Flightdeck Avionics

User Manual

Version 1.40
22/11/2013

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Introduction

Sim-Avionics Flightdeck Avionics are designed to simulate the avionics and systems of a modern glass cockpit aircraft.

The applications are designed to be run on multiple computers across a network using a TCPIP Protocol, although the software can run on a single computer if the hardware specification will allow.

The software is available under two separate licence schemes: Professional and Home-User. Please contact Sim-Avionics sales for any form of professional usage or application. If in any doubt it is better to check first rather than run into a licensing problem at a later date.

In order to use the software some knowledge of flying or appropriate training manuals will be required further to this software set-up manual. This manual will not in anyway discuss aircraft operations or training. It won't (for example) teach you how to operate a CDU or MCP. The software is highly detailed and requires that the user must either have prior knowledge of similar avionic operations or use the software in conjunction with appropriate training manuals.

As a general rule, none of the information herein and none of the software can be used for real world aviation or navigation. The software is by no means to be considered complete concerning any of the respective aircraft's real systems and operation. The software is designed to give familiarization of those aircraft modeled.

The applications are based on a Client/Server principle meaning that the Server application is the 'main brain' of the system. The other programs are all clients that connect to the Server. Clients receive all of their data from the Server.

The Server is the interface to Flight sim and therefore must be able to connect to flightsim. This is achieved via **FSUIPC** (if the Server is run on the FS PC) or via **WideClient** (if the Server is run on a separate PC to FS). FSUIPC and WideClient are additional programs written by Pete Dowson www.schiratti.com/dowson.html

The Server also contains all of the System Logic and Autopilot Functions.

It is possible to evaluate the basic functions of this software without FlightSim Running

If you find technical errors in this manual please e-mail: support@sim-avionics.com

The Quick Start Guide

[The programs can be started in any order.]

1. The installer will execute \TCP_Client\TCP_Client.exe and ask for the Server IP Address
2. At the Prompt enter the Server IP Address. (The IP Address of the PC that will run the Server Application)
3. Run [Avionics.exe] (icon) - At the prompt select the displays that you want to run
4. Run the Server.exe
5. Press the 'Quick Start' button on the Server Program.
6. Use F1-F7 to enable/disable PFD/ND/EICAS/MFD/Stbys
7. Press F9 to set all windows to the default size and position
8. Use 'A' to select a window to resize
9. Use the arrow keys and numpad - + to resize the selected window. Hold CTRL to increase movement.
10. press 'S' to save the current window sizes and positions to DISPLAY.INI
11. Launch other Clients as desired.

Any additional program files are automatically created when the main .exe is first run.

*** Please be aware that if you are running 'Windows Vista' then depending on which folder location you installed the programs you may have to change the folder permissions and enable 'full control' to the "Sim-Avionics" and sub folders. This is due to Vista's UAC (User Account Control) and will prevent the automatic creation of various config files ***

**** Important for correct Flap display ****

Flap Definitions

The number of flap positions varies between the 777 and 737, also the final flap position varies between aircraft, therefore it is necessary to define the flap positions for you particular aircraft.

To define the flap positions for your aircraft.

Run Flight Sim (and Wideclient if required)
Start the Server. (Ensure it is connected to FS)
Goto Menu Page [**Aircraft Specific**]
In the Flap Definition box press [**Clear All**] to reset the current values

Ensure the aircraft flaps are **UP** in flight sim
The 'live' Flap Trigger and Displayed Positions are shown next to **Current FS Values**

Press **SET** next to the Flaps **UP** position.

Select the first flap position in Flight Sim and press **SET** next to the corresponding flap position.

Repeat this for all flap positions.
If your aircraft does not have one of the values listed then leave it at as zero.

Remember to Save the changes by going to the menu
Aircraft Specific > Save Aircraft

DEMO MODE and Activation

Without an Access Key the Flightdeck Avionics Suite will run in <u>DEMO MODE</u>.

Demo Mode is fully functional with the following exceptions :
- Programs will shutdown after 20 minutes of runtime. They can be restarted.
- Limited geographical test area:
   Default Airport = EGCC Manchester, UK
   Default Area = Aprx 80 miles around Manchester

   Latitude
   54.0
   Longitude   -3.0 | -1.5
   52.9

   Below 10,000 ft
- Only : Status, Electical, Ground Camera and Maintenence MFD Synoptics Available

Flight Sim is NOT required to test the DEMO, but functionality will be limited. In this scenario you can press 'T' in the AVIONICS.EXE to see some gauge movement.

When starting an unregistered version of the Server you will see this screen.

Select the "Cancel or Demo Mode" button to run the applications in DEMO MODE.

This screen is also used to 'activate' the server once a license has been purchased.
Activation involves
1. Purchasing a license from www.sim-avionics.com
2. Running the Server and sending an email to register@sim-avionics.com
   From the email address used to purchase the license in Paypal
   containing
   - Your unique Computer ID as displayed in the activation window.
   - The 'Registration Name' that you wish to register the product to.
3. Once verified we will send you (via return email) a unique Activation Key.
4. You should enter the 'Registration Name' and 'Activation Key' into the appropriate boxes and press OK.
5. You should receive an "Application Successfully Registered" message
   Your registration name and activation key are then stored in a new file within the Sim-Avionics\Server\ folder called **SERVER.SET**

When Flightsim is running and the Server is connected - Press 'Quick Start'. This will position the aircraft on the runway at Manchester with the basic systems enabled.

If you want to start the aircraft systems yourself via the overhead panel then you will need to manually position the aircraft within the DEMO area (EGCC – Manchester, UK) .
Do not press 'Quick Start' after starting the Server.

Update License

Your Activation Key is unique to your Computer ID and Registration Name and will entitle you to run new versions of the Server up to **one year** from purchasing the license.
After this time you will not be able to run newer versions of Server.exe.

Your existing versions _prior_ to your license expiration will continue to run.

Visit www.sim-avionics.com to extend your update license.

Server

This is the centre of the Flightdeck Avionics Suite.
All of the clients connect to the server from which they send and receive all of their data.

Network connectivity

By default data is transferred via a mixture of **TCP and UDP** protocols.
But you can set the system to only use TCP by adding
FD_PROTOCOL=tcp
into the CONFIG.INI in the \TCP_Client Folder

TCPIP Ports

If you are running firewalls on your PC's then you may need to unblock the ports used by the avionics programs. You will need to open all ports between **689 to 699**

TCP_Client.exe

When a 'client' program is executed it checks that TCP_Client.exe is running and will execute it as necessary.
TCP_Client.exe is used to receive data from the 'Server' and **MUST** be running for a client to receive data.

When TCP_Client is run it checks for the existents of **CONFIG.INI** in the \TCP_Client folder.
If it doesn't exists then a popup will be displayed asking for the 'Server' IP address.
(This is the IP Address of the PC that will be running the 'Server' program. 127.0.0.1 is the default and can be use if the 'Server' and client will be run on the same PC)

TCP_Client is executed automatically at the end of the install to generate this initial CONFIG.INI.

Configuration

Our avionics suite is designed to run on multiple computers over a TCP/IP network.

You can run everything on as many PC's as you want, dual monitors are also supported.
It is possible to run everything on a single PC, but for performance we recommend that you run Flightsim on a separate PC.

Here are a couple of configuration examples:

Example1 : Avionics running on one PC and Flight sim on another.

Network
Hub or Switch
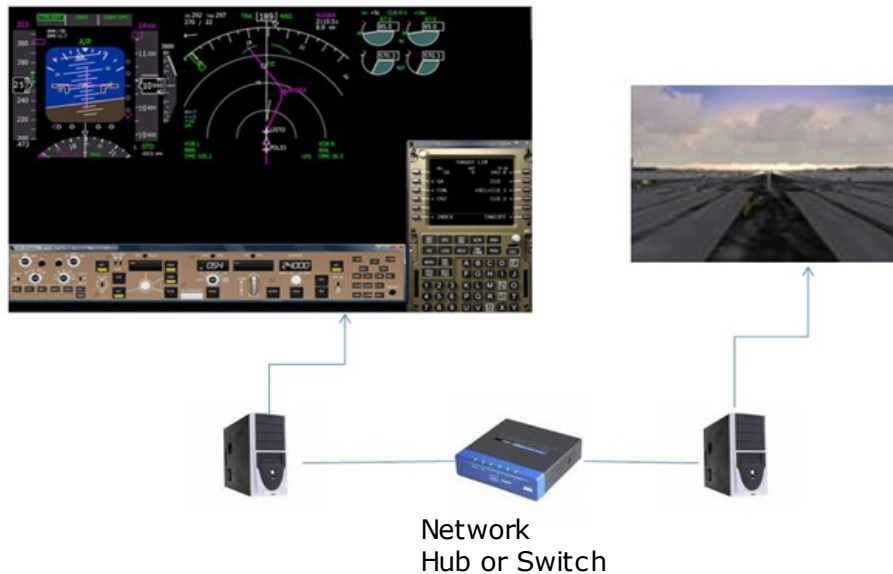
Example 2 : Here we've split the functions for use in a full cockpit. Note, we haven't shown the Sound Module, Weather, MCP or Panel Sim as these are optional and can be run anywhere.
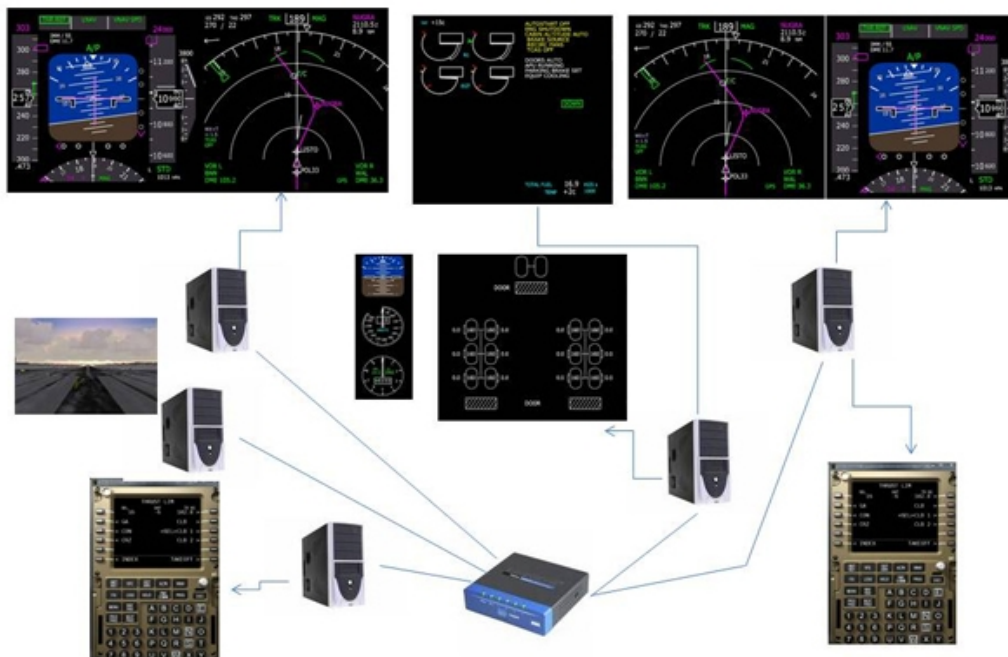
AVIONICS.EXE

This is the client program that displays the PFD, ND, EICAS, MFD and Standby Instruments.

B777 Version

B737 Version

If you have purchased a 'Lite' or 'Captain Only' license then you will only be able to run one instance of the avionics program. This will also be limited to run in CAPTAIN mode.
If you try and run a second instance of Avionics.exe then the applications will terminate.

If you have purchased a 'Full' or 'Pro' license then an unlimited number of avionics clients can be run in CAPTAIN or FO mode.

All of the avionics functions are controlled via the server and can be mapped to FSUIPC offsets. But the initial configuration will need to be made via a keyboard.

To help you configure the avionics, when executing the application for the first time a popup will ask you which instruments you wish to display and if this is to be a CAPTAIN or FO version. Make your selection and press OK after which a CONFIG.INI will be created in the Avionics directory. Once a CONFIG.INI has been created you will need to manually edit this file to switch between Captain and FO versions.

If you have an F/O license, to enable the PFD and ND in F/O Mode you can edit the
CONFIG.INI and set the line :
        [SETTINGS]
        POSITION=FO
Valid options are **CPT** = CAPTAIN or **FO** = First Officer

At any time in the avionics application you can press **F11** to display the keyboard shortcuts
help page:

Keyboard shortcuts :
        F1   : PFD   (Enable / Disable)
        F2   : ND   (Enable / Disable)
        F3   : EICAS   (Enable / Disable)
        F4   : Standby Attitude   (Enable / Disable)
        SHIFT + F4   : Standby ISIS   (Enable / Disable)
        F5   : Standby Airspeed   (Enable / Disable)
        F6   : Standby Altitude   (Enable / Disable)
        F7   : MFD   (Enable / Disable)
        F8   : 737 Flap Gauge   (Enable / Disable)
        SHIFT + F8   : Clock   (Enable / Disable)
        CTRL + F8   : Clock Background   (Enable / Disable)

        F9   : Default display window sizes
        F11   : Display Key Help

Display Resizing and Positioning
        A   = Cycle through the displays for adjustment
        Q   = Reset Size and Position of the selected display
        Arrow Keys   = Move Selected Display
        Num Pad -   = Reduce Selected Display Size
        Num Pad +   = Increase Selected Display Size
        Hold CTRL to increase movement

Additional Keys:
        0-9   =   MFD Synoptics
        Space Bar   =   Alternates between Single or Dual Monitor display
        S   **=**   **Save Window Positions and Sizes to DISPLAY.INI**
        F   =   Display Frame Rates
        T   =   Simple Test Mode
        P   =   Reset Application position to top-left of the screen
        Escape   **=**   **Close Application**

All avionics display positions and sizes are stored in a DISPLAY.INI after pressing '**S**' but can be
manually edited if necessary. If this file is deleted then a new one will be created when the
avionics application is next run.

Editing **\Sim-Avionics\Avionics\CONFIG.INI**

CONFIG.INI

```
[SETTINGS]
MAIN_TIMER=10                                    The main program loop time in ms

// Position=CPT or FO  (for PFD/ND only)
POSITION=CPT                                     Captain or FO position

// ***  MFD PARAMERTERS ***
// L =left 90 degs
// R = right 90 degs
// U = upsidedown rotate 180 degs
// C = normal
MFD_ORIENTATION=C                                Mouse Orientation for Checklist
MFD_TIMER=100                                    Separate MFD loop Timer – Resource Saver

//NAV_DATA_PATH=..\CDU\Data                       Map a custom path to the Navdata

USE_FONT=1                                       Use TTF Fonts
FONT_NAME=verdana                                Install TTF Font
FONT_X_OFFSET=0                                  Font Alignment Fine Turning
FONT_Y_OFFSET=0                                  Font Alignment Fine Turning
FONT_STRENGTH=550                                Font Strength
FONT_SIZE_ADJUST=-0.3                            Additional Font Sizing
ADD_FONT_OUTLINE_PFD=1                           Add a black outline around the font PFD
ADD_FONT_OUTLINE_ND=1                            Add a black outline around the font ND
FONT_OUTLINE_DEVIATION=0.0                       The acuracy of the outline

// Width of checklist - right text position
CHECKLIST_LENGTH_ADJUST=490

// Checklist font alignment
// Verdana - default
CHECKLIST_ALIGNMENT=11
// Baloo
//CHECKLIST_ALIGNMENT=13

// Background / Sky / Ground RGB -  0..255
BACKGROUND_R=0                                   Background Color Red
BACKGROUND_G=0                                   Background Color Green
BACKGROUND_B=0                                   Background Color Blue
SKY_R=0                                          Horizon Sky Color Red
SKY_G=51                                         Horizon Sky Color Green
SKY_B=153                                        Horizon Sky Color Blue
GROUND_R=74                                      Horizon Ground Color Red
GROUND_G=56                                      Horizon Ground Color Green
GROUND_B=43                                      Horizon Ground Color Blue

DISPLAY_ADDITIONAL_DATA=1                        Airport/Navaid info displayed with DATA selected.

// =  PFD or ND or EICAS or STBY_ATT or STBY_AIR or STBY_ALT or ALL
TAKE_SCREENSHOT=NONE                             Take a Screenshot of the displays
// In Seconds
SCREENSHOT_OUTPUT_TIME=10                        Interval between Screenshots in Sec's
// Creates: PFD.jpg, ND.jpg, EICAS.jpg, STBY_ATT.jpg, STBY_AIR.jpg, STBY_ALT.jpg
SCREENSHOT_FILENAME=\\127.0.0.1\b777_webcam      Output Filepath

[ENGINE]
EGT_START_MAX=700                                EGT Hotstart Max line before engine start
```

DISPLAY.INI

WINDOW_WIDTH=979	**Main Window Width**
WINDOW_HEIGHT=772	**Main Window Height**
WINDOW_LEFT=0	**Main Window Left**
WINDOW_TOP=0	**Main Window Top**
MAXIMIZED=0	**Application is Maximized**
BORDER=1	**Application Borders Displayed**
DISPLAY_PFD=1	**PFD Enabeld**
DISPLAY_ND=1	**ND Enabled**
DISPLAY_EICAS=0	**EICAS Enabled**
DISPLAY_STBY_ATTITUDE=0	**Standby Attitude Indicator Enabled**
DISPLAY_STBY_AIRSPEED=0	**Standby Airspeed Indicator Enabled**
DISPLAY_STBY_ALTITUDE=0	**Standby Altitude Indicator Enabled**
DISPLAY_MFD=1	**MFD Enabled**
DISPLAY_FLAP_GAUGE=0	**737 Flap Gauge Enabled**
DISPLAY_CLOCK_GAUGE=0	**Clock Gauge Enabled**
DISPLAY_CLOCK_BACKGROUND=0	**Clock Background Enabled**
DISPLAY_STBY_ISIS_GAUGE=0	**Standby ISIS Gauge Enabled**
PFD_X=0	**PFD Left Position**
PFD_Y=0	**PFD Top Position**
PFD_WIDTH=366	**PFD Width**
ND_X=486	**ND Left Position**
ND_Y=0	**ND Top Position**
ND_WIDTH=366	**ND Width**
EICAS_X=486	**EICAS Left Position**
EICAS_Y=0	**EICAS Top Position**
EICAS_WIDTH=486	**EICAS Width**
STBY_ATT_X=364	**Standby Attitude Indicator Left Position**
STBY_ATT_Y=0	**Standby Attitude Indicator Top Position**
STBY_ATT_WIDTH=162	**Standby Attitude Indicator Width**
STBY_AIR_X=364	**Standby Airspeed Indicator Left Position**
STBY_AIR_Y=162	**Standby Airspeed Indicator Top Position**
STBY_AIR_WIDTH=162	**Standby Airspeed Indicator Width**
STBY_ALT_X=364	**Standby Altitude Indicator Left Position**
STBY_ALT_Y=324	**Standby Altitude Indicator Top Position**
STBY_ALT_WIDTH=162	**Standby Altitude Indicator Width**
MFD_X=252	**MFD Left Position**
MFD_Y=368	**MFD Top Position**
MFD_WIDTH=366	**MFD Width**
FLAP_X=518	
FLAP_Y=367	
FLAP_WIDTH=123	
CLOCK_X=278	
CLOCK_Y=247	
CLOCK_WIDTH=123	
STBY_ISIS_X=278	
STBY_ISIS_Y=247	
STBY_ISIS_WIDTH=123	

// Screen Rotation in Degrees	
ROTATE_PFD=0	**Rotate PFD by x Degrees**
ROTATE_ND=0	**Rotate ND by x Degrees**
ROTATE_EICAS=0	**Rotate EICAS by x Degrees**
ROTATE_STBY=0	**Rotate Standby's by x Degrees**
ROTATE_MFD=0	**Rotate MFD by x Degrees**
ROTATE_FLAP=0	
ROTATE_CLOCK=0	

CDU.EXE

This is the client program that displays the CDU.
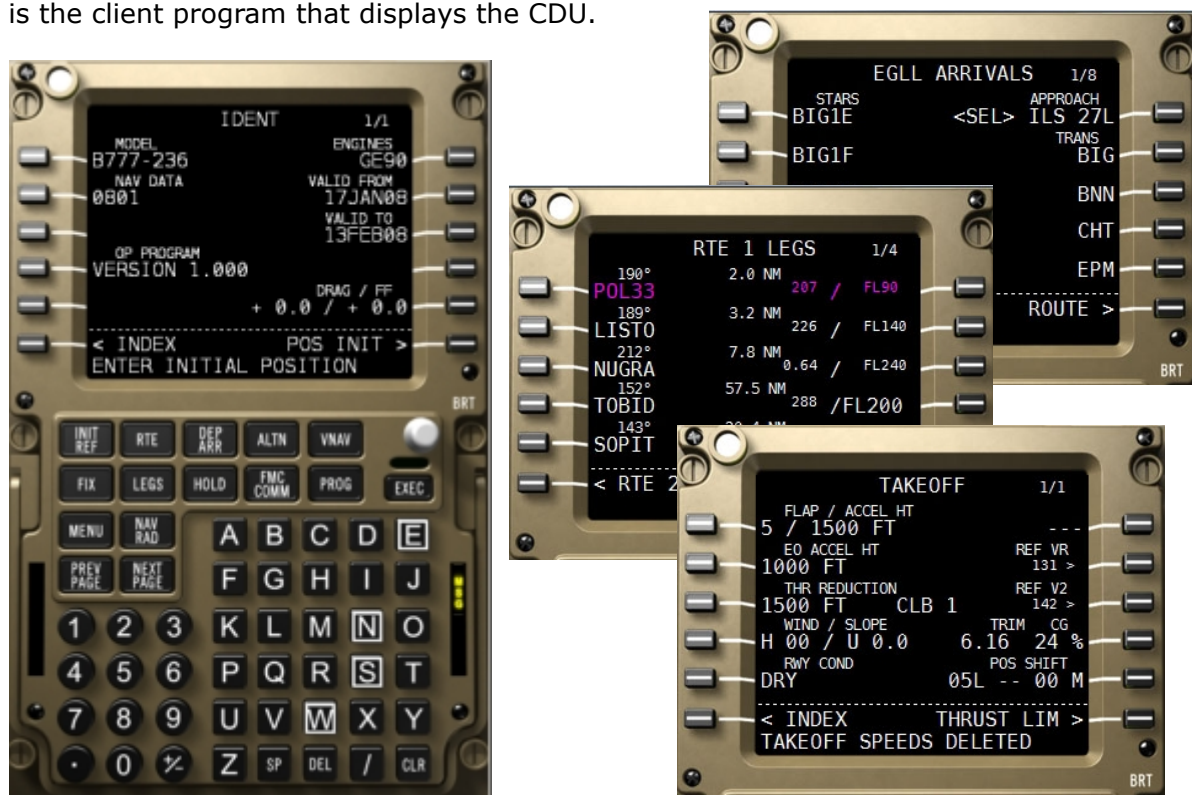
If you have purchased a 'Captain Only' license then you will only be able to run one instance of the CDU program. This will also be limited to run in CAPTAIN mode.
If you try and run a second instance of CDU.exe then the applications will terminate.

If you have purchased a 'Full' or 'Pro' license then an unlimited number of CDU clients can be run in 1xCAPTAIN, 1xFO and unlimited OBS modes (OBS in Pro License Only).

