





pmSystems

Pmsystems provides us with the ability to simulate the complex system logics found in heavy transport aircraft. It can be used both as a pure software interface and / or to provide logics for custom hardware.

Switch positions, indicator lights, even the position of a cover guard switch have been given offsets and further defined as bits or bytes to give users full flexibility when implementing their hardware requirements. It is also fully expandable and almost anything within the systems can be defined by users themselves.

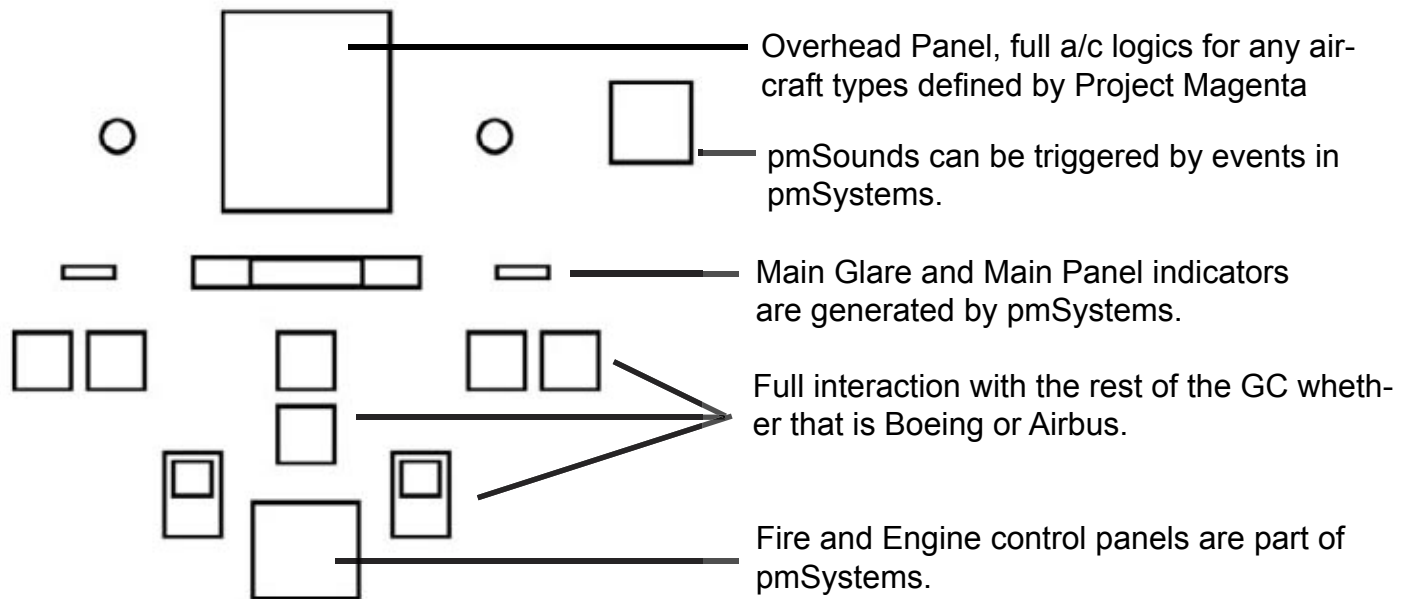
Offsets are listed within the system file sysvar.txt in the main program folder and will allow users to connect and control their own hardware with the appropriate I/O board. As long as your I/O board can read and write FSUIPC offsets/bits/bytes it should work with pmSystems.

The following is a guide to become acquainted with the general operation of the software and its features. We do recommend that you read this guide thoroughly before using the software as it contains some important information that will in the end save you time. We have made it as short as possible.

We have also provided a video presentation of a typical 737 panel scan and start procedure in the Videos section of the website.



OVERVIEW



The diagram above shows how pmSystems fits into the rest of the Project Magenta software concept.

The software is released with a base system logic for the 737 and Airbus (twin) series of aircraft. This base logic will be expanded with revisions of the software builds as is normal practice.

