

PMDG 737 THE NEXT GENERATION

737-600/700/800/900

Aircraft Operating Manual

REVISION 1.4



AIRCRAFT OPERATING MANUAL

&

FLIGHT MANAGEMENT COMPUTER HANDBOOK

This manual was compiled for use only with: *PMDG 737: The Next Generation*. The information contained within this manual is derived from multiple sources, and is not subject to revision. This manual is not to be used for training or assumed to provide operating procedures for use on any aircraft. The manual is for entertainment purposes as required by the simulator software.

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Precision Manuals Development Group is an organization of aviation, aeronautical and software development professionals dedicated to the task of producing software for aviation enthusiasts.

PMDG products have gained worldwide recognition for the innovative use of new ideas to realistically portray the challenges of commercial aviation. PMDG simulations are designed for use by those interested to learn about commercial airliners and commercial airline operations.

The simulation you have purchased represents nearly 24 months of research, testing and development work and is the first in a series of commercial airline simulations planned for use with Microsoft Flight Simulator *Century of Flight*.

Currently PMDG is developing additional technologies to enhance the simulation of commercial airline operations within Microsoft Flight Simulator. Please visit our website for more information on future release dates, products and purchases!

PMDG's product line will expand in size and range during 2004 with the introduction of PMDG 747-400, *Queen of the Skies*. This product, designed exclusively for Flight Simulator 9 will feature the same attention to detail and accuracy as the much smaller 737 cousin.

All of us at PMDG are grateful that you have purchased this product and we stand committed to support you in your enjoyment of this software. If you find yourself in need of support, please email us or visit our customer support forum for help. PMDG staff is available to assist customers through these two venues.

Thank you again for your support of PMDG.

The Development Team
Precision Manuals Development Group
<http://www.precisionmanuals.com>

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MASTER TABLE OF REVISIONS

PMDG strives for completeness and innovation in our products. On occasion we will issue free updates to our software, and we strongly encourage all customers to download and install these updates as they ensure the trouble-free operation of your software and add functionality that we may not have been able to offer in the initial release version of the product.

Note: This manual is being continually updated and expanded to cover additional topic areas and to add additional depth to existing aircraft functions. You can obtain the most current version of the manual free by visiting the PMDG 737 Operators Information Center (Tech Support) at www.precisionmanuals.com

REVISION HISTORY

[illegible]

Note: 737-800/900 data is provided for consistency. PMDG 737-800/900 is a separate product.

Manual Updates Version 1.4

With the addition of the 737-800/900 to the fleet, it is necessary to expand the breadth of this manual to include aircraft performance data and aircraft differences. Additionally, PMDG has added new functions to the airplane and these additions required changes to the existing manual. The follow updates have been added to this manual during revision 1.4. If you do not own the PMDG 737-800/900, then not all options will be available to you.

- Chapter 0: Updated PMDG Styles Menu overview
Updated Key Assignments Menu Overview
Explanation of Lighting Options
New/Updated PMDG Functions
- Chapter 1: Added Takeoff Performance Data for 737-800/900
- Chapter 2: Added Cruise Flight Performance Data for 737-800/900
- Chapter 3: Added Landing Performance Data for 737-800/900
- Chapter 4: Added weight limitation data for 737-800/900
- Chapter 5: No changes.
- Chapter 6: No changes.
- Chapter 7: Added 737-800/900 Cabin Temp Control Overview
- Chapter 8: Added Route Offset capability.
Updated current functionality (Opt/Max Alt, Cost Index, etc)

Options and Customization

When airlines purchase an airplane a significant amount of customization goes into each aircraft in order to provide the airline customer with the exact options and capability that they require.

When modeling aircraft for Microsoft Flight Simulator, it is often difficult to include provision for many of the options that individual airlines purchase, but at PMDG we have tried hard to provide our customers with the ability to individualize their airplane!

When you run the airplane for the first time, you will notice that we have added a PMDG menu item along the top menu bar within Microsoft Flight Simulator. The PMDG menu item is the place where you can find an array of options and customizations to further enhance your PMDG 737 experience!

The PMDG menu provides access to a host of options that can be selected by the user to add the specter of aircraft system and engine failures or to tweak the performance and appearance of the cockpit to match the user's favorite airline configuration!

To further enhance the custom experience, PMDG has produced dozens of liveries representing airlines operating the 737-600/700/800 and 900 aircraft worldwide. These liveries are provided at no cost to you, and can be downloaded from www.precisionmanuals.com

PMDG has elected not to charge for airline liveries in order to provide additional value to the base product that you have already purchased. Users should feel free to download the PMDG 737 PaintKits that are also available from the PMDG web site. These paintkits were developed by PMDG's livery artists in order to assist users who wish to add their own customizations to the PMDG line of airplanes.

Users are free to distribute the artwork that they create, but should carefully refrain from distributing any files that are included in the base PMDG 737 package, as these files are all copyright protected and watermarked for easy identification. PMDG aggressively prosecutes cases of theft and we offer rewards for individuals providing information that leads to successful prosecution of theft. (If you have any questions on this policy, please contact us!)

GETTING THE MOST FROM YOUR PMDG 737

Introduction: At PMDG we have an established mission to bring a degree of realism to desktop simulation. All of us at PMDG are simulation enthusiasts who have elected to bring our “day job” specializations (Airline Transport Pilot, Aviation Maintenance, Software Development, Aeronautical Engineering, 3D Design and Animation, Graphic Design and Computational Mathematics) to the simulation community in the form of a comprehensive and sophisticated simulation of a modern airliner.

For many years, the terms, “most realistic,” “most accurate,” and “Certified by Real Pilots” have been used by developers to describe offerings to the desktop simulation community. While some of these claims have merit, our own experience has generally led us to believe that marketing is always marketing, and that the value of an experience has as much to do with the perception of the customer as it does with engineering data.

To this end, we have gone to great lengths to simulate the sophisticated environment that is the modern airliner cockpit. Using many of the same tools employed to teach pilots and mechanics how to support the 737 series of airplanes, we have worked to build a simulation that capitalizes on the strengths while minimizing the weaknesses of Microsoft Flight Simulator.

Invariably there have been times when we needed to make choices between realism and usability. While Microsoft Flight Simulator is a wonderful and dynamic platform for modeling the 737, there are some aspects of Microsoft Flight Simulator that just do not function as well as we would like, and we have worked hard to overcome them while also enhancing the realism of the 737 simulation experience.

PMDG began development of the 737 series in September of 2002 with virtually no prior Microsoft Flight Simulator development experience. Our experience developing products for the FLY community was useful, but not entirely so, as the MSFS community has significantly more options available in terms of Weather Management Products, Weight and Balance simulations, Scenery and various other addons.

Currently we have not placed significant development emphasis on developing compatibility with certain types of addon products in the marketplace. (Aircraft Maintenance addons, Weight and Balance addons, etc.) These decisions have been made in order to place greater emphasis on areas of our simulation package that we feel are important to developing a complete airplane. As we proceed further with our MSFS design aims, we are certain that we will provide the required development time necessary to add compatibility with some of the “related” products currently on the market!

In the following section we outline some of the many options that we have included to further your enjoyment of the simulator. Additionally, we outline some of the “oddities” that you might come across, along with an explanation of their existence. We hope you will find this information useful and that it will enhance your enjoyment of the PMDG 737!

The PMDG Menu:



The PMDG menu has been added to the normal menu bar within Microsoft Flight Simulator in order to simplify user interaction with the PMDG airplane. From this menu the user can choose an assortment of options as described below.

PMDG 737NG Styles Menu:

The Styles menu presents the user with a context sensitive interface from which the cockpit can be customized to represent an array of options available to real world operators of the 737!

The Styles menu can be used to select options in order to customize the display of information in the 737 cockpit according to personal tastes, or in order to model a specific airline's cockpit layout.