After executing the program for the first time a CONFIG.INI will be created in the CDU directory.
If you have an F/O license, to enable the CDU in F/O Mode you can edit the CONFIG.INI and set the line :
     [SETTINGS]
     POSITION=FO
Valid options are **CPT** = CAPTAIN or **FO** = First Officer

The alpha numeric keys (A-Z and 0-9) are mapped to the keyboard as normal.
The 'line select keys' are mapped to the Function keys (F1-F12)
The Left Line Select Keys = F1-F6
The Right Line Select Keys = F7-F12

The other CDU Menu keys can be custom mapped in the CONFIG.INI

CONFIG.INI

```
[NAVDATA]
//NAVDATA_PATH=..\..\Navigation_Data                Make a custom path to the Navdata

[SETTINGS]
// = CPT  or   FO or OBS
POSITION=CPT                                         CDU Position

EVENTS_TIMER=500                                     Internal Events Loop Timer in ms

// MENU KEY Pages                                    Set the Menu Key to 777 or 737 positions
// 0 = 777
// 1 = 737
// 2 = 737  with NAV RAD instead of N1 LIMIT
KEY_MAP=2

// Force Manual Radio Tuning
// Inhibits ILS Autotune in 777 mode
NAV_RAD_OVERIDE=0

// Some CDU interface modules use CAPS LOCK, SCROLL LOCK states to control the output lights
// You can disable this functionality if it causes probles with your setup.
DISABLE_OUTPUT_KEY_LIGHTS=0

[ENGRAVITY]                                          Enable Engravity CDU Support
ENABLED=0
COMPORT=COM?                                         Engravity CDU ComPort
BAUDRATE=38400

[ACARS]
PROXY_NAME=                                          Proxy Server Name
PROXY_PORT=                                          Proxy Server Port
PROXY_USERNAME=                                      Proxy Server UserName
PROXY_PASSWORD=                                      Proxy Server Password

[AIRLINE_POLICY]
DERATE1_PERCENT=5                                    % Derate 1 Thrust from T/O thrust
DERATE2_PERCENT=15                                   % Derate 2 Thrust from T/O thrust
GA_DERATE_PERCENT=5                                  % Derate Go-Around from T/O Thrust
CON_DERATE_PERCENT=10                                % Derate Continuous Thrust from T/O
CRZ_DERATE_PERCENT=12                                % Derate Cruise Max from T/O thrust

CLB_TRANSITION_SPEED_RESTRICTION=250                 Default Transition Speed
CLB_TRANSITION_ALTITUDE_RESTRICTION=10000            Default Transition Altitude
ECON_CLIMB_SPEED=310                                 Default ECON CLB Speed @CI 100
ECON_CRUISE_SPEED=0.84                               Default ECON Cruise Mach @ CI100
DES_TRANSITION_SPEED_RESTRICTION=240                 Default Descent Transition Speed
DES_TRANSITION_ALTITUDE_RESTRICTION=10000            Default Descent Transition Altitude
TRANSITION_ALTITUDE=18000                            Default Transition Altitude

; 1,5,15 = Flap defaults
; > 15 = Height defaults
THRUST_REDUCTION_DEFAULT=1500                        Default Thrust Reduction Flaps or Alt
MAX_FUEL_LEFT_WEIGHT=30000                           Left Tank Max Fuel (Tonnes)
MAX_FUEL_CENTRE_WEIGHT=81100                         Centre Tank Max Fuel (Tonnes)
MAX_FUEL_RIGHT_WEIGHT=30000                          Right Tank Max Fuel (Tonnes)

[USER]

FULL_SCREEN=0                                        FullScreen or Frontend mode

WINDOW_LEFT=0                                        Fullscreen Window Left Pos
WINDOW_TOP=0                                         Fullscreen Window Top Pos
WINDOW_WIDTH=650                                     Fullscreen Window Width
WINDOW_HEIGHT=520                                    Fullscreen Window Height
WINDOW_ROTATE=0                                      Fullscreen Rotation (degrees)
```

ROTATE_X=0   **Centre of rotation 0 = default**
ROTATE_Y=0   **Centre of rotation 0 = default**

FONT_LARGE=Sim-Avionics-CDU   **Installed TTF Font for Large text**
FONT_SMALL=Sim-Avionics-CDU   **Installed TTF Font for small text**

[FULLSCREEN]   **Full Screen Settings**
LINE1=120   **Line 1 Vertical Position**
LINE2=220   **Line 2 Vertical Position**
LINE3=320   **Line 3 Vertical Position**
LINE4=420   **Line 4 Vertical Position**
LINE5=520   **Line 5 Vertical Position**
LINE6=620   **Line 6 Vertical Position**
TITLE=10   **Title Vertical Position**
PAGE=25   **Page Number Vertical Position**
LINE_MARGIN_LEFT=84   **Left Margin Horizontal Position**
LINE_MARGIN_RIGHT=940   **Right Margin Horizontal Position**
LINE_T_MARGIN_LEFT=130   **Left Ref Margin Horizontal Position**
LINE_T_MARGIN_RIGHT=870   **Right Ref Margin Horizontal Position**
SCRATCHPAD=690   **Scratchpad Vertical Position**
FONT_SIZE_LARGE_FULL=36   **Font Size Large Text**
FONT_SIZE_SMALL_FULL=38   **Font Size Small Text**
FONT_SIZE_REF_FULL=32   **Font Size Ref Text**

; ctrl + shift + alt + xxx key number   **Key Assignments**
KEY_PROG_EXIT=001081
KEY_CLR=000008
KEY_NEXT_PAGE=000033
KEY_PREV_PAGE=000034
KEY_INIT_REF=100112
KEY_ROUTE=100113
KEY_DEP_ARR=100114
KEY_ALTN=100115
KEY_VNAV=100116
KEY_FIX=100117
KEY_LEGS=100118
KEY_HOLD=100119
KEY_FMC_COMM=100120
KEY_PROGRESS=100121
KEY_MENU=100122
KEY_NAV_RAD=100123
KEY_EXECUTE=000110
[WINDOWED]   **Non fullscreen defaults - Same as above**

Defining Key Presses

// ctrl + shift + alt + xxx key number
The first 3 chars determine if **CTRL, SHIFT** or **ALT** should be held down during the key press.
The last 3 chars are the key number to assign.

     000**65** = a
     1000**65** = ctrl+a
     0**1**00**65** = shift+a
     00**1**0**65** = alt+a
     1100**65** = ctrl+shift+a

Remote Key Presses Via FSUIPC

It is possible to control the CDU's via 3 FSUIPC offsets. (CPT, FO,OBS)
Each offset is 1 byte. Set the offset (set in FSUIPC_IO.INI) to the desired keypress number.
This is received by the Server and sent to the CDU's. Once the correct CDU has processed the keypress it will reset the offset value back to 0.
Most of these are the standard windows key numbers 0-9 A-Z, but there are a few additionals.

```
0=48    C=67    O=79    F1=112   SP     =  32   INIT REF = 150  HOLD     = 157
1=49    D=68    P=80    F2=113   .      = 190   RTE      = 151  FMC COMM = 158
2=50    E=69    Q=81    F3=114   /      = 191   DEP/ARR  = 152  PROG     = 159
3=51    F=70    R=82    F4=115   +/-    = 109   ALTN     = 153  MENU     = 160
4=52    G=71    S=83    F5=116   DELETE =  46   VNAV     = 154  NAVRAD   = 161
5=53    H=72    T=84    F6=117   EXEC   =  13   FIX      = 155  PREV     = 162
6=54    I=73    U=85    F7=118                  LEGS     = 156  NEXT     = 163
7=55    J=74    V=86    F8=119   (keydown)
8=56    K=75    W=87    F9=120   CLR    = 253
9=57    L=76    X=88    F10=121
A=65    M=77    Y=89    F11=122  (keyup)                        Exit     = 255
B=66    N=78    Z=90    F12=123  CLR    = 254
```

Navigation Data

Navigation Data for the CDU and ND is held centrally in the **sim-avionics\Navigation_Data** folder. Place new Navigation databases in here.

The base package comes with some limited Navigation Data, but the full version can be purchased at www.navigraph.com

Place the nd.mdb in the **\Navigation_Data** folder.

User Waypoints

User waypoints can be added to the \Navigation_Data\USER_WAYPOINTS.txt file in the format.
unique id=latitude,longitude
XWPT1=51.4,-0.4

Routes

CDU Flight plans are placed in the **\Routes** Folder.
Standard CDU flight plans are saved in plain text as .CFP files.

But you can also export an FS9 or FSX flight plan and place the .PLN file into the \Route Folder.
It's worth renaming the flight plan to a sensible name that can be displayed on the CDU screen, for example : EGLLKJFK1.PLN

SERVER.EXE

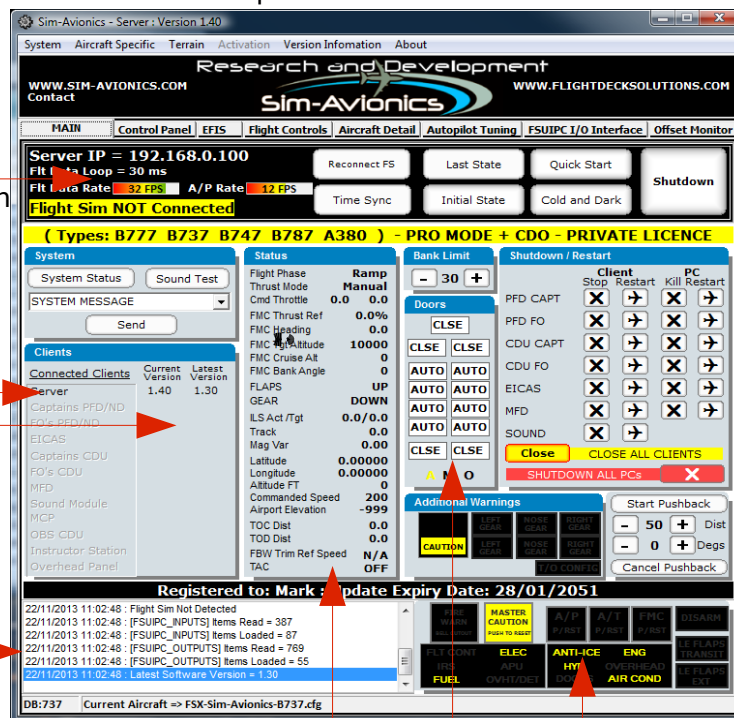This is the main Server window. It is split into several area's

Menu

Server Info

Main

Ctrl Buttons

Client PC control

Connected
Clients &
Versions

Log

Pushback Ctrl

737 Warnings

A/C Info   737 Annunciators

Door ctrl

Shutdown	:	Closes the Server.
QuickStart	:	Switches on the main Aircraft Systems.
		(Will positions the aircraft to EGCC – Mancherster, UK in DEMO mode)
Cold and Dark	:	Switches OFF the Aircraft Systems.
Last State	:	Load the Server State from the Server Backup Files.
Initial State	:	Load the Server State from INITIAL_STATE.INI
Reconnect FS	:	Tries to Reconnect to FSUIPC or WIDECLIENT
		(Used if FS or WideClient is started after the Server.)
Time Sync	:	Set's Flight Sim Time to the current Server PC Time.
Server IP	:	IP Address of the Server.
Data Send Loop	:	Time in milliseconds that critical flight data is sent.
Data Send Rate	:	Actual critical data send rate per second.

Flight Sim NOT Connected : The server was not able to establish a connection to Flight Sim.
Check Flight Sim or WideClient is running
press <Reconnect FS>

DEMO MODE – DATA BLOCKED (A/C OUT OF DEMO AREA) :

The Demo Mode is limited to a geographical area around EGCC Manchester, UK. If you fly out of this area then the flight data transfer will stop. It will restart when you fly back into the demo area.

Time : DEMO MODE has a 20 minute time limit. This shows amount of Demo Time Remaining.

Main Control Panel

Enable State Backup   : Every 20 seconds the current server state is saved to file
SERVER_STATUS.DAT = System Data
SERVER_CRITICAL_STATUS.DAT = Flight Data
SERVER_CDU_HDR_STATUS.DAT = CDU Data
SERVER_CDU_RTE_STATUS.DAT = CDU Route Data

Enable Internal Flight Controls
: Generally if you have joysticks connected directly to FlightSim
then this should be OFF
If you have I/O hardware writing 'pot' positions to FSUIPC
offsets then this functionality can be used to manipulate the flight
controls.
These are configured under the >System > Flight Controls menu

Load "Initial State" on Startup
: Sets the initial system switch positions during Server Start
using settings from INITIAL_STATE.ini

Enable Auto Door Logic : Cabin Doors open automatically when:
- Aircraft is on the ground
- Doors are in 'Manual' status
- Both engines are SHUTDOWN
- Parking brake is Set

Enable System Logic   : This enables the internal system logic and would usually be
                              switched ON.

Show AI Traffic Labels : This will show or disable the AI traffic labels.

Show TCAS ID Labels   : Show the AI aircraft ID's on the TCAS Traffic.

Display Smoothing   : Smooths the changes on the PFD/ND/EICAS displays.
                              Higher numbers increase the amount of smoothing steps.
                              Setting this too high can make the displays slow to react to
                              aircraft attitude changes.

Start with IRS Aligned : The IRS/ADIRU system is always aligned.
                              It cannot be switched off using the overhead switches.

Link XPNDR to Squawkbox
                            : The SB Transponder mode is linked to the System XPNDR Mode.

Use Calculated Accels (X-Plane)
                            : Should be enabled if using X-Plane.

Enable Auto Cabin Ready : Cabin Ready is Automatically enabled when...
                              On the ground when the Cabin Safety breifing is played.
                              In the Air above 1000ftRA, Gear down, Flaps >= 15.

Enable ATC Chatter   : ATC Chatter is played when COM1 is tuned to an ATC chatter
                              frequency as defined in the \Sounds\ATC folder.
                              ATC Chatter can be disabled here – if flying with online ATC.

Using Flight Illusion Stby Altimeter
                            : The FI software constantly writes to the FS baro which can cause
                              a conflict with the CPT/FO baro's. This will be seen as a 'jumping'
                              altimeter. Setting this checkbox will stop the conflict.

Use FS UTC Time   : Uses UTC on the clocks and CDU's based on the current time in
                              FS. Otherwise use UTC based on the computer system time.

Use Internal I/O Radio Functions
                            : With this disabled, the SimA radio settings are hard linked to the
                              FS values... ie if NAV1 is being monitored in FS this will be
                              reflected in SimA.
                              When enabled SimA will 'set' it's parameters in FS.

Play Radio Change Confirmation Sound
                            : Plays a confirmation 'beep' sound when any radio frequency is
                              changed.

Use Custom Pushback   : Use the Custom Pushback routine. This allows the Tug speed
                              and Rotation speed to be set in the Server.ini.
                              // Pushback Tug Info. (Custom Pushback must be enabled)
                                  USE_CUSTOM_PUSHBACK=1
                                  PUSHBACK_TUG_SPEED=4
                                  PUSHBACK_TUG_ROTATION_SPEED=11
                                  PUSHBACK_TUG_CONNECTION_BOUNCE=8
                              Disabled – The default FS Pushback is used.

Block FSUIPC Logging   : Prevents FSUIPC File logging.

Flight Data Communication Protocol

UDP   *:* Send highspeed flight data via UDP protocol

TCP   *:* Send highspeed flight data via TCP protocol

By default the UDP broadcast address is 255.255.255.255 but this can be made more specific
if required. ie 192.168.0.255

FSUIPC Interface – also see menu FSUIPC I/O Interface

Use MCP Values   : If external I/O hardware is being used this will map FSUIPC
                              offset values to the internal MCP values.
                              If you are using the MCP frontend client then this can be set OFF.

Use Flt CTRLS Values   : If external I/O hardware is being used this will map FSUIPC
                              offset values to the internal flight controls.

Use INPUT Offsets   : If external I/O hardware is being used this will map FSUIPC
                              offset values to the internal switch status.

Use OUTPUT Offsets   : If external I/O hardware is being used this will map internal
                              values to FSUIPC offsets.

Use Display Brightness   : Using the assigned joystick to dimmer axis to control the display
                              brightness. Assignments are made in the FSUIPC_IO.ini file.
                              [DISPLAY_DIMMERS]
                              // assign a Joystick ID (0-31) + Joystick axis ID. 1-6.
                              // Format : <Joystick ID>,<Joystick Axis> // 0,3 for axis 2 on joystick 0
                              CPT_PFD_AXIS=0,0   STANDBYS_AXIS=0,0
                              FO_PFD_AXIS=0,0   CPT_CLOCK_AXIS=0,0
                              CPT_ND_AXIS=0,0   FO_CLOCK_AXIS=0,0
                              FO_ND_AXIS=0,0   TERRAIN_AXIS=0,0
                              EICAS_AXIS=0,0   WEATHER_AXIS=0,0
                              MFD_AXIS=0,0   WEATHER_TILT_AXIS=0,0
                              CPT_CDU_AXIS=0,0   WEATHER_GAIN_AXIS=0,0
                              FO_CDU_AXIS=0,0   ATC_CHATTER_VOLUME_AXIS=0,0
                              OBS_CDU_AXIS=0,0

Use CDU INPUT Offsets

                             : This allows the CDU's to be controlled via FSUIPC offsets.
                               (See CDU Key Mapping: Page 16)

Select Simulator

MS Flight Simulator   : Connects to MSFS via FSUIPC

Auto Reconnect   : Tries to reconnect to FS. Interval set in Retry box (in Seconds)

ACARS

Enable ACARS   : Used to enable ACARS functionality
Use Sim-Avionics ACARS Server
                                : Enabled uses the Sim-Avionics webserver for basic Aircraft to
                                  Aircraft Text Communication.
                                  Disabled uses http://www.hoppie.nl/acars/ Service for
                                  WorldFlight events.
                                        POS REP
                                        ETA Times
                                        ACARS Messaging
                                        CPLDC Messaging to ATC ground station

ACARS Webserver   : Specifies the ACARS WebServer.
                                  Set To : http://www.hoppie.nl/acars/system/connect.html
                                  if using the Worldflight service.

ACARS Logon ID
                                : For Sim-Avionics server this is not required.

ACARS PROXY Details
                                : Complete these details if you use a proxy server.

EFIS

Provides a quick way of accessing the Glareshield EFIS and EICAS controls.

TCAS

Provides a quick way of accessing the TCAS Controls.
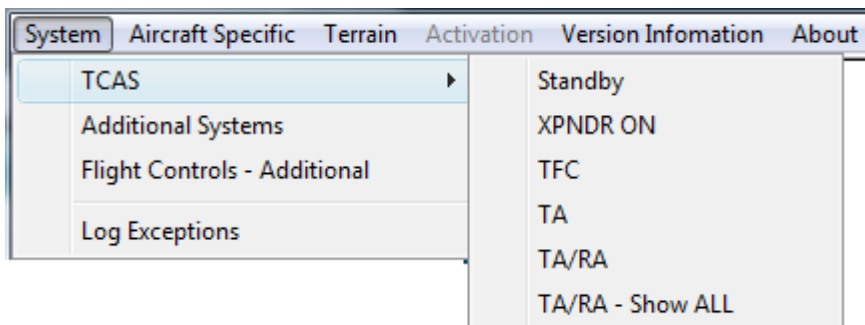
Various modes are provided to select how TCAS traffic is displayed on the ND's and how Audible warnings are handled.

TCAS Mode	System Mode	Squawkbox Mode
Standby	TCAS OFF	TCAS OFF
XPNDR ON	TCAS ON	TCAS ON
TFC	TCAS ON – ND Traffic Display	TCAS ON
TA	TCAS ON – Audible Warnings	TCAS ON
TA/RA	TCAS ON – Traffic Avoidance	TCAS ON
TA/RA – Show ALL	TCAS ON – Traffic Avoidance	TCAS ON

Please Note : TA/RA Show ALL is not a real mode. It has been added so simulation purposes.
It removes the altitude filter and shows all AI traffic around the aircraft.
It is displayed on the ND as : TA/RA*

Additional Systems
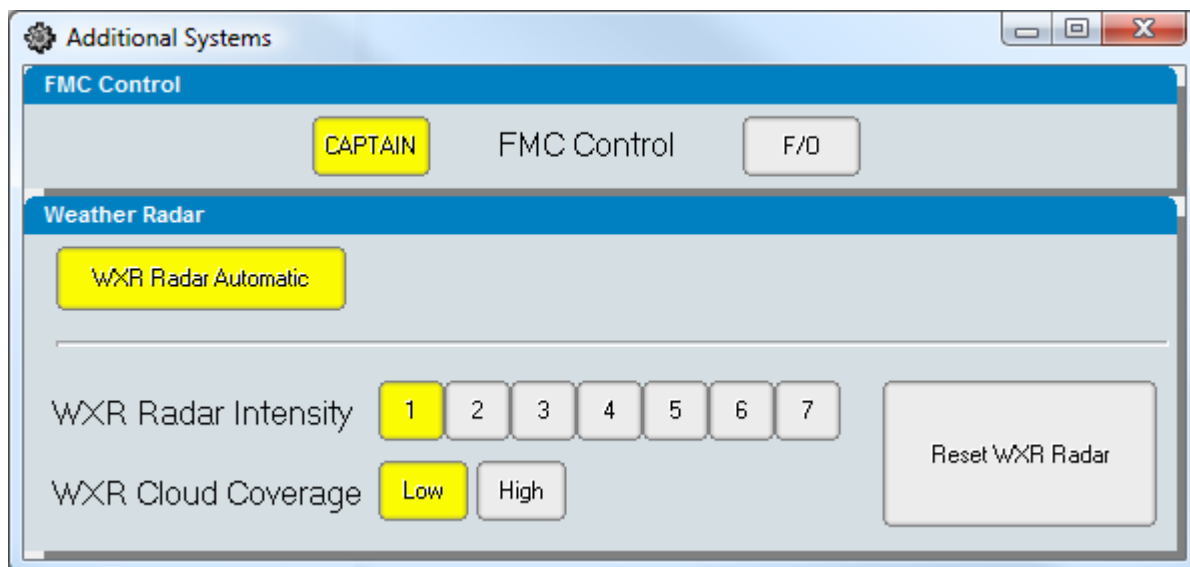
FMC Control

: Selects which CDU is issuing FMC commands.

WXR Radar Auto Updates

: Tells the Weather Radar generator to use Flight Sim's weather to generate weather radar images.
Exact cloud position data is not available from flight sim so the weather radar image is an approximation based on the current clouds coverage.

WXR Radar Intensity

: Flight Sim Cloud coverage is assigned an intensity and weather radar images are compiled based on that intensity.
These buttons allow for manual overide of the intensity value.

WXR Cloud Coverage

: Tells the Weather Radar generator LOW or HIGH volumes of clouds on the weather radar.

Reset WXR Radar

: Blanks the Weather Radar and generates a new image based on the current weather intensity.

Flight Controls

The Upper part of this Tab called "Internal Flight Controls" are only relevant is offsets are directly mapped to the flight controls. This is not applicable to most users.

More detail on Internal Flight Controls can be found in the next section.

Elevator Trim Calibration :   This is the amount the trim moves every cycle when an offset is assigned to the "ELEVATOR_CONTINUOUS_TRIM" I/O function.
Value 0 = STOP Trim
Value 1 = Trim UP
Value 2 = Trim Down

CWS Axis Position Information : This is used for information and to monitor the values in the axis.

CWS Null Zone   : This sets the amount of joystick movement required to trigger CWS Mode.

A/P Breakaway Null Zone   : This sets the amount of joystick movement required to disengage the Autopilot.

Trim Null Zone   : The amount of elevator movement before triggering Stab Trim adjustment.

Special Operations   : Use to decide if the Server should SET the ParkingBrake, Flaps, Gear,
                           or if the Server should just READ the current FS value.
                           If you assign the I/O functions :
                               PARKING_BRAKE=
                               COMMANDED_FLAP_POSITION=
                               COMMANDED_GEAR_POSITION=
                           Then these checkboxes should be ENABLED.

                           If you write directly to the 'standard' FS offsets then these checkboxes
                           should be DISABLED.

Brakes   : This section shows the Left and Right Brake positions.
               Brake Pressure is charged by the HYD system.

               Autobrake status is also shown here.

               'Use Simple Braking Mode' removes any brake pressure logic and simply directly
               maps the Brake axis value to the FS Brake value.

Flight Controls Additional

This menu was developed to allow mapping of an FSUIPC offset vaule (2 byte word) to a specific flight control.
Many I/O cards now have FSUIPC compatibility and it is possibly to map an analogue potentiometer to an FSUIPC offset. This usually mean the assigned offset will contain a value of -16383 – 16383 depending on the potentiometers actual position.

We then want to take this value and map it to a flight control.
This page allows some adjustment on how this value is sent to FS.

Flight controls can be assigned in the FSUIPC_IO.INI
(Please note: The default offset numbers are only a suggestion and can be changed)

If you enable '**Internal Flight Controls**' from the Main Control Panel and do not want to assign all of the flight controls, then set the assigned offset = 0 to ignore the control.

```
[FSUIPC_FLIGHT_CONTROLS]
ELEVATOR_CPT=5304
ELEVATOR_FO=5304
AILERON_CPT=5300
AILERON_FO=5302
RUDDER_CPT=5306
RUDDER_FO=5308
THROTTLE_L=5310
THROTTLE_R=5312
THROTTLE_REVERSE_L=0              <-- Set to 0 is not being used.
THROTTLE_REVERSE_R=0              <-- Set to 0 is not being used.
SPOILERS=5314
FLAPS=530E
BRAKE_L_CPT=5316
BRAKE_R_CPT=5318
BRAKE_L_FO=531A
BRAKE_R_FO=531C
```

Why use this page ?

