.

The Station Monitor's SIDs and STARs buttons simplifies the selection of departures and arrivals prior to programming the G1000/G3000 units. The SID and STAR selection is aided graphically by reviewing the departure/arrival route on the OpusMSFS Map. A selected SID or STAR can also be copied into the OpusMSFS Flight Planning form using the **Open Flight Plan Form** button.

Map Options

Map display options are provided to Keep Aircraft Centred, Keep Aircraft on Map, set Grey Scale Map, and set the Map Opacity.



You can tick the checkbox to **Auto Select** the aircraft icon or alternatively specify your own custom bitmap.

Select the options you wish to be superimposed on the map; traffic 1, met stations (blue), flight plan (magenta on dark magenta line) 2, airway (orange on dark magenta line), aerodromes (white), nav aids (yellow) and waypoints (brown).

*Note¹: The display of live **Traffic** is dependent on the 'Enable In-Flight Map Traffic' and associated 'Traffic Radius' Configuration settings.*

Note²: The PLN (flight plan) and the system's NavData source is specified within the ' Flight Planning and Navdata' dialog, accessed via the the server's Configure dialog.

You can specify one airway and up to four specified aerodromes, nav aids and waypoints, or tick the **All** checkbox to display them all.

If you tick the **Show Display Controls On Map** then control buttons will be displayed at the bottom of the map to enable you to toggle the traffic, met stations, flight plan, airway, aerodromes, nav aids and waypoints on/off.

The **Update Weather** button will download the METARs again to update the weather.

Enable the required options to **Keep Aircraft in Centre** or **Keep Aircraft on the visible Map**.

Selecting **Map Server Cache** will speed up the display of the geographic map by saving it to cache instead of downloading it via the internet. Note that for Google and Bing maps you are limited to the number of downloads you can perform during a session.

The **Map Grey Scale** option makes it easier to view certain data against the geographical map. All LWA and Wx Maps all default to a monochrome map display if no user preferences have been set.

Opacity specifies the opacity for a map down to a minimum of 30%.

Select either a **Sizeable** or **Fixed** format **Station Monitor Window**.

Zoom

The + plus and - minus buttons are used to zoom in and out.

Map Type

Use the dropdown box to select the preferred map type. The following map types are available,

- Bing Street Map
- Bing Satellite Map
- Bing Hybrid Map (default)
- Google Street Map
- Google Terrain Map
- ArcGIS Street Map

Resize Map

You can drag the map edges to move and resize in the usual manner.

Flight Planning and Navigation Data

OpusMSFS will automatically import the current sim flight plan if you select the **Auto Import Current MSFS PLN Flight Plan** checkbox option or you can import it manually via the **Import Current MSFS PLN Flight Plan** button. However if you wish to manually import, edit, or enter and

process a flight plan then you can do it via this Flight Planning and Navdata dialog (via Configure dialog).

Opus MSFS - Navdata and Flight Plan Options

Navdata Location
 Navdata Folder (Defaults to x:\OpusMSFS\Navdata) Cycle Info 2313 1
 C:\Users\Opus Software\AppData\Local\Packages\Microsoft Flight Simulator_Bwekyb Browse
 To receive cycle updates please subscribe to Navigraph at www.navigraph.com
 Subscribed Navdata must not be saved in the default folder. Reload

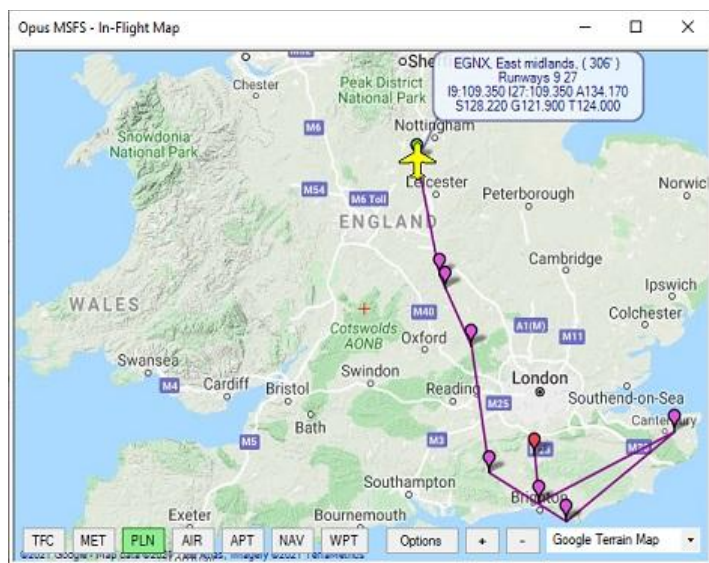
Flight Plan Details
 Departure **EGNX** Nottingham, United Kingdom
 SID
 Destination **KLAX** Los Angeles
 STAR
 Flight Plan <departure> <sic> <route> <star> <destination> Separate Lines ☐ Map
 EGNX N52.829814W1.392253:TIMECLIMB N62.421625W58.623600:TOC
 N56.644722W87.267403:TOD N33.959758W118.184181:TIMEAPPROACH KLAX
 Cruise 0 feet Reset Save Load Process

Flight Plan Route - Airway Fixes in Green, Suspected Errors in Red Auto Correct Errors

		LAT		LON		Sim	Stn	
EGNX	LAT	52.830988	LON	-1.328126				United Kingdom
TIMECLIMB	LAT	52.829814	LON	-1.392253	Lat	Lon		
TOC	LAT	62.421625	LON	-58.623600	Lat	Lon		
TOD	LAT	56.644722	LON	-87.267403	Lat	Lon		
TIMEAPPROACH	LAT	33.959758	LON	-118.184181	Lat	Lon		
KLAX	LAT	33.943113	LON	-118.408809	Sim	Stn		

Import / Export PLN Folder (Defaults to x:\OpusMSFS\Plans)
 Default
 Import PLN Flight Plan Export PLN Flight Plan
☒ Auto Import Current MSFS PLN Flight Plan (CUSTOMFLIGHT.PLN)
 Import Current MSFS PLN Flight Plan OK

The In-Flight Map can be displayed without the sim active and used to aid flight planning.



