Panel Interface

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This document describes interfacing methods between VRinsight's unit and Flight Simulators.

Interface Methods:

There are three ways to interface MCP combo panel and CDU panel of VRinsight with default aircrafts of MSFS (FS 2004 / FSX) and payware aircrafts of add-ons;

1. Direct Interface (Accessing aircrafts internal variable)
2. Key-command (Keyboard emulation)
3. Mouse-key (Mouse Emulation)

DIRECT INTERFACE (MSFS / Level-D)

It directly interfaces MCP combo panel and CDU panel of VRinsight with aircrafts control panel by using SDK(Software Development Kit). FSUIPC is used for MSFS original aircrafts and most free-ware aircrafts. Level-D has released their own SDK (Software Development Kit) in order that hardware makers can get easily interface their aircrafts and hardware. Special thanks for them!

Direct interface method is explained at Fig.1. For this method, the software library, interface kit (SDK, software development kit) must be provided. Pete Dowson's FSUIPC is the greatest add-on module for FS2004 and FSX. Exact values and controls from hardware can be written into the aircrafts internal variables. Updated variables can be read synchronized with flight computer's management and displayed on panel hardware. As long as the add-on aircraft's interface kit is available, VRinsight will support it with aircraft dependent DLL modules.
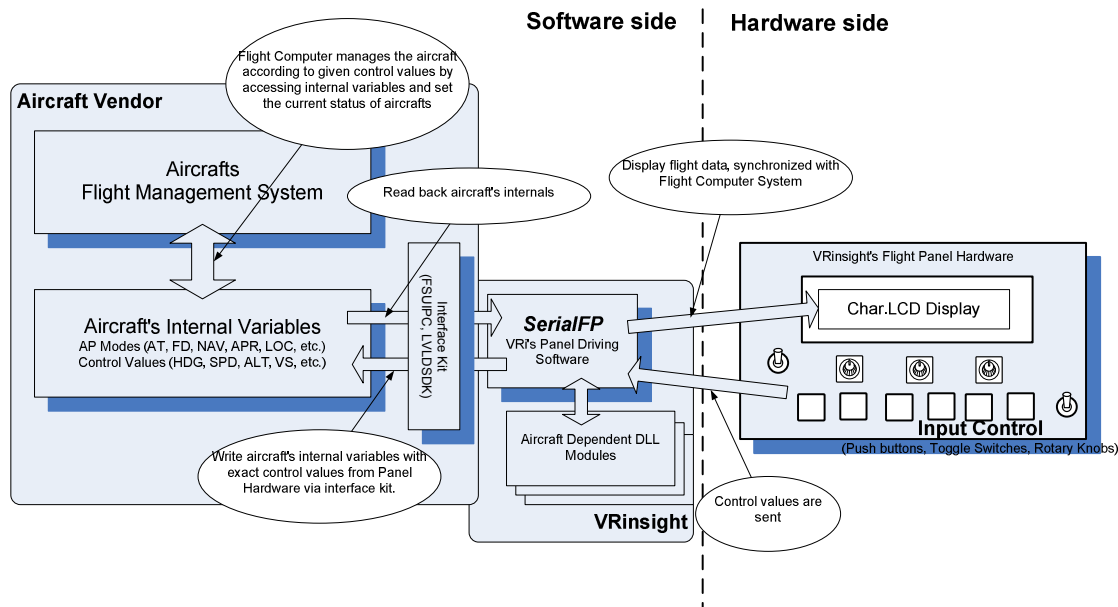
KEY-COMMAND INTERFACE (Wilco, PMDG, PSS)