If you move you aileron axis FULL left then FULL right, your I/O will probably write -16383 – 16838 to the assigned offset to match the pot position exactly. But we do not what the aircraft Ailerons to sharply change from FULL left to FULL right, using this page allows us to add some delay and 'soften' the movement to simulate a hydraulic actuator on the real aircraft.
This is similar to the Joystick Sensitivity in MSFS control settings.
The sensitivity can be adjusted in the 'Aircraft Specific Menu' under '**Control Response'**.

Also if you set the **scale** = 1 then the full movement (-16383-16383) is sent to the flight controls. If you set the scale = 0.5 then only -8192 – 8192 is sent to the flight controls.

Offset allows you to adjust the centre point of the movement. (like a trim)

This page was initially developed when I/O software interfaces were very basic. But as thing have progressed a lot of interface gui's have good scaling and additional functionality that makes this page obsolete. It really depends on you personal hardware setup whether you need to use this page. Feel free to contact us if you need any advise.

Flt Ctrls will only become active after the Hyd system has been pressurized.

Control Position
Pointer = Target Position
Bar = Actual Ctrl Position

Control Calibrations

Map CPT or FO offsets to flight controls.

Parking Brake External, Gear External and Flaps External
If your hardware currently set's these functions then checkbox = OFF
If your hardware will be setting these functions via a custom offset then checkbox = ON

Aircraft Specific

Configuration specific to a particular aircraft. This information is held in a separate config file.

The default is **FSX-Sim-Avionics-B777.CFG**
This is used to hold (amongst other) :
      Engine Idle values
      Startup Spool time values
      Autopilot Tuning Values

The aircraft config file is loaded when the Server is started and the filename is read from the SERVER.INI
[AIRCRAFT_DETAILS]
AIRCRAFT_CONFIG_FILE=FSX-Sim-Avionics-B777.CFG
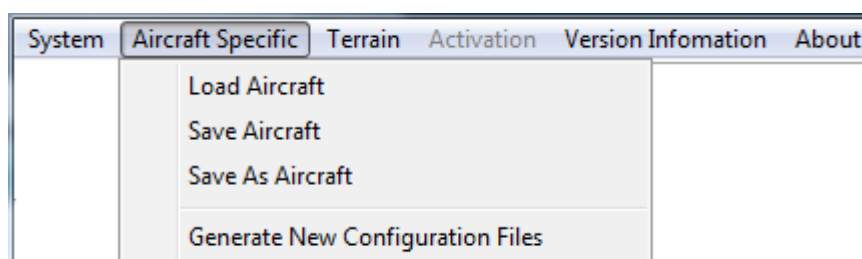
Load Aircraft

        : Loads a different Aircraft Config File

Save Aircraft

        : Saves the current Aircraft config details to the Aircraft Config File
          that is currently loaded.

SaveAs Aircraft

        : Saves the current Aircraft config details to a different Aircraft
          Config File.

Generate New Configuration Files

        : For reference - Re-Generates the Default Aircraft Configuration
          files in the seperate folder \Server\New Config Files

Aircraft Details

Engine Details

Ground Idle   : Engine N1 Idle speed on the Ground

Flight Idle   : Engine N1 Idle speed in flight

Approach Idle   : Engine N1 Idle speed when flaps > 20

Commanded Throttle   : Shows the current Throttle Position

Thrust Ref Throttle Limit : Shows the Calculated Thrust Ref Throttle Position

Default T/O N1 (No CDU)
                    : Initial Takeoff N1 Thrust Ref – For LITE users
                      CDU values from Thrust Ref page will overwrite this.

Default CLB N1 (No CDU)
                    : Initial Climb N1 Thrust Ref – For LITE users
                      CDU values from Thrust Ref page will overwrite this.

Startup / Shutdown Sequence:

Flight Sims engine spool up on 'engine start' and spool down on 'engine shutdown' is very fast and unrealistic, so the Startup / Shutdown sequence was added to simulate a slower engine spool up /spool down.
The startup sequence is triggered when the FS engine combustion status changes from OFF to ON and similarly the shutdown sequence is triggered when the FS engine combustion status changes from ON to OFF.
You might need test at which N2 for your particular aircraft it's best to set the Engine Fuel Cutoff switches to 'Run' because sometimes FS increases the EGT faster than the startup sequence can be triggered. We've found that be varying the point at which the fuel is added allows for a smoother start

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N1 Target

: Target N1 value after engine start.
After Engine Combustion is detected the EICAS N1 will spool to this value.

N1 Spool Time - Start

: The time in seconds from engine combustion to N1 Target value.

N1 Spool Time - Shutdown

: The time in seconds from engine shutdown to 0 N1.

N2 Target

: Target N2 value after engine start.
After Engine Combustion is detected the EICAS N2 will spool to this value.

N2 Spool Time – Start

: The time in seconds from engine combustion to N2 Target value.

N2 Spool Time - Shutdown

: The time in seconds from engine shutdown to 0 N2.

EGT Target

: Target EGT value after engine start.
After Engine Combustion is detected the EICAS EGT will spool to this value.

EGT Spool Time - Start

: The time in seconds from engine combustion to EGT Target value.

EGT Spool Time - Shutdown

: The time in seconds from engine shutdown to 0 EGT.

FF Target

: Target Fuel Flow value after engine start.
After Engine Combustion is detected the EICAS FF will spool to this value.

FF Spool Time - Start

: The time in seconds from engine combustion to FF Target value.

FF Spool Time - Shutdown

: The time in seconds from engine shutdown to 0 FF.

Oil Temp Target

: Target Oil Temperature value after engine start.
After Engine Combustion is detected the EICAS Oil Temp will spool to this value.

Oil Temp Spool Time - Start

: The time in seconds from engine combustion to Oil Temp Target value.

Oil Temp Spool Time - Shutdown

: The time in seconds from engine shutdown to 0 Oil Temp.

Oil Press Target

: Target Oil Pressure value after engine start.
After Engine Combustion is detected the EICAS Oil Pressure will spool to this value.

Oil Press Spool Time - Start

: The time in seconds from engine combustion to Oil Pressure Target value.

Oil Press Spool Time - Shutdown

: The time in seconds from engine shutdown to 0 Oil Pressure.

Pilot Response Time

      : The time in minute allowed with no button activity before a
       PILOT RESPONSE EICAS message is issued.
       After x minutes a PILOT RESPONSE EICAS message is displayed
       After x+x minutes a MASTER CAUTION is issued
       After x+x+x minutes a MASTER WARNING is issued
       For 777 operation

Takeoff N1 % Config Trigger

      : The N1 percentage required to check for a Takeoff config
       warning.
       A Master Warning is issued if the N1 value is above x % AND
       CONFIG SPOILER : Spoilers not down
       CONFIG PARKINGBRAKE : Parking brake SET
       CONFIG FLAPS : Flap not in Takeoff range - (Flaps UP or > 20)
       CONFIG DOORS : A door is open

Autoland Flare Altitude (RA)

      : Radio Altitude in Feet that initiates a Flare during autoland.

Autoland Idle Altitude (RA)

      : Radio Altitude in Feet that initiates Idle Thrust during autoland.

Internal Flight Control Response

> : Control sensitivity when using the Internal Flight Control offsets.
> This is the speed at which the control moves from it's current
> position to the new target position value in the offset.

Aircraft Height

> : Height (in Feet) of the cockpit above the ground – when on the
> ground.
> This is used for Radio Altimeter Calibration
> Radio Altitude would normally read about -4 on the ground.

Auto Seatbelt Trigger Altitude

> : Altitude in Feet that Seatbelt signs are triggered if the Seatbelts
> Signs are set to Auto.
> Below Altitude x = Seatbelts ON
> Above altitude x = Seatbelts OFF

PFC / FBW Enabled

> : Enable Primary Flight Computer / Fly By Wire functions.
> These are not currently implemented so keep this checkbox OFF

TAC Enabled / Yaw Damper

> : Enables the Autopilot to control the rudder to provide Thrust
> Asym Compensation during single engine operation and turn
> coordination. TAC or Yaw Damper must be enabled on the OVH.

Manual Braking Disengaged Autobrake

> : Autobrake is disabled when the manual braking value is >= the
> autobrake applied braking value.

Aircraft Weight

> : Display/Enter aircraft ZFW, Gross Weight and Fuel Weight in
> KG's or LB's

Auto CLB Thrust Reduction

> : Thrust will automatically reduce to the selected CLB Thrust N1
> at the thrust reduction height or flap setting.
> If this height isn't set then 1500ft default is used.

Aircraft Type

                : Select the Aircraft Type.
                 This will appropriately change the displays and the system logic.
                 A License upgrade may be required for additional aircraft types.

                 This will change all of the system logic and display accordingly.

Flight Director Wing Mode

                : Changes the PFD Flight director style from the single magenta
                 bars to the FD Wing style.

Display AOA Option

                : Replaces the Radio Altimeter on the PFD with an Angle of Attack
                 Indicator.

Alternate 737 Engine Display

                : In 737 mode will display the more comprehensive engine display.

TOGA HDG Select

                : Some 737 models do not select a Roll mode during TOGA.
                 Some select HDG Select. Select this option if you want HDG
                 SELECT to be the Roll Mode during TOGA.

CDU Suggests V1 Speeds

                : Some airlines configure the CDU to not default a V1 speed, this
                 should be manually calculated and entered by the pilot. Some
                 configure the CDU to suggest a V1 speed. This can still be
                 manually over written by the pilots.

AutoLand Enabled

                : Enabled Full Autoland capabilities.
                 When enabled at 1500ft RA the FMA 'Rollout' and 'Flare' are
                 armed. The aircraft will then perform a full autoland.

Derated Climb Thrust Washout

                : If performing a reduced thrust 'Derated' Takeoff, Full CLB thrust
                 is gradually applied.
                 CLB1 by 10,500ft, CLB by 12,500ft

Display RNP

                : Displays the LNAV/VNAV navigation profiles on the PFD.

737 ND HDG/TRK Mode

                : HDG – always in HDG mode
                 TRK – always in TRK mode
                 AUTO – TRK mode in LNAV else in HDG mode

Enable Display VSD

                : Enables the Vertical Situation Display on the second push of the
                 EFIS CTR button.

Display Electronic Units – Boot Time

                : The time it takes the displays to be available after initial power
                 on. This can take a few minutes so a reduced time can be set.

Display Clock Info on PFD/ND

        : The latest generation of 777's do not have clocks installed.
         Instead they have software clocks built into the PFD and ND.

Enable Approach RWY Warning

        : This is part of the RAAS system and provides an audible warning
         when approaching and lining up on a runway.
         Confirmation is also received on final approach.

Speed Trim Logic

        : Allows the autopilot to assist with the Stab Trim.
         Enabled above 900ftRA with Flaps > 0.
         Will trim to maintain speed in TOGA mode or zero Elevator.

EEC Thrust Limit Logic (Experimental)

        : Limits the engine thrust to the set Thrust Ref Limit.

MCP has ALT INTV and SPD INTV

        : Enable if you MCP has Speed and Altitude Interveen buttons.
         This allows VNAV to switch into VNAV ALT mode on Level off.
         Without these buttons VNAV will switch to ALT HOLD on level off.

Play 737 A/T Disconnect Warning

        : Plays a Master Caution sound when the Autothrottle is
         disconnected.

Play 737 Master Caution Warnings

        : Plays a Master Caution sound when a 'six pack' Master Caution
         occurs.

FDS Throttle Options

        : Do Not Use. Customer Specific functionality.

VNAV Descent Angles

        : These can be calibrated to you particular flight model, and are
         used to calculated the VNAV descent path.

Flap Definition

Flap Definitions				
FS Values Trigger	0	0	Display	Clear All
Flap Position UP	0	0	Set	Clear
Flap Position 1	2048	3640	Set	Clear
Flap Position 2	4096	7509	Set	Clear
Flap Position 5	6144	10239	Set	Clear
Flap Position 10	8192	12742	Set	Clear
Flap Position 15	10239	13652	Set	Clear
Flap Position 20	0	0	Set	Clear
Flap Position 25	12287	14335	Set	Clear
Flap Position 30	14335	15017	Set	Clear
Flap Position 40	16383	16383	Set	Clear

FLAP Display Calculation
- ○ Use FLAP + SLAT Mix
- ◉ Use FLAP Only

Auto Flaps Enabled	☐
Auto Gear Enabled	☐
Auto Trim Enabled	☐
Auto ParkingBrake Enabled	☐
Airbus FBW	☐

N1 Thrust Ref Calibrations

FS Values Throttle Position		N1 Value		Clear All	Altitude Scalar	
30% N1	1344	301	Set	Clear	35000ft - 43000ft	-4
40% N1	2752	400	Set	Clear	30000ft - 35000ft	-4
50% N1	4224	500	Set	Clear	25000ft - 30000ft	-5
60% N1	5888	603	Set	Clear	20000ft - 25000ft	-3
70% N1	7488	698	Set	Clear	15000ft - 20000ft	-3
80% N1	9344	801	Set	Clear	10000ft - 15000ft	-8
90% N1	11008	901	Set	Clear	1000ft - 10000ft	-5
100% N1	13568	1003	Set	Clear		
110% N1	16128	1099	Set	Clear	Current Throttle Thrust Ref Throttle Limit	
MAX N1	16384	1112	Set	Clear	0 -3102	

: For defining the flap positions on you aircraft.
  The number of flap positions varies between the 777 and 737,
  also the final flap position varies between aircraft, therefore it is
  necessary to define the flap positions for you particular aircraft. The
  positions are stored in the Server Aircraft Config file held in the Server
  folder.

To define the flap positions for your aircraft.
    Run Flight Sim (and Wideclient if required)
    Start the Server. (Ensure it is connected to FS)
    Goto Menu Page [**Aircraft Specific**]
    In the Flap Definition box press [**Clear All**] to reset the current values

    Ensure the aircraft flaps are **UP** in flight sim
    The 'live' Flap Trigger and Displayed Positions are shown next to **Current FS Values**

Press **SET** next to the Flaps **UP** position.

Select the first flap position in Flight Sim and press **SET** next to the corresponding flap position.

Repeat this for all flap positions.
If your aircraft does not have one of the values listed then leave it at as zero.

Remember to Save the changes by going to the menu
Aircraft Specific > Save Aircraft

Flap Display Calculation
> : Use Trailing Edge Flaps and Leading Edge Slats to generate the flap position, or only the Trailing Edge Flaps.

Auto Flaps Enaged
> : Sets the Flaps according to the Speed.

Auto Gear Enaged
> : Sets the Gear according to the Speed and Altitude.

Auto Trim Enaged
> : Sets the Trim according to the Speed and Thrust.

Auto ParkingBrkae Enaged
> : Sets the ParkingBrake < 1kt and throttles at idle.

Airbus FBW
> : Basic Fly by Wire using Pitch and Bank Angle hold.

N1 Thrust Ref Calibrations
> : Used to calibrate the target Thrust Ref on the N1 Gauges.
>   Set the specified % N1, wait for the engine to stabilize and press SET to record the throttle position and actual N1

Altitude Scalar
> : Used to make adjustement to the N1 Thrust Ref calibrations based on Altitude.

Remember to Save the changes by going to the menu
Aircraft Specific > Save Aircraft

FSUIPC Offset Monitoring

A simple FSUIPC Offset monitoring tool has been added to the server so that you can easily view the value of a particular offset.

You first Enter the Offset to be monitored and the number of bytes to compare, then enable the monitoring. The current value is displayed in the 'Current Value' box.

You can also set an offset value by entering the value in the 'Set Value' box and pressing 'Set'.

FSUIPC I/O Interface

All of the functions of the avionics suite can be interfaced via FSUIPC offsets.

FSUIPC is an Inter Process Communication interface that runs as part of the flight sim process but allows a block of memory to be accessed by external applications. We can read and write to specific locations in this block of memory via 'offsets'.
An FSUIPC offset is simply a memory location in Hex format.
Some of these memory offsets are populated by FSUIPC with internal Flight sim data such as Altitude, Latitude, Heading, Airspeed. Other locations are not populated and are free for other addon programs to use knowing they will not conflict with any other process.
You can freely use offsets **5300-53FF** for Sim-Avionics

So how do you interface with the Sim-Avionics Server ? Simple...
Tell your I/O software to write a value to an FSUIPC offset when a button is pressed and then assign that offset to a function in the Sim-Avionics Server.

You assign Offsets to function via the Server **FSUIPC I/O Interface** tab.

FSUIPC INPUT Offsets

<u>**Important**</u>
You must enable FSUIPC offset monitoring under the [Main Control Panel] menu
Enable the type of offsets that you need to monitor.
Usually the minimum would be :
          Use INPUT Offsets
          Use OUTPUT Offsets
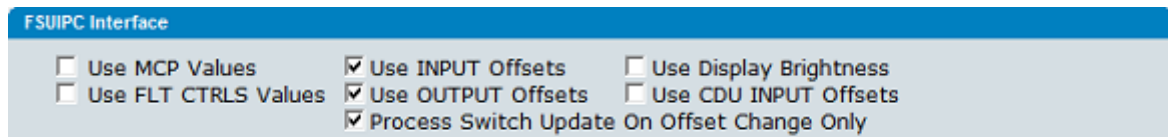
[FSUIPC_INPUTS]
BATTERY_SWITCH=5300

In the above example offset 5300 has been assigned to the **Battery Switch**
And the server is now monitoring the value of this offset.

For switch inputs the server is expecting :
Offset value = 0 means switch = OFF
Offset value = 1 means switch = ON

There are a few additional functions that you can use when assigning an offset but I would see
the simple (normal) method as being the most useful.

Syntax : **Item = offset$invert**(1 or 0) **b**(bit 00000000)

BATTERY_SWITCH=5300   *(normal)*
                                     (if offset 5300 = 1 then
                                       Battery Switch = 1
                                       else
                                       Battery Switch = 0)
BATTERY_SWITCH=5300$1   *(inverting)*
                                     (if offset 5300 = 1 then
                                       Battery Switch = 0
                                       else
                                       Battery Switch = 1)

BATTERY_SWITCH=5300b00000100   *(bit offset)*
                                     (if offset 5300 = 4 then
                                       Battery Switch = 1
                                       else
                                       Battery Switch = 0)

BATTERY_SWITCH=5300$1b00001000   *(Inverted bit offset)*
                                     (if offset 5300 = 8 then
                                       Battery Switch = 0
                                       else
                                       Battery Switch = 1)

BATTERY_SWITCH=5300b2   *(bit offset)*
                                    (if offset 5300 = 4 then
                                       Battery Switch = 1
                                       else
                                       Battery Switch = 0)

BATTERY_SWITCH=5300$1b3   *(Inverted bit offset)*
                                    (if offset 5300 = 8 then
                                       Battery Switch = 0
                                       else
                                       Battery Switch = 1)

FSUIPC OUTPUT Offsets

These are assigned in the same way as input offsets, with the exception of BIT offsets.

Syntax : **Item = offset$invert**(1 or 0)

BATTERY=5301   *(normal)*
                                    (if battery = ON then
                                       offset 5301 = 1
                                       else
                                       offset 5301 = 0)
BATTERY=5301$1   *(inverting)*
                                    (if battery = ON then
                                       offset 5301 = 0
                                       else
                                       offset 5301 = 1)

Note
All Outputs are based on single **byte** offsets with the exception of
MCP_SPEED   **2 bytes (Word)**
MCP_HDG   **2 bytes (Word)**
MCP_VERTICAL_SPEED   **2 bytes (Word)**
MCP_ALTITUDE   **4 bytes (Dword)**

MCP MACH
MCP_MACH = output / 100
for example:
MACH 0.87 outputs as 87

FSUIPC Fight Controls Values

Flight controls are assigned as 2 byte (Word)
They are expecting a range of movement of -16383 to 16383 and are passed through the internal Flight Controls calibration. If you do not wish all flight controls to be passed through the internal calibrations then you can set the value = 0.

In this example our Elevator and Aileron values are being read from offsets 5304 and 5300, however Throttle_L is controlled by a joystick connected directly to flight sim and therefore needs to be left uneffected.

[FSUIPC_FLIGHT_CONTROLS]
ELEVATOR_CPT=5304
AILERON_CPT=5300
THROTTLE_L=0

All Flight Control Offset lengths are 2 bytes (Word)

FSUIPC Remote CDU Keypresses

Send the virtual key number to these offsets to remotely control the CDU
 ie 49 = 1
    65 = A

[FSUIPC_CDU_INPUTS]
CAPTAIN=
FO=
OBS=

FSUIPC MCP Values

MCP Values are assigned as 2 byte (Word)

[FSUIPC_MCP_INPUTS]
MCP_SPEED=53A0
MCP_HDG=53A2
MCP_ALTITUDE=53A4
MCP_VS=53A8

Note:
MCP_SPEED   **2 bytes (Word)**
MCP_HDG   **2 bytes (Word)**
MCP_ALTITUDE   **4 bytes (Dword)**
MCP_VS   **2 bytes (Word)**

// Use FS formating
// HDG = value /65536*360
MCP_HDG_FS_FORMAT=1
        MCP_HDG is expected FS formatting - like offsets 07CC.
                ie: 324deg = 324 / 360 * 65536 = 58982
                write 58982 to the MCP_HDG offset

// ALT = value ft /3.28084*65536
MCP_ALT_FS_FORMAT=1
        MCP_ALTITUDE is expected FS formatting - like offsets 07D4.
                ie: 31700ft = 317(00) = 317 * 1997537 = 633219229
                write 633219229 to the MCP_ALTITUDE offset

if **MCP_ALT_FS_FORMAT=0** or **MCP_HDG_FS_FORMAT=0**
you can directly write 317 or 324 to the offsets.

[FSUIPC_EFIS_INPUTS]
CPT_BARO=530A
FO_BARO=530C
MINIMUMS=04FA

All EFIS Inputs Offset lengths are 2 bytes (Word)

MCP_SPEED works slightly differently to the other offsets. To allow this offset to also control MACH the server is looking at the *delta* difference as the value changes. Therefore it is possible for the MCP speed to be out of sync with the value in this offset.

Additional Offset Detail

Most offsets with the exception of the one's specified earlier are

byte or length **1**

MFD Display

MFD Display can be controlled by
MFD_DISPLAY_POSITION=   &   MFD_DISPLAY=

MFD_DISPLAY_POSITION corresponds to the [left] [centre] [right] display buttons on the
EICAS Display panel.

