MCP747

(THIS MANUAL IS SUITABLE FOR THE "MCP747" VERSION)

This manual is intended for Flight Simulator use only and may not be used in any
real world aviation application. The authors are not responsible for any errors or omissions.

FOREWORD

Thank you for purchasing the CPflight MCP747 hardware. To optimize the performance of this unit, please read through this manual carefully. This manual gives you the information to connect and use MCP747 panel with Microsoft Flight simulator and Project Magenta. The MCP747 supports the most commonly used FS add-ons, it is not possible to assure however full compatibility with all third party add-ons.
To find out more about compatibility with a specific add-on aircraft please refer to the latest information on the CPflight website "compatibility" page.

This manual contains the latest information at time of drafting. Due to the continuous evolution of the product some features could be been modified as deemed necessary. Latest information's can be found on the CPflight website www.cpflight.com

All CPflight modules are produced to meet the requirements of the hobby market. The use of our products in professional or commercial environments is strictly prohibited without prior approval from CPflight management; please contact us at info@cpflight.com for possible professional or commercial applications.

The MCP747 is a full scale replica of the Boeing 747 Mode Control Panel, the panel includes the EICAS selector in a single block, the EFIS selectors (Captain and/or F/O) are available as separate products.

Important: The hardware does not have its own on-board memory. Once it interfaces with the supplied software; logics, operating modes and aircraft behavior are all managed by the software.

HARDWARE INSTALLATION
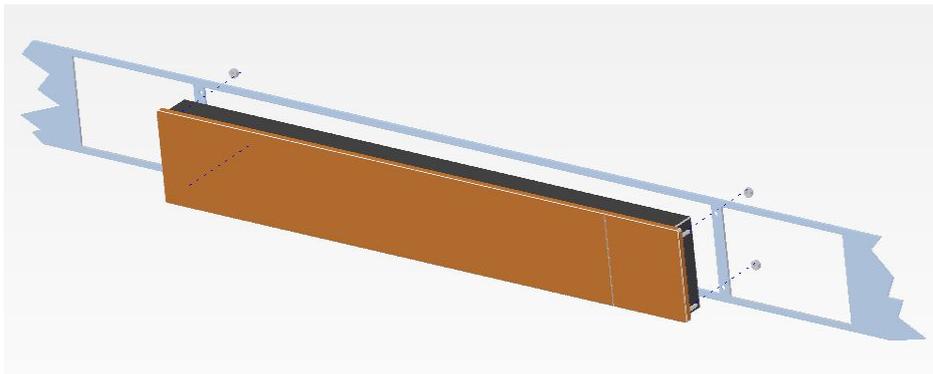
The MCP747 module is designed for panel assembly. The MCP747 is intended as a part to be inserted in a MIP (Main Instrument Panel) reproduction. CPflight does not produce chassis or other mechanical parts for the cockpit or MIP structure, the module is therefore intended to be inserted in your own or third –party cockpit MIP. To mount the MCP module cut out your panel according with the dimensions supplied on the last page of this manual. To allow mounting via the supplied screws the bracket structure does not exceed 8mm thickness. When mounting, please allow clear access to the rear of the MCP module for connectors, maintenance and firmware upgrades (see below).

CONNECTIONS

Connection sockets are located on the back of the module (Figure 1). Besides to the supply and USB connectors the MCP747 module has some other sockets, these are provided for future system expandability. A DIN 5 pole socket "C" is used to link auxiliary CPflight modules (EFI747).

POWER SUPPLY

The MCP747 can be directly powered via the USB port; the USB port must have 500mA current capability (USB 2.0 or higher) or a HUB with its own power is recommended. A standard 500mA USB port can feed the MCP747 + 2 EFI747 (Captain + F/O), should you need to connect further CPflight expansion modules an optional power supply adapter is required; a suitable power supply adapter is available on CPflight website purchase page.
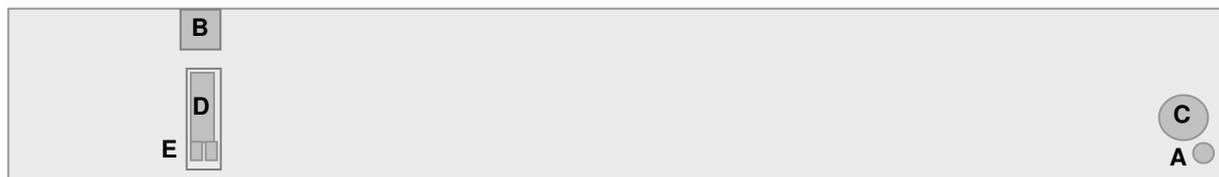
Figure 1: Connectors (back view)

