



# Opencockpits



## B737 V3. CDU's Manual

**Index:**

B737 V3. CDU'S MANUAL.....	1
INDEX:.....	2
INTRODUCTION: .....	3
FMC B737 V3: .....	3
SPECIFICATIONS:.....	3
APPEARANCE AND MEASURES: .....	3
DESCRIPTION OF THE CONNECTORS:.....	4
STARTUP OF THE FMC:.....	4
SCREEN: .....	4
BACKLIGHT:.....	6
KEYBOARD: .....	6
<i>Definition of the elements of the card for use with Sioc: .....</i>	7
<i>The module control script: .....</i>	8
FMC B737 V3 TEST:.....	9
ADJUSTMENT AND POSITIONING OF THE DISPLAY OF THE SIMULATOR ON THE SCREEN OF THE CDU:.....	10
ADJUSTMENT FOR CDU FROM DOCKED WINDOW OF THE SIMULATOR: .....	11
ADJUSTMENT FOR CDU FROM EXTERNAL PROGRAM: .....	11
LINKS OF INTEREST: .....	12

## Introduction:

FMC B737 V3 is the natural evolution of earlier versions for excellence in simulation. This module has been developed keeping in mind users who want a real simulation of both aesthetics and functionality.

This module presents several new features, like integrating adjustable backlight by hardware (such as the real), split screen frame, keys at the right height, modern and functional controller that allows the shutdown and setting of the screen and direct input from VGA. The module is connected through the USB port on the computer and is managed by the Protocol IOCP using at least version 4.2B of SIOC.

## FMC B737 V3:

Unlike his younger brothers, FMC V1 and V2, in V3 FMC B737 all indicators and LED's are operative as in the real and does not need additional soldering and other IOCards to be able to operate at his 100% thanks to the development of a specific IOCard, the FMC V1 USB, that controls the inputs of energy, USB, video, brightness of the keys and their beats.

His younger siblings who only had a video RCA input, in most of cases they needed an expensive RCA adapter to VGA and that often caused interference problems. With the new built-in screen controller we save buying costs of accessories and potential problems, since we now have in addition to the RCA video input the new VGA input, that allows us to connect the module directly to any modern video card (which currently has two outputs) and makes the position and size of the screen configuration extremely simple.



The 5" LCD screen which we have selected for this module has better specifications than those used in FMC V1:

## Specifications:

- 12V external power supply included.
- Brilliance intensity control of hardware keys.
- 2 Video inputs, 1 RCA and other VGA (DB15).
- 1 USB 2.0 input
- 1 power supply input
- Possibility of auto-configuration of the LCD.
- Resolution of 800 x 600 dpi.
- 286,000 colors. Viewable.
- The display with separate keyboard settings.
- Boeing paint with matte finish.
- Feel of the keys as the real

## Appearance and measures:

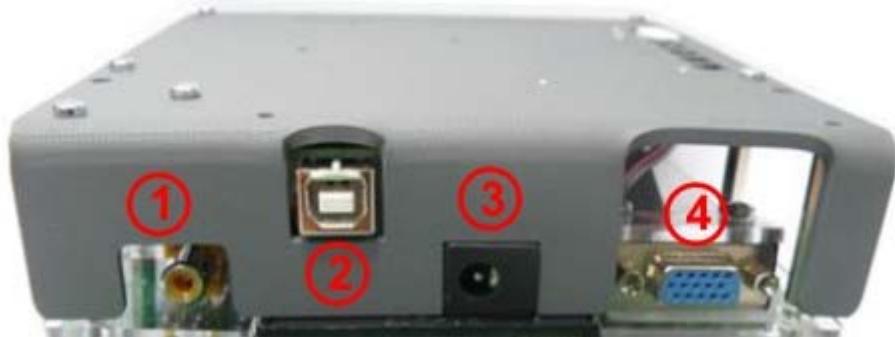
- Measures: 150x225x65mm.