MFD_DISPLAY_POSITION = 0 = MFD CENTRE Display
MFD_DISPLAY_POSITION = 1 = MFD LEFT Display (Capt ND)
MFD_DISPLAY_POSITION = 2 = MFD RIGHT Display (FO ND)

Once you've selected which display you're 'talking' to, set
MFD_DISPLAY=
0 = OFF
1 = ENGINE
2 = STATUS
3 = ELEC
4 = HYD
5 = FUEL
6 = AIR
7 = DOOR
8 = GEAR
9 = FCTL
10 = CHKL
11 = COMM
12 = NAV
13 = Camera
14 = Maintenance

Alternatively you can write the above values directly to
MFD_LEFT_DISPLAY=
MFD_CENTRE_DISPLAY=
MFD_RIGHT_DISPLAY=

Specific Offset Mapping Information

ND_CAPTAIN_RANGE & ND_FO_RANGE

Range	FSUIPC Value
10	0
20	1
40	2
80	3
160	4
320	5
640	6

ND_CAPTAIN_MODE & ND_FO_MODE

Mode	FSUIPC Value
Plan Mode	0
Map Mode	1
VOR Mode	2
APP Mode	3

**ND_CAPTAIN_RADIO_L / ND_CAPTAIN_RADIO_R /
ND_FO_RADIO_L / ND_FO_RADIO_R**

Mode	FSUIPC Value
OFF	0
VOR L/R	1
ADR L/R	2

APU_SWITCH

Mode	FSUIPC Value
OFF	0
ON	1
START	2

HYD Demand Pumps

Mode	FSUIPC Value
OFF	0
ON	1
AUTO	2

Engine Starters

Mode	FSUIPC Value
OFF	0
START	1
CON	2
FLT	3

AutoBrake

Mode	FSUIPC Value
OFF	0
RTO	1
1	2
2	3
3	4
4	5
MAX	6

COMMANDED_GEAR_POSITION

Mode	FSUIPC Value
UP	0
DOWN	1

COMMANDED_FLAP_POSITION

Position	FSUIPC Value
UP	0
1 – 40	1 - 40

No Smoking / Seatbelts / Anti Ice

Mode	FSUIPC Value
OFF	0
ON	1
AUTO	2

To simulate the A/P **ON** switches use **MCP_ENGAGED=**
Set value **1** when the switch is pressed **0** when it is released

EFIS

For the below assignments you can use

Function	FSUIPC Value
OFF	0
ON	1
TOGGLE	2

ND_CAPTAIN_CENTRED=
ND_CAPTAIN_WXR=
ND_CAPTAIN_APT=
ND_CAPTAIN_STA=
ND_CAPTAIN_WPT=
ND_CAPTAIN_DATA=
ND_CAPTAIN_POS=
ND_CAPTAIN_TER=
ND_CAPTAIN_TFC=
ND_CAPTAIN_MTRS=
ND_CAPTAIN_FPV=
ND_FO_CENTRED=
ND_FO_WXR=
ND_FO_APT=
ND_FO_STA=
ND_FO_WPT=
ND_FO_DATA=
ND_FO_POS=
ND_FO_TER=
ND_FO_TFC=
ND_FO_MTRS=
ND_FO_FPV=

DOORS

The Door assignments

Function	FSUIPC Value
OPEN	0
CLOSED MANUAL	1
CLOSED AUTOMATIC	2

Additional Light and Switch Assignment Information

[FSUIPC_OUTPUTS]
MCP_ON= MCP ON light
MCP_OPEN_SPEED_WINDOW= if 1 Display MCP_SPEED else Blank display
MCP_HDG_HOLD_ENGAGED= MCP HDG Hold light
MCP_ALT_HOLD_ENGAGED= MCP ALT Hold Light
MCP_IAS_HOLD_ENGAGED= MCP A/T Light
MCP_VS_ENGAGED= MCP V/S Light
MCP_LNAV= MCP LNAV Light
MCP_VNAV= MCP VNAV Light
MCP_FLCH= MCP FLCH Light
MCP_LOC= MCP LOC Light
MCP_APP= MCP APP Light

EXTERNAL_POWER_1_LIGHT= Elec Primary External power Light
EXTERNAL_POWER_2_LIGHT= Elec Secondary External power Light

[FSUIPC_INPUTS]

MCP_ENGAGED= MCP ON Button
MCP_DISCONNECT= MCP Disconnect on the Yoke : pulse 1 the 0 (Double click)
MCP_ON= Direct control Engaged = 1 Disengaged = 0

MCP_AUTOTHROTTLE_ARM_L= Autothrottle Arm L switch
MCP_AUTOTHROTTLE_ARM_R= Autothrottle Arm R switch
MCP_TOGGLE_AUTOTHROTTLE_ENGAGED= MCP Autothrottle Engaged button :Pulse 1 then 0
MCP_AUTOTHROTTLE_DISCONNECT= MCP Autothrottle Disconnect button on the throttles
                          pulse 1 then 0 (double click)

MCP_AUTOTHROTTLE_ENGAGED= Direct control Engaged = 1 Disengaged = 0

EXTERNAL_POWER_1_AVAILABLE= Elec Primary External Power is Available
EXTERNAL_POWER_1_SELECTED= Elec Primary External Power switch is selected
EXTERNAL_POWER_2_AVAILABLE= Elec Seconary External Power is Available
EXTERNAL_POWER_2_SELECTED= Elec Secondary External Power switch is selected

If set to 1 they inhibit the GPWS warnings. (0 enables them)

GPWS_INHIBIT_GS=
GPWS_INHIBIT_FLAP=
GPWS_INHIBIT_GEAR=
GPWS_INHIBIT_SINK=
GPWS_INHIBIT_TERRAIN=
GPWS_GROUND_PROX=

FAILURE MODES are not yet implemented.
They will be used when the **Instructor Station** is released

Multi Function Offset

This is an alternative method of sending switch presses.
Instead of assigning individual offsets to a switch function, ALL switch functions can be
controlled via a single offset by setting the offset to specific values.

We recommend using this method on Momentary pushbuttons.

To enable this functionality:
In the **FSUIPC_IO.INI** add/modify
     [FSUIPC_MULTI_FUNCTION]
      MULTI_FUNCTION=53FE   *(Any spare 2 byte offset)*

Ensure that **Use INPUT Offsets** is enabled in the Server Main Control Panel

The Multi Function Offset is a **WORD** (**Length 2 bytes**)

Examples:
Write the value of **4** to offset **53FE** to set the Captains ND Mode to PLAN
Write the value of **43** to offset **53FE** to set the Captains ND Range to 40 nm
Write the value of **90** to offset **53FE** to toggle the STATIONS ON/OFF on the Captains ND
Write the value of **726** to offset **53FE** to set the APU switch to START

As soon as the Server processes the value the offset is reset to **0** ready for the next command.

For easy reading listed below are the assignments for the B777 and B737 aircraft.

B777 Function Mapping

Value	Description
1	ND CAPTAIN MODE = MAP
3	ND CAPTAIN MODE = VOR
4	ND CAPTAIN MODE = PLAN
5	ND CAPTAIN MODE = APP
6	TOGGLE ND CAPTAIN CENTRED
14	TOGGLE ND CAPTAIN FPV
41	ND CAPTAIN RANGE = 10
42	ND CAPTAIN RANGE = 20
43	ND CAPTAIN RANGE = 40
44	ND CAPTAIN RANGE = 80
45	ND CAPTAIN RANGE = 160
46	ND CAPTAIN RANGE = 320
47	ND CAPTAIN RANGE = 640
50	TCAS MODE SWITCH = OFF
51	TCAS MODE SWITCH = 1 (SQUAWKBOX)
52	TCAS MODE SWITCH = 2 (SQUAWKBOX + ND TRAFFIC)
53	TCAS MODE SWITCH = 3 (SQUAWKBOX + ND TRAFFIC + AUDIO)
54	TCAS MODE SWITCH = 4 (SQUAWKBOX + ND TRAFFIC + AUDIO + RESOLUTIONS)
70	ND CAPTAIN WXR = OFF
71	ND CAPTAIN WXR = ON
72	TOGGLE ND CAPTAIN WXR
73	ND CAPTAIN RADIO L = OFF
74	ND CAPTAIN RADIO L = ADF
75	ND CAPTAIN RADIO L = VOR
76	ND CAPTAIN RADIO R = OFF
77	ND CAPTAIN RADIO R = ADF
78	ND CAPTAIN RADIO R = VOR
80	ND CAPTAIN TER = OFF
81	ND CAPTAIN TER = ON
82	TOGGLE ND CAPTAIN TER
90	TOGGLE ND CAPTAIN STA
93	TOGGLE ND CAPTAIN WPT
94	TOGGLE ND CAPTAIN APT
95	TOGGLE ND CAPTAIN DATA
96	TOGGLE ND CAPTAIN POS
97	TOGGLE ND CAPTAIN MTRS
98	TOGGLE ND CAPTAIN TFC
101	ND FO MODE = MAP

103	ND FO MODE = VOR
104	ND FO MODE = PLAN
105	ND FO MODE = APP
106	TOGGLE ND FO CENTRED
114	TOGGLE ND FO FPV
141	ND FO RANGE = 10
142	ND FO RANGE = 20
143	ND FO RANGE = 40
144	ND FO RANGE = 80
145	ND FO RANGE = 160
146	ND FO RANGE = 320
147	ND FO RANGE = 640
170	ND FO WXR = OFF
171	ND FO WXR = ON
172	TOGGLE ND FO WXR
173	ND FO RADIO L = OFF
174	ND FO RADIO L = ADF
175	ND FO RADIO L = VOR
176	ND FO RADIO R = OFF
177	ND FO RADIO R = ADF
178	ND FO RADIO R = VOR
180	ND FO TER = OFF
181	ND FO TER = ON
182	TOGGLE ND FO TER
190	TOGGLE ND FO STA
193	TOGGLE ND FO WPT
194	TOGGLE ND FO APT
195	TOGGLE ND FO DATA
196	TOGGLE ND FO POS
197	TOGGLE ND FO MTRS
198	TOGGLE ND FO TFC
300	MFD DISPLAY = OFF
301	MFD DISPLAY = ENGINE
302	MFD DISPLAY = STATUS
303	MFD DISPLAY = ELEC
304	MFD DISPLAY = HYD
305	MFD DISPLAY = FUEL
306	MFD DISPLAY = AIR
307	MFD DISPLAY = DOOR
308	MFD DISPLAY = GEAR
309	MFD DISPLAY = FLT CTRLS
310	MFD DISPLAY = CHECKLIST

311	MFD DISPLAY = COMMS
312	MFD DISPLAY = NAV
313	MFD DISPLAY = GROUND CAMERA
314	MFD DISPLAY = MAINTENANCE
315	EICAS RECALL (CANCEL / RECALL BUTTON)
316	MFD DISPLAY POSITION = MFD
317	MFD DISPLAY POSITION = CPT ND
318	MFD DISPLAY POSITION = FO ND
422	NO SMOKING = ON
423	NO SMOKING = OFF
424	NO SMOKING = AUTO
425	SEATBELTS = ON
426	SEATBELTS = OFF
427	SEATBELTS = AUTO
430	ATTEND CALL
431	GND CALL
500	COMMANDED FLAP POSITION = UP
501	COMMANDED FLAP POSITION = 1
503	COMMANDED FLAP POSITION = 5
505	COMMANDED FLAP POSITION = 15
506	COMMANDED FLAP POSITION = 20
507	COMMANDED FLAP POSITION = 25
508	COMMANDED FLAP POSITION = 30
510	COMMANDED GEAR POSITION = UP
511	COMMANDED GEAR POSITION = DOWN
512	AUTOBRAKE = OFF
513	AUTOBRAKE = RTE
514	AUTOBRAKE = 1
515	AUTOBRAKE = 2
516	AUTOBRAKE = 3
517	AUTOBRAKE = 4
518	AUTOBRAKE = MAX
520	TOGGLE STD SET CAPT
521	TOGGLE STD SET FO
522	CAPT BARO = HPA
523	CAPT BARO = INS
524	FO BARO = HPA
525	FO BARO = INS
526	MINIMUMS MODE CPT = RADIO

527	MINIMUMS MODE CPT = BARO
528	MINIMUMS MODE FO = RADIO
529	MINIMUMS MODE FO = BARO
530	MINIMUMS RESET
533	INBOARD DSPL L = MFD
534	INBOARD DSPL L = NAV
535	INBOARD DSPL L = PFD
536	INBOARD DSPL L = EICAS
537	INBOARD DSPL R = MFD
538	INBOARD DSPL R = NAV
539	INBOARD DSPL R = PFD
540	INBOARD DSPL R = EICAS
550	MCP ENGAGED
551	MCP DISCONNECT
552	MCP ON = OFF
553	MCP ON = ON
554	MCP FLTDIR L = OFF
555	MCP FLTDIR L = ON
556	MCP FLTDIR R = OFF
557	MCP FLTDIR R = ON
558	MCP AUTOTHROTTLE ARM L = OFF
559	MCP AUTOTHROTTLE ARM L = ON
560	MCP AUTOTHROTTLE ARM R = OFF
561	MCP AUTOTHROTTLE ARM R = ON
562	MCP AUTOTHROTTLE ENGAGED
563	MCP AUTOTHROTTLE DISCONNECT
564	MCP AUTOTHROTTLE ENGAGED = OFF
565	MCP AUTOTHROTTLE ENGAGED = ON
566	MCP CLB CON
567	MCP TOGA
568	MCP TOGGLE HDG TRACK SELECTOR
569	MCP HDG TRACK SELECTOR = HDG
570	MCP HDG TRACK SELECTOR = TRACK
571	MCP TOGGLE VS FPA SELECTOR
572	MCP VS FPA SELECTOR = VS
573	MCP VS FPA SELECTOR = FPA
574	MCP TOGGLE MACH SPEED SELECTOR
575	MCP MACH SPEED SELECTOR = IAS
576	MCP MACH SPEED SELECTOR = MACH
577	MCP TOGGLE SPEED WINDOW
578	MCP OPEN SPEED WINDOW = BLANK

579	MCP OPEN SPEED WINDOW = OPEN
580	MCP HDG HOLD ENGAGED
581	MCP HDG SELECT ENGAGED
582	MCP ALT HOLD ENGAGED
583	MCP ALT SELECT ENGAGED
584	MCP VS ENGAGED
585	MCP LNAV
586	MCP VNAV
587	MCP FLCH
588	MCP LOC
589	MCP APP
590	PARKING BRAKE = OFF
591	PARKING BRAKE = ON
592	MASTER WARNING/CAUSTION PUSH
601	A/P Disengage Bar UP
602	A/P Disengage Bar DOWN
700	GROUND POWER PRIMARY SELECTED = OFF
701	GROUND POWER PRIMARY SELECTED = ON
702	GROUND POWER SECONDARY SELECTED = OFF
703	GROUND POWER SECONDARY SELECTED = ON
704	BATTERY SWITCH = OFF
705	BATTERY SWITCH = ON
706	ELEC BUS TIE L SWITCH = OFF
707	ELEC BUS TIE L SWITCH = ON
708	ELEC BUS TIE R SWITCH = OFF
709	ELEC BUS TIE R SWITCH = ON
710	ELEC ENG GEN L SWITCH = OFF
711	ELEC ENG GEN L SWITCH = ON
712	ELEC ENG GEN R SWITCH = OFF
713	ELEC ENG GEN R SWITCH = ON
714	ELEC ENG GEN DRIVE L SWITCH = OFF
715	ELEC ENG GEN DRIVE L SWITCH = ON
716	ELEC ENG GEN DRIVE R SWITCH = OFF
717	ELEC ENG GEN DRIVE R SWITCH = ON
718	ELEC BACKUP GEN L SWITCH = OFF
719	ELEC BACKUP GEN L SWITCH = ON
720	ELEC BACKUP GEN R SWITCH = OFF
721	ELEC BACKUP GEN R SWITCH = ON
722	ADIRU SWITCH = OFF
723	ADIRU SWITCH = ON

724	APU SWITCH = OFF
725	APU SWITCH = ON
726	APU SWITCH = START
727	ELEC APU GEN SWITCH = OFF
728	ELEC APU GEN SWITCH = ON
730	HYD PUMP PRI ENG L SWITCH = OFF
731	HYD PUMP PRI ENG L SWITCH = ON
732	HYD PUMP PRI ELEC C1 SWITCH = OFF
733	HYD PUMP PRI ELEC C1 SWITCH = ON
734	HYD PUMP PRI ELEC C2 SWITCH = OFF
735	HYD PUMP PRI ELEC C2 SWITCH = ON
736	HYD PUMP PRI ENG R SWITCH = OFF
737	HYD PUMP PRI ENG R SWITCH = ON
744	HYD PUMP DEM ELEC L SWITCH = AUTO
745	HYD PUMP DEM AIR C1 SWITCH = AUTO
746	HYD PUMP DEM AIR C2 SWITCH = AUTO
747	HYD PUMP DEM ELEC R SWITCH = AUTO
748	HYD PUMP DEM ELEC L SWITCH = OFF
749	HYD PUMP DEM ELEC L SWITCH = ON
750	HYD PUMP DEM AIR C1 SWITCH = OFF
751	HYD PUMP DEM AIR C1 SWITCH = ON
752	HYD PUMP DEM AIR C2 SWITCH = OFF
753	HYD PUMP DEM AIR C2 SWITCH = ON
754	HYD PUMP DEM ELEC R SWITCH = OFF
755	HYD PUMP DEM ELEC R SWITCH = ON
756	HYD PUMP RAT SWITCH = OFF
757	HYD PUMP RAT SWITCH = ON
760	FUEL PUMP LEFT FWD SWITCH = OFF
761	FUEL PUMP LEFT FWD SWITCH = ON
762	FUEL PUMP LEFT AFT SWITCH = OFF
763	FUEL PUMP LEFT AFT SWITCH = ON
764	FUEL PUMP RIGHT FWD SWITCH = OFF
765	FUEL PUMP RIGHT FWD SWITCH = ON
766	FUEL PUMP RIGHT AFT SWITCH = OFF
767	FUEL PUMP RIGHT AFT SWITCH = ON
768	FUEL PUMP CENTRE LEFT SWITCH = OFF
769	FUEL PUMP CENTRE LEFT SWITCH = ON
770	FUEL PUMP CENTRE RIGHT SWITCH = OFF
771	FUEL PUMP CENTRE RIGHT SWITCH = ON
772	FUEL PUMP CROSSFEED FWD SWITCH = OFF
773	FUEL PUMP CROSSFEED FWD SWITCH = ON

774	FUEL PUMP CROSSFEED AFT SWITCH = OFF
775	FUEL PUMP CROSSFEED AFT SWITCH = ON
776	FUEL JETTISON ARM SWITCH = OFF
777	FUEL JETTISON ARM SWITCH = ON
778	FUEL JETTISON L SWITCH = OFF
779	FUEL JETTISON L SWITCH = ON
780	FUEL JETTISON R SWITCH = OFF
781	FUEL JETTISON R SWITCH = ON
790	AIR ENG L SWITCH = OFF
791	AIR ENG L SWITCH = ON
792	AIR ENG R SWITCH = OFF
793	AIR ENG R SWITCH = ON
794	AIR APU SWITCH = OFF
795	AIR APU SWITCH = ON
796	AIR ISLN L SWITCH = OFF
797	AIR ISLN L SWITCH = ON
798	AIR ISLN C SWITCH = OFF
799	AIR ISLN C SWITCH = ON
800	AIR ISLN R SWITCH = OFF
801	AIR ISLN R SWITCH = ON
802	AIR PACK L SWITCH = OFF
803	AIR PACK L SWITCH = ON
804	AIR PACK R SWITCH = OFF
805	AIR PACK R SWITCH = ON
806	AIR TRIM AIR L SWITCH = OFF
807	AIR TRIM AIR L SWITCH = ON
808	AIR TRIM AIR R SWITCH = OFF
809	AIR TRIM AIR R SWITCH = ON
810	AIR RECIRCULATION UPPER SWITCH = OFF
811	AIR RECIRCULATION UPPER SWITCH = ON
812	AIR RECIRCULATION LOWER SWITCH = OFF
813	AIR RECIRCULATION LOWER SWITCH = ON
814	AIR EQUIPMENT COOLING SWITCH = OFF
815	AIR EQUIPMENT COOLING SWITCH = ON
816	AIR GASPER SWITCH = OFF
817	AIR GASPER SWITCH = ON
818	AIR FLIGHT DECK TEMP INCREASE
819	AIR FLIGHT DECK TEMP DECREASE
820	AIR CABIN DECK TEMP INCREASE
821	AIR CABIN DECK TEMP DECREASE
822	AIR CARGO FWD TEMP INCREASE
823	AIR CARGO FWD TEMP DECREASE

824	AIR CARGO AFT TEMP INCREASE
825	AIR CARGO AFT TEMP DECREASE
830	ENGINE L STARTER SWITCH = OFF
831	ENGINE L STARTER SWITCH = START
832	ENGINE L STARTER SWITCH = CONTINUOUS
833	ENGINE R STARTER SWITCH = OFF
834	ENGINE R STARTER SWITCH = START
835	ENGINE R STARTER SWITCH = CONTINUOUS
836	ENGINE AUTOSTART SWITCH = OFF
837	ENGINE AUTOSTART SWITCH = ON
838	ENGINE EEC L MODE SWITCH = OFF
839	ENGINE EEC L MODE SWITCH = ON
840	ENGINE EEC R MODE SWITCH = OFF
841	ENGINE EEC R MODE SWITCH = ON
842	ENGINE L FUEL CUTOFF SWITCH = OFF
843	ENGINE L FUEL CUTOFF SWITCH = ON
844	ENGINE R FUEL CUTOFF SWITCH = OFF
845	ENGINE R FUEL CUTOFF SWITCH = ON
850	ENGINE L ANTI ICE SWITCH = OFF
851	ENGINE L ANTI ICE SWITCH = ON
852	ENGINE L ANTI ICE SWITCH = AUTO
853	ENGINE R ANTI ICE SWITCH = OFF
854	ENGINE R ANTI ICE SWITCH = ON
855	ENGINE R ANTI ICE SWITCH = AUTO
856	WING ANTI ICE SWITCH = OFF
857	WING ANTI ICE SWITCH = ON
858	WING ANTI ICE SWITCH = AUTO
860	WINDOW HEAT L1 SWITCH = OFF
861	WINDOW HEAT L1 SWITCH = ON
862	WINDOW HEAT L2 SWITCH = OFF
863	WINDOW HEAT L2 SWITCH = ON
864	WINDOW HEAT R1 SWITCH = OFF
865	WINDOW HEAT R1 SWITCH = ON
866	WINDOW HEAT R2 SWITCH = OFF
867	WINDOW HEAT R2 SWITCH = ON
870	PASSENGER OXYGEN SWITCH = OFF
871	PASSENGER OXYGEN SWITCH = ON
872	THRUST ASYM COMP SWITCH = OFF
873	THRUST ASYM COMP SWITCH = ON

874	PRIMARY FLIGHT COMPUTERS SWITCH = OFF
875	PRIMARY FLIGHT COMPUTERS SWITCH = ON
880	CARGO FIRE ARM FWD SWITCH = OFF
881	CARGO FIRE ARM FWD SWITCH = ON
882	CARGO FIRE ARM AFT SWITCH = OFF
883	CARGO FIRE ARM AFT SWITCH = ON
884	CARGO FIRE DISCHARGE SWITCH = OFF
885	CARGO FIRE DISCHARGE SWITCH = ON
890	LIGHTS LANDING = OFF
891	LIGHTS LANDING = ON
892	LIGHTS STORM = OFF
893	LIGHTS STORM = ON
894	LIGHTS BEACON = OFF
895	LIGHTS BEACON = ON
896	LIGHTS NAV = OFF
897	LIGHTS NAV = ON
898	LIGHTS LOGO = OFF
899	LIGHTS LOGO = ON
900	LIGHTS WING = OFF
901	LIGHTS WING = ON
902	LIGHTS RWY TURNOFF = OFF
903	LIGHTS RWY TURNOFF = ON
904	LIGHTS TAXI = OFF
905	LIGHTS TAXI = ON
906	LIGHTS STROBE = OFF
907	LIGHTS STROBE = ON
920	AIR OUTFLOW VALVE FWD AUTO SWITCH = OFF
921	AIR OUTFLOW VALVE FWD AUTO SWITCH = ON
922	AIR OUTFLOW VALVE AFT AUTO SWITCH = OFF
923	AIR OUTFLOW VALVE AFT AUTO SWITCH = ON
924	AIR OUTFLOW VALVE FWD OPEN
925	AIR OUTFLOW VALVE FWD CLOSE
926	AIR OUTFLOW VALVE AFT OPEN
927	AIR OUTFLOW VALVE AFT CLOSE
928	AIR OUTFLOW MODE = AUTO
929	AIR OUTFLOW MODE = ALTN
930	AIR OUTFLOW MODE = MANUAL
940	GPWS INHIBIT GS = OFF
941	GPWS INHIBIT GS = ON