It is used for other add-ons aircrafts; Wilco, PMDG, PSS by key board emulation. Since they haven't opened their SDK for direct interfacing with hardware makers, MCP combo panel and CDU panel of VRinsight use Key-Command. Key-Command interface method is explained at Fig.2. Key-commanding is assigning combination of keyboard strokes to a button on hardware panel. Shortcoming of key-commanding is NO two-way communication between aircraft software and panel hardware. It's only "Input Device". The panel has display device showing current aircraft status(i.e. engaged autopilot mode, SPD, HDG...). These status and values are varies with controlling of flight computer. The hardware panel can display various data synchronized, as far as the interface kit is available and internal variables are accessible.
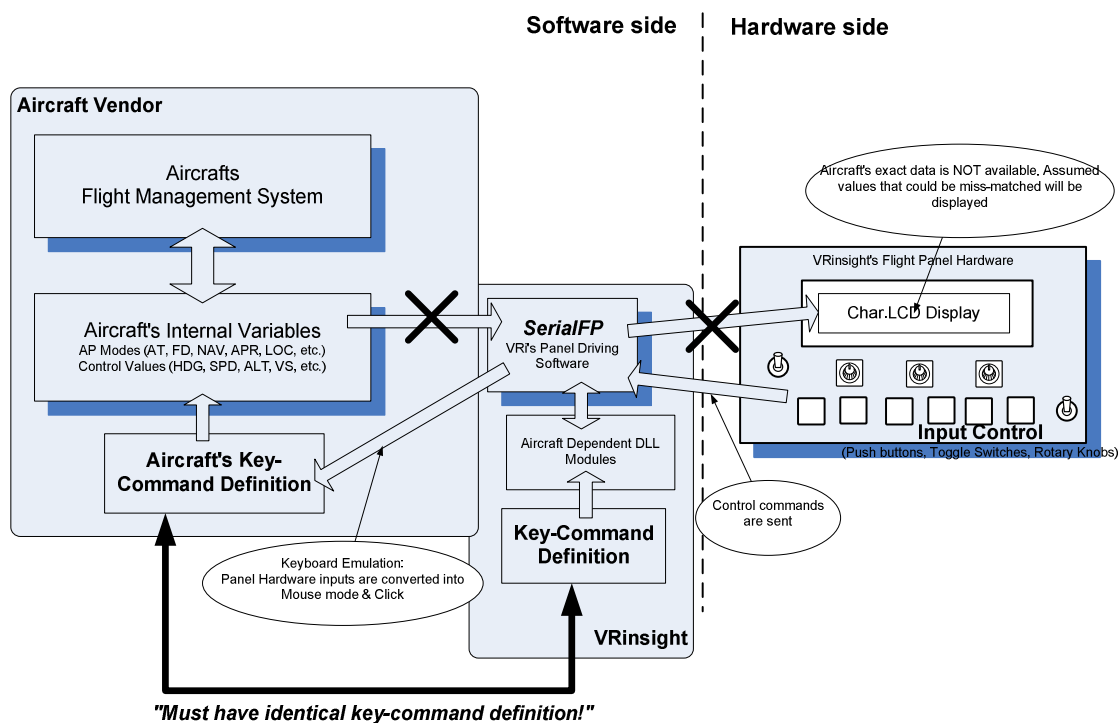
To control the aircraft with Key-Command Interface, key-command definitions of aircraft's and SerialFP's must be identical. There're very various aircrafts flying over the virtual sky and limited number of aircraft is supported from VRinsight. You can find which aircraft is supported at the time when SerialFP is released, follow the system menu, Start->Program->SerialFP2->Airceaft Support.
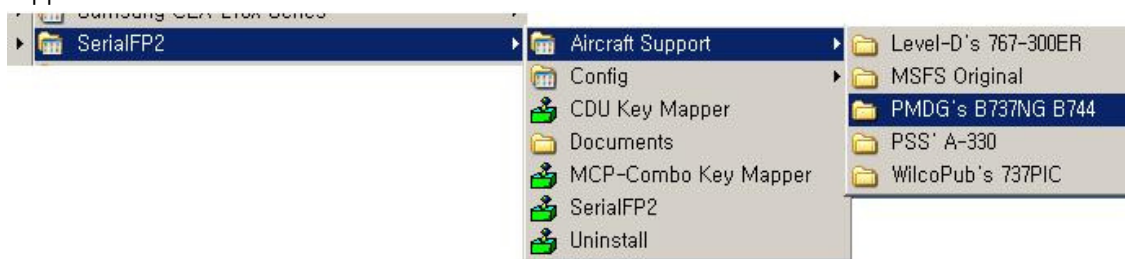
By selecting one, aircraft supporting folder will be opened where the pre-defined key definition files is found. Just copy the provided key definition file into where the aircraft is installed. See following fig. as an example of PMDG-744X.
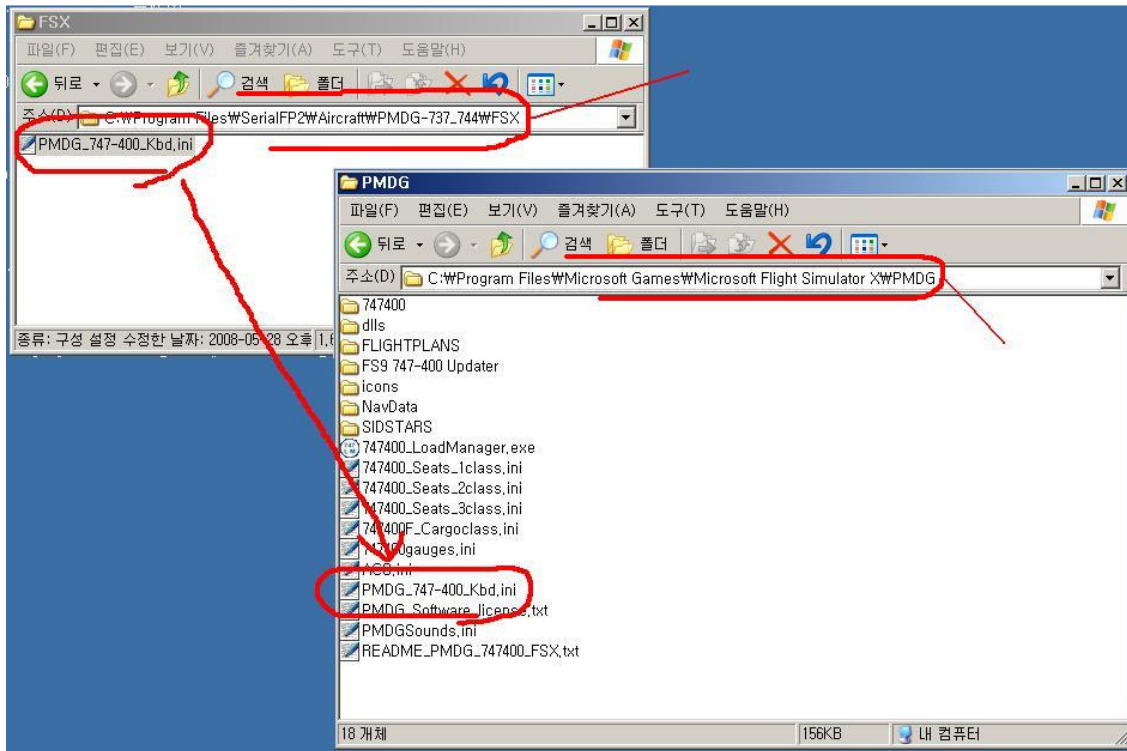
MOUSE-KEY INTERFACE