IMPORTANT NOTE: The PMDG STYLES menu images and description below assumes that the user owns both the PMDG 737-600/700 and the PMDG 737-800/900. For users of only the 737-600/700 some options are not enabled and the menu layout is designed to present only those options available to 6/700 users. If an option described below is not present or is not selectable, then the option is only available when the PMDG 737-800/900 is also installed.

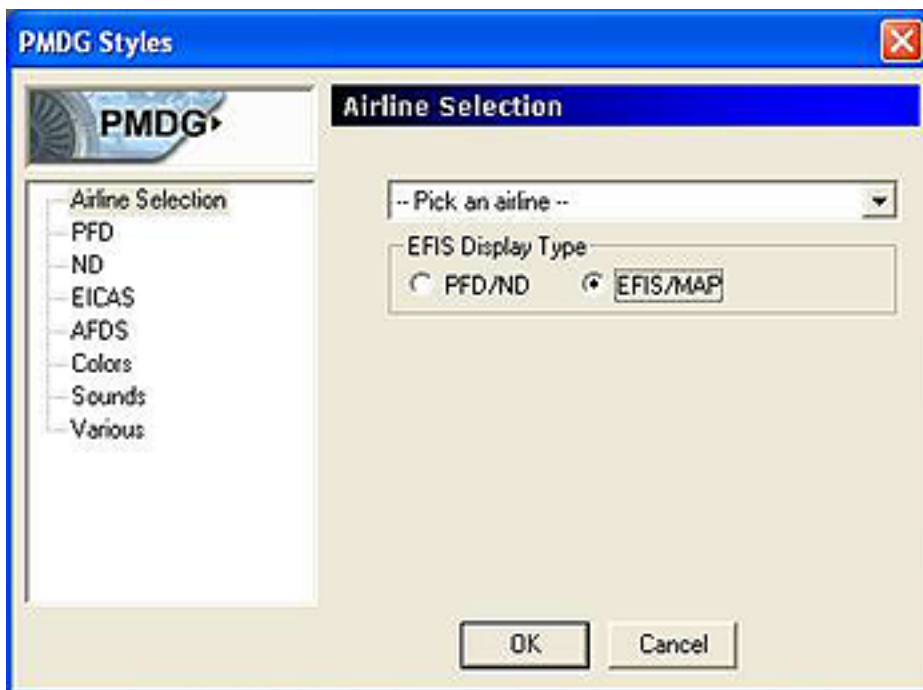
The styles menu is divided into pages. The pages group similar functions and options together in order to make cockpit and display customization simple.

Currently the following Styles pages are available:

- Airline Selection [Airline Specific Layout Selection]
- PFD [Primary Flight Display Options]
- ND [Navigation Display Options]
- EICAS [EICAS Display/Layout Options]
- Colors [PFD/ND/Autopilot Digit Color Options]
- Sounds [Sound Performance Options]
- Various

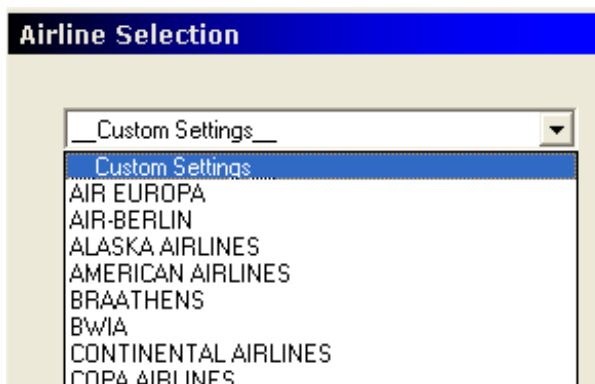
Airline Selection Page: The Airline Selection page allows the user to choose from a range of pre-formatted cockpit setups based upon the styles in use at many popular airlines. Although crews are unable to switch between the formats on their airplanes, we have provided you with this option in order to increase your enjoyment of the product!

NOTE: *This option is cockpit setup related only and does not affect the airline livery chosen by the user.*



Airline Custom Settings: To choose the layout that is used by a specific airline, simply use the drop-down menu. This will present the user with a list of representative airlines operating the 737 airplane, and will automatically customize the display layout to match that airline's preference.

Pulling the menu will present an option list similar to the following:



Adding Your Own Custom Cockpit Settings: (ADVANCED USERS ONLY): If you wish to add an airline to your list of custom airlines, you can do so!

Open the following file: FS\PMDG\Airlines.ini

At the bottom of the list, enter information in the following format:

[DELTA AIR LINES]
 Engine=CFMI CFM56-7B26
 EFISMap=0
 EICASSide=0
 FDVBar=0
 AOA=0
 Lbs=1

Airline Name
 Engine Type
 0 = PFD/ND 1=EFISMap
 0 = Over/Under 1=Side/Side
 0 = Pitch Roll Cues 1=Flying Wing
 0 = No AoA index 1=AoA index active
 0 = Kilograms 1=Lbs

EFIS Display Type: There are two types of cockpit display layouts provided by Boeing to 737 customers. The display format is not changeable in the airplane itself, but to maximize flexibility you will suffer no ill effects switching between display formats within the PMDG 737. The two formats are quite different in the presentation and layout of information:

PFD/ND (Primary Flight Display / Navigation Display):

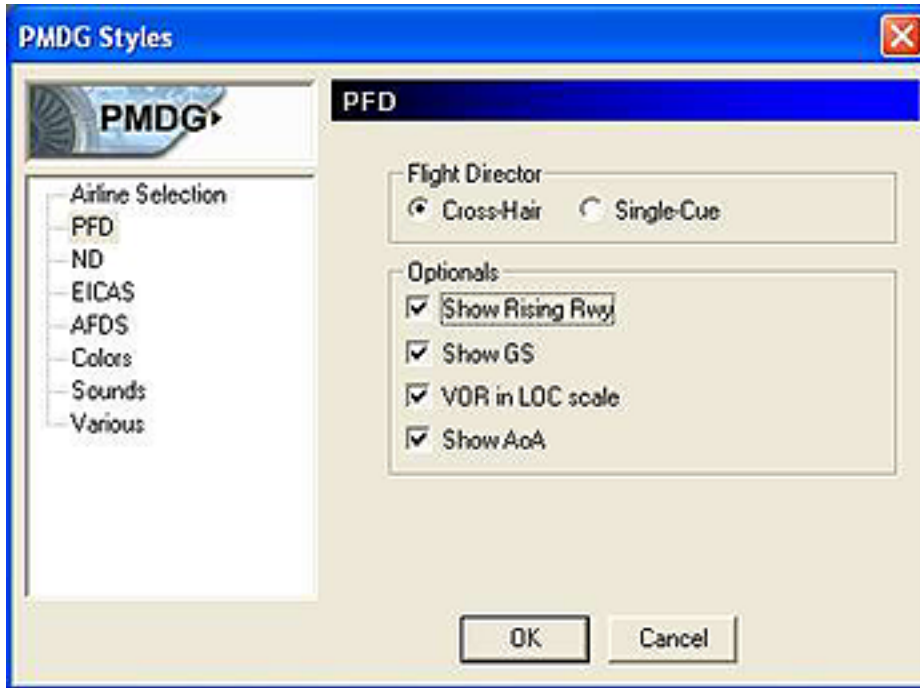


EFIS/MAP (Electronic Flight Instrumentation System / MAP):



The information presented on either display layout is formatted to allow users to switch between cockpit display types while maintaining familiarity with the presented information. The PFD/ND is a common style information layout, while the EFIS/MAP layout is very similar in presentation to a standard “steam gauge” layout cockpit presented with the advantages of modern computer and information processing.

PFD Page: The PFD Styles page allows the user to modify the amount of information that is displayed in the cockpit.



Flight Director: This option allows the user to choose between the Cross-Hair type pitch and roll cue or the Single-Cue “flying V” type of flight director on the Primary Flight Display.