942	GPWS INHIBIT FLAP = OFF
943	GPWS INHIBIT FLAP = ON
944	GPWS INHIBIT GEAR = OFF
945	GPWS INHIBIT GEAR = ON
946	GPWS INHIBIT SINK = OFF
947	GPWS INHIBIT SINK = ON
948	GPWS INHIBIT TERRAIN = OFF
949	GPWS INHIBIT TERRAIN = ON
980	WIPER L = OFF
981	WIPER L = SLOW
982	WIPER L = HIGH
983	WIPER L = OFF
984	WIPER L = SLOW
985	WIPER L = HIGH
989	AIR ISOLATION VALVE - OPEN
990	RADIO COM1 TRANSFER
991	RADIO COM2 TRANSFER
992	RADIO NAV1 TRANSFER
993	RADIO NAV2 TRANSFER
1000	DOOR ENTRY 1L - OPEN
1001	DOOR ENTRY 1L – CLOSED - MANUAL
1002	DOOR ENTRY 1L – CLOSED – AUTO
1003	DOOR ENTRY 2L - OPEN
1004	DOOR ENTRY 2L – CLOSED - MANUAL
1005	DOOR ENTRY 2L – CLOSED – AUTO
1006	DOOR ENTRY 3L - OPEN
1007	DOOR ENTRY 3L – CLOSED - MANUAL
1008	DOOR ENTRY 3L – CLOSED – AUTO
1009	DOOR ENTRY 4L - OPEN
1010	DOOR ENTRY 4L – CLOSED - MANUAL
1011	DOOR ENTRY 4L – CLOSED – AUTO
1012	DOOR ENTRY 1R - OPEN
1013	DOOR ENTRY 1R – CLOSED - MANUAL
1014	DOOR ENTRY 1R – CLOSED – AUTO
1015	DOOR ENTRY 2R - OPEN
1016	DOOR ENTRY 2R – CLOSED - MANUAL
1017	DOOR ENTRY 2R – CLOSED – AUTO
1018	DOOR ENTRY 3R - OPEN
1019	DOOR ENTRY 3R – CLOSED - MANUAL
1020	DOOR ENTRY 3R – CLOSED – AUTO

1021	DOOR ENTRY 4R - OPEN
1022	DOOR ENTRY 4R – CLOSED - MANUAL
1023	DOOR ENTRY 4R – CLOSED – AUTO
1024	DOOR FWD ACCESS - OPEN
1025	DOOR FWD ACCESS – CLOSED
1026	DOOR TT ACCESS - OPEN
1027	DOOR TT ACCESS – CLOSED
1028	DOOR FWD CARGO - OPEN
1029	DOOR FWD CARGO - CLOSED
1030	DOOR AFT CARGO - OPEN
1031	DOOR AFT CARGO - CLOSED
1032	DOOR AFT CARGO2 - OPEN
1033	DOOR AFT CARGO2 - CLOSED
1040	DOORS TO MANUAL
1041	DOORS TO AUTOMATIC
1200	DISPLAY BRIGHTNESS CPT PFD LEVEL = LOW
1201	DISPLAY BRIGHTNESS CPT PFD LEVEL = MED
1202	DISPLAY BRIGHTNESS CPT PFD LEVEL = HIGH
1203	DISPLAY BRIGHTNESS CPT ND LEVEL = LOW
1204	DISPLAY BRIGHTNESS CPT ND LEVEL = MED
1205	DISPLAY BRIGHTNESS CPT ND LEVEL = HIGH
1206	DISPLAY BRIGHTNESS FO PFD LEVEL = LOW
1207	DISPLAY BRIGHTNESS FO PFD LEVEL = MED
1208	DISPLAY BRIGHTNESS FO_PFD LEVEL = HIGH
1209	DISPLAY BRIGHTNESS FO ND LEVEL = LOW
1210	DISPLAY BRIGHTNESS FO ND LEVEL = MED
1211	DISPLAY BRIGHTNESS FO ND LEVEL = HIGH
1212	DISPLAY BRIGHTNESS EICAS LEVEL = LOW
1213	DISPLAY BRIGHTNESS EICAS LEVEL = MED
1214	DISPLAY BRIGHTNESS EICAS LEVEL = HIGH
1215	DISPLAY BRIGHTNESS MFD LEVEL = LOW
1216	DISPLAY BRIGHTNESS MFD LEVEL = MED
1217	DISPLAY BRIGHTNESS MFD LEVEL = HIGH
1220	CLOCK CPT CHR MODE = STOP
1221	CLOCK CPT CHR MODE = RUN
1222	CLOCK CPT CHR MODE = RESET
1223	CLOCK CPT ELAPSED TIME MODE = HOLD
1224	CLOCK CPT ELAPSED TIME MODE = RUN
1225	CLOCK CPT ELAPSED TIME MODE = RESET
1226	CLOCK CPT DATE MODE = TIME

1227	CLOCK CPT DATE MODE = DATE
1228	CLOCK CPT TIME MODE = UTC
1229	CLOCK CPT TIME MODE = MAN
1230	CLOCK CPT SET MODE = RUN
1231	CLOCK CPT SET MODE = HLDY (Hold / Year)
1232	CLOCK CPT SET MODE = SSM (Slow Slew Month)
1233	CLOCK CPT SET MODE = FSD (Fast Slew Day)
1234	CLOCK CPT CHR / CLOCK Switch Push
1235	CLOCK CPT DATE Switch Push
1240	CLOCK FO CHR MODE = STOP
1241	CLOCK FO CHR MODE = RUN
1242	CLOCK FO CHR MODE = RESET
1243	CLOCK FO ELAPSED TIME MODE = HOLD
1244	CLOCK FO ELAPSED TIME MODE = RUN
1245	CLOCK FO ELAPSED TIME MODE = RESET
1246	CLOCK FO DATE MODE = TIME
1247	CLOCK FO DATE MODE = DATE
1248	CLOCK FO DATE MODE = UTC
1249	CLOCK FO DATE MODE = MAN
1250	CLOCK FO SET MODE = RUN
1251	CLOCK FO SET MODE = HLDY (Hold / Year)
1252	CLOCK FO SET MODE = SSM (Slow Slew Month)
1253	CLOCK FO SET MODE = FSD (Fast Slew Day)
1254	CLOCK FO CHR / CLOCK Switch Push
1255	CLOCK FO DATE Switch Push
1260	CLOCK CPT CHR Button
1261	CLOCK CPT ET RUN / HOLD Button
1262	CLOCK CPT ET RESET Button
1263	CLOCK CPT DATE / TIME Button
1264	CLOCK CPT SET Button
1265	CLOCK CPT SET - Button
1266	CLOCK CPT SET + Button
1270	CLOCK FO CHR Button
1271	CLOCK FO ET RUN / HOLD Button
1272	CLOCK FO ET RESET Button
1273	CLOCK FO DATE / TIME Button
1274	CLOCK FO SET Button
1275	CLOCK FO SET - Button
1276	CLOCK FO SET + Button
2000	GROUND POWER PRIMARY CONNECTED

2001	GROUND POWER PRIMARY DISCONNECTED
2002	GROUND POWER SECONDARY CONNECTED
2003	GROUND POWER SECONDARY DISCONNECTED
2004	GROUND AIR CONNECTED
2005	GROUND AIR DISCONNECTED
2100	ACCEPT ACARS REQUEST
2101	DECLINE ACARS REQUEST
2102	CANCEL ACARS REQUEST

B737 Function Mapping

Most of these values are duplicates of the 777's, but some are new for the 737 or have a 737 description.

Value	Description
1	ND CAPTAIN MODE = MAP
3	ND CAPTAIN MODE = VOR
4	ND CAPTAIN MODE = PLAN
5	ND CAPTAIN MODE = APP
6	TOGGLE ND CAPTAIN CENTRED
14	TOGGLE ND CAPTAIN FPV
40	ND CAPTAIN RANGE = 2.5
41	ND CAPTAIN RANGE = 5
42	ND CAPTAIN RANGE = 10
43	ND CAPTAIN RANGE = 20
44	ND CAPTAIN RANGE = 40
45	ND CAPTAIN RANGE = 80
46	ND CAPTAIN RANGE = 160
47	ND CAPTAIN RANGE = 320
48	ND CAPTAIN RANGE = 640
50	TCAS MODE SWITCH = OFF
51	TCAS MODE SWITCH = 1 (SQUAWKBOX)
52	TCAS MODE SWITCH = 2 (SQUAWKBOX + ND TRAFFIC)
53	TCAS MODE SWITCH = 3 (SQUAWKBOX + ND TRAFFIC + AUDIO)
54	TCAS MODE SWITCH = 4 (SQUAWKBOX + ND TRAFFIC + AUDIO + RESOLUTIONS)
70	ND CAPTAIN WXR = OFF

71	ND CAPTAIN WXR = ON
72	TOGGLE ND CAPTAIN WXR
73	ND CAPTAIN RADIO L = OFF
74	ND CAPTAIN RADIO L = ADF
75	ND CAPTAIN RADIO L = VOR
76	ND CAPTAIN RADIO R = OFF
77	ND CAPTAIN RADIO R = ADF
78	ND CAPTAIN RADIO R = VOR
80	ND CAPTAIN TER = OFF
81	ND CAPTAIN TER = ON
82	TOGGLE ND CAPTAIN TER
90	TOGGLE ND CAPTAIN STA
93	TOGGLE ND CAPTAIN WPT
94	TOGGLE ND CAPTAIN APT
95	TOGGLE ND CAPTAIN DATA
96	TOGGLE ND CAPTAIN POS
97	TOGGLE ND CAPTAIN MTRS
98	TOGGLE ND CAPTAIN TFC
101	ND FO MODE = MAP
103	ND FO MODE = VOR
104	ND FO MODE = PLAN
105	ND FO MODE = APP
106	TOGGLE ND FO CENTRED
114	TOGGLE ND FO FPV
140	ND FO RANGE = 2.5
141	ND FO RANGE = 5
142	ND FO RANGE = 10
143	ND FO RANGE = 20
144	ND FO RANGE = 40
145	ND FO RANGE = 80
146	ND FO RANGE = 160
147	ND FO RANGE = 320
148	ND FO RANGE = 640
170	ND FO WXR = OFF
171	ND FO WXR = ON
172	TOGGLE ND FO WXR
173	ND FO RADIO L = OFF
174	ND FO RADIO L = ADF
175	ND FO RADIO L = VOR
176	ND FO RADIO R = OFF
177	ND FO RADIO R = ADF
178	ND FO RADIO R = VOR

180	ND FO TER = OFF
181	ND FO TER = ON
182	TOGGLE ND FO TER
190	TOGGLE ND FO STA
193	TOGGLE ND FO WPT
194	TOGGLE ND FO APT
195	TOGGLE ND FO DATA
196	TOGGLE ND FO POS
197	TOGGLE ND FO MTRS
198	TOGGLE ND FO TFC
300	MFD DISPLAY = OFF
301	MFD DISPLAY = ENGINE
302	MFD DISPLAY = STATUS
304	MFD DISPLAY = HYD
305	MFD DISPLAY = FUEL
306	MFD DISPLAY = AIR
308	MFD DISPLAY = GEAR
309	MFD DISPLAY = FLT CTRLS
314	MFD DISPLAY = MAINTENANCE
315	EICAS RECALL (CANCEL / RECALL BUTTON)
422	NO SMOKING = ON
423	NO SMOKING = OFF
424	NO SMOKING = AUTO
425	SEATBELTS = ON
426	SEATBELTS = OFF
427	SEATBELTS = AUTO
430	ATTEND CALL
431	GND CALL
500	COMMANDED FLAP POSITION = UP
501	COMMANDED FLAP POSITION = 1
502	COMMANDED FLAP POSITION = 2
503	COMMANDED FLAP POSITION = 5
504	COMMANDED FLAP POSITION = 10
505	COMMANDED FLAP POSITION = 15
507	COMMANDED FLAP POSITION = 25
508	COMMANDED FLAP POSITION = 30
509	COMMANDED FLAP POSITION = 40
510	COMMANDED GEAR POSITION = UP
511	COMMANDED GEAR POSITION = DOWN

512	AUTOBRAKE = OFF
513	AUTOBRAKE = RTE
514	AUTOBRAKE = 1
515	AUTOBRAKE = 2
516	AUTOBRAKE = 3
517	AUTOBRAKE = 4
518	AUTOBRAKE = MAX
520	TOGGLE STD SET CAPT
521	TOGGLE STD SET FO
522	CAPT BARO = HPA
523	CAPT BARO = INS
524	FO BARO = HPA
525	FO BARO = INS
526	MINIMUMS MODE CPT = RADIO
527	MINIMUMS MODE CPT = BARO
528	MINIMUMS MODE FO = RADIO
529	MINIMUMS MODE FO = BARO
530	MINIMUMS RESET
549	CMD B Press
550	CMD A Press
598	CWS A Press
599	CWS B Press
551	MCP DISCONNECT
552	MCP CMD A = OFF
553	MCP CMD A| = ON
554	MCP FLTDIR L = OFF
555	MCP FLTDIR L = ON
556	MCP FLTDIR R = OFF
557	MCP FLTDIR R = ON
558	MCP AUTOTHROTTLE ARM = OFF
559	MCP AUTOTHROTTLE ARM = ON
562	MCP AUTOTHROTTLE ENGAGED
563	MCP AUTOTHROTTLE DISCONNECT
564	MCP AUTOTHROTTLE ENGAGED = OFF
565	MCP AUTOTHROTTLE ENGAGED = ON
566	MCP CLB CON
567	MCP TOGA
574	MCP TOGGLE MACH SPEED SELECTOR
575	MCP MACH SPEED SELECTOR = IAS
576	MCP MACH SPEED SELECTOR = MACH

577	MCP TOGGLE SPEED WINDOW
578	MCP OPEN SPEED WINDOW = BLANK
579	MCP OPEN SPEED WINDOW = OPEN
580	MCP HDG HOLD ENGAGED
581	MCP HDG SELECT ENGAGED
582	MCP ALT HOLD ENGAGED
583	MCP ALT SELECT ENGAGED
584	MCP VS ENGAGED
585	MCP LNAV
586	MCP VNAV
587	MCP FLCH
588	MCP LOC
589	MCP APP
590	PARKING BRAKE = OFF
591	PARKING BRAKE = ON
592	MASTER WARNING/CAUSTION PUSH
593	MCP CMD B = OFF
594	MCP CMD B = ON
595	A/P P/RST
596	A/T P/RST
597	FMC P/RST
600	Fire Bell Press
601	A/P Disengage Bar UP
602	A/P Disengage Bar DOWN
603	MCP CWS A = OFF
604	MCP CWS A = ON
605	MCP CWS B = OFF
606	MCP CWS B = ON
666	ELEC CABIN UTILITY = OFF
667	ELEC CABIN UTILITY = ON
668	ELEC IFE / PASS SEAT = OFF
669	ELEC IFE / PASS SEAT = ON
670	ELEC DC SELECTOR = STBY PWR
671	ELEC DC SELECTOR = BAT BUS
672	ELEC DC SELECTOR = BAT
673	ELEC DC SELECTOR = TR2
674	ELEC DC SELECTOR = TR2
675	ELEC DC SELECTOR = TR3
676	ELEC DC SELECTOR = TEST
680	ELEC AC SELECTOR = STBY PWR

681	ELEC AC SELECTOR = GND PWR
682	ELEC AC SELECTOR = GEN1
683	ELEC AC SELECTOR = APU GEN
684	ELEC AC SELECTOR = GEN2
685	ELEC AC SELECTOR = INV
686	ELEC AC SELECTOR = TEST
696	ELEC STANDBY POWER SWITCH = OFF
697	ELEC STANDBY POWER SWITCH = ON
700	GND POWER SELECTED = OFF
701	GND POWER SELECTED = ON
704	BATTERY SWITCH = OFF
705	BATTERY SWITCH = ON
706	ELEC BUS TRANSFER SWITCH = OFF
707	ELEC BUS TRANSFER SWITCH = ON
710	ELEC ENG GEN 1 SWITCH = OFF
711	ELEC ENG GEN 1 SWITCH = ON
712	ELEC ENG GEN 2 SWITCH = OFF
713	ELEC ENG GEN 2 SWITCH = ON
714	ELEC ENG GEN DRIVE 1 SWITCH = OFF
715	ELEC ENG GEN DRIVE 1 SWITCH = ON
716	ELEC ENG GEN DRIVE 2 SWITCH = OFF
717	ELEC ENG GEN DRIVE 2 SWITCH = ON
722	ADIRU SWITCH = OFF
723	ADIRU SWITCH = ON
724	APU SWITCH = OFF
725	APU SWITCH = ON
726	APU SWITCH = START
727	ELEC APU GEN L SWITCH = OFF
728	ELEC APU GEN L SWITCH = ON
698	ELEC APU GEN R SWITCH = OFF
699	ELEC APU GEN R SWITCH = ON
730	HYD PUMP ENG 1 SWITCH = OFF
731	HYD PUMP ENG 1 SWITCH = ON
732	HYD PUMP ELEC 2 SWITCH = OFF
733	HYD PUMP ELEC 2 SWITCH = ON
734	HYD PUMP ELEC 1 SWITCH = OFF
735	HYD PUMP ELEC 1 SWITCH = ON
736	HYD PUMP ENG 2 SWITCH = OFF
737	HYD PUMP ENG 2 SWITCH = ON
738	HYD FLT CTRL A SWITCH = OFF
739	HYD FLT CTRL A SWITCH = ON
740	HYD FLT CTRL B SWITCH = OFF

741	HYD FLT CTRL B SWITCH = ON
1050	HYD SPOILERS A SWITCH = OFF
1051	HYD SPOILERS A SWITCH = ON
1048	HYD SPOILERS B SWITCH = OFF
1049	HYD SPOILERS B SWITCH = ON
742	HYD ALTERNATE FLAP SWITCH = OFF
743	HYD ALTERNATE FLAP SWITCH = ON
758	HYD YAW DAMPRER = OFF
759	HYD YAW DAMPRER = ON
760	FUEL PUMP LEFT FWD SWITCH = OFF
761	FUEL PUMP LEFT FWD SWITCH = ON
762	FUEL PUMP LEFT AFT SWITCH = OFF
763	FUEL PUMP LEFT AFT SWITCH = ON
764	FUEL PUMP RIGHT FWD SWITCH = OFF
765	FUEL PUMP RIGHT FWD SWITCH = ON
766	FUEL PUMP RIGHT AFT SWITCH = OFF
767	FUEL PUMP RIGHT AFT SWITCH = ON
768	FUEL PUMP CENTRE LEFT SWITCH = OFF
769	FUEL PUMP CENTRE LEFT SWITCH = ON
770	FUEL PUMP CENTRE RIGHT SWITCH = OFF
771	FUEL PUMP CENTRE RIGHT SWITCH = ON
772	FUEL PUMP CROSSFEED FWD SWITCH = OFF
773	FUEL PUMP CROSSFEED FWD SWITCH = ON
790	AIR ENG 1 SWITCH = OFF
791	AIR ENG 1 SWITCH = ON
792	AIR ENG 2 SWITCH = OFF
793	AIR ENG 2 SWITCH = ON
794	AIR APU SWITCH = OFF
795	AIR APU SWITCH = ON
798	AIR ISLN VALVE SWITCH = OFF
799	AIR ISLN VALVE SWITCH = ON
1122	AIR ISLN VALVE SWITCH = AUTO
802	AIR PACK L SWITCH = OFF
803	AIR PACK L SWITCH = AUTO
804	AIR PACK R SWITCH = OFF
805	AIR PACK R SWITCH = AUTO
806	AIR TRIM AIR SWITCH = OFF
807	AIR TRIM AIR SWITCH = ON
810	AIR L RECIRCULATION FAN SWITCH = OFF
811	AIR L RECIRCULATION FAN SWITCH = ON
812	AIR R RECIRCULATION FAN SWITCH = OFF

813	AIR R RECIRCULATION FAN SWITCH = ON
814	AIR EQUIPMENT COOLING SUPPLY SWITCH = OFF
815	AIR EQUIPMENT COOLING SUPPLY SWITCH = ON
990	RADIO COM1 TRANSFER
991	RADIO COM2 TRANSFER
992	RADIO NAV1 TRANSFER
993	RADIO NAV2 TRANSFER
1052	TEMPERATURE CONT CABIN = -3
1053	TEMPERATURE CONT CABIN = -2
1054	TEMPERATURE CONT CABIN = -1
1055	TEMPERATURE CONT CABIN = AUTO
1056	TEMPERATURE CONT CABIN = 1
1057	TEMPERATURE CONT CABIN = 2
1058	TEMPERATURE CONT CABIN = 3
1059	TEMPERATURE FWD CABIN = -2
1061	TEMPERATURE FWD CABIN = -1
1062	TEMPERATURE FWD CABIN = AUTO
1063	TEMPERATURE FWD CABIN = 1
1064	TEMPERATURE FWD CABIN = 2
1065	TEMPERATURE FWD CABIN = 3
1066	TEMPERATURE AFT CABIN = -3
1067	TEMPERATURE AFT CABIN = -2
1068	TEMPERATURE AFT CABIN = -1
1069	TEMPERATURE AFT CABIN = AUTO
1070	TEMPERATURE AFT CABIN = 1
1071	TEMPERATURE AFT CABIN = 2
1072	TEMPERATURE AFT CABIN = 3
826	AIR EQUIPMENT COOLING EXHAUST SWITCH = OFF
827	AIR EQUIPMENT COOLING EXHAUST SWITCH = ON
828	AIR PACK L SWITCH = HIGH
829	AIR PACK R SWITCH = HIGH
1091	TRIP RESET
1092	OVHT TEST
1093	TEMP ZONE SELECTOR = CONT CAB DUCT SUPPLY
1094	TEMP ZONE SELECTOR = FWD CAB DUCT SUPPLY
1095	TEMP ZONE SELECTOR = AFT CAB DUCT SUPPLY
1096	TEMP ZONE SELECTOR = FWD PASS CABIN
1097	TEMP ZONE SELECTOR = AFT PASS CABIN
1098	TEMP ZONE SELECTOR = R PACK
1099	TEMP ZONE SELECTOR = L_PACK

830	ENGINE 1 STARTER SWITCH = OFF
831	ENGINE 1 STARTER SWITCH = GND / FLT
832	ENGINE 1 STARTER SWITCH = CONT
833	ENGINE 2 STARTER SWITCH = OFF
834	ENGINE 2 STARTER SWITCH = GND / FLT
835	ENGINE 2 STARTER SWITCH = CONT
838	ENGINE EEC 1 MODE SWITCH = NORM
839	ENGINE EEC 1 MODE SWITCH = ALTN
840	ENGINE EEC 2 MODE SWITCH = NORM
841	ENGINE EEC 2 MODE SWITCH =ALTN
842	ENGINE 1 FUEL CUTOFF SWITCH = OFF
843	ENGINE 1 FUEL CUTOFF SWITCH = ON
844	ENGINE 2 FUEL CUTOFF SWITCH = OFF
845	ENGINE 2 FUEL CUTOFF SWITCH = ON
850	ENGINE 1 ANTI ICE SWITCH = OFF
851	ENGINE 1 ANTI ICE SWITCH = ON
853	ENGINE 2 ANTI ICE SWITCH = OFF
854	ENGINE 2 ANTI ICE SWITCH = ON
856	WING ANTI ICE SWITCH = OFF
857	WING ANTI ICE SWITCH = ON
860	WINDOW HEAT L1 SWITCH = OFF
861	WINDOW HEAT L1 SWITCH = ON
862	WINDOW HEAT L2 SWITCH = OFF
863	WINDOW HEAT L2 SWITCH = ON
864	WINDOW HEAT R1 SWITCH = OFF
865	WINDOW HEAT R1 SWITCH = ON
866	WINDOW HEAT R2 SWITCH = OFF
867	WINDOW HEAT R2 SWITCH = ON
868	WINDOW HEAT TEST SWITCH = TEST 1
869	WINDOW HEAT TEST SWITCH = TEST 2
859	WINDOW HEAT TEST SWITCH = OFF
1085	PROBE HEAT A = OFF
1086	PROBE HEAT A = ON
1087	PROBE HEAT B = OFF
1088	PROBE HEAT B = ON
1089	ALT HORN CUTOUT = OFF
1090	ALT HORN CUTOUT = ON
870	PASSENGER OXYGEN SWITCH = OFF
871	PASSENGER OXYGEN SWITCH = ON