A - Power supply socket
B - USB
C - 5 poles DIN socket for external module connection
D - Aux input
E - Jumpers for firmware upgrade

WARNING! A compatible stabilized plug-in power supply adapter must be used; do not attempt to use a different adapter as you may irreparably damage the MCP module. In addition, do not attempt to connect any other device to the module not covered in this manual. Warranty does not cover damage due to incorrect wiring of any other external device.

USB DRIVER INSTALLATION

When you connect the MCP for the first time it will prompt you for USB driver installation. The drivers are available for download from CPflight website. To install the drivers follows these steps:

➢ Download the file "usbdriver.zip" from http://www.cpflight.com/sito/downloads/downloads.asp

➢ Files are in a compressed archive .zip; unzip the files in a temporarily folder…

➢ While the computer is ON, connect one end of the supplied USB cable to the rear socket of the MCP747 module first, then connect the other end to an available USB port in your computer.

➢ The driver installation procedure will start automatically; follows the instruction on the screen (note that the figure of the following example may be different depending by your operating system)…

When windows prompts you to automatically search for the software, click on the "No, not this time" button and then click next to continue…
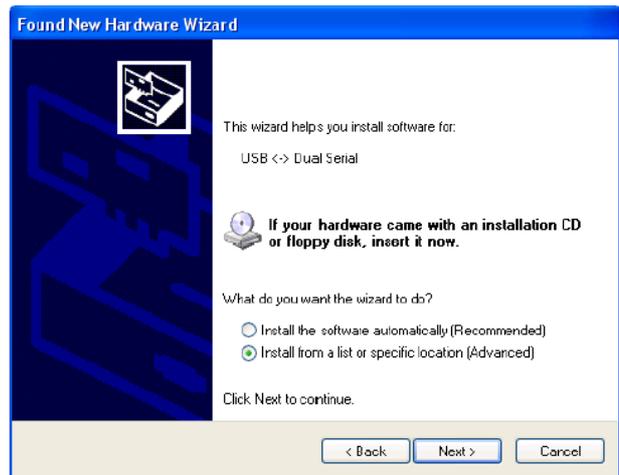
Select "Install from a list or specific location" and click next to continue…
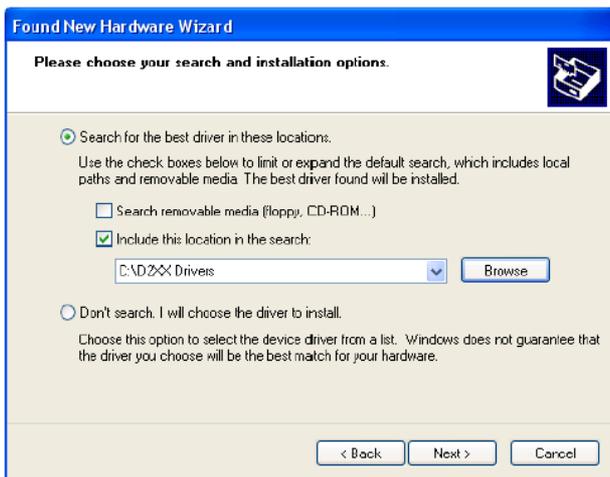
Browse to the temporarily folder where you previously unzipped the files and click next to continue…

You will be prompted that the "driver has not been signed by the Windows logo authentication program" click "Continue Anyway"…The drivers will now be installed in the system; click "Finish" when prompted.

The drivers will be installed in the system; click "Finish" when prompted.

Important note: Depending on your system you may be required to repeat the driver installation twice.

During the USB drivers installation the system assigns a communication port number. Check your configuration in the Windows Control panel -> System Property -> Device Manager Tab. On the (COM & LPT) port you will see "CPflight serial adapter (COM n)" where "n" is the assigned communication port number, you will need this number when running the initial set up (se following).