The Assembly is shipped with the following elements:

- FMC B737 V3 module.
- 12V, 4A. Power source
- Power cable.
- VGA cable.
- USB cable.



## Description of the connectors:



- 1.- RCA video input connector
- 2.- USB connector.
- 3.- 12V, 4A power supply connector, with positive in the Center.
- 4.- VGA video input connector.

## Startup of the FMC:

We already have unpacked our FMC B737 V3 and we have it visually inspected, now we have to install and configure it, so we will proceed to plug the cables that are included in the package: USB, VGA and power.

The display, keyboard and lighting are independent and can be configured separately:

### **Screen:**

We can test the screen connecting only the power to select the video signal source, orientation of the image, contrast, brightness, etc. But they are already predefined at our Assembly line.

As soon as we connect the other end of the VGA cable to our computer, it will detect that we have connected a screen. To configure this screen (it depends on each operating system, in this example it is with Windows XP), click with the right button at any free space in our desktop and a menu of options, where we select the "Properties" option, will appear to us and will show us our desktop settings screen, as shown:



It shows us the two "monitors" that we have already connected; the image shows the button of your mouse, the information is shown in the following image: "main" monitor settings and numbers as 1, we also see beside the "attached" monitor, which in our case is the screen of our CDU. If we chose this second monitor and click on the right button, the information is as shown in the following image:



Where we can see how it tells us that monitor 2 is the "Deputy" and have it set to a screen resolution of 800 x 600 pixels with 16-bit color quality and what we see is an extension of the Windows desktop and it is in the position shown in the graph (which can be moved to our own liking around monitor 1).

If you select "advanced options" option on this screen, it will appear a menu that will vary depending on the manufacturer of the graphics card chip, therefore this cannot be generalized. Here are the main desirable configurations for the use of the CDU:

- Resolution: 800x600 or lower.
- Color quality: 16-bit or lower.
- Display mode: Dual view, although it will depend on the user.

With this, the new screen is configured and recognized by the operating system (in Win7 or Vista, the process is practically the same and only changes the appearance of the popups).

### **Backlight:**

The backlight of the module is independent of all other components, just insert the connector of the power supply have control over it.



Simply turn the brightness button to go from zero to full brightness and vice versa

### **Keyboard:**

This section requires a little more than attention others. This module has an IOCard developed exclusively for him, the FMC V1 USB. This card is controlled using Sioc version 4.2B2 or higher and is declared as any other Opencockpits modules (if you have an earlier version it is recommended to uninstall it and install the latest available in the area of help/support from the Opencockpits shop):

**MASTER = index device, type, number of cards, device number**

**Device index** = number to identify the FMC in the scripts (IDX in the SIOC window) and DEVICE in the script, 13 in our example.

**Type** = 13, fixed number which tells Sioc is a FMC-737 module of Opencockpits.

**Number of cards** = fixed number that tells you to Sioc that it is a module only.

**Number of device** = number of the USB port where the module is attached.

I.e., our tests B737 V3 FMC statement is:

MASTER = 13, 13, 1, 258

In your case the 258 value is replaced by the value of your USB port. We now come to declare the module in our sioc.ini: we execute Sioc, click on the button Edit INI, this will open the text editor with our current sioc.ini, where we will be able to declare our module in the section:

```

[ sioc.ini: Bloc de notas ]
Archivo Edición Formato Ver Ayuda
[----- CARDS CONFIG -----]
[ IOCard Master ]
[ Spanish : ]
[ MASTER=(indice device),(Tipo),(Número de tarjetas),(Número device) ]

[ Índice Device: Índice usado en la variable SIOC como device, para indicar a que tarjeta se hace referencia ]
[ Se usa 0 en el caso de que sólo haya una tarjeta y no se tenga en cuenta el número de device, por defecto un script en SIOC cuando no se pone parámetro DEVICE, se hace referencia al índice 0 ]

[ tipo = 0 : Emulador de Master Card // OBSOLETO ]
[ tipo = 1 : Tarjeta Master conectada al puerto paralelo directamente // OBSOLETO ]
[ tipo = 2 : Tarjeta Master conectada al puerto paralelo mediante cable de compatibilidad // OBSOLETO ]
[ tipo = 3 : Placa de expansión por puerto paralelo // OBSOLETO ]
[ tipo = 4 : Tarjeta USBExpansion usada ]
[ tipo = 5 : Modulo MCP de Opencockpits ]
[ tipo = 6 : Tarjeta USBOutputs ]
[ tipo = 7 : Modulo EFIS de Opencockpits ]
[ tipo = 8 : Modulo Radio COM de Opencockpits ]
[ tipo = 9 : Modulo Radio NAV de Opencockpits ]
[ tipo = 10 : Modulo Radio ADF de Opencockpits ]
[ tipo = 11 : Modulo Radio ATC de Opencockpits ]
[ tipo = 12 : Modulo Radio Airbus RMP de Opencockpits ]
[ tipo = 13 : Modulo FMC-737 de Opencockpits ]
[ tipo = 14 : Tarjeta USBDmotorPLUS ]

[ Número de tarjetas = Número de placas Master usadas, 1 a 4 para uso de placas de expansión, 1 para conexión de placa Master directa o del Emulador ]
[ Número de device = 0 en el caso del Emulador o primera tarjeta USB detectada, Dirección del puerto paralelo (por ejemplo $0378), o número de dispositivo USB ]
[ Un ejemplo de 2 USBExpansion conectadas con 3 y 2 placas Master ]
[ MASTER=0,4,3,22 ]
[ MASTER=1,4,2,24 ]
[ Un ejemplo de conexión a simulador ]
[ MASTER=0,0,1,0 ]

MASTER=13,13,1,258
[USB FMC]

```

Save the changes and close the text editor, press the button Reload of Sioc and if everything went well the FMC V1 USB locard will be properly recognized in order to work with it. To check if the card is working properly we must perform a verification script and review with IOCPConsole since Sioc Monitor is not ready for this hardware.

## Definition of the elements of the card for use with Sioc:

The definition of all the elements of the card for use with Sioc is:

```

// ****
// Definition of USB FMC V1 - By Manuel Velez - www.opencockpits.com
// ****

Var 0001, name keys, Link IOCARD_KEYS, device XX
Var 0002, name OUTPUT0, Link IOCARD_OUT, device XX, Output 0 // OFST indicator
Var 0003, name OUTPUT1, Link IOCARD_OUT, device XX, Output 1 // MSG indicator
Var 0004, name OUTPUT2, Link IOCARD_OUT, device XX, Output 2 // EXEC led
Var 0005, name OUTPUT3, Link IOCARD_OUT, device XX, Output 3 // DSPY indicator
Var 0006, name OUTPUT4, Link IOCARD_OUT, device XX, Output 4 // FAIL indicator
Var 0007, name OUTPUT5, Link IOCARD_OUT, device XX, Output 5 // not used
Var 0008, name OUTPUT6, Link IOCARD_OUT, device XX, Output 6 // not used
Var 0009, name OUTPUT7, Link IOCARD_OUT, device XX, Output 7 // not used
Var 0010, name OUTPUT8, Link IOCARD_OUT, device XX, Output 8 // not used
Var 0011, name OUTPUT9, Link IOCARD_OUT, device XX, Output 9 // not used

```

## Programming notes:

The outputs are activated with 1 and deactivated with 0.

With these data we will generate the script and test the module.