880	CARGO FIRE ARM FWD SWITCH = OFF
881	CARGO FIRE ARM FWD SWITCH = ON
882	CARGO FIRE ARM AFT SWITCH = OFF
883	CARGO FIRE ARM AFT SWITCH = ON
884	CARGO FIRE DISCHARGE SWITCH = OFF
885	CARGO FIRE DISCHARGE SWITCH = ON
888	EMERGENCY LIGHTS = ON
889	EMERGENCY LIGHTS = ARMED
890	LIGHTS LANDING = OFF
891	LIGHTS LANDING = ON
892	LIGHTS STORM = OFF
893	LIGHTS STORM = ON
894	LIGHTS BEACON = OFF
895	LIGHTS BEACON = ON
896	LIGHTS NAV = OFF
897	LIGHTS NAV = ON
898	LIGHTS LOGO = OFF
899	LIGHTS LOGO = ON
900	LIGHTS WING = OFF
901	LIGHTS WING = ON
902	LIGHTS RWY TURNOFF = OFF
903	LIGHTS RWY TURNOFF = ON
904	LIGHTS TAXI = OFF
905	LIGHTS TAXI = ON
906	LIGHTS STROBE = OFF
907	LIGHTS STROBE = ON
908	LIGHTS LANDING RETRACT L = OFF
909	LIGHTS LANDING RETRACT L = ON
910	LIGHTS LANDING RETRACT R = OFF
911	LIGHTS LANDING RETRACT R = ON
912	LIGHTS LANDING FIXED L = OFF
913	LIGHTS LANDING FIXED L = ON
914	LIGHTS LANDING FIXED R = OFF
915	LIGHTS LANDING FIXED R = ON
916	LIGHTS RWY TURNOFF L = OFF
917	LIGHTS RWY TURNOFF L = ON
918	LIGHTS RWY TURNOFF R = OFF
919	LIGHTS RWY TURNOFF R = ON
924	AIR OUTFLOW VALVE OPEN
925	AIR OUTFLOW VALVE CLOSE
928	AIR OUTFLOW VALVE SWITCH = AUTO

929	AIR OUTFLOW VALVE SWITCH = ALTN
930	AIR OUTFLOW VALVE SWITCH = MANUAL
940	GPWS INHIBIT GS = OFF
941	GPWS INHIBIT GS = ON
942	GPWS INHIBIT FLAP = OFF
943	GPWS INHIBIT FLAP = ON
944	GPWS INHIBIT GEAR = OFF
945	GPWS INHIBIT GEAR = ON
946	GPWS INHIBIT SINK = OFF
947	GPWS INHIBIT SINK = ON
948	GPWS INHIBIT TERRAIN = OFF
949	GPWS INHIBIT TERRAIN = ON
980	WIPER L = OFF
981	WIPER L = SLOW
982	WIPER L = FAST
983	WIPER R = OFF
984	WIPER R = SLOW
985	WIPER R = FAST
1000	DOOR FWD ENTRY - OPEN
1001	DOOR FWD ENTRY – CLOSED - MANUAL
1002	DOOR FWD ENTRY – CLOSED – AUTO
1006	DOOR WING L - OPEN
1007	DOOR WING L – CLOSED - MANUAL
1008	DOOR WING L – CLOSED – AUTO
1009	DOOR AFT ENTRY - OPEN
1010	DOOR AFT ENTRY – CLOSED - MANUAL
1011	DOOR AFT ENTRY – CLOSED – AUTO
1012	DOOR FWD SERVICE - OPEN
1013	DOOR FWD SERVICE – CLOSED - MANUAL
1014	DOOR FWD SERVICE – CLOSED – AUTO
1018	DOOR WING R - OPEN
1019	DOOR WING R – CLOSED - MANUAL
1020	DOOR WING R – CLOSED – AUTO
1021	DOOR AFT SERVICE - OPEN
1022	DOOR AFT SERVICE – CLOSED - MANUAL
1023	DOOR AFT SERVICE – CLOSED - AUTO
1024	DOOR SERVICE - OPEN
1025	DOOR SERVICE – CLOSED
1028	DOOR FWD CARGO - OPEN
1029	DOOR FWD CARGO - CLOSED

1030	DOOR AFT CARGO - OPEN
1031	DOOR AFT CARGO - CLOSED
1040	DOORS TO MANUAL
1041	DOORS TO AUTOMATIC
1073	VHF NAV = NORMAL
1074	VHF NAV = BOTH ON 1
1075	VHF NAV = BOTH ON 2
1076	IRS = NORMAL
1077	IRS = BOTH ON L
1078	IRS = BOTH ON R
1079	SOURCE = AUTO
1080	SOURCE = ALL ON 1
1081	SOURCE = ALL ON 2
1082	CONTROL PANEL = NORMAL
1083	CONTROL PANEL = BOTH ON 1
1084	CONTROL PANEL = BOTH ON 2
1100	IRS DSPL SELECTOR = TEST
1101	IRS DSPL SELECTOR = TK/GS
1102	IRS DSPL SELECTOR = PPOS
1103	IRS DSPL SELECTOR = WIND
1104	IRS DSPL SELECTOR = HDG/STS
1105	IRS SYS SELECTOR = L
1106	IRS SYS SELECTOR = R
1107	SERVICE INTERPHONE = OFF
1108	SERVICE INTERPHONE = ON
1109	STALL WARNING TEST No 1 = OFF
1110	STALL WARNING TEST No 1 = ON
1111	STALL WARNING TEST No 2 = OFF
1112	STALL WARNING TEST No 2 = ON
1113	MACH AIRSPEED WARNING TEST No 1 = OFF
1114	MACH AIRSPEED WARNING TEST No 1 = ON
1115	MACH AIRSPEED WARNING TEST No 2 = OFF
1116	MACH AIRSPEED WARNING TEST No 2 = ON
1117	ALTERNATE FLAPS = UP
1118	ALTERNATE FLAPS = DOWN
1119	IGN = L
1120	IGN = BOTH
1121	IGN = R
1123	TAT Test (Test Heat Probes)
1124	LE TEST = ON
1125	LE_TEST = OFF
1126	ALTERNATE FLAPS = UP
1127	ALTERNATE FLAPS = STOP

1128	ALTERNATE FLAPS = DOWN
1136	LANDING GEAR CONFIG WARNING CUTOUT
1137	ALTERNATE GEAR POSITION = DOWN
1138	ALTERNATE GERA POSITION = UP
1139	IRS - ALIGN NOW
1140	APU QUICK START
1141	APU QUICK STOP
1150	IRS Key 0
1151	IRS Key 1
1152	IRS Key 2
1153	IRS Key 3
1154	IRS Key 4
1155	IRS Key 5
1156	IRS Key 6
1157	IRS Key 7
1158	IRS Key 8
1159	IRS Key 9
1160	IRS Key ENT
1161	IRS Key CLR
1197	DISPLAY BRIGHTNESS TERRAIN LEVEL = LOW
1198	DISPLAY BRIGHTNESS TERRAIN LEVEL = MED
1199	DISPLAY BRIGHTNESS TERRAIN LEVEL = HIGH
1200	DISPLAY BRIGHTNESS CPT PFD LEVEL = LOW
1201	DISPLAY BRIGHTNESS CPT PFD LEVEL = MED
1202	DISPLAY BRIGHTNESS CPT PFD LEVEL = HIGH
1203	DISPLAY BRIGHTNESS CPT ND LEVEL = LOW
1204	DISPLAY BRIGHTNESS CPT ND LEVEL = MED
1205	DISPLAY BRIGHTNESS CPT ND LEVEL = HIGH
1206	DISPLAY BRIGHTNESS FO PFD LEVEL = LOW
1207	DISPLAY BRIGHTNESS FO PFD LEVEL = MED
1208	DISPLAY BRIGHTNESS FO_PFD LEVEL = HIGH
1209	DISPLAY BRIGHTNESS FO ND LEVEL = LOW
1210	DISPLAY BRIGHTNESS FO ND LEVEL = MED
1211	DISPLAY BRIGHTNESS FO ND LEVEL = HIGH
1212	DISPLAY BRIGHTNESS EICAS LEVEL = LOW
1213	DISPLAY BRIGHTNESS EICAS LEVEL = MED
1214	DISPLAY BRIGHTNESS EICAS LEVEL = HIGH
1215	DISPLAY BRIGHTNESS MFD LEVEL = LOW

1216	DISPLAY BRIGHTNESS MFD LEVEL = MED
1217	DISPLAY BRIGHTNESS MFD LEVEL = HIGH
1220	CLOCK CPT CHR MODE = STOP
1221	CLOCK CPT CHR MODE = RUN
1222	CLOCK CPT CHR MODE = RESET
1223	CLOCK CPT ELAPSED TIME MODE = HOLD
1224	CLOCK CPT ELAPSED TIME MODE = RUN
1225	CLOCK CPT ELAPSED TIME MODE = RESET
1226	CLOCK CPT DATE MODE = TIME
1227	CLOCK CPT DATE MODE = DATE
1228	CLOCK CPT DATE MODE = UTC
1229	CLOCK CPT DATE MODE = MAN
1230	CLOCK CPT SET MODE = RUN
1231	CLOCK CPT SET MODE = HLDY (Hold / Year)
1232	CLOCK CPT SET MODE = SSM (Slow Slew Month)
1233	CLOCK CPT SET MODE = FSD (Fast Slew Day)
1234	CLOCK CPT CHR / CLOCK Switch Push
1235	CLOCK CPT DATE Switch Push
1240	CLOCK FO CHR MODE = STOP
1241	CLOCK FO CHR MODE = RUN
1242	CLOCK FO CHR MODE = RESET
1243	CLOCK FO ELAPSED TIME MODE = HOLD
1244	CLOCK FO ELAPSED TIME MODE = RUN
1245	CLOCK FO ELAPSED TIME MODE = RESET
1246	CLOCK FO DATE MODE = TIME
1247	CLOCK FO DATE MODE = DATE
1248	CLOCK FO DATE MODE = UTC
1249	CLOCK FO DATE MODE = MAN
1250	CLOCK FO SET MODE = RUN
1251	CLOCK FO SET MODE = HLDY (Hold / Year)
1252	CLOCK FO SET MODE = SSM (Slow Slew Month)
1253	CLOCK FO SET MODE = FSD (Fast Slew Day)
1254	CLOCK FO CHR / CLOCK Switch Push
1255	CLOCK FO DATE Switch Push
1260	CLOCK CPT CHR Button
1261	CLOCK CPT ET RUN / HOLD Button
1262	CLOCK CPT ET RESET Button
1263	CLOCK CPT DATE / TIME Button
1264	CLOCK CPT SET Button
1265	CLOCK CPT SET - Button
1266	CLOCK CPT SET + Button

1270	CLOCK FO CHR Button
1271	CLOCK FO ET RUN / HOLD Button
1272	CLOCK FO ET RESET Button
1273	CLOCK FO DATE / TIME Button
1274	CLOCK FO SET Button
1275	CLOCK FO SET - Button
1276	CLOCK FO SET + Button
1290	FIRE BELL = STOP
1291	FIRE BELL = START
1292	777 FIRE TEST = TRIGGER
1293	777 FIRE TEST = STOP
1294	EVAC HORN = CUTOUT
1340	FLT DOOR LATCH
2000	GROUND POWER CONNECTED
2001	GROUND POWER DISCONNECTED
2004	GROUND AIR CONNECTED
2005	GROUND AIR DISCONNECTED

Save / Load Flight Scenarios

3000	Save Scenario 1
3001	Save Scenario 2
3002	Save Scenario 3
3003	Save Scenario 4
3004	Save Scenario 5
3005	Save Scenario 6
3006	Save Scenario 7
3007	Save Scenario 8
3008	Save Scenario 9
3009	Save Scenario 10
3100	Load Scenario 1
3101	Load Scenario 2
3102	Load Scenario 3
3103	Load Scenario 4
3104	Load Scenario 5
3105	Load Scenario 6
3106	Load Scenario 7
3107	Load Scenario 8
3108	Load Scenario 9
3109	Load Scenario 10

Activation

Activation Option is used if you are upgrading you application license.
A backup of your existing SERVER.SET is taken as
SERVER – ddmmyyy hhmm.SET
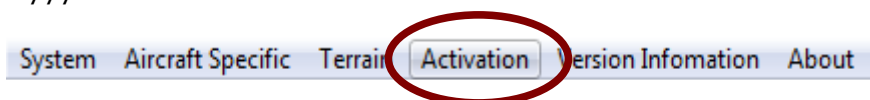
Version Information
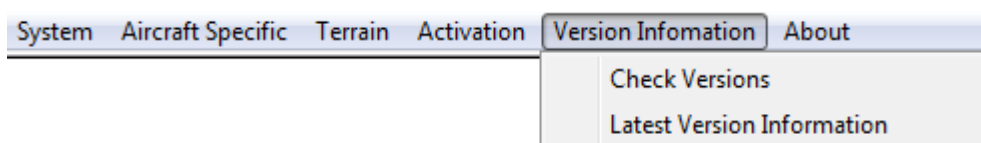
Check Version : will check www.sim-avionics.com for the latest version information. It uses the internet (proxy) setting from the Main Control Panel window. This check is also performed when the Server is started.

Your current program versions and the latest versions are displayed on the Server

Additional information is also display in the Server log

Latest Version Information

Retrieves latest version information change log.

Aircraft – Gate Pushback

This can be controlled from the CDU, Display Console or from the Server.

- Set a Pushback distance   (Distance travelled before the Turn – aprx 150)
- Set a Pushback Bearing   (The delta between your current heading and your desired
final heading
-90 (or L90 on the CDU) for a pushback facing 90º to the left)

- Start Pushback

After a few seconds a 'Go Ahead' wav is played…
(Pretend to ask for pushback)
After a few seconds a 'Set Parking Brake' wav is played….
This will loop *until* the parking brake is set

- Set Parking Brake
(Pretend to confirm 'Parking Brake Set')

After a few seconds a 'Towing pin inserted – Please Release Brakes' wav is played….
This will loop *until* the parking brake is released

- Release Parking Brake
(Pretend to confirm 'Parking Brake Set')

Pushback will start

Once the turn is initiated a 'Cleared to start engines' wav is played

When the desired heading is reached pushback stops.

'Set Parking Brake' wav is played…
This will loop *until* the parking brake is set

- Set Parking Brake

'OK Towing system is removed, please wait for my hand signal on the left hand side' wav is played.

Pushback complete.

Press Cancel Pushback at any time to cancel the pushback routine..

Electronic Checklist

The Electronic checklist is a new feature on the 777. It is part of the MFD synoptics and therefore can be display on the MFD and/or either ND.
The Checklist can be modified by updating the Checklist.ini in the Main Server folder.

The Checklist.ini consist of multiple sections. Each section refers to a particular checklist and must have a unique identifier. For example
[1]
..
[2]
..
[3]
..

Within each section there is a checklist name parameters
        CHECKLIST_NAME=....

And Checklist Items
        10=INSPECTION AND SECURITY$COMPLETED$O

The Checklist Item Message Format consists of :
        A unique index number for it's checklist section
        =
        Pilot Command
        $
        Pilot Response
        $
        O or C

O = Open loop items. These responses for checklist items cannot be determined
ie INSPECTION AND SECURITY and have a square checkbox next to the Item which must be selected by the pilot to confirm the action has been completed.

C = Closed loop items. Theses responses for checklist items can be determined by the aircraft systems donot have a selectable checkbox next to the item. Once the checklist action has been performed, it will be automatically detected and the checklist item completed.
ie AUTOBRAKE = RTO

Please Note:
Closed Loop items have **hardcoded** index numbers which must not be changed.
But they can be positioned in any checklist.

Closed Loop Items
75=TCASOFFC
100=AUTOBRAKERTOC
110=PARKING BRAKESETC
120=FUEL CONTROL SWITCHES$CUTOFF$C
135=SEATBELTSONC
190=BEACONONC
200=DOORS$CLOSED$C
370=STROBESONC
380=LANDING LIGHTSONC

390=TCASONC
400=LANDING GEARUPC
410=FLAPSUPC
420=ENGINE ANTI-ICE$AUTO$C
430=ALTIMETERS$STD(1013)$C
525=SEATBELTSONC
550=SPEEDBRAKE$ARMED$C
560=LANDING GEAR$DOWN$C
590=SPEEDBRAKE$DOWN$C
600=STROBESOFFC
610=FLAPSUPC
620=WEATHER RADAROFFC
630=TRANSPONDER$TCAS OFF$C
640=APU ELECTRICS$AVAILABLE$C
660=DOORS$MANUAL & CROSSCHECK$C
670=PARKING BRAKESETC
680=FUEL CONTROL SWITCHES$CUTOFF$C
690=HYDRAULIC PANELSETC   (Shutdown)
691=HYDRAULIC PANELSETC   (Startup)
700=FUEL SYSTEMSETC   (Shutdown)
701=FUEL SYSTEMSETC   (Startup)
710=SEATBELTSOFFC
720=AUTOTHROTTLE ARM L+ROFFC
730=FLT DIRECTORS L+ROFFC
740=EMERGENCY LIGHTSOFFC
750=PACK SWITCHESOFFC
760=APUOFFC
770=ADIRU SWITCHOFFC
780=BATTERYOFFC

Example Checklists

[1]
CHECKLIST_NAME=PRE FLIGHT
10=INSPECTION AND SECURITY$COMPLETED$O
20=OXYGEN$CHECKED/100%$O
30=INSTRUMENTS$CHECKED$O
40=FMC$LOADED$O
50=BRIEFING$COMPLETED$O
60=MEL/AIS/Sig Weather/Return Altn/Runway/Flap$$O
70=Terrain & Perf Restrictions/SSA/MSA/Trans Alt$$O
80=SID/AFDS/Radio Aids/FMC/Emergancies/Review$O

[2]
CHECKLIST_NAME=BEFORE START
90=QNH$SET & CROSSCHECKED$O
100=AUTOBRAKERTOC
110=PARKING BRAKESETC
120=FUEL CONTROL SWITCHES$CUTOFF$C
130=FUELSETO
140=THRUSTSETO
150=SPEEDSSETO
160=LNAV/VNAVSETO

B777_MCP.EXE

B777_MCP.exe is a 'frontend' glareshield for the B777/737.
It does **not** contain any Autopilot logic.

You only need to run this program if you require access to the Autopilot/EFIS functions and are not interfacing via FSUIPC offsets.

Starting and Stopping this program will have no effect on the Autopilot.

There are 2 display modes, both modes display :
- Captain EFIS Panel, MCP Panel, EICAS Control Panel
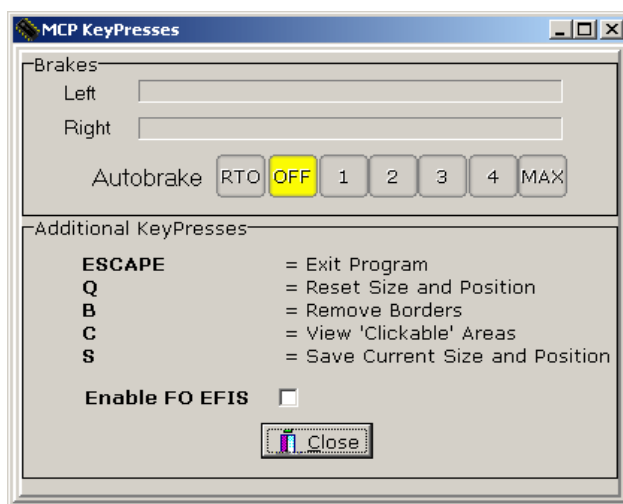
But you may also enable the FO EFIS Panel.

Captain Only Mode

Captain + FO Mode

Pressing **F11** whilst the MCP has focus will display an control popup.

This will allow you to
- set the '**Autobrakes**' and view the applied brake pressures.
- Display Assigned Keypress Information.
- Enable the FO EFIS

MCP Keyboard Assignments

Key presses can be used to control the Glareshield.

MCP Functions

[Slow - Increase/Decrease by 1 unit]
SHIFT + 1 = NAV1 Course Decrease
SHIFT + 2 = NAV1 Course Increase
SHIFT + 3 = MCP Speed/MACH Decrease
SHIFT + 4 = MCP Speed/MACH Increase
SHIFT + 5 = MCP HDG Decrease
SHIFT + 6 = MCP HDG Increase
SHIFT + 7 = MCP Vertical Speed Decrease
SHIFT + 8 = MCP Vertical Speed Increase
SHIFT + 9 = MCP Altitude Decrease
SHIFT + 0 = MCP Altitude Increase
SHIFT + - = NAV2 Course Decrease
SHIFT + + = NAV2 Course Increase

[Fast - Increase/Decrease by 10 units]
CTRL + SHIFT + 1 = NAV1 Course Decrease
CTRL + SHIFT + 2 = NAV1 Course Increase
CTRL + SHIFT + 3 = MCP Speed/MACH Decrease
CTRL + SHIFT + 4 = MCP Speed/MACH Increase
CTRL + SHIFT + 5 = MCP HDG Decrease
CTRL + SHIFT + 6 = MCP HDG Increase
CTRL + SHIFT + 7 = MCP Vertical Speed Decrease
CTRL + SHIFT + 8 = MCP Vertical Speed Increase
CTRL + SHIFT + 9 = MCP Altitude Decrease
CTRL + SHIFT + 0 = MCP Altitude Increase
CTRL + SHIFT + - = NAV2 Course Decrease
CTRL + SHIFT + + = NAV2 Course Increase

[MCP Functions]
SHIFT + A = MCP ENGAGED button
SHIFT + B = MCP FLIGHT DIRECTOR L = OFF
SHIFT + C = MCP FLIGHT DIRECTOR L = ON
SHIFT + D = MCP AUTOTHROTTLE ARM L = OFF
SHIFT + E = MCP AUTOTHROTTLE ARM L = ON
SHIFT + F = MCP AUTOTHROTTLE ARM R = OFF
SHIFT + G = MCP AUTOTHROTTLE ARM R = ON
SHIFT + H = MCP AUTOTHROTTLE button
SHIFT + I = MCP Speed Interveen
SHIFT + J = MCP CLB CON
SHIFT + K = MCP VNAV
SHIFT + L = MCP LNAV
SHIFT + M = MCP FLCH
SHIFT + N = MCP HDG SELECT
SHIFT + O = MCP HDG HOLD
SHIFT + P = MCP VS
SHIFT + Q = MCP ALT HOLD
SHIFT + R = MCP LOC
SHIFT + S = MCP APP

SHIFT + T = MCP FLIGHT DIRECTOR R = OFF
SHIFT + U = MCP FLIGHT DIRECTOR R = ON
SHIFT + V = MCP TOGGLE IAS / MACH
SHIFT + W = MCP TOGGLE HDG / TRK
SHIFT + X = MCP TOGGLE VS / FPA
SHIFT + Y = MCP DISENGAGED BAR = ENABLED
SHIFT + Z = MCP DISENGAGED BAR = DISABLED
SHIFT + BACKSPACE = MCP TOGA

[Captain EFIS Functions]
CTRL + 1 = ND RANGE = 5
CTRL + 2 = ND RANGE = 10
CTRL + 3 = ND RANGE = 20
CTRL + 4 = ND RANGE = 40
CTRL + 5 = ND RANGE = 80
CTRL + 6 = ND RANGE = 160
CTRL + 7 = ND RANGE = 320
CTRL + 8 = ND RANGE = 640
CTRL + 9 = ND MAP MODE = PLAN
CTRL + 0 = ND MAP MODE = MAP
CTRL + - = ND MAP MODE = APP
CTRL + + = ND MAP MODE = VOR
CTRL + A = ND MAP TOGGLE CENTRED
CTRL + B = ND MAP TOGGLE TFC
CTRL + C = ND RADIO L OFF
CTRL + D = ND RADIO L VOR
CTRL + E = ND RADIO L ADF
CTRL + F = ND RADIO R OFF
CTRL + G = ND RADIO R VOR
CTRL + H = ND RADIO R ADF
CTRL + I = ND TOGGLE FPV
CTRL + J = ND TOGGLE MTRS
CTRL + K = MINIMUMS MODE = RADIO
CTRL + L = MINIMUMS MODE = BARO
CTRL + M = MINIMUMS RST
CTRL + N = MINIMUMS DECREASE - 10
CTRL + O = MINIMUMS INCREASE + 10
CTRL + P = BARO HPA
CTRL + Q = BARO INS
CTRL + R = BARO DECREASE - 1
CTRL + S = BARO INCREASE + 1
CTRL + T = BARO TOGGLE STD
CTRL + U = DECREASE ND RANGE
CTRL + V = INCREASE ND RANGE
CTRL + W = DECREASE ND MODE
CTRL + X = INCREASE ND MODE
CTRL + F1 = ND TOGGLE WXR
CTRL + F2 = ND TOGGLE STA
CTRL + F3 = ND TOGGLE WPT
CTRL + F4 = ND TOGGLE APT
CTRL + F5 = ND TOGGLE DATA
CTRL + F6 = ND TOGGLE POS
CTRL + F7 = ND TOGGLE TER