Identifying your Navdata Source

The flight planning assistance software decodes the standard Navigraph Navdata Nav aids and Waypoints text files for use in identifying all Nav aids and general waypoints within the your flight plan.

First locate your Navdata folder. The standard <SIM>\Navigraph\Navdata\ path is the default location for these files but you may **Browse** to different folders should they be located elsewhere (e.g. NavDataPro folder). The Navigraph Navdata supplied for the PMDG aircraft is in your

<SIM>\PMDG\NAVDATA folder in the wpnavaid.txt and wpnavfix.txt Navigraph files. iFLY files are in the <SIM>\iFly\Navdata folder.

If you do not have any Navigraph files then a default version of the files (apart from SIDs and STARs) are installed into your OpusMSFS\Navdata folder.

A default 'out of date' set of SID and STAR data (procedures) has been supplied in the form of a Proc.zip file, located in your x:\OpusMSFS\Navdata installation folder. If you intend using the default supplied SID/STAR data then the supplied Proc.zip file must be extracted and its '.txt' file content stored in the \OpusMSFS\Navdata\Proc folder.

To update Navigraph files subscribe to Navigraph's FMS data service at www.navigraph.com.

You will know if OpusMSFS has extracted the Nav data because the NAVAIDS.DAT and WAYPOINTS.DAT files will be created in the OpusMSFS folder. The NavData is reloaded each time you change the folder location, or press the **Reload** or **Process** buttons, or exit the dialog.

N.B. you only need to identify your Navdata folder once and it will be used for all aircraft types, you do not need to change the Navdata folder when selecting aircraft from different manufacturers. The same Navdata folder can be used for all sim types.

Entering a Flight Plan Manually

Not really applicable with MSFS unless you wish to specify a different flight plan to the one generated by MSFS to be used with the OpusMSFS maps.

If you enter the flight plan manually then your flight plan should start and end with a station's ICAO code, i.e. in the form,

<origin> <nav aids and waypoint fixes and airways> <destination>

e.g. EGCC 53.317167N2.318000W WAL33 TULIP LFST

Your departure and destination points are required in order for the software to identify the specific Nav aid or waypoint since many of them have shared names. So make sure you specify your origin and destination ICAO codes. The origin, destination and fixes can also be defined as Lat Lon fixes.

The formats for Lat Lon fixes are as follows,

<sign><lat>/<sign><lon>:<code>	e.g. 12-34-56/-123-45-67 12°34'56"/-123°45'67" or 1234/-12345 or 1.23/-1.23:ABC1
<lat><N or S><lon> <E or W>:<code>	e.g. 12-34-56N123-45-67W or 1234N12345W or 1.23N1.23W:ABC1
<N or S><lat><E or W><lon>:<code>	e.g. N12-34-56W123-45-67 or N1234W12345 or N1.23W1.23 :ABC1
<N or S><lat> <E or W><lon>:<code>	e.g. N12-34-56 W123-45-67 or N1234 W12345 or N1.23 W1.23 :ABC1

where

<sign> = + (optional) to indicate North or East
- to indicate South or West

<lat> = dd-mm-ss
dd°mm'ss"
ddmm
deg.deg

<lon> = ddd-mm-ss
dd°mm'ss"
dddmm
deg.deg

<code> = optional ICAO code or station name

dd = degrees in 2 digits

ddd = degrees in 3 digits

deg = degrees represented in decimal form e.g. 30 minutes would be 0.5 degrees

mm = minutes in 2 digits

ss = seconds represented in decimal form

All LatLon fixes used to define either the point of departure or destination within flight plans are temporarily added to the OpusMSFS station list with a pseudo name Xnnn, where 'nnn' ranges from 000 to 999. If the LatLon fix is within 2km of an existing station then that station is assumed to be identified.

SIDs and STARS

SIDs and **STARS** may be selected from the Flight Planning and Navdata dialog or Station Monitor window and reviewed on the Map. Once selected the relevant portion of the SID or STAR can be cut and pasted into the current flight plan using the **Open Flight Plan Form** button.

Opus MSFS - SIDs (Standard Instrument Departures) for EGKK, Gatwick, London, United Kingdom

BIG3P	08R	BIG	26km (14nm)	NE 037	KKW07			
BIG3W	08L	BIG	26km (14nm)	NE 037	KKW09	3.3 km (	1.8 nm)	WSW 257
BIG7M	26L	BIG	26km (14nm)	NE 037	MID	15.3 km (	8.3 nm)	WSW 243
BIG7V	26R	BIG	26km (14nm)	NE 037	KKW28	20.9 km (	11.3 nm)	WSW 257
BOGN1M	26L	BOGNA	50km (27nm)	S 184	KENET	67.6 km (	36.5 nm)	NNW 326
BOGN1V	26R	BOGNA	50km (27nm)	S 184				
BOGN1X	26L	BOGNA	50km (27nm)	S 184				
CLN1Z	08R	CLN	121km (65nm)	NE 049				
CLN4X	26L	CLN	121km (65nm)	NE 049				
CLN5P	08R	CLN	121km (65nm)	NE 049				
CLN5W	08L	CLN	121km (65nm)	NE 049				
CLN8M	26L	CLN	121km (65nm)	NE 049				
CLN8V	26R	CLN	121km (65nm)	NE 049				
DAGA1M	26L	CLN	121km (65nm)	NE 049				
DAGA1V	26R	CLN	121km (65nm)	NE 049				
DAGA1X	26L	CLN	121km (65nm)	NE 049				
DVR2P	08R	DVR	108km (58nm)	E 088				
DVR2W	08L	DVR	108km (58nm)	E 088				
DVR8M	26L	DVR	108km (58nm)	E 088				
DVR8V	26R	DVR	108km (58nm)	E 088				
HARD1X	26L	HARDY	89km (48nm)	SSE 147				
HARD5M	26L	HARDY	89km (48nm)	SSE 147				
HARD5V	26R	HARDY	89km (48nm)	SSE 147				
KENE1X	26L	KENET	97km (52nm)	WNW 295				