COMMUNICATION SOFTWARE INSTALLATION

In addition to the USB driver, communication software is needed to interface and use the MCP747 module with the default FS.
Note: the communication software allows using the MCP747 with default FS aircraft. To use the MCP747 with Project Magenta it is not necessary to install the communication software as it is already included in the Project Magenta MCP software.

To install the communication software:

- Download instfs9_xxx.zip (for FS2004) or instfsx_xxx.zip (for FSX) where xxx = revision number from
 http://www.cpflight.com/sito/downloads/downloads.asp

- The file is in a compressed (zip) archive. To install the software, extract the zipped folder in a temporary folder and run the exe file (start PC as administrator to install software on Windows 2000/XP/Vista).

- CPflight MCP747 requires the popular FSUIPC library. If you do not have FSUIPC in your system download it at http://www.schiratti.com/dowson.html For FS 2004 download FSUIPC 3.xx, unzip the files into FS9 module folder. For FSX download FSUIPC 4.xx unzip the files in a temporarily folder and double click on "Install FSUIPC4.exe".
Note that the CPflight driver does not need the registered copy of FSUIPC to use the MCP747 and its expansions, we recommend however, that you register your copy of FSUIPC to take advantage of all the extra features allowed by FSUIPC.
More information about FSUIPC at http://www.schiratti.com/dowson.html

Note: although the hardware support commands on all the pushbuttons/knobs, EICAS and LNAV/VNAV functions are not supported by the default FS 747. To use EICAS and LNAV/VNAV functions Project Magenta or other additional add-on software may be required.

FIRST SET UP AND START-UP

To enable communication with Project Magenta set the communication port number in the Project Magenta "mcp.ini" file. In the Project Magenta MCP folder open "mcp.ini" with a text editor, browse the [Serial Connection] section and set CpflightComm= n where "n" stands for the communication port assigned by the system during the USB drivers installation (see the above "Driver Installation" section). Save the "mcp.ini" file.
To start the MCP747 run the Project Magenta MCP software.
To start the MCP747 with the default FS select "Connect" from the top-bar FS Add-on menu -> CPflight -> FS-COM.
The first time you run FS-COM you will be prompted to select the communication port number (Setting COM); set the port number assigned during the USB driver installation (see above).
The MCP747 will now initialize, you will see the "VERT SPD" and "ALT" displaying the serial number while the "HDG" display shows the installed Firmware revision.

The MCP automatically disconnects from FS and turns itself off when you exit FS. If you shut-down your computer without first exiting FS - or if the computer freezes, the MCP may stay on or may fail to start on the next power-up. If you encounter any issues starting or shutting down the MCP, we recommend that you reset the unit. To do this, disconnect the USB cable (and power supply adapter if any) from the MCP, wait a few seconds and reconnect the power.

Important notes! The MCP features a displays-off mode to simulate a "cold and dark" situation depending upon the battery, avionics or other aircraft systems status. Be sure to have the right conditions in the cockpit to match the display status. For supported functions please refer to the CPflight website "compatibility" page

ON- THE- FLY DISPLAY BRIGHTNESS AND BACKLIGHT ADJUSTMENT

With the MCP running normally (or in test mode using the CPflight test software) you can adjust the display and backlight brightness on-the-fly. These functions are not available however, if the corresponding preferences are set "On" in the configuration menu (see above "CONFIGURATION MODE" section).
To adjust the display brightness press and hold the "SEL" button and rotate the HEADING knob; to adjust the backlight brightness press and hold the "SEL" button and rotate the SPEED knob. The MCP stores the

setting in its memory, the last setting is saved in a non-volatile memory when the MCP is switched-off (data is not saved if you disconnect the MCP power supply while running.)

CONFIGURATION MODE

MCP747 firmware allows to make changes in the programming to configure some of the preferences in the hardware functionality.