[FO EFIS Functions]
ALT + 1 = ND RANGE = 5
ALT + 2 = ND RANGE = 10
ALT + 3 = ND RANGE = 20
ALT + 4 = ND RANGE = 40
ALT + 5 = ND RANGE = 80
ALT + 6 = ND RANGE = 160
ALT + 7 = ND RANGE = 320
ALT + 8 = ND RANGE = 640
ALT + 9 = ND MAP MODE = PLAN
ALT + 0 = ND MAP MODE = MAP
ALT + - = ND MAP MODE = APP
ALT + + = ND MAP MODE = VOR
ALT + A = ND MAP TOGGLE CENTRED
ALT + B = ND MAP TOGGLE TFC
ALT + C = ND RADIO L OFF
ALT + D = ND RADIO L VOR
ALT + E = ND RADIO L ADF
ALT + F = ND RADIO R OFF
ALT + G = ND RADIO R VOR
ALT + H = ND RADIO R ADF
ALT + I = ND TOGGLE FPV
ALT + J = ND TOGGLE MTRS
ALT + K = MINIMUMS MODE = RADIO
ALT + L = MINIMUMS MODE = BARO
ALT + M = MINIMUMS RST
ALT + N = MINIMUMS DECREASE - 10
ALT + O = MINIMUMS INCREASE + 10
ALT + P = BARO HPA
ALT + Q = BARO INS
ALT + R = BARO DECREASE - 1
ALT + S = BARO INCREASE + 1
ALT + T = BARO TOGGLE STD
ALT + U = DECREASE ND RANGE
ALT + V = INCREASE ND RANGE
ALT + W = DECREASE ND MODE
ALT + X = INCREASE ND MODE
ALT + F1 = ND TOGGLE WXR
ALT + F2 = ND TOGGLE STA
ALT + F3 = ND TOGGLE WPT
ALT + F4 = ND TOGGLE APT
ALT + F5 = ND TOGGLE DATA
ALT + F6 = ND TOGGLE POS
ALT + F7 = ND TOGGLE TER

[MFD Display]
CTRL + SHIFT + A = MFD POSITION = CTR
CTRL + SHIFT + B = MFD POSITION = LEFT
CTRL + SHIFT + C = MFD POSITION = RIGHT
CTRL + SHIFT + D = MFD DISPLAY = ENG
CTRL + SHIFT + E = MFD DISPLAY = STAT
CTRL + SHIFT + F = MFD DISPLAY = ELEC
CTRL + SHIFT + G = MFD DISPLAY = HYD
CTRL + SHIFT + H = MFD DISPLAY = FUEL

CTRL + SHIFT + I = MFD DISPLAY = AIR
CTRL + SHIFT + J = MFD DISPLAY = DOOR
CTRL + SHIFT + K = MFD DISPLAY = GEAR
CTRL + SHIFT + L = MFD DISPLAY = FLT CTRL
CTRL + SHIFT + M = MFD DISPLAY = CHKL
CTRL + SHIFT + N = MFD DISPLAY = NAV
CTRL + SHIFT + O = MFD DISPLAY = COMM
CTRL + SHIFT + P = MFD DISPLAY = CANC/RCL

MCP – CONFIG.INI

[SETTINGS]
STAY_ON_TOP=1   **Window Stays on Top**
ENABLE_FO_EFIS=0   **Display the FO EFIS Panel**

// Enables OPENGL drawn panel.
// This can be disabled to increase performance and hide the window
// if hardware is being connected.
DRAW_PANEL=1   **Display the Panel**
                                   You can disable this if you are using a
                                   hardware solution to improve performance

// Enable Logging
LOG=0

[HARDWARE]
// Enable External Hardware
// 0 = No Hardware Connected
// 1 = CPFlight MCP / EFIS
// 2 = GoFlgiht MCPPro / EFIS
// 3 = VRInsight MCP Combo
// 4 = FDS New Glares
// 5 = FDS G2 Glareshield
ENABLE_HARDWARE_SUPPORT=3   **Enables various Hardware Solutions**
COMMPORT=COM5   **Hardware Com port**

// Sets the CPT device number is 2 GoFlight EFIS panels are connected
GOFLIGHT_CPT_EFIS_DEVICE_NUMBER=0

Overhead_Panel.EXE

Overhead_Panel.exe is a 'frontend' Overhead Panel. It does **not** contain any Systems logic.
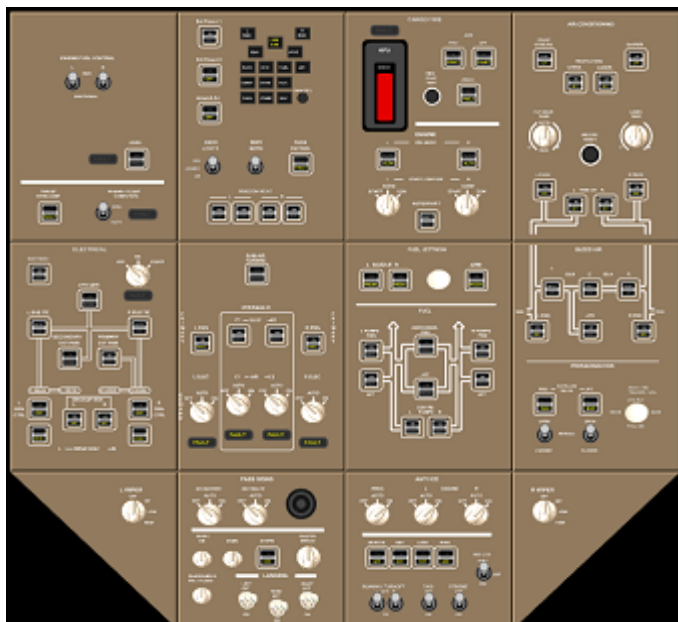
B777 Overhead   **B737 Overhead**

It shows the current switch and systems status for users that do not have overhead hardware.
The type of panel displayed will be determined by the aircraft type selected on the Server.

The panel can be dragged around using the Middle-mouse button by default although this can
be edited in the DISPLAY.INI by setting [MOUSE_BUTTONS] PAN_WINDOW = 0 or 1 or 2
You can Zoom using the mouse scroll-wheel or by using Num Pad + and -
If you cannot see the panel press **Q** to centre the panel.

To operate 'switches'
                    click on a switch with the left mouse-button.

To operate Rotaries switches
                    click on a switch with the left mouse-button to rotate left
                    click on a switch with the right mouse-button to rotate right

The overhead is about 90% functional.
Information:
For simulation purposes the Top Left panels contain some additional switches that are not
found on the real overhead.
   ●   Engine Fuel Control switches
   ●   External Power Primary
   ●   External Power Secondary
   ●   External Ground Air
   ●   EICAS Controls

SOUND.EXE
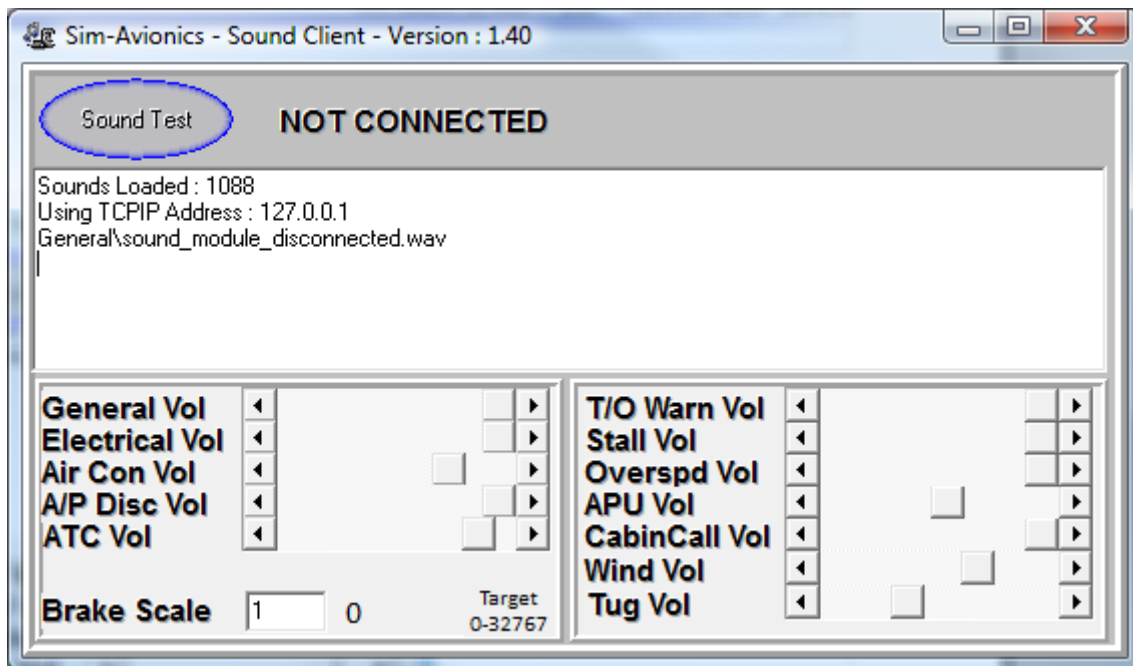
The Sound Module is a client that can produce the additional ambient, voice and warning sounds heard in a modern cockpit environment.

The Sound module can be run on multiple machines allowing different sounds to be played through different speakers.

For example in our B777 simulator we run 3 instances of the sound module:
1. Main Cockpit warnings
2. Cabin Calls
3. Pushback calls through cockpit headsets

To prevent certain sounds playing simply delete or rename them. If the filename doesn't exist the the sound module will ignore it.

Various sound groups have their own volume controls so that you can balance the sounds better. These values are saved to \Sound\CONFIG.INI when the client is closed.

To trigger the braking rumble sound ensure that you brakes do now exceed 32767 when both brakes are pressed. If they do then set the brake scale = 0.5 for example until they fall within the 0-32767 limit.

Server.ini

```
[SETTINGS]
MAIN_TIMER=30

ENABLE_SYSTEM_LOGIC=1
ENABLE_SYSTEM_BACKUP=1
ENABLE_AUTOMATIC_DOORS=1

LOAD_INITIAL_STATE_ON_STARTUP=0
// Load a previously saved flight scenario on Server Start.
// 0 = No Scenarion Load.  > 0  = Scenario Number
LOAD_SCENARIO_ON_STARTUP=0

// Force Manual Radio Tuning
// Allows for manual radio tuning in 777 mode
NAV_RAD_OVERIDE=0
UDP_BROADCAST_MASK=255.255.255.255

// Show AI Traffic Labels
SHOW_TRAFFIC_LABELS=0

// Show Aircraft ID Lables on TCAS
SHOW TCAS_ID_LABELS=0
DISPLAY_SMOOTHING=20
SHOW_AI_TRAFFIC_LABELS=1
SHOW_TCAS_ID_LABELS=0

[SIMULATOR]
SIMULATOR=0
MSFS_AUTO_RECONNECT=1
MSFS_AUTO_RECONNECT_INTERVAL=5

[FSUIPC]
ENABLE_FSUIPC_MCP_INPUT=0
ENABLE_FSUIPC_FLTCTRL_INPUT=0
ENABLE_FSUIPC_INPUT=1
ENABLE_FSUIPC_OUTPUT=0
ENABLE_FSUIPC_EMULATION=0
ENABLE_FSUIPC_CDU_INPUT=0

[ACARS]
ENABLE_ACARS=0
ACARS_WEBSERVER=http://www.sim-avionics.com/acars/connect.asp
ACARS_LOGON= [Your unique Computer ID]
PROXY_SERVER=
PROXY_PORT=
PROXY_USERNAME=
PROXY_PASSWORD=

[AIRCRAFT_DETAILS]
AIRCRAFT_CONFIG_FILE=MELJET-B777-200

[AIRCRAFT_CONTROLS]
ENABLE_INTERNAL_FLT_CTRLS=0

ELEVATOR_ENABLED=1
AILERON_ENABLED=1
RUDDER_ENABLED=1
BRAKES_ENABLED=0
THROTTLE_L_ENABLED=1
THROTTLE_R_ENABLED=1
SPOILERS_ENABLED=1
GEAR_ENABLED=1
FLAPS_ENABLED=1
COMBINED_THROTTLE_CONTROL=1
PARKING_BRAKE_EXTERNAL=0
```

```
// offset = -16383 to 16383
// scale = control * scale ...ie 0.5 to half the movement or 2 to double the movement
// negative scales 'reverse' the control
ELEVATOR_OFFSET=0
ELEVATOR_SCALE=1
AILERON_OFFSET=0
AILERON_SCALE=1
RUDDER_OFFSET=0
RUDDER_SCALE=1
THROTTLE_L_OFFSET=0
THROTTLE_L_SCALE=1
THROTTLE_R_OFFSET=0
THROTTLE_R_SCALE=1
SPEEDBRAKE_OFFSET=0
SPEEDBRAKE_SCALE=1
BRAKE_OFFSET=0
BRAKE_SCALE=1
GEAR_EXTERNAL=0
FLAPS_EXTERNAL=0
```

Aircraft Config

The Aircraft Config files that contain the flight model specific Autopilot Tuning are initially self-generated by the Server. For Information purposes the recommended Sim-Avionics 737 and 777 files are posted below.

FSX-Sim-Avionics-B737.CFG

[AIRCRAFT_DETAILS]

// Time in Minutes between pilot response messages
PILOT_RESPONSE_TIME=999

// Throttle limit that triggers Take off 'config' warnings
TO_CONFIG_LIMIT=9000

// For Radio Altitude calibration
GROUND_HEIGHT=15

// N1 Idles
GROUND_IDLE=0
FLIGHT_IDLE=0
APPROACH_IDLE=1500

// Maximun N1
MAX_N1=114

// Defaults (No CDU)
DEFAULT_TO_N1=942
DEFAULT_CLB_N1=890

// 0 = KG's   1 = LB's
WEIGHT_UNIT=0

// Control sensitivity when using Internal Flight Controls option
CONTROL_RESPONSE=400

// Alignment time in secs. If you want to overide the standard values
ADIRU_IRS_ALIGN_TIME_OVERRIDE_SECS=0

TYPE=B737

FUEL_JETTISON_RATE=1

AUTO_SEATBELT_ALT=10000
WING_AOA=0
ENGINE_DISPLAY_TYPE=0
FD_WING_MODE=0
AOA_OPTION=1
AUTOMATIC_THRUST_REDUCTION=1
TOGA_HDG_SELECT=1
SUGGEST_V1_SPEEDS=1
AUTOLAND_ENABLED=1
DERATED_CLIMB_THRUST_WASHOUT=1
DISPLAY_COURSE_FOR_TUNED_ILS_RADIOS=0
CWS_JOYSTICK_BREAKAWAY_VALUE=8000
ND_HDG_TRK_MODE=1
REALISTIC_THROTTLE_HOLD=0
MANUAL_THROTTLE_OVERRIDE_VALUE=0
DISPLAY_RNP_INDICATORS=1
ENABLE_VSD_DISPLAY=1
ENABLE_RWY_CHECK=1
ENABLE_EEC_LIMIT_LOGIC=0
ENABLE_SPEED_TRIM_LOGIC=0
SPEED_TRIM_NULL_ZONE=5
MANUAL_BRAKE_OVERRIDE=1

```
CPFLIGHT_BACKLIGHTING=0
PFC_ENABLED=0
TAC_ENABLED=0
ND_HDG_TRK_MODE=0
AUTOLAND_ALTITUDE_FLARE=50
AUTOLAND_ALTITUDE_IDLE=30
VNAV_DESCENT_ANGLE_HIGH=2.8
VNAV_DESCENT_DECCEL_ANGLE=0.8
VNAV_DESCENT_ANGLE_LOW=2.7
VNAV_DESCENT_EARLY_DESCENT=2.3
USE_DIRECT_FLAP_POSITIONS=1
SPEEDBRAKE_ARMED_LOW=500
SPEEDBRAKE_ARMED_HIGH=5000
SPEEDBRAKE_FLIGHT_MAX=8000
CONTINUOUS_TRIM_SPEED=32
DISPLAY_CLOCK_INFO_ON_PFD=1
MANUAL_THROTTLE_OVERRIDE=0
MCP_HAS_ALT_INTV_AND_SPD_INTV=1
AUTO_FLAPS=0
AUTO_GEAR=0
AUTO_TRIM=0
AUTO_PARKINGBRAKE=0
PLAY_737_MASTER_CAUTION_WARNINGS=1
AP_JOYSTICK_BREAKAWAY_VALUE=14000
PLAY_737_AUTOTHROTTLE_DISCONNECT_WARNING=0

// Flap Target Position
[TARGET_FLAP_POSITION]
FLAP_0_VALUE=0
FLAP_1_VALUE=2048
FLAP_2_VALUE=4096
FLAP_5_VALUE=6144
FLAP_10_VALUE=8192
FLAP_15_VALUE=10239
FLAP_20_VALUE=0
FLAP_25_VALUE=12287
FLAP_30_VALUE=14335
FLAP_40_VALUE=16383

[DISPLAY_FLAP_POSITION]
FLAP_0_VALUE=0
FLAP_1_VALUE=3640
FLAP_2_VALUE=7509
FLAP_5_VALUE=10239
FLAP_10_VALUE=12742
FLAP_15_VALUE=13652
FLAP_20_VALUE=0
FLAP_25_VALUE=14335
FLAP_30_VALUE=15017
FLAP_40_VALUE=16383

[ENGINE_START]
TARGET_EPR=1.23
TARGET_N1=20.6
TARGET_N2=60
TARGET_EGT=331.9
TARGET_FF=450
TARGET_OIL_TEMP=100
TARGET_OIL_PRESS=57

// in seconds
EPR_SPOOL_TIME=35
N1_SPOOL_TIME=35
N2_SPOOL_TIME=35
EGT_SPOOL_TIME=23
FF_SPOOL_TIME=25
OIL_TEMP_SPOOL_TIME=25
```

OIL_PRESS_SPOOL_TIME=18

EPR_SPOOL_DOWN_TIME=60
N1_SPOOL_DOWN_TIME=60
N2_SPOOL_DOWN_TIME=40
EGT_SPOOL_DOWN_TIME=100
FF_SPOOL_DOWN_TIME=5
OIL_TEMP_SPOOL_DOWN_TIME=100
OIL_PRESS_SPOOL_DOWN_TIME=30

// N1% when starter returns to OFF
STARTER_CUTOUT_N1=0
// N2% when starter returns to OFF
STARTER_CUTOUT_N2=56

[N1_CALIBRATIONS]
30_THR=1344
30_N1=301
40_THR=2752
40_N1=400
50_THR=4224
50_N1=500
60_THR=5888
60_N1=603
70_THR=7488
70_N1=698
80_THR=9344
80_N1=801
90_THR=11008
90_N1=901
100_THR=13568
100_N1=1003
110_THR=16128
110_N1=1099
MAX_THR=16384
MAX_N1=1112
ALTITUDE_SCALAR_1=-5
ALTITUDE_SCALAR_2=-8
ALTITUDE_SCALAR_3=-3
ALTITUDE_SCALAR_4=-3
ALTITUDE_SCALAR_5=-5
ALTITUDE_SCALAR_6=-4
ALTITUDE_SCALAR_7=-4

[AUTOPILOT]

// Autothrottle
AT_SENSITIVITY_REDUCTION=4
AT_DAMPING=0.5
AT_CHANGE_RATE=30

// Thrust Reference
AT_THR_REF_ACCEL=9
AT_THR_REF_ACCEL_BASE=2.2
AT_THR_REF_CHANGE_RATE=6
AT_THR_REF_LVL_REDUCTION=15
AT_THR_REF_LVL_REDUCTION_RATE=0.005

//Flight Level Change
FLCH_SENSITIVITY_REDUCTION=-0.005
FLCH_DAMPING=0.7
FLCH_AGGRESSION=2.4
FLCH_AGGRESSION_DOWN=1.2

//Heading
HDG_TURN_GAIN=1.35
HDG_ROLL_SPEED=7000

```
HDG_ROLL_STABILIZER=-26
HDG_MAXIMUM_BANK_ANGLE=30
HDG_ROLL_ACCEL_SCALAR=25000

// LNAV Off Track Capture
LNAV_TURN_ANTICIPATION=1.1
LNAV_AGGRESSION_SMALL=1.3

// LOC
LOCALIZER_SENSITIVITY_REDUCTION=5
LOCALIZER_DAMPING=0.6

// GS
GLIDESLOPE_CAPTURE_AGGRESSION=8
GLIDESLOPE_DAMPING=10

// V/S
VS_SENSITIVITY_REDUCTION=3
VS_DAMPING=0.38

// ALT HOLD
ALT_CAPTURE_AGGRESSION=4
ALT_DAMPING=0.4
ALT_PITCH_DAMPING=-360
ALT_SCALE=1.0
ALT_PITCH_ACCEL_SCALE=0.1

TAC_SENSITIVITY_REDUCTION=6
RUDDER_DAMPER=8
AUTO_RUDDER_SENSITIVITY_REDUCTION=12
FBW_PITCH_DAMPING=-65
AUTOBRAKE_SCALAR=15

// Flight Directors
FD_PITCH_VS=1.5
FD_VS_DAMPING=-0.001
FD_VS_PITCH_ACCEL_SCALE=-100
FD_PITCH_ALT=2
FD_ALT_DAMPING=-0.001
FD_ALT_PITCH_ACCEL_SCALE=-100
FD_BANK=1.35
FD_PITCH_GS=1.5
FD_GS_DAMPING=-0.001
FD_GS_PITCH_ACCEL_SCALE=-100
FD_PITCH_FLCH=2
FD_FLCH_DAMPING=-0.001
FD_FLCH_PITCH_ACCEL_SCALE=-0.001

CWS_SENSITIVITY_REDUCTION=4
CWS_DAMPING=0.3
CWS_ROLL_SENSITIVITY_REDUCTION=4.8
CWS_PITCH_AGGRESSION=0.0004
CWS_ROLL_AGGRESSION=0.0004

[LIFT_COEFFICIENT_MAX]
1=-180,-1.7246
2=-157.5,-3.4492
3=-135,-2.9229
4=-112.5,-2.3965
5=-90,-1.8401
6=-67.5,-1.2437
7=-45,-0.6874
8=-22.5,-0.2
9=-20.1,-0.25
10=-17.2,-0.22
11=-14.3,-0.19
12=-11.5,-0.16
```

```
13=-8.6,-0.135
14=-5.7,-0.1
15=-2.9,-0.065
16=0,-0.03
17=2.9,-0.015
18=5.7,-0.005
10=8.6,0.04
20=11.5,0.12
21=14.3,0.23
22=17.2,0.4
23=20.1,0.55
24=22.5,0.70
25=45,1.0174
26=67.5,1.3737
27=90,1.7701
28=112.5,2.1965
29=135,2.8229
30=157.5,3.4492
31=180,1.7246
```

FSX-Sim-Avionics-B777.CFG

```
[AIRCRAFT_DETAILS]

// Time in Minutes between pilot response messages
PILOT_RESPONSE_TIME=99999

// Throttle limit that triggers Take off 'config' warnings
TO_CONFIG_LIMIT=9000

// For Radio Altitude calibration
GROUND_HEIGHT=25

// N1 Idles
GROUND_IDLE=0
FLIGHT_IDLE=1000
APPROACH_IDLE=3500

// Maximun N1
MAX_N1=108

// Defaults (No CDU)
DEFAULT_TO_N1=968
DEFAULT_CLB_N1=890

// 0 = KG's    1 = LB's
WEIGHT_UNIT=0

// Control sensitivity when using Internal Flight Controls option
CONTROL_RESPONSE=400

// Alignment time in secs. If you want to overide the standard values
ADIRU_IRS_ALIGN_TIME_OVERIDE_SECS=0

AUTO_SEATBELT_ALT=10000
WING_AOA=0
ENGINE_DISPLAY_TYPE=0
FD_WING_MODE=0
AOA_OPTION=1
AUTOMATIC_THRUST_REDUCTION=1
TOGA_HDG_SELECT=1
SUGGEST_V1_SPEEDS=1
AUTOLAND_ENABLED=1
DERATED_CLIMB_THRUST_WASHOUT=1
DISPLAY_COURSE_FOR_TUNED_ILS_RADIOS=0
DISPLAY_RNP_INDICATORS=1
```