ALL RUNWAYS ALL FIXES

KKW07 KKW09 MID KKW28 KENET

Open Flight Plan Form

Opus MSFS - STARs (Standard Terminal Arrival Routes) for EGGP, Liverpool, Liverpool, United Kingdom

Name	Rwy	Fix	Distance	Direction	MONTY			
KEGU1D	09	KEGUN	26km (14nm)	SW 232	D186X	11.2 km (	6.0 nm)	S 182
KEGU1D	27	KEGUN	26km (14nm)	SW 232	KEGUN	22.2 km (	12.0 nm)	S 182
KEGU2A	09	KEGUN	26km (14nm)	SW 232	TORG0	10.2 km (	5.5 nm)	NE 049
KEGU2A	27	KEGUN	26km (14nm)	SW 232				
KEGU2B	09	KEGUN	26km (14nm)	SW 232				
KEGU2B	27	KEGUN	26km (14nm)	SW 232				
KEGU2C	09	KEGUN	26km (14nm)	SW 232				
KEGU2C	27	KEGUN	26km (14nm)	SW 232				
TIPO1B	09	TIPOD	31km (17nm)	WNW 291				
TIPO1B	27	TIPOD	31km (17nm)	WNW 291				
TIPO1C	09	TIPOD	31km (17nm)	WNW 291				
TIPO1C	27	TIPOD	31km (17nm)	WNW 291				
TIPO1D	09	TIPOD	31km (17nm)	WNW 291				
TIPO1D	27	TIPOD	31km (17nm)	WNW 291				
TIPO1E	09	TIPOD	31km (17nm)	WNW 291				
TIPO1E	27	TIPOD	31km (17nm)	WNW 291				
TIPO1J	09	TIPOD	31km (17nm)	WNW 291				
TIPO1J	27	TIPOD	31km (17nm)	WNW 291				
TIPO1K	09	TIPOD	31km (17nm)	WNW 291				
TIPO1K	27	TIPOD	31km (17nm)	WNW 291				
TIPO2A	09	TIPOD	31km (17nm)	WNW 291				
TIPO2A	27	TIPOD	31km (17nm)	WNW 291				
TIPO2F	09	TIPOD	31km (17nm)	WNW 291				

ALL RUNWAYS ALL FIXES

MONTY D186X KEGUN TORG0

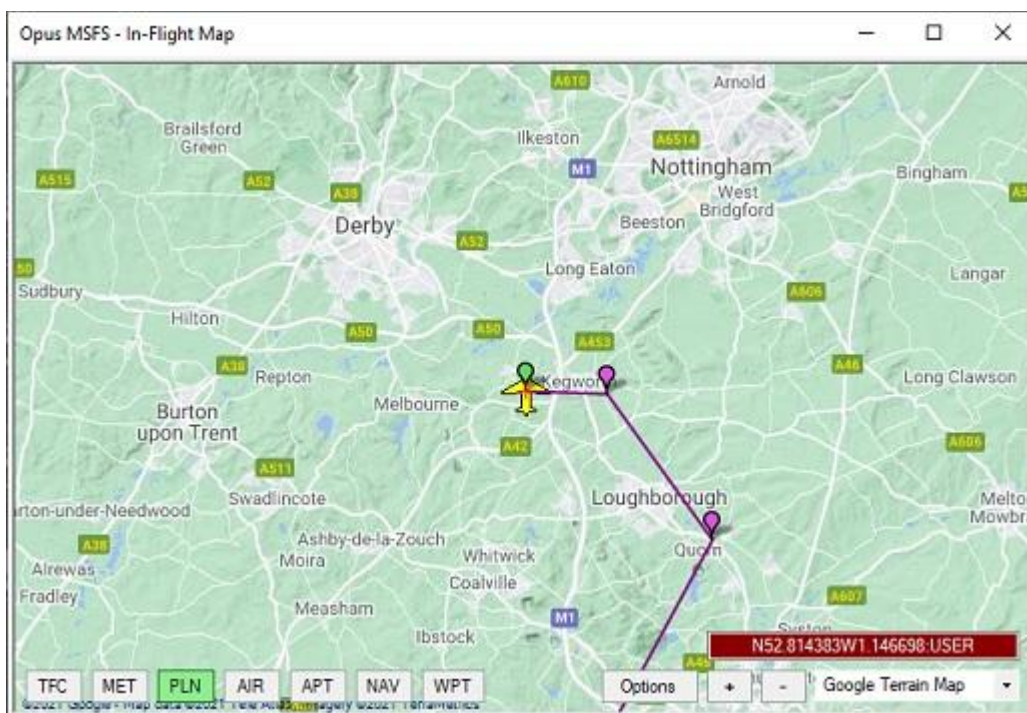
Open Flight Plan Form

User Specified LatLon Fixes

User Specified LatLon Fixes are ideal for including 'points of interest' or geographic landmarks to a flight plan.

Double-clicking with the right mouse button anywhere on the OpusMSFS Map will,

1. Generate a LatLon Fix of the form '<lat><lon>:USER'
2. Sound a short beep
3. Display a confirmation message on the map
4. Copy the generated fix to the Windows Clipboard



The generated LatLon fix is now ready to be pasted into a flight plan.

The saved LatLon fix is pasted in the usual manner either by right clicking within the flight plan text and selecting the 'Paste' option, or by positioning the text cursor within the flight plan and pressing 'Ctrl-V' to paste.

N.B. The inserted LatLon fix is automatically delimited with space characters. Once inserted, the 'USER' LatLon fix's name can be edited and replaced with any label up to twelve (12) characters in length (e.g. STADIUM, BRIDGE or HENG). After processing the flight plan is automatically converted to upper-case and correctly delimited with single space characters.

All User LatLon Fix names are exported within the OPUSMSFS.PLN file so they will appear within the simulator's G1000/G3000 flight plan.