At the present time, the way pmSystems works is to connect it on a separate client with MSFS running a default panel (testing was done with the 737 default panel) Please use this as the basis for your initial tests/setup.

PMSystems is a separate piece of software designed to work outside of MSFS and follows the normal Project Magenta software concept. It can work connected to MSFS or connected to Project Magenta's own specialised flight model (only used within our professional FMST training software solutions and not supported or used in MSFS).

We have designed pmSystems to

communicate through FSUIPC to MSFS but as MSFS does not provide enough advanced system logics for an airliner type aircraft the internal logics are generated inside pmSystems not MSFS. The end result should be seen in MSFS in terms of the resultant function but the correct procedure for that result must be followed on the pmSystems panel.

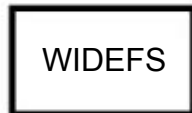
For example, if you follow a normal engine start sequence in pmSystems, eventually it will lead to the FS engines starting. If you don't follow the correct procedure then unless you override pmSystems by communicating directly with FS itself, then your engines will not start. It is important to understand that pmSystems becomes the central interface for control of what aircraft systems there are in FS and not FS itself. Once pmSystems is in the loop you must use it as your central interface to start engines etc and your hardware must be talking directly to pmsystems (if you are using hardware). Otherwise unpredictable results may occur even though pmSystems will try to interpret what FS has been set to.

GETTING STARTED

pmSystems uses FSUIPC to communicate with MSFS. If running pmSystems on a client PC (advisable) then WideFS will also be required. These are two independent programs written by Peter Dowson and full registered versions must be used to run pmSystems. You must also read the documentation for both WideFS setup and FSUIPC thoroughly if you are not familiar with this software. I would advise as further reading the FSUIPC, WideFS and also the FSUIPC SDK .



CLIENT PC WITH
PMsystems



1/ Install pmSystems on a client PC and run it for the first time. We do not recommend (at this time) installing it on a PC with other Project Magenta software or indeed on the same PC as MSFS.

2/ Make sure it is connected to MSFS using Peter Dowson's WideFS and FSUIPC. If it is not connected to MSFS you won't get the correct/or any functionality. Also, note it has been tested with a default 737 panel – do not use third party panels with pmSystems. It is probably best, until you become very familiar with pmSystems to start your first flights with everything OFF, i.e. cold dark cockpit state (save as a start-up situation). PmSystems will read the cold dark state of FS and you will then be able to run through a normal start procedure. Generally, pmsystems will read the state of MSFS upon start-up, but as MSFS does not provide enough state information, unless you start with a cold dark cockpit, certain indications on the systems panel may appear to be abnormal given the current status in MSFS.

3/ Upon first boot-up, the 737 or Airbus panel (selectable) will appear full screen showing the entire panel. Depending on how good your graphics card driver is, there are a number of options by pressing the ESC key that you can change. Pressing the ESC brings up the user menu.



Select system File = Aircraft type Panel

Font Smoothing = Smooths fonts (some graphics cards may require this to be off)

Font Quality Hi/Lo
Font Smoothing ON/OFF
Font Smooth via Lines/Polygons

Given the detail of the panel the above (depending on your graphics card) will improve the quality of texts and graphics which may be a requirement if using pmSystems on a small screen or simply to get the best look. More menu options will become available and for the most part these are self explanatory items.

To exit the program press the "Q" key.

PMsystems (at time of writing) has been tested and seen to be running acceptably on PC's with processors ranging from 850mhz to 2.2ghz win98 & winXP.

The key factor is your graphics card and the driver versions. Most will support all of the above higher quality settings, if not, you have three options, reduce the settings, update the drivers or find a previous better driver, and as a last resort change graphics cards. The software requires a full compliant OpenGL graphics card with appropriate drivers. If the drivers are not working correctly, it can cause not only strange artifacts on the display of the panel but also delays in writing commands to FSUIPC making the whole system slow.

Scroll Smooth ON / OFF

Scroll Smooth simply makes the scrolling action smooth rather than in steps when panning and zooming into the panel.