ENABLE_VSD_DISPLAY=1
MANUAL_BRAKE_OVERIDE=1
REALISTIC_THROTTLE_HOLD=0
ND_HDG_TRK_MODE=0

CPFLIGHT_BACKLIGHTING=0
PFC_ENABLED=0
TAC_ENABLED=0
DEU_BOOT_TIME=5
CWS_JOYSTICK_BREAKAWAY_VALUE=8000
SPEEDBRAKE_ARMED_LOW=500
SPEEDBRAKE_ARMED_HIGH=5000
SPEEDBRAKE_FLIGHT_MAX=8000

TYPE=B777

AUTOLAND_ALTITUDE_FLARE=70
AUTOLAND_ALTITUDE_IDLE=40
VNAV_DESCENT_ANGLE_HIGH=2.7
VNAV_DESCENT_DECCEL_ANGLE=1
VNAV_DESCENT_ANGLE_LOW=2.7
VNAV_DESCENT_EARLY_DESCENT=2.3

ENABLE_RWY_CHECK=1
USE_DIRECT_FLAP_POSITIONS=0
MANUAL_THROTTLE_OVERRIDE_VALUE=0
ENABLE_EEC_LIMIT_LOGIC=1
ENABLE_SPEED_TRIM_LOGIC=0
SPEED_TRIM_NULL_ZONE=1200
DISPLAY_CLOCK_INFO_ON_PFD=1
CONTINUOUS_TRIM_SPEED=32
MANUAL_THROTTLE_OVERRIDE=0
MCP_HAS_ALT_INTV_AND_SPD_INTV=1
AUTO_FLAPS=0
AUTO_GEAR=0
AUTO_TRIM=0
AUTO_PARKINGBRAKE=0
PLAY_AUTOTHROTTLE_DISCONNECT_WARNING=0
PLAY_737_MASTER_CAUTION_WARNINGS=0
AP_JOYSTICK_BREAKAWAY_VALUE=14000
PLAY_737_AUTOTHROTTLE_DISCONNECT_WARNING=0
FLY_BY_WIRE=0

// Flap Target Position
[TARGET_FLAP_POSITION]
FLAP_0_VALUE=0
FLAP_1_VALUE=2731
FLAP_2_VALUE=0
FLAP_5_VALUE=5461
FLAP_10_VALUE=0
FLAP_15_VALUE=8192
FLAP_20_VALUE=10922
FLAP_25_VALUE=13653
FLAP_30_VALUE=16383
FLAP_40_VALUE=0

[DISPLAY_FLAP_POSITION]
FLAP_0_VALUE=0
FLAP_1_VALUE=1024
FLAP_2_VALUE=0
FLAP_5_VALUE=3414
FLAP_10_VALUE=0
FLAP_15_VALUE=8192
FLAP_20_VALUE=10581
FLAP_25_VALUE=13994
FLAP_30_VALUE=16383
FLAP_40_VALUE=0

```
[ENGINE_START]
TARGET_EPR=1.23
TARGET_N1=20.1
TARGET_N2=55
TARGET_EGT=349
TARGET_FF=250
TARGET_OIL_TEMP=108
TARGET_OIL_PRESS=220

EPR_SPOOL_TIME=35
N1_SPOOL_TIME=35
N2_SPOOL_TIME=35
EGT_SPOOL_TIME=23
FF_SPOOL_TIME=25
OIL_TEMP_SPOOL_TIME=25
OIL_PRESS_SPOOL_TIME=18

EPR_SPOOL_DOWN_TIME=60
N1_SPOOL_DOWN_TIME=60
N2_SPOOL_DOWN_TIME=40
EGT_SPOOL_DOWN_TIME=100
FF_SPOOL_DOWN_TIME=5
OIL_TEMP_SPOOL_DOWN_TIME=100
OIL_PRESS_SPOOL_DOWN_TIME=30

[N1_CALIBRATIONS]
30_THR=4672
30_N1=301
40_THR=6720
40_N1=407
50_THR=7744
50_N1=505
60_THR=9280
60_N1=603
70_THR=10304
70_N1=689
80_THR=11328
80_N1=794
90_THR=12608
90_N1=907
100_THR=14912
100_N1=996
110_THR=16384
110_N1=1027
MAX_THR=16384
MAX_N1=1027
ALTITUDE_SCALAR_1=-3
ALTITUDE_SCALAR_2=-14
ALTITUDE_SCALAR_3=-17
ALTITUDE_SCALAR_4=-16
ALTITUDE_SCALAR_5=-15
ALTITUDE_SCALAR_6=-15
ALTITUDE_SCALAR_7=-20

[AUTOPILOT]

// Autothrottle
AT_SENSITIVITY_REDUCTION=3
AT_DAMPING=0.45
AT_CHANGE_RATE=18

// Thrust Reference
AT_THR_REF_ACCEL=8
AT_THR_REF_ACCEL_BASE=3
AT_THR_REF_CHANGE_RATE=12
AT_THR_REF_LVL_REDUCTION=16
```

AT_THR_REF_LVL_REDUCTION_RATE=0.004

//Flight Level Change
FLCH_SENSITIVITY_REDUCTION=-0.005
FLCH_DAMPING=0.7
FLCH_AGGRESSION=2.4
FLCH_AGGRESSION_DOWN=1.4

//Heading
HDG_TURN_GAIN=1.25
HDG_ROLL_SPEED=9000
HDG_ROLL_STABILIZER=-35
HDG_MAXIMUM_BANK_ANGLE=30
HDG_ROLL_ACCEL_SCALAR=20000

// LNAV Off Track Capture
LNAV_AGGRESSION_SMALL=1.2
LNAV_TURN_ANTICIPATION=1

// LOC
LOCALIZER_SENSITIVITY_REDUCTION=6.0
LOCALIZER_DAMPING=0.006

// GS
GLIDESLOPE_CAPTURE_AGGRESSION=7
GLIDESLOPE_DAMPING=18

// V/S
VS_SENSITIVITY_REDUCTION=4
VS_DAMPING=0.03

// ALT HOLD
ALT_CAPTURE_AGGRESSION=4
ALT_DAMPING=0.04
ALT_PITCH_DAMPING=-320
ALT_SCALE=1.0
ALT_PITCH_ACCEL_SCALE=0.1

TAC_SENSITIVITY_REDUCTION=0.04
RUDDER_DAMPER=-100
AUTO_RUDDER_SENSITIVITY_REDUCTION=250
FBW_PITCH_DAMPING=-65
CWS_SENSITIVITY_REDUCTION=8
CWS_DAMPING=0.3
AUTOBRAKE_SCALAR=15

// Flight Directors
FD_PITCH_VS=1.5
FD_VS_DAMPING=-0.001
FD_VS_PITCH_ACCEL_SCALE=-100
FD_PITCH_ALT=2
FD_ALT_DAMPING=-0.001
FD_ALT_PITCH_ACCEL_SCALE=-10
FD_BANK=1
FD_PITCH_GS=1.5
FD_GS_DAMPING=-0.001
FD_GS_PITCH_ACCEL_SCALE=-100
FD_PITCH_FLCH=1.2
FD_FLCH_DAMPING=-0.001
FD_FLCH_PITCH_ACCEL_SCALE=-0.001

CWS_ROLL_SENSITIVITY_REDUCTION=0.8
CWS_PITCH_AGGRESSION=0.0004
CWS_ROLL_AGGRESSION=0.0008

[LIFT_COEFFICIENT_MAX]
1=-180,-1.7246

2=-157.5,-3.4492
3=-135,-2.9229
4=-112.5,-2.3965
5=-90,-1.8701
6=-67.5,-1.3438
7=-45,-0.8174
8=-22.5,-0.4
16=0,0
24=22.5,0.4
25=45,0.8174
26=67.5,1.3438
27=90,1.8701
28=112.5,2.3965
29=135,2.9229
30=157.5,3.4492
31=180,1.7246

Updating Programs

When a new update is released we will usually post a new '**Full**' installer containing **ALL** of the programs and .dll's

We will do this rather than post individual exe's because all of the programs need to be compiled and running on the same common data structure.
The common data structure will change from time to time as the software develops and new functionality is added and programs will not run on different data structures. Therefore we felt it was best to deploy a complete suite of programs everytime.

There are multiple ways to update the programs and you can decide which is best for your setup.

1. The .ini and config files are self generated by the programs when they are first executed and only create new files if they are not present. Therefore it is safe to just run the latest installer on each of you local PC's. This will overwrite the .exe's and .dll's

2. Run the Installer on you main PC and configure Startup.exe as described below.

3. Run the Installer on you main PC and manually copy the .exe's and .dll's to your client PC's

New Config file values will be published in
\Sim-Avionics\Documentation\LaterstVersionInfo.txt

Or can be retrieve by selecting the Server menu
Version Information > Latest Version Information

New lines will need to be added manually to the appropriate .ini or .cfg file so that you do not loose and config changes that you may have previously made.
If you delete the .ini or .cfg file then it will be regenerated with default values.

** Until you have verified the permissions on your PC, please ensure that the latest AVIONICS_IPC.dll get's copied to your C:\WINDOWS\SYSTEM32 folder.
This can sometimes get by folder permissions of UAC on Vista

Configuring STARTUP.EXE

This application was written while we were developing the software to aid in keeping all of the software upto date.

<u>The basic principle is:</u>
A shortcut is added to the local Startup.exe in the windows 'startup' folder.
Various applications are then defined in Startup.ini (Avionics.exe, CDU.exe etc)
Startup.exe then checks a specific location for a newer version of the defined programs and copies them to a specified location.

So everytime Startup.exe is run - it checks for a newer version, updates it and executes it.

We found this very useful whilst developing in our sim because all of the Startup.exe's checked my development PC for the latest versions and copied them across as required.

We included this application in the package because we thought that this could also be useful to those running multiple PC setups.
When we release a new update you will only need to install the new programs on your main PC. The next time you start the clients they will automatically detect and copy the new program versions.

The Server also has Client 'Restart' buttons in the right hand window. This triggers the Startup.exe contained in the folder of the trigger client and kill the client application.

When STARTUP.EXE is first run is displays a popup window to help you build the STARTUP.INI
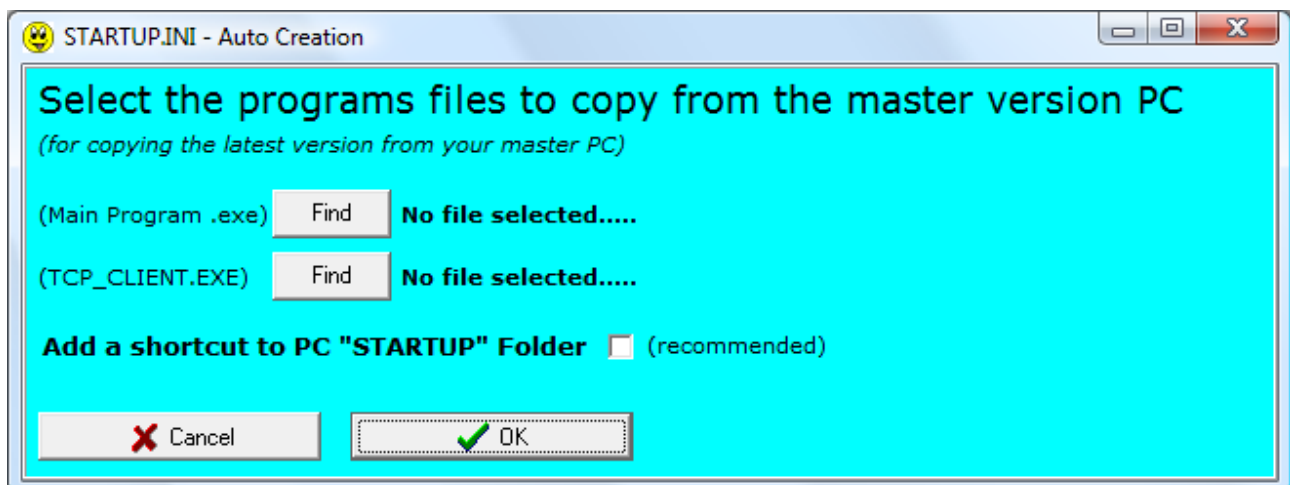
Click the 'Find' button to locate the Client application on your main PC.
Click the 'Find' button to locate the TCP_Client application on your main PC.
Select the checkbox to add a shortcut to your startup folder.
Click OK

This will create a STARTUP.INI

A typical STARTUP.INI looks like this:

[SOURCE]
1=\\192.168.0.51\Sim-Avionics\Avionics\Avionics.exe
2=\\192.168.0.51\Sim-Avionics\TCP_Client\TCP_Client.exe
3=\\192.168.0.51\Sim-Avionics\TCP_Client\AVIONICS_IPC.DLL

[DESTINATION]
1=
2=..\TCP_Client\TCP_Client.exe
3=C:\Windows\system32\AVIONICS_IPC.DLL

[EXECUTE]
1=C:\Sim-Avionics\Avionics\Avionics.exe

[SOURCE] – contains the network locations of the master files.

[DESTINATION] – contains the destination of the master files.
If the Destination is left blank or is not defined then the current working directory is assumed.

[EXECUTE] – contains the Filenames that are to be Executed after the version is checked and copied.
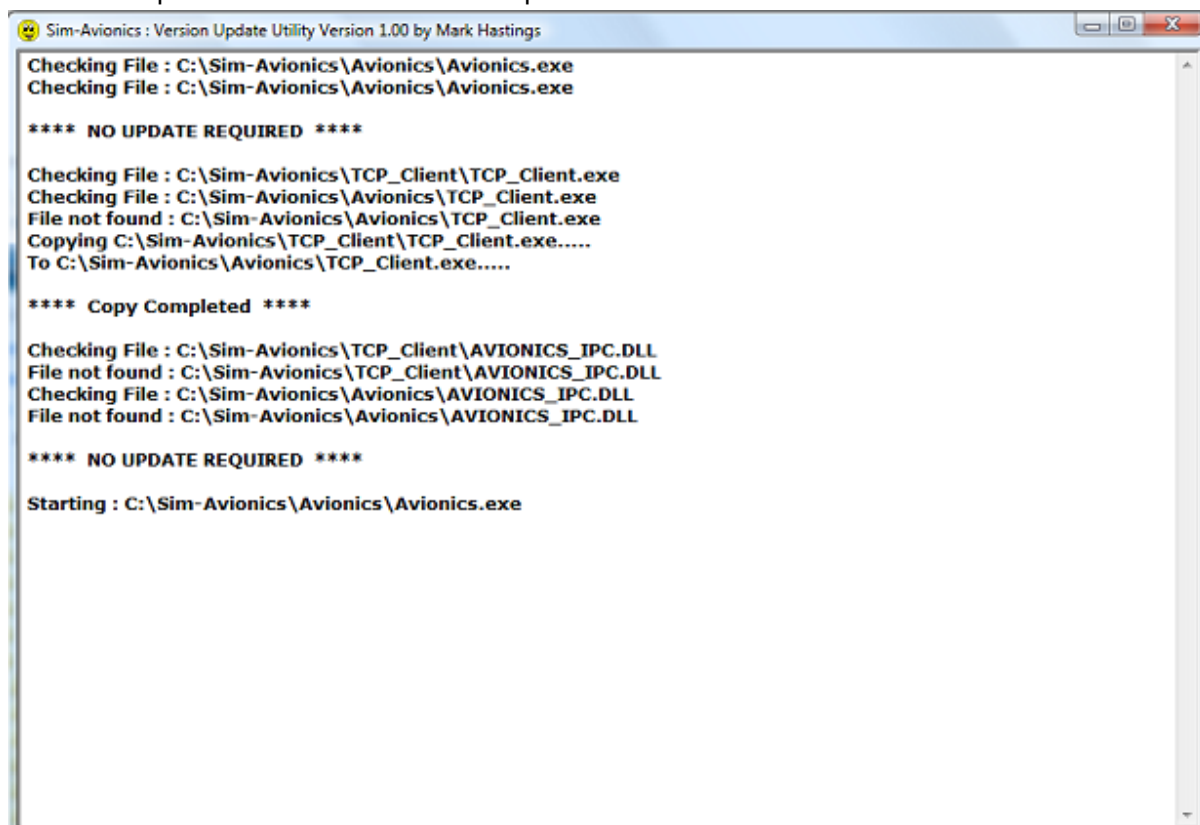
Additional values:
[STARTUP]
DELAY=5000   This will add a 5 second delay after execution before files are checked and copied. This is useful to prevent locking issues if multiple startup's are being run.

This is a sample window from the Startup.exe

Compatibility with 3rd party interfaces

We are aiming to make our software compatible with many current I/O hardware solutions.

Flight Deck Solutions - SYS3 support

Our internal I/O interface that is built into the Server is able to assign system functions to FSUIPC offsets. FDS SYS3 boards also use InterfaceIT software to map I/O to FSUIPC offset. Therefore we have produced two config files to support this hardware.

Copy **\Interface_Files\FSUIPC_IO_B777_FlightDeckSolutions.INI** into the main Server folder and rename it to **FSUIPC_IO.INI** (overwrite the default file)

Copy **\Interface_Files\Sim-Avionics_B777_SDK.ini** into the main InterfaceIT folder.

You may then use the Sim-Avionics menu option in the InterfaceIT software when assigning functions to switch assignments.

Flight Deck Solutions – PnP CDU Support

The latest CDU's from FDS come with their own driver software.

The Sim-Avionics install creates a Registry Entry
● HKLM\Software\TEKWorx Limited\FDS-CDU\Extra Modules\
        SimAvionics [Install Folder]\CDU

\SimAvionicsCDU.dll is used to interface to the CDU Driver.

After connecting your CDU hardware and starting FDS-CDU.exe you will now be able to assign your hardware as Sim-Avionics Captain, First Officer or Observer CDU.

You should now start the Sim-Avionics CDU on the same PC where the hardware is connected. You must ensure that the Sim-Avionics CDU is in the same mode as the assigned hardware. You can change the CDU mode in the CDU\CONFIG.INI
        [SETTINGS]
        // = CPT or   FO or OBS
        POSITION=**CPT**

This solutions allows for multiple CDU support on one PC if you have multiple video out's
You could for example connect 3 FDS CDU's
        Run FDS-CDU.exe
        Assign each CDU. One as Captain, First Officer, Observer.
        Create 3 separate folder copies of \CDU
        Edit each CONFIG.INI.
                Set one as CPT, FO, OBS
                edit the WINDOW_LEFT positions so that they display on a separate monitor.
        Run each CDU.exe

MCP Hardware Support

MCP.exe must be running on the same PC to which the hardware is connected.
Edit the \B777_MCP\CONFIG.INI to enable the required hardware support

0 = None
1 = CPFlight MCP/EFIS
2 = GoFlight MCP Pro/EFIS
4 = FDS New Glares
5 = FDS G2 Glareshield

[HARDWARE]
ENABLE_HARDWARE_SUPPORT=**?**

Flight Deck Solutions – PnP Glare Support

The latest MCP's from FDS come with their own driver software.

The Sim-Avionics install creates a Registry Entry
   ● HKLM\Software\TEKWorx Limited\FDS-CDU\Extra Modules\
           SimAvionics [Install Folder]\MCP

\SimAvionicsGLARE.dll is used to interface to the MCP Driver.

ENABLE_HARDWARE_SUPPORT=4

Flight Deck Solutions – G2 Support

There is now better support for G2 Glare interface.

ENABLE_HARDWARE_SUPPORT=5
COMMPORT=COMx   ←(replace **x** with the com port your hardware is using)

CPFlight MCP/EFIS support

Our MCP is compatible with CPFlight MCP/EFIS
MCP.exe must be running on the same PC to which the CPFlight hardware is connected.

ENABLE_HARDWARE_SUPPORT=1
COMMPORT=COMx   ←(replace **x** with the com port your hardware is using)

Note: Press + Hold **VNAV** for Speed Intervention

Backlighting is linked to the Aircraft 'STORM' Lights.

ENABLE_HARDWARE_SUPPORT=1
COMMPORT=COMx   ←(replace **x** with the com port your hardware is using)

GoFlight MCPPro/EFIS support

Our MCP is compatible with GoFlight MCPPro + EFIS
MCP.exe must be running on the same PC to which the GoFlight hardware is connected.

ENABLE_HARDWARE_SUPPORT=2

Terrain Data

Terrain Database files can be downloaded from the www.sim-avionics.com downloads page.
Extract these files and place the .mdb files into the **Sim-Avionics\Terrain** folder.
They need to be placed on each computer running the Navigation Display avionics.

Dispatcher Console

The dispatcher Console is include from release 1.06.
It allows control of the aircraft systems required to dispatch the aircraft.

It consists of 2 tabbed pages: **Pre-Flight** and **Dispatch**. Each button can either be pressed directly or you can use a keyboard by pressing the underlined letter next to the function.

Pre-Flight

Load Scenario: allows 6 custom 'scenarios' to be saved using the standard server scenario save function. This saves the FS flight detais and the System state details. So all switch positions and Route information is saved and can be recalled.
When a Scenario is loaded the simulator is automatically 'Paused'.

External Connections: For connection Primary and Secondary external power and Ground Air.

Fuel: Can be loaded immediately or at a realistic flow rate.
Immediate fueling allows fuelt o be reduced or added up to the maximum qty.
Realistic fuel loading can only add fuel.
The total amount of fuel should be entered in the popup box. Ie the amount show on your flight plan.
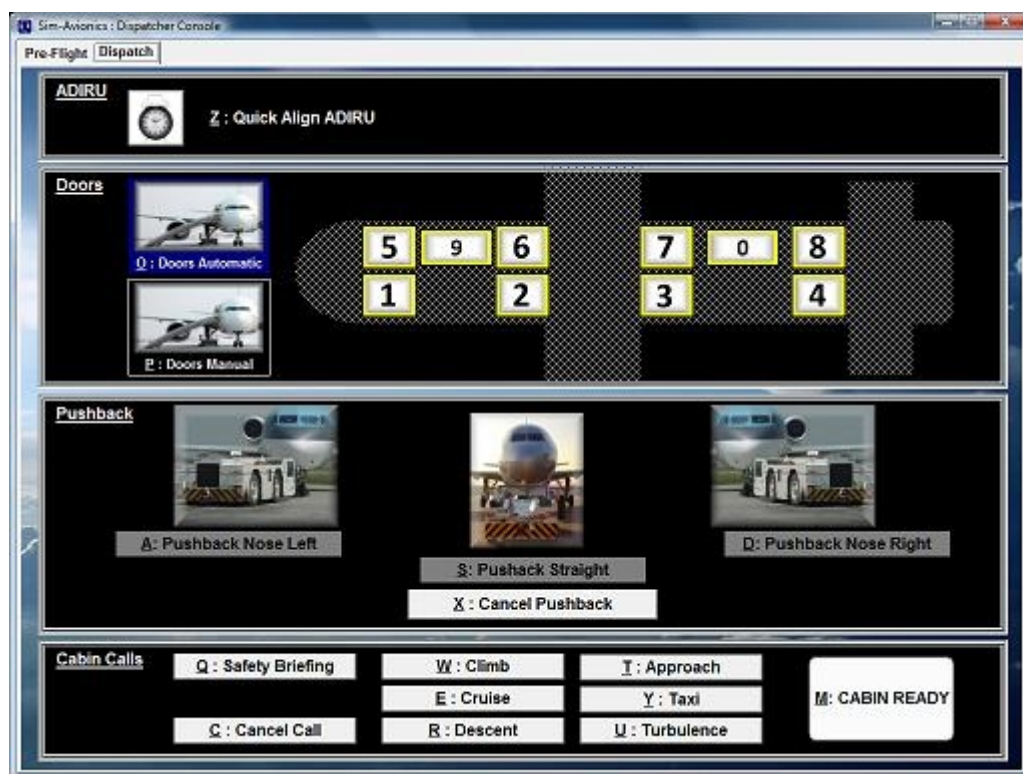It is entered in tonnes and can be in the format of 16 (for 16tons) or 16200 (for 16.2 tonees)

Dispatch

ADIRU: The ADIRU or IRS's can take up to 10 minutes to align, this option allows for a quick alignment.

Doors: Pressing the button or pressing the keyboard 0-9 opens / closes the corresponding door. Door positions, Automatic and Manual status can be viewed on the EICAS and MFD.

Pushback: This triggers the default FS pushback, Nose Left, Straight or Nose Right. External power and air must be disconnected first.
The more advanced internal pushback can be triggered from a CDU or via the Server.

Cabin Calls: Triggers the assigned Cabin Call. Cabin Ready displayed on the EICAS for 3 minutes.

END OF MANUAL