Opus MSFS - Navdata and Flight Plan Options

Navdata Location
 Navdata Folder (Defaults to x:\OpusMSFS\Navdata) Cycle Info 2007 1
 Browse
 To receive cycle updates please subscribe to Navigraph at www.navigraph.com
 Subscribed Navdata must not be saved in the default folder. Reload

Flight Plan Details
 Departure **EGCV** **Sheep, United Kingdom**
 SID
 Destination **EGNC** **Carlisle, United Kingdom**
 STAR
 Flight Plan <departure> <sids> <route> <star> <destination> Separate Lines ☒ Map
 0 feet

Flight Plan Route - Airway Fixes in Green, Suspected Errors in Red

EGCV	LAT 52.833885	LOX -2.771666	Sim Stn	United Kingdom
EGNR	LAT 53.178048	LOX -2.977778	Sim Stn	United Kingdom
EGGP	LAT 53.334171	LOX -2.847404	Sim Stn	United Kingdom
ANFIELD	LAT 53.438710	LOX -2.958326	Lat Lon	
EGCO	LAT 53.645273	LOX -3.028611	Sim Stn	United Kingdom
EGNH	LAT 53.771557	LOX -3.028561	Sim Stn	United Kingdom
WINDMERE	LAT 54.274647	LOX -2.954464	Lat Lon	
BELLEISLE	LAT 54.361458	LOX -2.935238	Lat Lon	
AMBLESIDE	LAT 54.421127	LOX -2.965279	Lat Lon	
GRASSMERE	LAT 54.457366	LOX -3.024158	Lat Lon	
THIRLMERE	LAT 54.532139	LOX -3.061495	Lat Lon	
LEGGBURT	LAT 54.561562	LOX -3.068619	Lat Lon	
KESWICK	LAT 54.600014	LOX -3.137970	Lat Lon	
DUBWATH	LAT 54.670009	LOX -3.243885	Lat Lon	
EGNC	LAT 54.937492	LOX -2.809166	Sim Stn	United Kingdom

Import / Export PLN Folder (Defaults to x:\OpusMSFS\Plans)

☐ Auto Import Current MSFS PLN Flight Plan (CUSTOMFLIGHT.PLN)



Saving and Loading a TXT Flight Plan

You can use the **Save** button to save your manually entered flight plan in a text file. These saved flight plans can be loaded in future flights using the **Load** button. All text flight plan files contain the cruise altitude and flight plan string on two separate lines. Text flight plan files are stored in the \OpusMSFS\Plans folder.

Importing a PLN Flight Plan

You can import any PLN formatted flight plan (with .PLN filename extension). The **Import Flight Plan** option will initialise its path to your \OpusMSFS\Plans folder. The **Opus Folder** and **Sim Folder** button options allow the most useful Import/Export PLN folders to be specified without needing to Browse for the location. The Default PLN folder option is x:\OpusMSFS\Plans, the Simulator PLN folder option is the standard MSFS LocalState AppData folder for your installation. Your PLN folder's location is remembered by the FPA software after you have selected the required .PLN filename.

The decoding of Lat/Lon coordinates in imported PLN flight plan files has been extended to accept delimited degrees (°), minutes (') and seconds (") coordinated values.

Processing a Flight Plan

If you have manually entered or edited a flight plan, or loaded a TXT flight plan then you need to process the flight plan. Click on the **Process** button to decode the Flight Plan and display the result in the **Flight Plan Route - Navigation Points** box.

The navigation aids and waypoints, where they exist, are displayed with their Lat/Lon coordinates, general type and country codes. Where possible the specified label of any lat/lon waypoint fixes are shown. Airway fixes are displayed in green. Alternate Met stations are displayed in red.

The software ignores all identifiers that are not listed as Nav aids and waypoints. Airways are recognised provided the entry point is specified.

Flight plan points that are suspected to be erroneous are highlighted in red within the Flight Plan Route list. The **Auto Correct Errors** button option above the route list simplifies the removal of all 'suspect' points from the flight plan.

The **Flight Plan Details** editbox lists all identified navigation points extracted from your flight plan. A '**Separate Lines**' option can be used to separate all flight plan points onto separate lines and scroll bars allow the display window to be scrolled.

Just remember to force a weather update to download the METARs. Until then there will be no METAR data since it hasn't been downloaded. After downloading, all the non-reporting Met stations are removed from the list.

If you subsequently change your alternates then you will need to process the flight plan again.

Exporting a PLN Flight Plan

The **Export PLN Flight Plan** option will save the current processed flight plan into a standard user specified PLN file.

Import Current MSFS PLN Flight Plan

The 'Auto Import...' option allows the CUSTOMFLIGHT.PLN flight plan file to be checked and automatically imported on start up. The CUSTOMFLIGHT.PLN file is checked and imported from the MSFS AppData folder automatically only if it has been modified within the previous 12 hours.

The 'Import...' button option allows the current CUSTOMFLIGHT.PLN flight plan file to be imported and processed on demand.

N.B. All newly activated custom flight plans are automatically imported at the time of activation.

Deleting a Flight Plan

To delete a flight plan simply press the **Reset** button.

Landing Analysis



The touchdown and landing evaluation data is displayed in the main Spy window which will also display the previously captured landing data. The current evaluation is graded purely on the touchdown vertical speed in feet per minute (including any bounces). Landing completion is assumed once the aircraft has slowed to less than 30 knots. On landing the vertical speed is logged in both FPM and FPS units. The following evaluation gradings are now employed,

BUTTER LANDING	< less than 60 fpm
EXCELLENT LANDING	< less than 120 fpm
VERY GOOD LANDING	< less than 220 fpm
GOOD LANDING	< less than 320 fpm
MODERATE LANDING	< less than 380 fpm
POOR LANDING	< less than 440 fpm
HEAVY LANDING	< less than 500 fpm
VERY HEAVY LANDING	>= 500 fpm

An example **Spy** landing report is shown below. The evaluation is also given as a percentage value (100% for perfect landings). The touchdown airspeed, ground speed, vertical speed and lateral speed are shown. The lateral speed is always displayed in feet per second (FPS) for greater relevance.

```
LND Previous Touchdown at 09:49:20 Hrs
LND BUTTER LANDING, Evaluation 74 percent
LND Airspeed 52 knots, Ground Speed 46 knots
LND Vertical Speed 79 FPM, Lateral Speed 1.2 FPS
```

A **Landing Analysis Popup** window along with Config options are also included.