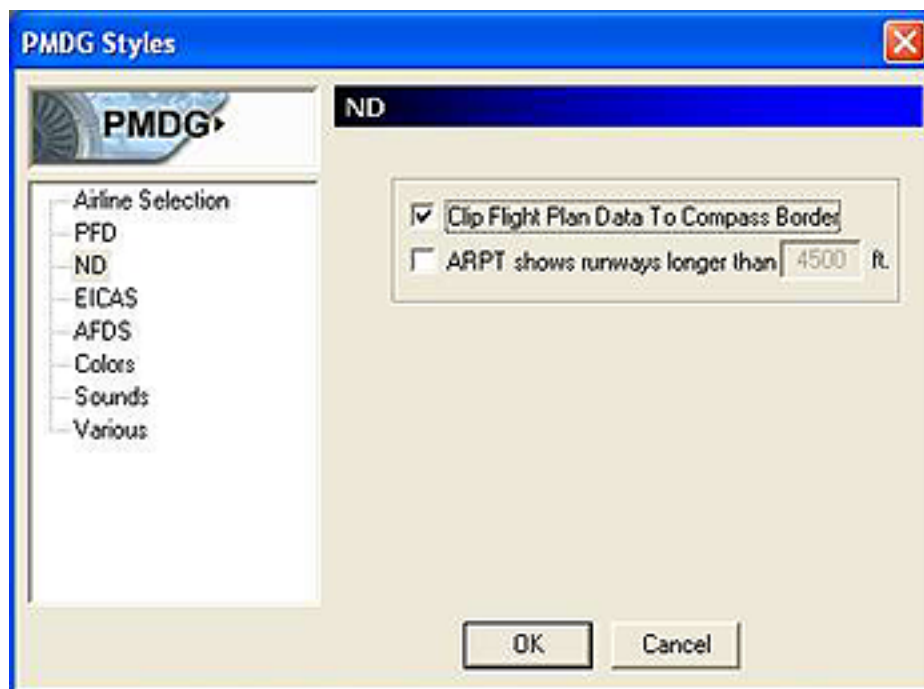
Optional Rising Runway: Selecting this option will enable the graphic “rising runway” on the PFD for use during autoland and instrument approaches.

Show GS: Selecting this option will enable a ground speed display on the Navigation Display.

VOR in LOC Scale: This option allows the user to determine if VOR bearing information will be displayed on the PFD LOC display.

Show AoA: Selecting this option will enable an Angle of Attack index on the Primary Flight Display. This is an option chosen by some airlines.

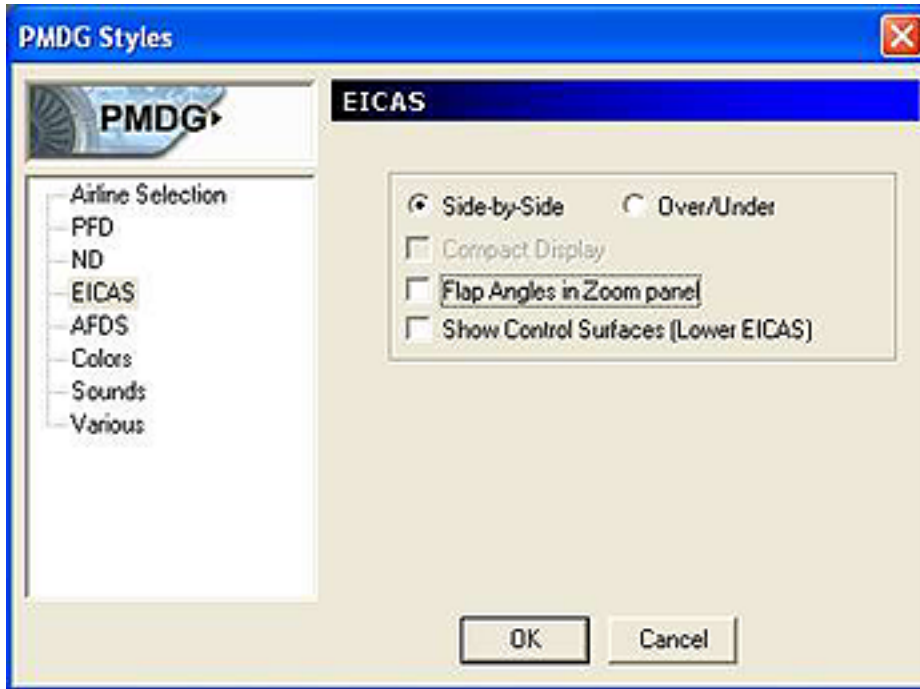
ND Page: The ND Styles page allows the user to modify the way certain types of information is displayed on the Navigation Display.



Clip Flightplan to Compass Border: The displays in this airplane are modeled as closely to the actual aircraft as possible. Some of the animation methods used can be extremely mathematically intensive and may result in lower performance on some processors. One mathematical method that is particularly taxing to slower computers is the circular animation calculations required to display the flight path only within the compass confines on the navigation display. By un-checking this option, the flight path magenta track will be shown all the way to the edge of the Navigation display. While less realistic, this will result in a drastic reduction in the amount of mathematics required to draw the navigation display and may result in significantly higher frame rates for some users. *If you find you are getting slow frame rates, try deselecting this option.*

ARPT shows runways longer than: This option allows the user to customize the way airports are displayed on the Navigation Display. Commonly, airlines buy only the airport navigation data for airports capable of servicing their aircraft. For the 737, we recommend setting the Airport display to only show airports with runways greater than 4,500 feet in length. Lowering this number will display a greater number of airports, (not all of which you may be able to use!) and raising the number will lower the number of airports displayed.

EICAS Page: The EICAS Styles page allows the user to modify the way certain types of information is displayed on the EICAS Display. The EICAS screen contains all of your engine monitoring and performance data.



There are three variations in the way the EICAS screens can be drawn.

Side by Side: This display format allows the user to see all available engine information in a single screen. This layout format is typically paired with the EFIS/MAP style of PFD layout. When the Side-by-Side format is used, the lower display unit is not populated with information, as all the engine monitoring is provided on a single screen.



Over/Under: This display format uses two EICAS display screens to show the engine information. This results in having the engine performance data split between the upper and lower screen. In the PMDG 737, this format is most easily used when flying from the Virtual Cockpit. When flying from the 2D cockpit, only the upper Display Unit is continually visible. In order to see the lower unit, you must select LOWER EICAS from the View/Instrument Panels menu within Microsoft Flight Simulator. You will then be presented with a popup of the lower display unit.

Important Note: The lower display unit will only display data if you have selected either ENG or SYS from the lower DU selector panel located on the main panel. If you have a blank lower DU popup image, it is because you are either using the Side-by-Side EICAS (in which case you do not have a functioning lower DU) or you have not selected the ENG or SYS data to be displayed!



Compact Display: A third display option is available, and shows a compact version of the Over/Under screen format. This compact version eliminates some of the dial displays in favor of text driven digital displays in order to save space. When using this version, you still have access to the lower DU for ENG/SYS data.



EICAS Draw Commanded Flaps in Zoom Panel: Selecting this option will cause the commanded flaps position to be displayed on the EICAS display. This is useful for those using the airplane with multiple monitors and unable to see the actual flap position gauge.

Show Flight Control Position Indication on Lower EICAS: Some airlines have chosen the option to show the flight control positions on the lower EICAS Display Unit. You can enable this option from the menu by selecting this box. When viewing the lower DU, if SYS is displayed, the current control positions will be shown on the display.