Slave Mode

Allows you to run x2 copies of PMsystems, one as a master and one as a slave – perhaps for an instructor. Normally this should be set OFF if there is no Master running otherwise in slave mode it will not communicate with MSFS.

Navigating around the panel

You can zoom into areas of the panel by pressing the + - keys on the numeric keypad. You can scroll across it by either using your RIGHT CLICK & hold your mouse or by the arrow keys.



With pmSystems connected to FS and your FS aircraft in a cold dark state with engines off you are ready to start operating the overhead panel.

PMsystems is designed to be used both as a software point and click interface and also to be connected to custom overhead / simulator hardware. It performs both types of operation. For now we are treating pmSystems as a pure software interface with MSFS to get us started. If you did have dedicated hardware connected and running, the primary goal of pmSystems would be to provide the logics, and be a visual reference when testing those logics against your hardware. Once your hardware was up and running, pmSystems could reside on the network as a background program, or perhaps as part of information available to an instructor in training scenarios on a client PC.



A/C Operating Procedures

The Airbus and 737 system logics are complex and reference must be made to proper training manuals to fully understand them. During the development of pmSystems real a/c logics were followed and there for if you are not familiar with these you will have to refer to real a/c operating manuals and / or checklists available in most good pilot / aviation shops. Some links to these are on the Project Magenta website. For the avoidance of doubt, Project Magenta develops software not a/c training manuals which is a totally different sphere of business and best left to that area of expertise (otherwise we would not have time to develop the software!).

For anyone who does not own or feel like purchasing aircraft training manuals, we have provided a short video for the 737 panel scan and engine start from a Cold Dark Cockpit. An Airbus video will also be provided if demand dictates. Videos are just to get you going and only serve as an example of general procedures. Depending on aircraft version / type / specific airline procedures these sequences may be applied differently. In no way should these videos be seen as any form of training aid, they are simply to show how the software can be used. Again, official publications are the best way to operate the panels and learn a/c operating procedures.

Flight Models

PmSystems does not care which flight model you use. It is only interested in being able to communicate with something it “can” communicate with. The only advise we have is to make sure that the panel your a/c uses inside FS is one of the appropriate default MSFS panels and not a third party add-on which could send confusing information back and forth to pmSystems.

PLEASE NOTE: Do not expect pmSystems to work if you run it with a/c with advanced panels of their own. Like PSS and PMDG. They have their own systems which will most probably cause conflicts with pmSystems. We can not accept bug reports if you are not running these a/c with default MSFS panels.

Reporting Problems

Please indicate the software version, and the a/c flight model. Always use pmSystems with the default MSFS a/c panels. Please make sure your version of FSUIPC is up to date.

Software Development Schedule

Phase 1 -> 737 & Airbus

Phase 2 -> Software refinement

Phase 3 -> Phased release of

757,767,777,747 & Airbus 340 logics

(order yet to be determined)



Connecting Hardware

In the main pmSystems folder you will find a file called sysvar.txt. You can open this file using a text editor such as notepad. It lists the FSUIPC offsets allocated to the corresponding pmSystems function. The length of the offset is defined as either a Byte or a Bit. Bytes are simply defined as a 1 2 3 etc where as bits are defined as .0 .1 .2 etc

561F .0 Gen1Fault
 561F .1 Gen2Fault
 561F .2 APUGenFault
 561F .3 APUGen2Fault
 561F .4 IDG1Fault
 561F .5 IDG2Fault
 561F .6 GalleyFault
 561F .7 ACCESSFeedFault

5620 1 Gen1
 5621 1 Gen2
 5622 1 Gen3
 5623 1 Gen4
 5624 1 APUGen
 5625 1 APUGenR

FSUIPC OFFSET ALLOCATION	BYTE	DESCRIPTION / FUNCTION
5620	1	GEN 1

FSUIPC OFFSET ALLOCATION	BIT	DESCRIPTION / FUNCTION
561F	.0	GEN1 FAULT

I/O boards will have their own ways of handling and interpreting FSUIPC offsets, bytes and bits. It will be necessary for you to understand how your I/O board hardware (and software) handle and allocate the above information.