The **Config** options allow you to disable the popup, specify the display persistence time in seconds, and specify the popup window opacity. Defaults are set to display enabled, 60 second duration, and 70 percent opacity.

All landings are also logged in a User Landings Log file (**LANDINGS.log**) within the OpusMSFS install folder.

```
Opus MSFS - User Landings Log File
Generated 21 February 2023, 08:07 Hrs
```

```
Aircraft : fnx320
Touchdown at 21/02/2023, 08:07:02 Hrs
POOR LANDING, Evaluation 42 percent
Airspeed 126 knots, Ground Speed 113 knots
T/D Vertical Speed 158.3 FPM (2.64 FPS), Lateral Speed 0.76 FPS
MAX Vertical Speed 158.3 FPM (2.64 FPS), Lateral Speed 0.76 FPS
```

```
Aircraft : fnx320
Touchdown at 21/02/2023, 09:30:11 Hrs
BUTTER LANDING, Evaluation 93 percent
Airspeed 118 knots, Ground Speed 104 knots
T/D Vertical Speed 39.4 FPM (0.66 FPS), Lateral Speed 3.19 FPS
MAX Vertical Speed 2368.3 FPM (39.47 FPS), Lateral Speed 191.24 FPS
```

Flight Capture and Replay

The Replay feature is enabled by setting the **Enable Replay Capture** option within the **OpusMSFS - Replay Parameters and Options** dialog. The automated capture of replay data is enabled by ticking the **Enable Auto Capture** checkbox.

Once enabled, the Replay Parameters set within the dialog will be used to automatically capture the final approach and landing phase of your flight. Alternatively, you may use the **Start Capture** and **Stop Capture** buttons within the dialog to capture any phase of your flight.

A minimum of 5 seconds of data is needed to create a Replay File. A maximum of 10 minutes of data can be captured by the software. Should the capture period exceed this limit then only the last 10 minutes of the flight data will be recorded and saved to the data (.DAT) file.

All replay files are saved within the c:\OpusMSFS\Replay folder.

A LOG file with the same filename is also created to record the details of the data capture.

OpusMSFS - Replay Parameters and Options

Flight Mode (Enable Data Capture) Criteria

		Jet	Piston	
<input checked="" type="checkbox"/> Elevation	Above	2000	1500	Feet
<input checked="" type="checkbox"/> Airspeed	Above	120	80	Knots
<input checked="" type="checkbox"/> Gear Raised				
<input checked="" type="checkbox"/> Flaps Raised	Delay	2		Secs

Approach / Landing Mode (Start Data Capture) Criteria

		Jet	Piston	
<input checked="" type="checkbox"/> Elevation	Below	1500	1000	Feet
<input checked="" type="checkbox"/> Airspeed	Below	180	100	Knots
<input checked="" type="checkbox"/> Gear Down				
<input checked="" type="checkbox"/> Flaps Down	Delay	2		Secs

Taxing Mode (End Data Capture) Criteria

		Jet	Piston	
<input checked="" type="checkbox"/> Gnd Speed	Below	25	15	Knots
	Delay	15		Secs

☒ Enable Replay Capture File Archive 30 Days

Load Replay Start Capture

Start Replay User Information ?

OK Cancel

The most recent replay is always stored in the LAST_REPLAY.DAT and LAST_REPLAY.LOG files. If the captured data ended at a known airfield then the replay is also stored in a date and time stamped files named ICAO_DDMMYYYY_HHMM.DAT and ICAO_DDMMYYYY_HHMM.LOG where ICAO identifies the airfield and DDMMYYYY_HHMM identify the recorded date and time respectively. If no airfield is known, or no landing has occurred, then the ICAO code will be replaced with the phrase REPLAY.

Hence, four files will be created for each captured replay, for example,

LAST_REPLAY.DAT

LAST_REPLAY.LOG

EGNX_20012024_0931.DAT

EGNX_20012024_0931.LOG

Replay Parameters

The replay parameters determine when the replay data capture process is enabled, started, and ended. The following limits are enforced to ensure correct operation.

Flight Mode (Enable Data Capture) Criteria ...

The minimum 'Elevation' is 500 feet for both jet and piston aircraft types.

The minimum 'Airspeed' is 100 knots for jets and 80 knots for piston aircraft.

Approach / Landing Mode (Start Data Capture) Criteria ...

The specified 'Start Elevation' must be less than 100 feet lower than the specified 'Enabling Elevation'.

The specified 'Start Airspeed' must be less than 10 knots lower than the specified 'Enabling Airspeed'.

The following parameters are used to control the automated capture of the final approach and landing.

Flight Mode (Enable Data Capture) Criteria

The replay data capture is **Enabled** with a **Delay** of X seconds after the aircraft has climbed above the specified **Elevation** (in feet), accelerated to the specified **Airspeed** (in knots), the Landing **Gear** is **raised**, and the **Flaps** are fully **raised**. Apart from the specified Delay, all of the individual criteria can be enabled/disabled using the checkboxes. Separate Elevation and Airspeeds can be specified for Jet and Piston type aircraft.

Approach / Landing Mode (Start Data Capture) Criteria

The replay data capture will **Start** with a Delay of X seconds after the aircraft has descended below the specified Elevation (in feet), decelerated to the specified Airspeed (in knots), the Landing Gear is lowered, and the Flaps are lowered. Apart from the specified Delay, all of the individual criteria can be enabled/disabled using the checkboxes. Separate Elevation and Airspeeds can be specified for Jet and Piston type aircraft.

Taxiing Mode (End Data Capture) Criteria

The replay data capture will **End** with a Delay of X seconds after the aircraft has landed and its ground speed has dropped below the specified speed (in knots). Apart from the specified Delay, the individual ground speed criteria can be enabled/disabled using the checkbox. Separate ground speeds can be specified for Jet and Piston type aircraft.

Replay File Archive

To prevent excessive numbers of replay files accumulating, the maximum period (in days) for which the files are kept can be specified in the **File Archive** parameter within the dialog.

If you wish to keep specific replay files you should rename them, changing then from the standard ICAO_DDMMYYYY_HHMM filename format. This will prevent them being identified and deleted after the Archive period has expired.