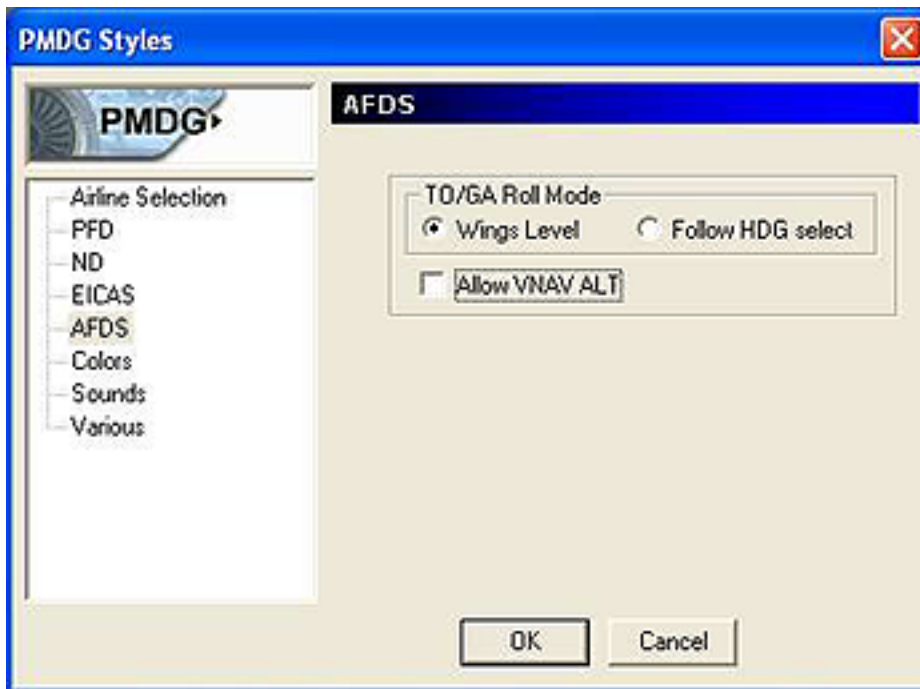
How to Use the Pop-Up displays in the 3D Cockpit: When flying from within the virtual cockpit, it is easy and intuitive to see how the display layout is used while in flight. When flying within the 2D cockpit, sometimes the screen setup is not as advantageous, especially if you have selected an EICAS setup that uses the lower display unit.

We generally recommend the SIDE-BY-SIDE display setup when using the 2D cockpit panels as your primary flying viewpoint. We make this recommendation because the Side-By-Side setup allows you to see more information on the screen.

For those interested in using the OVER/UNDER display while in the 2D cockpit, you can bring up the lower EICAS display unit using the VIEWS / INSTRUMENT PANEL / Lower EICAS Popup menu item. This will present you with a popup on the left side of your screen that shows you the current displayed information on the lower EICAS Display Unit.

To actually make information appear on the lower Display Unit pop-up, you need to press either the ENG or the SYS button located directly above the upper EICAS. If you do not press either of these two buttons your Lower EICAS Popup will appear only as a black square.

AFDS Page: There are a few options that airlines may take with regard to the Autopilot-Flight Director System on the 737. We have modeled these options here, for those users who wish to model some very specific behaviors for the airplane.



TO/GA Roll Mode: The Take Off / Go Around Roll Mode allows users to choose between two different behavior types when the flight crew presses the TOGA button to initiate a Go-Around from approach.

Wings Level: This mode will roll the wings level and initiate the programmed climb path. The crew will be required to select a roll mode such as HDG or LNAV in order to commence a turn during the missed approach climbout.

Follow HDG Select: This mode, if selected, will cause the airplane to turn toward and follow whatever setting has been selected for the heading bug. Using this mode requires diligence when setting the heading bug during approaches, as an improperly set heading bug may result in unwanted turns during a missed approach. This setup is useful however, to operators who conduct operations in regions where missed approach procedures generally require immediate turns for terrain or missed approach procedures.

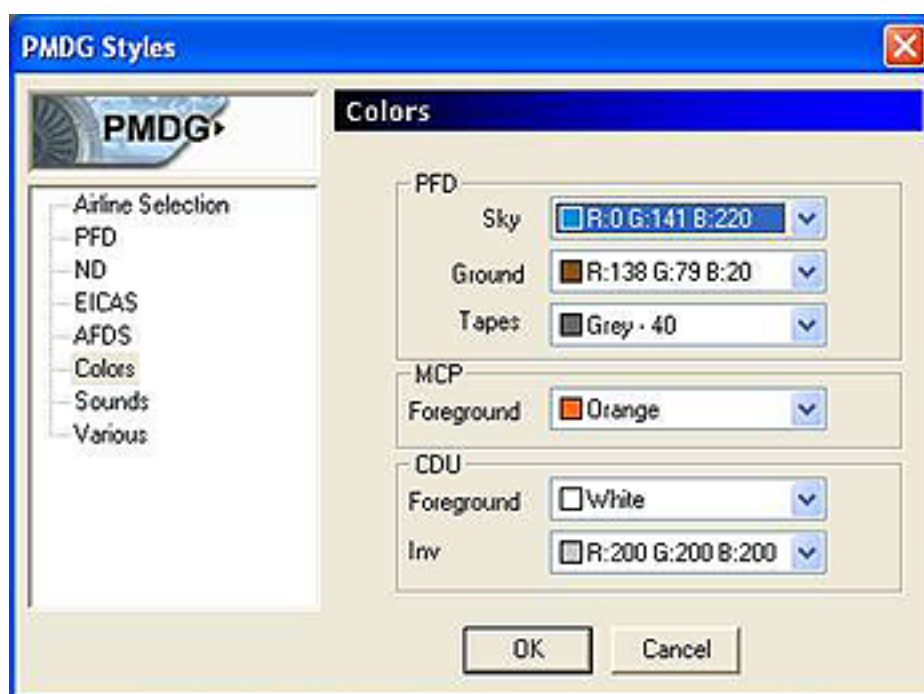
VNAV ALT Option: Selecting VNAV ALT will allow the FMC to utilize the VNAV Altitude hold function during climbs and descents. VNAV ALT is an option chosen by some airlines to simplify the methods used by the crew to climb and descend the airplane.

If selecting VNAV ALT to make it available in the aircraft, the crew will have the option to level the airplane during climbs or descents at altitudes other than the FMC specified cruise or target End of Descent altitudes. By using either the altitude intervention switch or the MCP Altitude selector, the crew can level off at an intermediate altitude and the AFDS will show VNAV ALT to indicate that VNAV is holding the selected altitude.

When climb/descent is recommenced, simply selecting the desired altitude in the FMC altitude window and pressing the altitude intervention button will recommence the previous VNAV climb/descent mode.

If this option is NOT selected, leveling the aircraft at an intermediate altitude will cause the AFDS to revert to ALT HOLD mode. In order to recommence the climb/descent, VNAV must be selected manually from the Autopilot Mode Control Panel.

Colors Page: The Colors Styles page allows the user to modify the colors used on the cockpit displays and in the Autopilot Mode Control Panel.

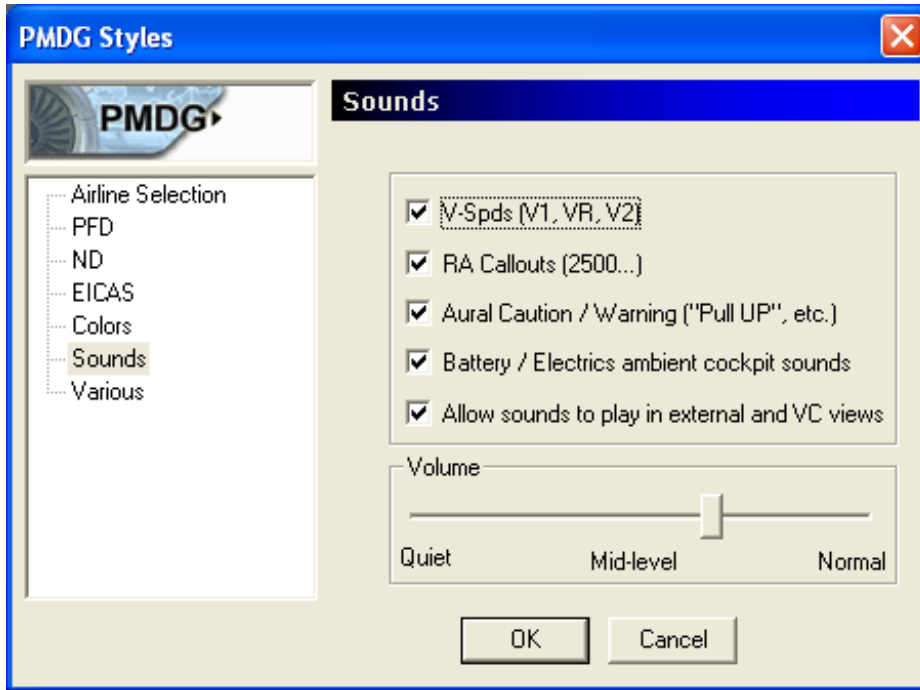


PFD: The SKY and GROUND options allow you to customize the colors displayed on the PFD attitude indicator. The TAPES option allows you to customize the background color of the Altitude, Mode Annunciation and Speed tapes.