With the MCP in stand-by mode (software not running) push and hold the "SEL" button for 2-3 seconds; this will start the hardware in configuration mode. This is the only way to access the configuration mode; no PC software program is required to configure the MCP747 hardware. In programming mode only some of the pushbuttons will be operational; the IAS/MACH, HDG and VERT SPD displays show the

program title and option as following:

IAS/MACH	HDG	VERT SPD
Function to be setted	Parameter	Setting

SEL pushbutton (push and hold for 2/3 seconds): enter the program menu.
THR pushbutton: scroll to the next program menu.
SPD pushbutton: toggle preference settings.
SEL pushbutton: save changes and exit the program menu.
Upon exiting the configuration menu, settings will be saved in non-volatile memory and the MCP will go in stand-by mode.
Following is a description of the menus available in Configuration Mode:

CONFIGURATION MENU	IAS/MACH display	HDG display	VERT SPD display
BACKLIGHT CONTROL: allows selection of the backlight management control: I : (default) the backlight will light-up when the NAV lights in FS are ON. E: the NAV lights status will be skipped and the backlight can be controlled through the related auxiliary input on the 14 pole connector (see below).	EbL	Ctrl	I/E
FAST INCREMENT: this menu allows setting the knobs fast increment functions (excluding V/S). Setting this function to "ON" (default) allows to rapidly increase/decrease the value when rotating the knobs fast, to quickly set the desired value. IFF *blank* OFF/On .	IFF	*blank*	OFF/On
SERIAL NUMBER: This menu shows the device serial number . Read-only (not modifiable). Sn xxx xxxx	Sn	xxx	xxxx
FIRMWARE RELEASE: This menu displays the installed firmware release. The number in this menu is not modifiable, but it changes automatically when updating the firmware. (see "FIRMWARE UPDATE" section). Rel *blank* xxx	Rel	*blank*	xxx
COUNTER: This menu displays the MCP's total hours of usage Read-only (not modifiable). *Note: the "xxxxx" in the above menu act for the total Hours of MCP usage from 0 to 99999.* Cont H xxxxx	Cont	H	xxxxx
BATTERY: By setting this function to "OFF" (default) the MCP ignores the Battery and/or Alternator status in the FS variables. By setting this function to "On" the MCP (and connected modules) display remains dark if the FS Battery and/or Alternator status are off. bAt *blank* OFF/On	bAt	*blank*	OFF/On

EXPANSIONS

Expansion of the MCP747 module is provided via the DIN 5 pole socket in the rear (Figure1 "C"). This allows you to connect and interface the MCP747 to other CPflight plug & play expansion modules (EFI747). For more information about modules and expansion boards refer to CPflight website.
An extra 14 pole connector (Figure1 D) is provided to connect some auxiliary functions (see following):

AUXILIARY CONNECTIONS
WARNING! The use of the auxiliary connector (Figure1 D) is intended for experienced users only.
To use these auxiliary functions it is necessary to connect external switches/pushbuttons etc. Do not connect anything coming from any external power source or anything not listed in the following instructions; warranty does not cover damages due to incorrect wiring of any external device.

The diagram below illustrates the pin-out of the 14 pole aux connector; the pin-out referrers to the rear view. Available pins are:

EXTERNAL BACKLIGHT CONTROL
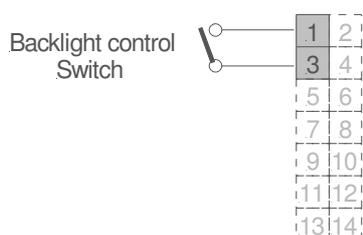
External backlight control accepts input from steady position switch (ON/OFF). Note that the MCP backlight also controls the backlight of the connected modules (if any). To use the external backlight control set the related preference to "ON" in the preferences setting (see "CONFIGURATION MODE" section).

Important note: when the backlight is controlled through the external control input, it's status it result independent from any other MCP function so, depending by the switch position, the backlight can be ON also if the MCP lie in stand-by mode.

EXTERNAL TO/GA
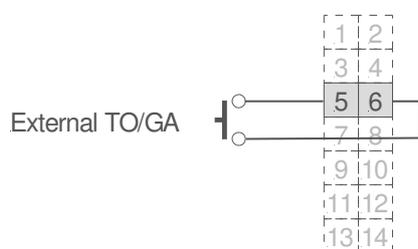
External TO/GA accepts input via a pushbutton. The pushbutton contact must be open in normal condition and closed only when pressed. Do not connect steady position switches to this input.
The TO/GA function engagement is dependent upon the aircraft' condition and situation (managed by the software).