Start/End Data Capture

Use the **Start Capture** and **Stop Capture** button to manually start and end the data capture respectively. The same button is used for both functions, its label changing to reflect the current capture status.

Loading Archived Replay Files

Use the **Load Replay** button to load any of the archived data (.DAT) files. Once loaded, the **Start Replay** button will be enabled and available to start the replay.

Starting/Stopping The Replay

Use the **Start Replay** and **Stop Replay** button to start and end the replay respectively. The same button is used for both functions, its label changing to reflect the current replay status.

Using The Replay Timeline Slider

After starting a replay the **Replay Timeline** slider can be used to adjust the timeline of replay, rapidly moving through and examining the captured replay data to resume the replay at your chosen point (e.g. when skipping ahead to short final).

Warning...

If you manually start the data capture then you must manually end the capture using this button. The software will NOT automatically end the capture of replay data after you have landing, all such automated criteria and functions are effectively suspended.

Shortcut Controls

Shortcut Controls enable you to assign joystick button and keyboard keys to common actions or controls within the SERVER program. All shortcut controls are defined using the Shortcut Controls dialog accessed via the SERVER program's main form. The Shortcut dialog will only be displayed if the sim is running.



At present, you can assign buttons and keys to,

- Toggle the Spy window On/Off
- Toggle the In-Flight Map On/Off ; In-Flight Map Zoom In ; In-Flight Map Zoom Out ; Toggle In-Flight Map Traffic ; Toggle In-Flight Map Flight Plan ; Toggle In-Flight Map Airway ; Toggle In-Flight Map Aerodromes ; Toggle In-Flight Map Nav aids ; Toggle In-Flight Map Waypoints ; Toggle Station Monitor Window
- Select Cockpit View mode ; Select External View mode ; Select Showcase View mode

Note that the key/button assignments within the sim will still remain active, so assign shortcut keys/buttons not already used in the sim if you don't want both sim and OpusMSFS shortcut actions to occur simultaneously, or alternatively you may find it useful.

If 'In-Flight Map Traffic' is enabled in the FSISERVER Configuration settings then the 'Toggle Map' button will remain greyed out until the traffic data has been fully initialised.



Assigning Joystick Buttons and Keyboard Keystrokes

All joystick button and keyboard events from the simulator are only enabled when the MSFS flight is loaded and you have clicked on 'Ready To Fly'.

OpusMSFS will accept buttons 1 through to 32 of Joysticks 1 through to 16. All button and registered key events are displayed within the Spy window when the button or key is pressed. If they are not displayed then the joystick or button is invalid, either not registered within the sim, already assigned elsewhere (i.e. 3rd party add-on etc), or just an illegal entry.

The software allows the following keys to be assigned to Shortcut controls,

Numeric keys: '0' to '9'.

NumPad keys: 'NumPad 0' to 'NumPad 9'. *The numeric pad keys 0 to 9 can be used but they must be assigned with the Num Lock ON (for recognition), and used with the Num Lock OFF within the sim.*

Letter keys: 'A' to 'Z'.

Function keys: 'F1' to 'F12'.

The entry is not case sensitive.

N.B. The Insert, Delete, Home, End, Page Up, Page Down, Left, Right, Up, and Down keys cannot be assigned to shortcuts. Unlike OpusFSI v5/6 you cannot use the Ctrl, Shift or Alt keys.

Click within the button or key command text boxes to specify the required assignment. When you click within the text box, the box will empty and turn red indicating it is waiting for your entry. You can now either click a second time to clear (delete) the entry, or press your desired joystick button or keyboard assignment.

If you assign an already used button or key to a Shortcut Control you will hear an exclamation and bleep sound. In such circumstances the previously assigned button or key is automatically deleted in favour of the new assignment.

All joystick button and keyboard 'key press' events will be shown within the main Spy window unless they've been disabled via the 'Disable Button/Key Events in Spy' option in the Configure settings.

All Shortcut Command data is stored in the FSISERVER.CMD file.

GPS Output (including SkyDemon and ForeFlight)

The OpusMSFS GPS Simulator interface can be used to feed data into an Aviation Planning and Navigation package running on an external device (e.g. SkyDemon or ForeFlight). The external device can be either a PC connected via Wi-Fi or LAN, or a mobile device connected via Wi-Fi (e.g. iPad, iPhone, or Android device).

Connecting to SkyDemon / ForeFlight on a Mobile Device via Wi-Fi

Step 1 - Find the Mobile Device's IP Address

Open the device's Settings -> Wi-Fi page.

IOS - Select the 'i' info button next to the connected Wi-Fi network.

Android - Select the Configure option in the bottom menu.

Make a note of the device's current IP Address.

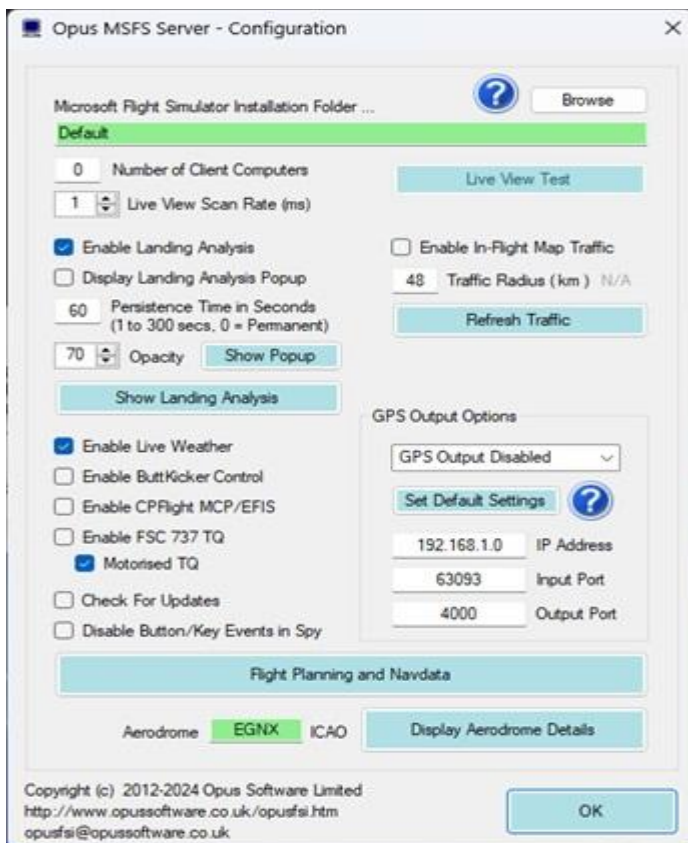
Step 2 - Configure OpusMSFS

Open the OpusMSFS Configuration dialog and prime the **GPS Output options**. Within the Configuration dialog the GPS Simulator interface can be disabled, set to feed basic Simulator GPS data via a WiFi or Ethernet LAN link, set to feed both Simulator GPS and Traffic data via a WiFi link, or set to imitate an external GPS using the NMEA protocol via a VSP (Virtual Serial Port).