MCP: The Foreground color allows you to change the color of the display digits on the autopilot Mode Control Panel.

CDU: The Foreground and Inv allow users to customize the FMC/CDU color display to be customized to personal preference.

Sounds Page: The Sounds Styles page allows the user to modify the way sounds are presented to the user and allow some customization based upon user preference.

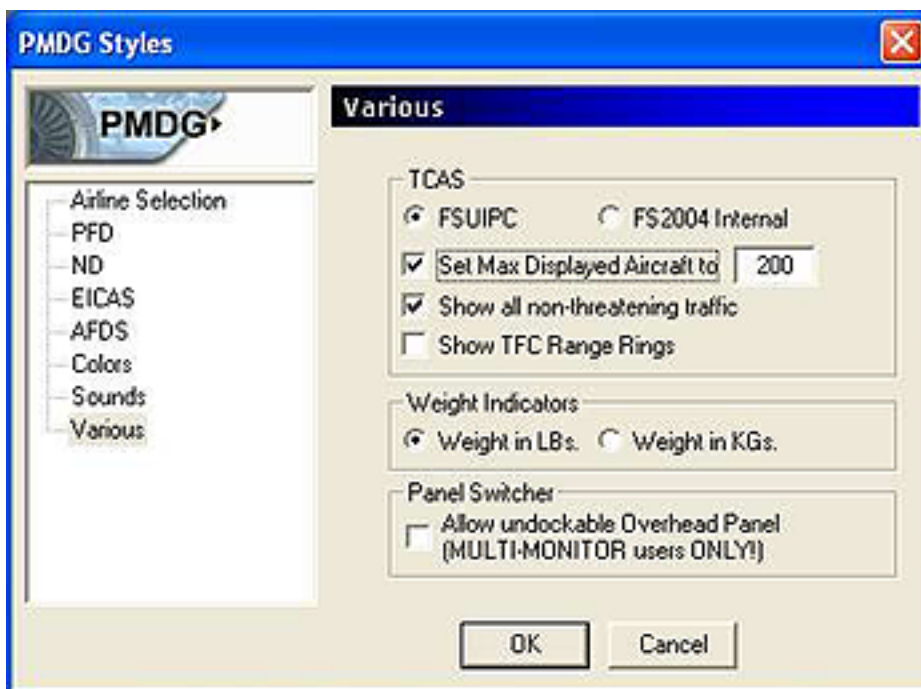


Sounds: Use these options to select the types of cockpit aural warnings that you wish to hear from within the cockpit. There are options to turn on/off three types of aural warnings, and a fourth option to turn on/off some of the ambient cockpit noise.

The 737 is one of the noisiest modern airliners, with the majority of the ambient noise offense coming primarily from the Recirculation Fans, the slipstream, the trim wheel and the standby altimeter vibrometer. We have modeled these sounds as accurately as possible, but we have also provided you with a volume slider to adjust their intensity as well as a check box to turn them off if you wish!

As a tribute to the accuracy of this package, these sounds, including the slipstream noise, were recorded on the flight deck of the airplane and processed for use in the simulator. For a true 737 experience, turn the sound up LOUD!

Various Page: The Various Styles page allows the user to modify the way certain functions interface with the simulator:



TCAS: The TCAS option set allows the user to customize the manner in which TCAS interfaces with the simulator and the amount of information displayed. TCAS can display traffic by using the traffic information interface provided by FSUIPC, or directly from within the FS2004 Internal Structure. (If flying online- use the FSUIPC interface.)

The TCAS module can limit the amount of traffic displayed to the user on the Navigation Display. Adjust this value to suit personal taste.

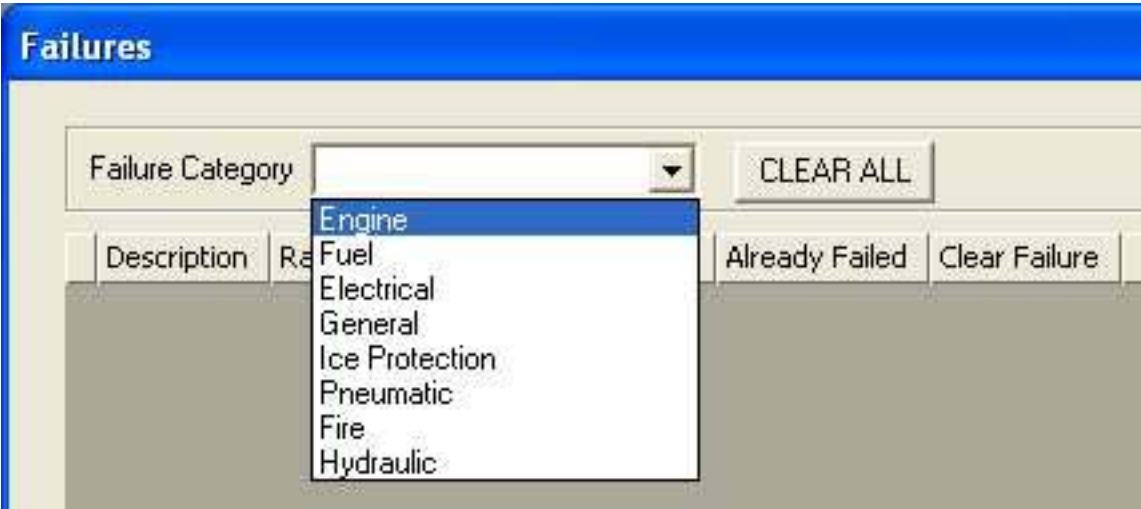
The TCAS2 system used on the 737 automatically suppresses the display of aircraft traffic that is not immediately in conflict with the airplane. As such, the only time traffic will be displayed is when it presents the potential for a traffic conflict and/or a resolution advisory. Some users may wish to be able to see non-conflicting traffic, however and selecting the Show All Non-Threatening Traffic option will allow the user to see all surrounding traffic rather than only conflict traffic.

Weight Indications: Use this option to select between Pounds or Kilograms as the weight units used in the airplane.

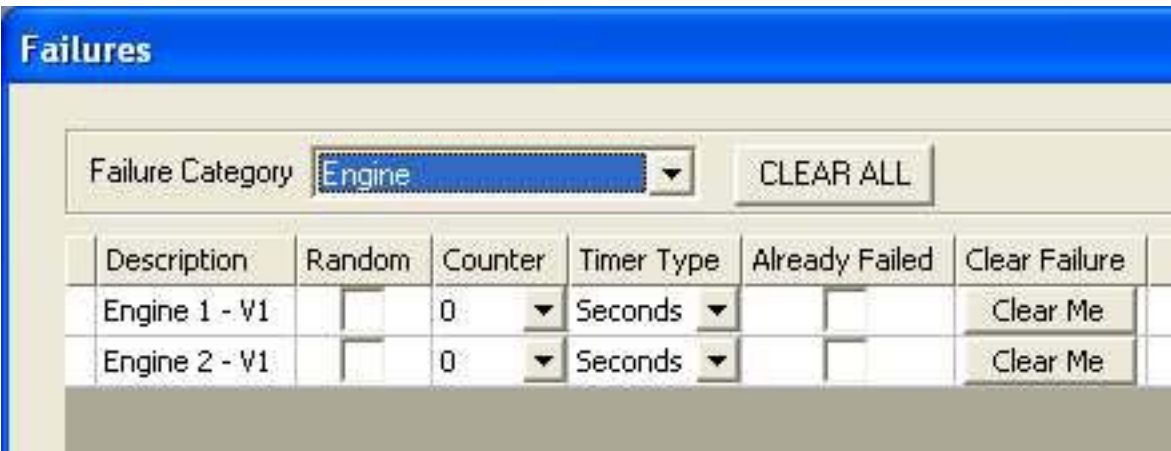
Panel Switcher: Users who wish to display the overhead panel on a second monitor should select this option in order to allow the undocked display of the overhead panel. Leave this option unchecked if you are not planning to display the overhead panel undocked.