It is used for all aircrafts; default aircrafts of MSFS / add-ons aircrafts; Wilco, PMDG, PSS by key board emulation. The key-commanding is simple but cause confliction with other add-ons. For complicated aircrafts, hundreds of key-commands are required. Unfortunately, some aircrafts does not have enough key-command definitions. For this case, any buttons, switches and knobs are defined to "moving mouse pointer and click". The most defeat of mouse-key interface method is the definition is very dependent to user's graphic configuration. Mapping software is provided for mouse pointer can be programming.

Software side | **Hardware side**

Aircraft Vendor

Aircrafts
Flight Management System

Aircraft's Internal Variables
AP Modes (AT, FD, NAV, APR, LOC, etc.)
Control Values (HDG, SPD, ALT, VS, etc.)

**Aircraft's Cockpit
Graphic Screen**

Mouse-Emulation:
Panel Hardware inputs are converted into
Mouse mode & Click

SerialFP
VRi's Panel Driving
Software

Aircraft Dependent DLL
Modules

**Mouse-pointer
Definition**

VRinsight

Aircraft's exact data is NOT available. Assumed
values that could be miss-matched will be
displayed

VRinsight's Flight Panel Hardware

Char.LCD Display

Input Control
(Push buttons, Toggle Switches, Rotary Knobs)

Control commands
are sent