COURSE AUX INPUT
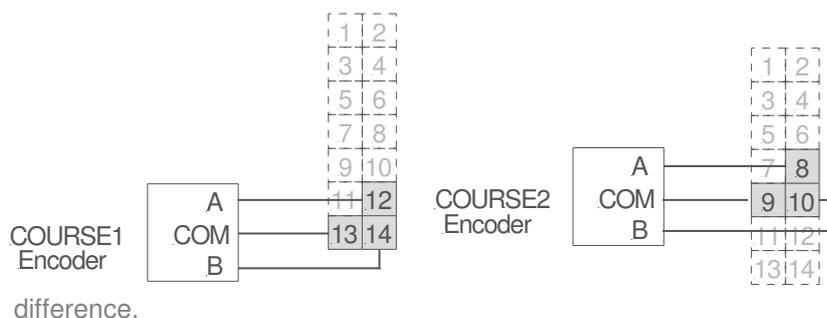
On the 747 the course setting is made by the CDU, therefore, there are not course knobs on the MCP. However the MCP allows the connection of encoders for course setting.
The input supports standard mechanical encoders with A and B signals proportionate to phase difference.

FIRMWARE UPDATE

The MCP747 hardware is based on a microprocessor. The microprocessor runs a special program called "firmware". The firmware manages all the hardware functions besides the communication with the computer. The firmware is stored in "flash" memory, this allows the program to be updated at any time as Improvements or additional functions are added. The firmware is available on the download page of the CPflight website (except for the first released version); the revision number is progressive, so a higher number corresponds to a later version. Before proceeding with the upgrade, check the installed firmware revision number. You can see the installed version in configuration mode (see related section) or at MCP747 power up.
In some cases a firmware upgrade may also require updating the software itself (Project Magenta or FS-COM driver), if you run into any issue or any malfunction after a firmware update, check software version and update the software as required.
To update the firmware follows these steps:

➢ Download the firmware at: http://www.cpflight.com/sito/downloads/downloads.asp ; Please make sure to download the proper software for the Device you are using, as the page includes software for different MCP devices and versions.. The firmware for the MCP747 is named "mcp747fwxxx.zip" (where xxx stands for the revision number)…

➢ Files are in a compressed archive .zip; unzip the files in a temporarily folder…

➢ Disconnect USB and power adapter (if any) from the MCP; disconnect external modules (if any)…

➢ Insert the two jumpers (provided) on the pins located on the back of the MCP as (see Figure 1 "E")…

➢ Re-connect the USB cable to the MCP, a short flash of the panel' backlight indicate that the MCP is now in "firmware program mode"…

➢ Close any application on the computer, browse the temporary folder containing the downloaded firmware and run the UPGRADE.EXE program. The program will prompt you to…
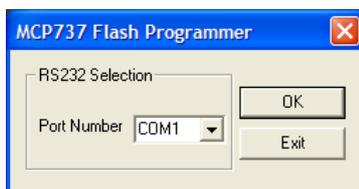
Select the port number assigned during the initial driver installation (see "driver installation" section) and click on OK…
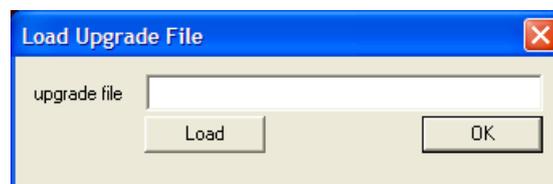
…click on the "Load" button and browse the MCP747xxx.mot file (where xxx stands for the release number) in the folder where you have extracted the firmware files; select it and proceed…

…the file name will be shown in the "upgrade file" field click OK to proceed…

…click on the Erase button to clear the memory for programming…
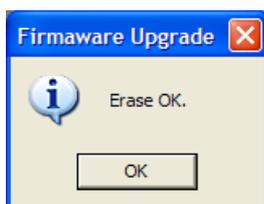
…at the end of the erase you will be prompted to click OK to proceed…

…now click on the Program... button…

…the program shows the info about the memory area to be programmed, click OK…
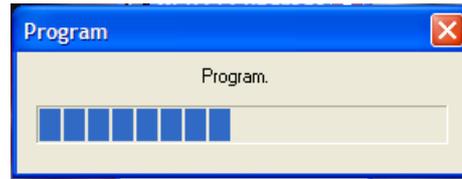
…the memory programming will take some time, during the programming the MCP backlight will flash…

…at the end of the programming procedure the above dialog will prompt you to click OK to continue…
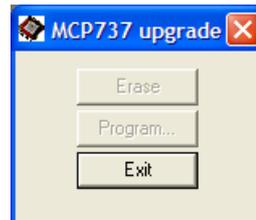
…then click to Exit button and wait until the dialog close before proceeding…

➢ The Firmware is now upgraded; disconnect the USB cable from the MCP…

➢ Remove the two jumpers from the two pins…

➢ Reconnect external modules and expansion board if any…

➢ Reconnect power adapter (if any) and USB cable to the MCP, the displays will show the new installed Firmware revision.