PMDG FAILURES MENU:

The PMDG Failures Menu allows the user to pre-program or randomly arm failures to affect the airplane during flight.



Failures are divided into category in order to simplify the selection of specific, related failures. Simply pull down the FAILURE CATEGORY menu and highlight the failure area desired. For example, selecting ENGINE from the Failure Category menu will display the following menu options:



Information in the failures menu is divided into columns for ease of use.

Description: Describes the failure type.

Random: Select this checkbox if you wish to experience a time random failure of this item.

Counter/Timer Type: Select the time units and the amount of time desired until failure.

Already Failed: Various simulations can be flown with specific items already failed.

Clear Failure: Use this button to reset a failure and restore an item to functionality.

PMDG LCD TUNING and KEYBOARD COMMANDS MENU:

In order to assist users in the quest for optimal frame rates, PMDG has provided users with the ability to tune the update rates for all three of the LCD's in the cockpit. If desired the user can set varying update rates based on the importance of the screens, and thus enhance the overall performance of the airplane within the simulator.



Users can customize keyboard input to control various aspects of the simulation using this menu.

PMDG's PANEL VIEW SWITCH:

In order to fully utilize a wide array of customizable panel options, we elected not to use the stock MSFS view selection system. The development of a custom PMDG View module has allowed us to provide a greater array of view options to enhance the realism of the simulation. The Panel View Switching Tool is present on each of the panels and has been placed in areas where it can be useful while blending into the panel itself.

The view switching tool is pictured below:



Due to the limited space we have elected not to use iconic graphics but instead have chosen letters in order to simplify the process of remembering which button performs which function!

- M:** Main Panel View (Default MSFS Large Panel View)
- Z:** Zoomed Main Panel (Removes peripheral functions of main panel to enlarge LCDs.)
- A:** Approach Panel View (Provides a true "Captains View" perspective over the panel.)
- L:** Landing View (Provides a realistic "Captain's View" looking out the front window.)
- F:** FMC pop-up panel.
- O:** Overhead Panel View.
- T:** Throttle Console.
- R:** Radio Console.
- C:** Chronograph pop-up window

Panel Views: The PMDG 737 comes with four 2D panels that can be used according to customer preference.

Main Panel: A traditional MSFS main panel view with instruments and engine gauges displayed.

Zoom Panel: Similar to the Main panel, but the displays have been made larger for readability.

Approach Panel: This 2D view is designed for use during visual approaches.

Landing Panel: This view is designed for appropriate “over the panel” viewing during landing.

Overhead Panel: The majority of aircraft mechanical functions are operated from here.

Virtual Cockpit: Obviously, a preferred environment due to it’s immersive nature. Owners of the PMDG 737-80/900 will also find that most all cockpit functions are “clickable”

Pop Ups Windows: In addition to the views listed above, we have included many “pop up” windows that provide additional areas of the cockpit systems/instrumentation.

FMC/CDU: Both Left and Right FMC/CDUs can be displayed as pop up windows.

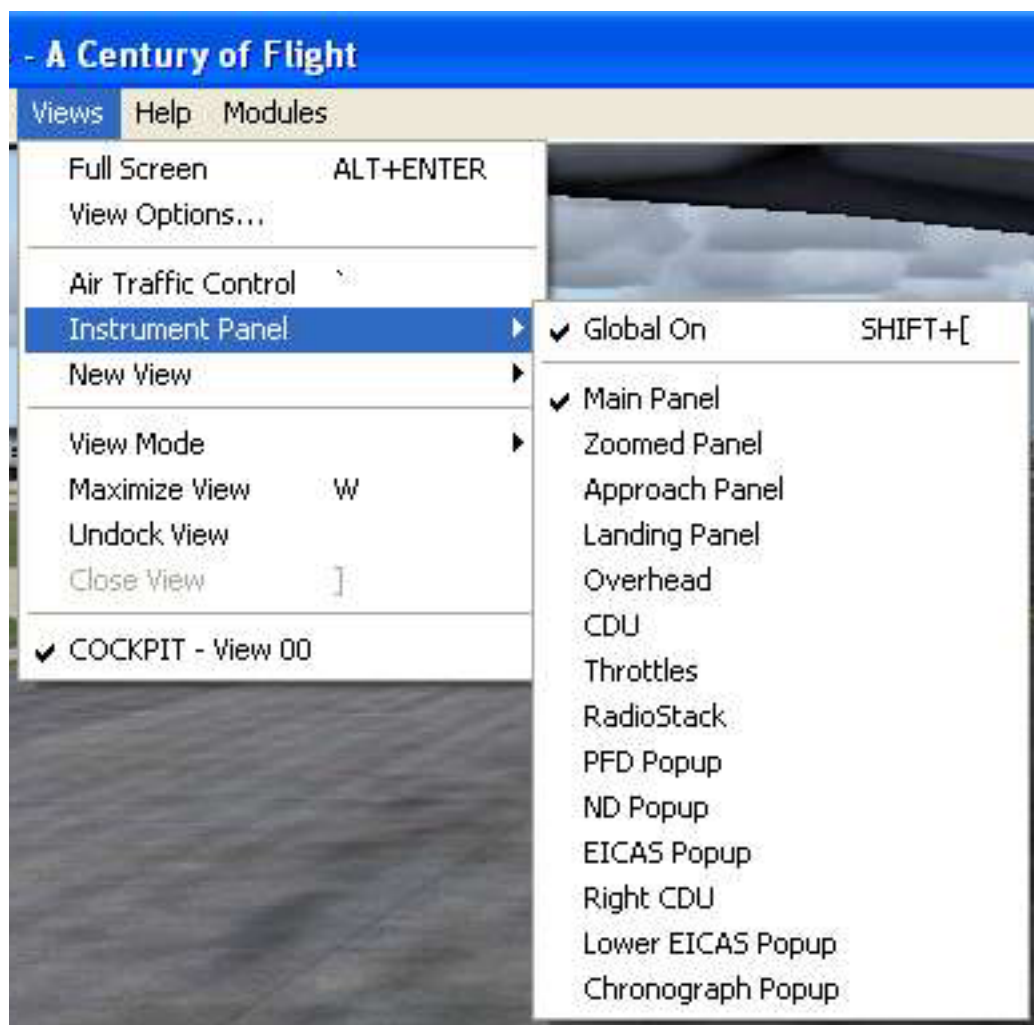
Throttles: The throttle console and associated equipment is included here.

Radio Stack: An operating radio console is provided here.

PFD/ND/EICAS/LOWER EICAS Pop Up: Each of these displays can be “popped up” by either clicking on the display face directly, or selecting from the menu here.

Chronograph: The chronograph has been made into a pop-up based on customer requests.

All of these options can be selected from the VIEWS/INSTRUMENT PANEL menu within MSFS.



Virtual Cockpit: The virtual cockpit concept has come a long way with the advent of Microsoft Flight Simulator 9: A Century of Flight. During the initial development of the PMDG 737, the product was planned for FS2002, and as such the 600/700 aircraft did not have “clickable” virtual cockpits.

The PMDG 737-800/900 aircraft have clickable main panels, overhead and center console panels. The fire control panel is not clickable in the 800/900.