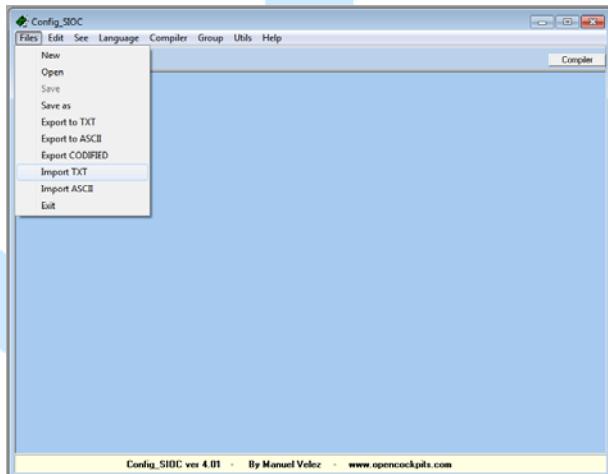
## The module control script:

Now we'll make a script with which we can check the operation of the keys and indicators of the module with a text editor such as notepad or similar.

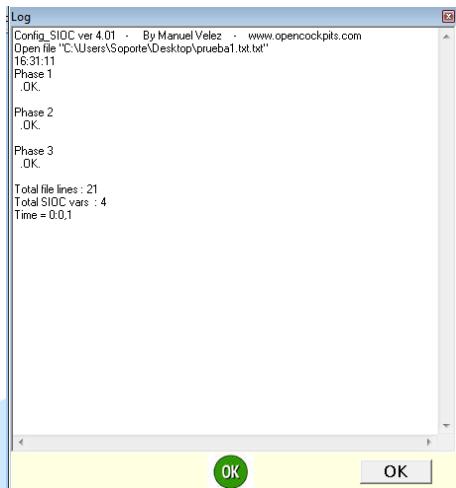
```
// ****
// * Config_SIOC ver 4.2 - By Manuel Velez - www.opencockpits.com
// ****
// * FileName : USB_FMC_V1_test.txt
// * Date : 07/13/2012

Var 0001, name keys, Link IOCARD_KEYS, Device 13
Var 0002, name OUTPUT0, Link IOCARD_OUT, Device 13, Output 0 // FMC OFST amber led
Var 0003, name OUTPUT1, Link IOCARD_OUT, Device 13, Output 1 // FMC MSG amber led
Var 0004, name OUTPUT2, Link IOCARD_OUT, Device 13, Output 2 // FMC EXEC green led
Var 0005, name OUTPUT3, Link IOCARD_OUT, Device 13, Output 3 // FMC DSPY red led
Var 0006, name OUTPUT4, Link IOCARD_OUT, Device 13, Output 4 // FMC FAIL red led
// End of File USB_FMC_V1_test.txt
```

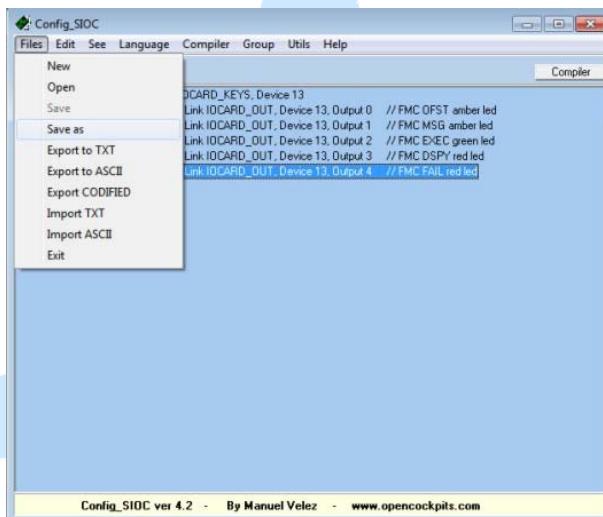
We save it as USB\_FMC\_V1\_test.txt, we connect our FMC B737 V3 to our computer as we have seen in previous chapters, runt Sioc, click on Config Sioc, go to the option of importing the menu txt files and select the script you just save:



If all went well a screen like this will appear:



Should there be any compilation error, it will warn us indicating what the error was and with a red button, in that case we must review our script. As everything went well we have our script compiled in Config\_SIOC:



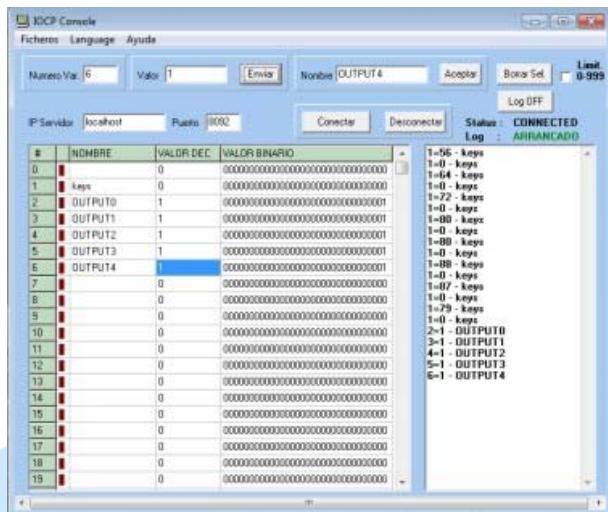
Let's go to the Save As option in the file menu and save it with the name sioc.ssi in the directory where SIOC is installed. We exit Sioc Setup, and go back to the main SIOC screen, where we check if the sioc.ssi file is declared to be loaded in in sioc.ini. Click the Edit button.Ini and check if the line is at the beginning of sioc.ini:

CONFIG\_FILE=.\sioc.ssi

If so we close the text editor without making any changes, we return to the main SIOC screen and click the Reload button to make all changes made in both sioc.ini and sioc.ssi loaded: we already have the option to check the 737B V3 FMC.

## FMC B737 V3 test:

Everything is now ready, press the IOCPConsole button and the following window will appear:



Click Log ON and Connect, the variables will be the actual values at that time.  
If we press any key on the FMC, keyboard movements will reflect in the log, one of activation of the button pressed and one of the return to zero (release).

For the outputs of the indicators we can select each one of them, and directly put a value of 1 and send it from the top check box and observe the results.



Now we can create the suitable scripts for each add-on simulators (visit the scripts zone in the help page where there already are several written) and adjust the virtual FMC in our actual screen display.

**Adjustment and positioning of the display of the simulator on the screen of the CDU:**

For this chapter must have installed a Flight Simulator that has an add-on having a FMC, in our case we are going to perform the example with IFly 737 running in FS9 that it has it integrated as a window in the cabin and has a slightly longer process than the add-on that includes it as an external executable:

### ***Adjustment for CDU from docked window of the simulator:***

1.- Start the Simulator, select a flight with an Ifly 737-800 (for example) with the environmental conditions and airport take-off we want. Once we have the main view of the cabin, we select the window of the FMC of the captain or the first officer to appear and we click with the right button on top of the FMC of the screen and select undock window:



2.- Once decoupled, we have a separate window from the Simulator with the FMC and we can already work with it both in position and size, from there we work just as if the FMC was a stand-alone executable independent from the simulator.

### ***Adjustment for CDU from external program:***

We run the FMC program included in our add-on and have the window ready to be moved to the position where we will set up our new screen and once in place we will adjust the size so the image that appears on our screen of the FMC is to its scale. The way to handle the size of the window is the same as with any window in Windows, pulling the sides or corners.

In our case we had the new screen in the upper right corner of the main screen and consequently we must drag the FMC window to that corner, we will see that on the LCD screen of the FMC where the wallpaper was, now can see part or the entire window of the FMC software:



Now we must move and resize until we get a good result:



We already have our FMC operative, in what regards to screen. Now comes the last important step: **save our flight** with a name that will remind us that we have the FMC configured in its place. In case we do not save the flight, all done will be lost.

With this purpose we end this manual and we invite you to read the other Opencockpits items and the SIOC software manuals and we thank you for trusting us.

## Links of interest:

Support zone for customers:

<http://www.opencockpits.com/catalog/info/>