The following GPS Output Options are available from the dropdown menu and described below,

1. GPS Output Disabled
2. Basic SIM GPS Data
3. GDL90 GPS + Traffic Data
4. NMEA GPS Data via VSP

Either click on the **Set Default Settings** button or enter the **Input Port** and **Output Port** values manually.



1. GPS Output Disabled

This option should be selected when no external device is used. The option disables all GPS output preventing OpusMSFS from attempting to connect and communicate with any external device.

2. Basic SIM GPS Data

This option transmits basic GPS (lat/lon position, altitude, heading and airspeed) data without any traffic information. To use this option you should set the following OpusMSFS Configuration IP Address and I/O Port options. On the external device you should then select the Third-Party XPlane (or equivalent) option within the SkyDemon/ForeFlight packages.

IP Address : < Your mobile device's IP Address>

Input Port : 49001

Output Port : 49002

3. GDL90 GPS + Traffic Data

This option transmits both GPS (lat/lon position, altitude, heading and airspeed) data along with all the simulator's traffic information. The data is broadcast over a WiFi link to the external device using the aviation industry standard GDL90 protocol. Using the standard GDL90 protocol OpusMSFS is able to imitate 'in cockpit' GPS + ADSB Input/Output devices (e.g. SkyEcho 2).

Note, to display traffic data on the SkyDemon/ForeFlight you must also tick the **Enable Live Traffic**

Updates option within the OpusMSFS Configuration dialog. The sim should also be configured within it's settings to generate some AI airline and GA traffic.

To use the 'GDL90 GPS + Traffic Data' option you should set the following OpusMSFS IP Address and Port Configuration options. On the external device you should also select any of the Third-Party SkyEcho, or GDL90 Compatible Device options within the SkyDemon/ForeFlight packages.

IP Address : < Your mobile device's IP Address >

Input Port : 63093 (Not Used)

Output Port : 4000

N.B. You must have a WiFi interface on the server PC for this link to function. It will not be able to make a connection via an Ethernet LAN connected router, even if the router itself is equipped with a WiFi output.

The **Local WiFi Broadcast IP Address** will share the same first three IP Address codes as your external device (e.g. iPad) with the final address code set to the Broadcast address of zero (0). Over local networks a router will typically assign local IP addresses ranging from 192.168.1.1 through to 192.168.1.253 (the router is normally assigned to local IP address 192.168.1.254). Hence on most systems the Local WiFi Broadcast IP Address will be 192.168.1.0.

4. NMEA GPS Data via VSP

This option transmits basic GPS (lat/lon position, altitude, heading and airspeed) data without any traffic information. The GPS data is transmitted to an Ethernet LAN connected PC via a VSP (Virtual Serial Port) using the industry standard NMEA GPS serial protocol. This protocol and VSP allows OpusMSFS to imitate an externally connected GPS receiver. See the section below.

IP Address : 127.1.1.0

Input Port : 0 (Not Used)

Output Port : 23 (The VSP's TCP/IP Port Number)

Step 3 - Configure SkyDemon / ForeFlight

Enable the X-Plane option and select 'Go Flying' mode.

In SkyDemon enable the X-Plane option in the 'Third-Party Devices' settings. Tap 'Go Flying' on the top menu and select the 'Use X-Plane' option.

Using The OpusMSFS GPS Option with an NMEA Output (Virtual Serial Port)

Step 1:

Download and install the **HW Group Virtual Serial Port - HW VSP3** software from the HW Group website www.HW-group.com.

Create a desktop icon for the HW Virtual Serial Port.

Run the VSP3 program, open the **Settings** tab and turn OFF all options except for,

TCP Server Mode

Connect to Device even if Virtual COM is closed

Save your settings to the INI file using the button.

Open the [v]Virtual Serial Port tab and specify your general parameters for the VSP. I have mine set up as follows,

Port Name: COM7

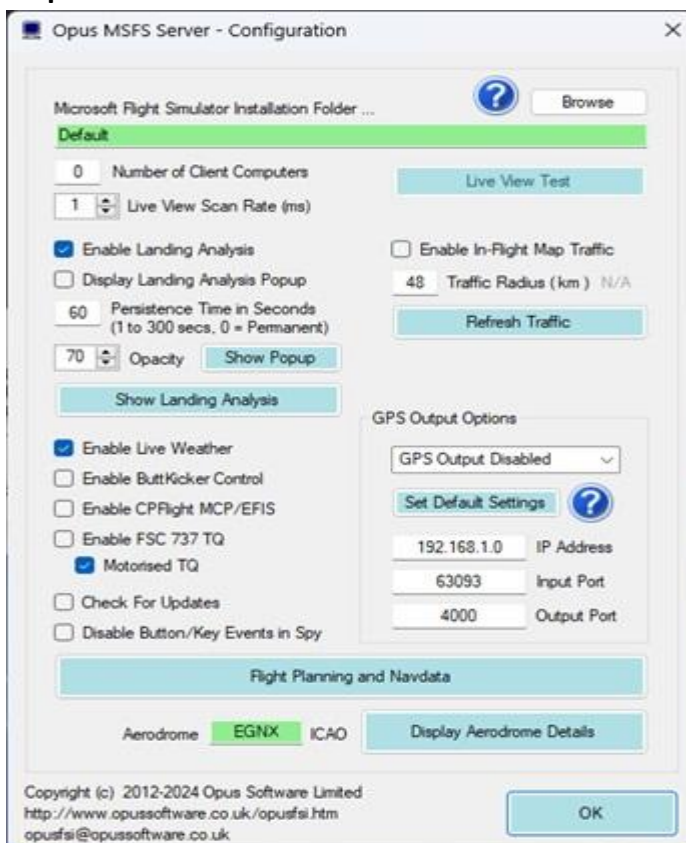
IP Address: 127.1.1.0

Port: 23

Click on the **Create COM** button.