The PMDG 737-600/700 is not clickable, but we have made the radio console “pop up enabled” so that users can click on the radio console, then interface with it via a pop up console.

Virtual Cockpit Lighting: The system used by Microsoft Flight Simulator to model cockpit lighting is not optimal, because it assumes lighting is done primarily by an overhead dome light as in a Cessna 172. Additionally, the light rendering engine used by MSFS can occasionally make the inside of the virtual cockpit much more dark than would otherwise be expected in the actual airplane.

To combat this, we have installed a “dome light” switch on the overhead panel. This switch **ONLY OPERATES WHILE IN THE VC**, and provides immediate bright illumination to the cockpit in order to prevent the MSFS “over-dark” condition.

NOTE: This dome light DOES have an impact on frame rates, especially on less robust machines, or in areas of heavy scenery.



Without Dome Light



With Dome Light

This switch is primarily intended for daytime use in order to keep things inside the cockpit well illuminated- but it can also be used at night as a “white dome light” if desired.

The dome light switch **WILL NOT OPERATE** and **WILL NOT PROVIDE ILLUMINATION** while in the 2D cockpit, however. (The dome light was designed using an MSFS animation technique that cannot be duplicated in the 2D cockpits.) Although we have long term plans to model multi-tiered lighting schemes in the virtual cockpit / 2D cockpit, this will take some time to effectively implement based on our desire to avoid using the ineffective MSFS lighting schemes.

If the dome light is operated at night while inside the virtual cockpit, the flight deck will be brightly illuminated just as if the interior white dome lights were illuminated. This bright light will not be present in the 2D cockpit, however.

Panel Lighting: At night, the panel lights switch on the overhead panel will turn on the panel back lighting to provide a realistic night illumination of the panels on the flight deck.

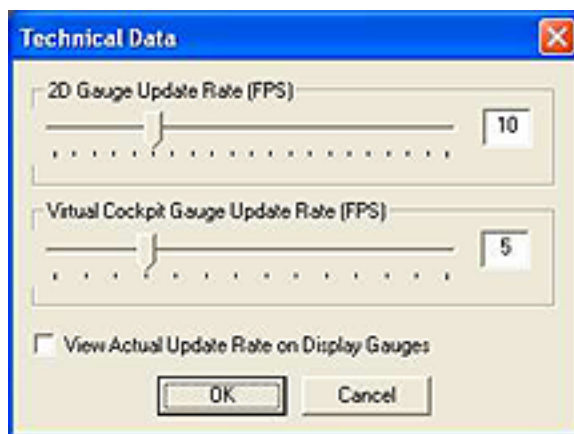
Occasionally during the transition from light/dark or dark/light times of day, the user will notice that the back lit portions of the panel retain a darker quality than surrounding areas within the virtual cockpit. This is an unavoidable result of the methods used in developing the lighting system. To eliminate this inconsistency, occasionally cycling the lights off/on will work. Additionally as the night/day transition becomes lighter, turning off the panel lights will remove the differences.

It should be noted that we have inhibited the panel back lighting from being displayed during non darkness periods. This behavior is realistic in that panel backlighting is not normally visible during daylight even if turned on.

In order to keep some semblance of order in the panel lighting process, we have included synchronization logic between the VC and 2D panel views. If either the panel lights or the "VC Dome Light" is ON in the VC- the panel lights will be on in the 2D cockpit.

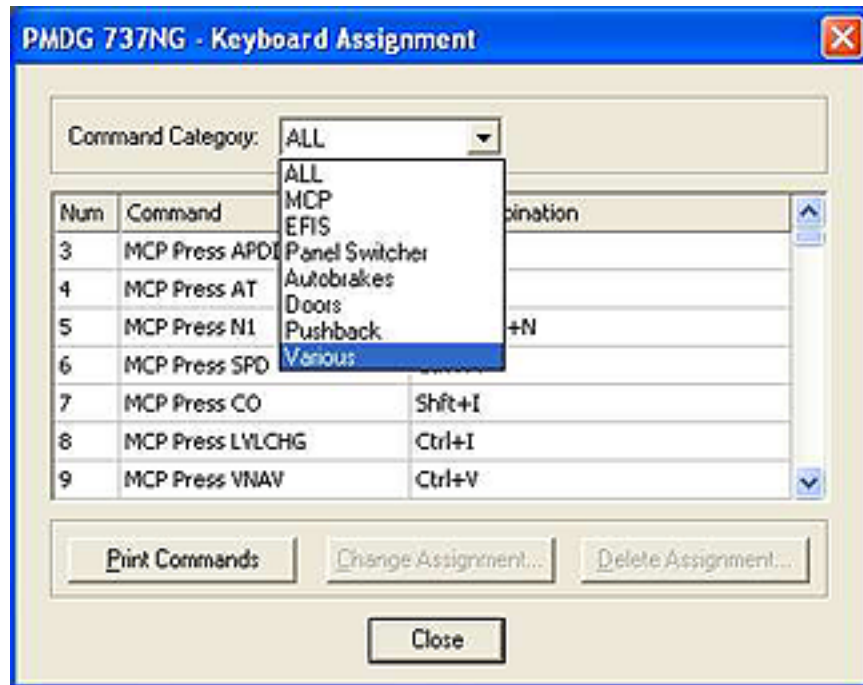
We continue to explore new ways of realistically including new lighting options in the PMDG 737.

Tuning The Virtual Cockpit Displays: The Virtual Cockpit is becoming an increasingly popular place for simulator pilots. Recognizing that the virtual cockpit places a heavier toll on the MSFS display engine, we have provided ways for users to tune the gauge update rates according to their personal preferences and hardware capability. You can find this option under the PMDG Menu within MSFS:



Assigning MSFS Functions to your keyboard or hardware: After release of the PMDG 737-600/700, many users wrote and requested the ability to map certain functions within the PMDG cockpit to hardware key commands within Microsoft Flight Simulator. We have provided a comprehensive Key Assignments menu that is available under the PMDG menu.

Key assignments can be made to many critical tasks within the PMDG cockpit, and some MSFS functions such as opening/closing doors and pushback have been set up through this menu in order to provide users with access to some default MSFS functions that have been known to conflict with the PMDG 737.



The following areas are available for keyboard assignment:

MCP (Autopilot Mode Control Panel)
 EFIS (Electronic Flight Instrumentation)
 Panel Switcher
 Autobrakes
 Doors
 Pushback
 Various

Users who have certain types of hardware setups will be able to map specific functions to their hardware through the use of this menu.

Additionally, we have identified two functions that are default MSFS commands that do not operate well with the PMDG 737. *Doors Open/Close* and *Pushback/Pushback Left/Pushback Right*.

(For those interested: The update rate of the PMDG airplane exceeds the update rate of the main MSFS engine, thus "combined key commands" in MSFS can sometimes be over-written before you can actually them...)

You can map the DOOR and PUSHBACK functions to the single key of your choice in order to use them appropriately!

Additionally, we have provided the ability to make the flight control yokes in the Virtual Cockpit appear and disappear so as to facilitate easier viewing of the Flight Management Computer while flying from within the VC. You can find this option under VARIOUS, and thus the single stroke of a key will remove the yoke or replace the yoke while you use the FMC!

Best Practices for Smooth 737 Operation

Frame Rates: We have designed the PMDG 737 Next Generation series of airplanes to provide good performance on a wide range of hardware platforms.

For users with very high performance machines, you should be able to operate your PMDG 737 in Flight Simulator 9 with maximum details, heavy scenery, weather and high update rates on the VC gauges while flying primarily from the Virtual Cockpit.