MAIN CHARACTERISTICS

- Engravity backlight frontplate.
- Backlight color: Warm White
- Engravity backlight pushbuttons.
- Pushbuttons legend backlight color: Warm White
- Displays: Altitude, Vertical Speed, Heading, Speed.
- Display characteristics: LED 7 segments. Digit height: 0,3" (7,6mm)
- Display color: white
- Digital long life (min 1.000.000 cycle) encoders to set: Altitude, Heading, Speed and Vertical Speed
- Dual concentric HDG-SEL knobs with 6 positions BANK ANGLE limit selector (AUTO, 5, 10°, 15°, 20°, 25°)
- Flat toggle switches for Left and Right Flight Director.
- Disengage bar.
- SEL round pushbutton.
- Integrate EICAS selector wit 8 rectangular + 2 round pushbuttons
- Display brightness adjustment.
- Backlight brightness adjustment.
- 16 bit Flash microcontroller.
- DIN 5 pole sockets for plug&play CPflight modules interface.
- USB powered (USB cable provided).
- Optional Supply: 6Vdc 1A
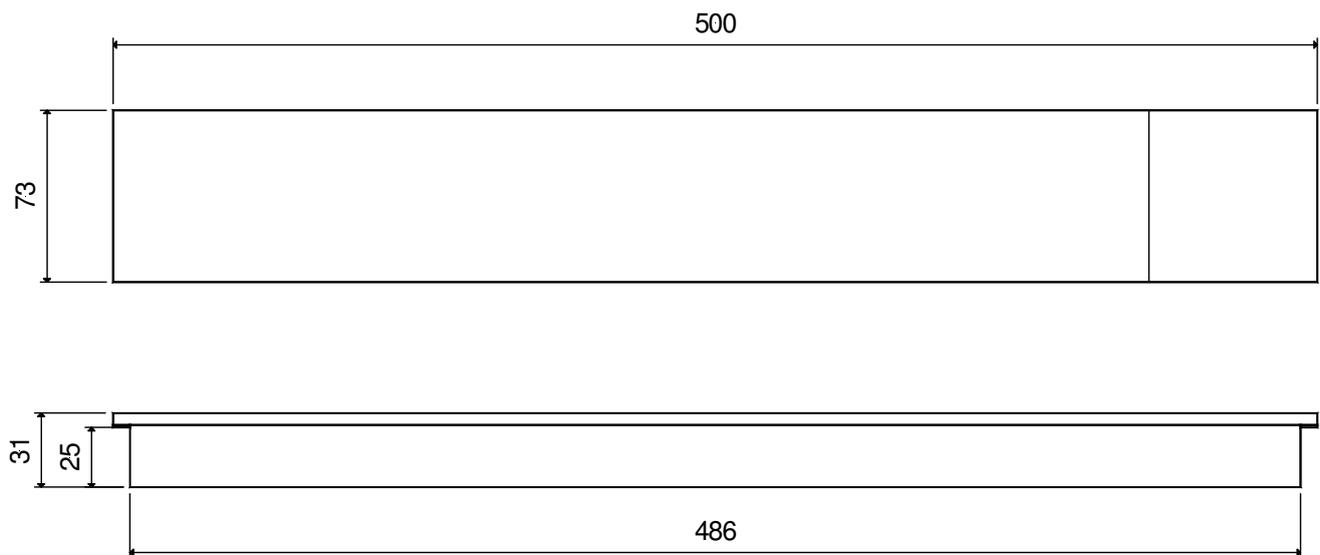
Figure 3: Mechanical Dimensions (mm)

LINKS

Web site: http://www.cpflight.com
Support: http://www.cpflight.com/sito/help/mainsupport.asp
Email: info@cpflight.com

PANEL CUT-OUT

Dimensions are in millimeters.

493

486

72

58

Front plate:73

Front plate: 500