The VSP Status will change to **Creating..** then finally **Created**. The LAN Status will then go to **Listen**.

Step 2:



In the Opus SERVER program's form click on the **View Device Driver Links** button to display the Device Driver Links on the form.

Now Open the SERVER program's **Configure** dialog, select the **NMEA GPS Data via VSP** option from the dropdown menu. Either click on the **Set Default Settings** button or enter the **IP Address** (e.g. 127.1.1.0) and **Output Port** number (e.g. 23) in the fields provided.

Click **OK** to close the Configure dialog.

A Device Driver Link should become coloured showing the GPS Simulation Networked TCP/IP Socket link, this link will turn green when it connects to the VSP.

The VSP LAN Status should now change to **Connected**.

Step 3:

After running and loading the flight in MSFS you are now ready to run the SkyDemon (or other 3rd party) package.

You will now have to set up your SkyDemon package.

Setup - > Device Connectivity Options ...

I have a Garmin handheld device

Port: COM7

OK

Setup -> GPS Navigation Options ...

General tab,

GPS Hardware,

Port: COM7

Baud: 9600 (I have my COM7 mode set to 9600,N,8,1)

OK

You are now ready to click on the **Start GPS** option in the top RH corner of the SkyDemon screen.

Device Drivers

The device drivers provide an interface to the popular Addon hardware for the sim. Each device driver will interface to the relevant aircraft simulation thereby eliminating the need to install separate drivers dedicated to each aircraft.

All device drivers are aware of any new aircraft selections even if the aircraft is changed in mid-flight. The appropriate interface (SimConnect or the manufacturer's SDK) will be initialised and employed automatically whenever necessary.

ButtKicker

Please refer to our **OpusMSFS_ButtKicker.pdf** document located in the **OpusMSFS\Docs** folder, also available from our downloads page.

FSC Motorised TQ Driver for the MSFS Simulator and PMDG's 737 NGX Aircraft

The OPUSFSCTQ.EXE program is supplied free of charge as part of the OpusMSFS v6 software installation. Please refer to the **OpusMSFS_FSCTQ_User_Guide.pdf** in your OpusMSFS/Docs folder.

CPflight MCP/EFIS 737 Panels

We currently have partial support for **CPflight MCP/EFIS 737 Panels**. The CPflight panel support is very limited due to severe limitations within the current MSFS SDK (the availability of SimConnect Variables and Events).

The following MCP737 panel features have been partially implemented. The CPflight panel interface is dependent on the correct action to SimConnect Events and correct feedback via SimConnect Variables. This is very much hit or miss depending on what aircraft is selected in the sim (see notes below). The following MCP panel features have been partially implemented,

- Course Knobs and Displays (adjust and display the Nav 1 and 2 course settings)
- Speed Knob and Display
- Heading Knob and Display
- Altitude Knob and Display
- Vertical Speed Dial and Display
- A/T ARM Switch. The MCP panel's A/T ARM will automatically disengage when not applicable, available, or settable on the selected aircraft.
- Left F/D Switch
- HDG SEL Button and Light
- LNAV Button and Light
- VOR LOC Button and Light
- APP Button and Light
- ALT HLD Button and Light
- CMD A and B Buttons and Lights. The MCP CMD A and B buttons can both be used to engage or disengage the sim's autopilot. The MCP A/P DISENGAGE switch is also factored into the control interface and effectively disables both CMD buttons.

Flight Director Master (MA) lights will only be controlled after establishing a connection to the sim. As there is no feedback or relevant data in the sim, these Master (MA) lights simply mimic the current ON/OFF state of the left and right F/D switches.

Improved control of the MCP **V/S light and vertical speed setting** while the autopilot is not engaged allows you to prime both the A/P's target Altitude and V/S before takeoff. You should take note, the F/D ON/OFF switch on the CPflight MCP panel is not controllable so the **F/D needs to be turned ON** to allow V/S mode and speeds to be set. If you don't enable the panel's F/D first, the panel will override the sim, turning the sim's F/D OFF, resulting in the sim disabling V/S mode!

N.B. The following MCP Panel controls are not functional,

N1, SPD INTV, VNAV, LVL CHG, V/S, ALT INTV, CWS A, and CWS B buttons, RH F/D switch.

The following SIM A/P controls cannot be processed,

VNAV, BC, V/S, and FLC.

This is all due to omissions and limitations within the current MSFS SDK SimConnect. Many of the SimConnect Variables and Events either do not work as expected, do not reflect the true settings in the aircraft, or do not control the aircraft's panel switches. There are many MCP/EFIS features that are not supported at all in SimConnect (e.g. separate left and right flight directors, level change or FLC).

A full interface and full control will only be possible with upgrades from Microsoft/Asobo or when the PMDG 737NG3 SDK is available. We have requested Microsoft/Asobo provide full access to read and write all knobs, dials, switches, and displays within the aircraft's panels, including the aircraft's throttle quadrant.

This CPflight MCP panel interface is supplied on an 'as is' basis. We will improve the interface as much as we can using the available MSFS SimConnect features. At least you will be able to use your MCP panel knobs and dials to change some of the autopilot's settings.

Future Development Plans

Further upgrades and enhancements are also planned, see our website for details. All upgrades will be freely available from our web site. The OpusMSFS_Release_Notes.txt file in the OpusMSFS folder details all upgrades and releases.

If you have any comments or requests for added features we will be pleased to hear from you.

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FAQ and Troubleshooting

Please refer to our **website FAQ page**, **OpusMSFS_Getting_Started_Single_PC** and **OpusMSFS_Getting_Started_Networked PCs** guides.