Users with mid to low range hardware should take a realistic approach to maximizing frame rates by reviewing the following notes:

- Displaying waypoints, airports, TCAS and Stations on the Navigation Display will have an impact of frame rates. This is due to the fact that the display routines must manage a tremendous amount of calculations to properly show you information on the navigation display. To minimize the impact, keep your navigation display reduced to only the information you need, and keep the range as close as feasible. Reducing the amount of information displayed will reduce the impact on your frame rates!
- We have included various model options to include 2D panel only, 2D panel and VC, and 2D panel with a VC and a cabin that can be “walked through” if you have the appropriate software installed. If you do not intend to use the cabin, don’t load that model as the extra overhead in polygons will impact your frame rates. If you do not fly from the virtual cockpit, then use the 2D model only in order to maximize your frame rates! A realistic assessment of what your machine is capable of handling will greatly enhance your enjoyment of this product!
- Tune your Virtual Cockpit frame rates using the MSFS options and the PMDG tuning tools provided in the menu.
- Limit your Frames per Second in FS: We have done substantial testing to determine the best ways to obtain smooth frame rates in MSFS. We found that setting Flight Simulator 9’s frame rates to “unlimited” tended to cause stuttering whenever the complexity of information viewed outside the cockpit window changed. We found that limiting the target FPS to between 25-30 allowed for significantly smoother overall frame rate performance when nearing complex scenery or viewing the airplane from the outside. We have tested this product on a range of platforms and found this to be true with the current high end technology- as well as most mid-range machines.

Force Feedback: There is no industry standard for Force Feedback controls, and we have found a wide variance in the behavior of Force Feedback products when used with FS9. We STRONGLY encourage users to disable “flight control feedback” to the joystick, as it’s implementation is generally inaccurate for transport category aircraft and will create over-control situations that make the airplane harder to fly. Also, ensure that in your FS9.CFG file, **stick_sensitivity_mode=0** If this entry is set to any value other than 0, aircraft controllability suffers.

Saved Flights: It is not currently possible to effectively save flights in progress for simple resumption. We had hoped to add this functionality with this new version of the PMDG 737, but were unable to do so without essentially “starting over” in the highly complex model of the aircraft systems. We continue to examine ways to make this possible, and it is a certainty that it will be a part of future PMDG products based on customer interest! Additionally, we have provided a “Cold and Dark” scenario that you can use if you wish to simulate entering an aircraft that is parked and shut down. You can load the **PMDG Cold and Dark** saved flight, then change to your preferred location and resave the flight. We recommend against loading a non PMDG airplane, shutting it down, then switching to the PMDG airplane as we’ve found that differences in the way various airplanes are modeled can lead to subtle conflicts.

Unexplainable FS9 Crashes or Error Reports: With the advent of Flight Simulator 9, Microsoft made some structural changes to the way Flight Simulator maintains its “current state” in the simulated world. Flight Simulator stores information in two locations:

- FS9.CFG
- Saved Flights.

The FS9.CFG file can be a great tool for managing FS9, but it is also the area of most significant failures within FS9. We have found that users who have made display/sound driver changes and/or installed/removed many addons generally have FS9.CFG files that are filled with “garbage” information that eventually confuses FS9.

If you find that FS9 begins displaying error messages or crashes to desktop when using the PMDG 737 or any other addon, then simply delete your FS9.cfg file, and re-run FS9. This will prompt the simulator to rebuild a fresh FS9.CFG file and usually resolves most problems that users experience.

Sometimes we receive email from users who have saved a flight within FS9 that they prefer to use as a “starting point” for all FS9 flying. Occasionally we have found that saving a flight in another aircraft then loading the PMDG 737 will create problems that prevent the proper initialization of the PMDG 737s systems and onboard computers. The PMDG 737 is a highly sophisticated product and while not fragile, it is always considered good practice to load directly into the PMDG 737 when you wish to fly the airplane.

Missing Lights: In order to see all the external lights on the PMDG 737, you must set the “Rendered Lights” slider to 8. On many machines FS9 will default this slider to position 6, and this will cause some of the external lights on the PMDG 737 to remain dark!

Also, we have provided a “dome light” in the Virtual Cockpit. In order to see this light, you MUST go to your OPTIONS, SETTINGS, DISPLAY, AIRCRAFT menu in FS9 and ensure that the “Show Landing Lights” box is checked!

Using the Virtual Cockpit and Cabin: A tremendous amount of thought and effort has gone into making this PMDG product interesting and usable to the greatest number of individuals and the various hardware setups common to simulation enthusiasts. When FS9 was initially released many users were surprised to find that Microsoft had removed some functionality that allowed greater freedom for users who enjoy the Virtual Cockpit and Virtual Cabin environments. PMDG was disappointed at this design decision with FS9, but we have continued to make powerful Virtual Cockpit and Virtual Cabin models available for those customers who own products like Active Camera. Active Camera will provide you with the freedom to wander around the airplane’s interior and exterior and significantly adds to the overall PMDG 737 experience. *Active Camera is not required to use the PMDG 737* however. Users can use the 2D cockpit and Virtual Cockpit models as provided and still experience the full value of this complex airliner simulation. We have provided the virtual cabin model for those with the additional software installed.

Customer Support

PMDG is committed to providing strong support to our customers 'after-the-sale.' When you purchased this PMDG product, you also purchased the support and dedication of the entire team to provide you with the finest high quality flight simulation experience possible on a modern computer.

Occasionally it is you may find it necessary to obtain help in the installation, operation or maintenance of your PMDG product. PMDG provides a number of avenues for you to receive support when you need it!

PMDG 737 Operator's Information Center: The PMDG 737 Operator's Information Center (PMDG 737 OIC) is located in the Support section at www.precisionmanuals.com.

The PMDG 737 OIC is a continually updated page that will provide users with current information on the operation and maintenance of your PMDG 737. If you find that you are having problems from installation to operation of the airplane, please visit the PMDG 737 OIC and consult the FAQ sections contained there. When PMDG identifies a problem that is being experienced by many users, the information is posted into the FAQ in order to ensure that users are made aware of the causes and solutions for common problems.

Additionally, the PMDG 737 OIC is your best source for easily ensuring that your PMDG 737 is up to date with the latest updates for functionality, Navigation Data and SID/STAR formats!

If you have a problem with your airplane, start out at the PMDG 737 OIC!

PMDG Customer Support Forum: PMDG supports a customer service forum that is hosted by AVSim as a courtesy to PMDG. (Thank you!) This forum is frequented by thousands of other PMDG customers and has become a welcome gathering place for experts on the operation and support of this sophisticated airplane! Additionally, all members of the PMDG team frequent the forum at different times to ensure that we are in tune with the experience our customers are having with our products!

The support forum is a great place to share flying tips/tricks/tales with other PMDG 737 pilots.

PMDG Technical Support Operations by Email: PMDG's technical support duties in the customer support forum are shared by a number of PMDG team members, but email support is handled directly by PMDG's Manager of Technical and Customer Support Operations, as well as by PMDG's Executive Director. Most email messages are answered within 24 hours and in most cases the direct interaction with the PMDG technical support resolves nearly all customer problems. Problems related to downloads, payments, irresolvable errors or other items of a serious nature can be addressed directly to support@precisionmanuals.com.

Again, please note that while we strive to answer all email with 24hrs, both support representatives are professional airline employees who's schedules may be affected by flight schedules, inclement weather or other industry events so occasionally response times may take a bit longer.

Telephone Support: PMDG developers are located in five countries and spread across fifteen time zones. For this reason we are unable to provide telephone support under any circumstances.

Replacement of Lost Download Products: PMDG is unable to replace lost or user damaged CD media, however we can easily replace a product that was originally purchased as a download from our website. PMDG provides free product replacement for a period of one year from the date of original purchase, provided the customer can provide enough identifying information to help us locate the order within our records! Please write updateme@precisionmanuals.com and provide your name, approximate date of purchase, Confirmation ORDER ID (if possible!) and any other information that may help us identify you and your order. *DO NOT SEND YOUR CREDIT CARD NUMBER, NOR WILL ANYONE FROM PMDG EVER ASK YOU FOR YOUR CREDIT CARD NUMBER.*

After the first year of ownership, PMDG may, at it's own discretion require a nominal charge to cover the cost of the replacement download. Additionally PMDG reserves the right to require that a customer repurchase the product entirely at our own discretion.

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