

# 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. Even if the MCP747 support the mainly used FS add-on software, it is not possible to assure the full compatibility with all third part add-on. To know more about the compatibility with a specific add-on aircraft please refer to the latest information's on the CPflight website "compatibility" page.

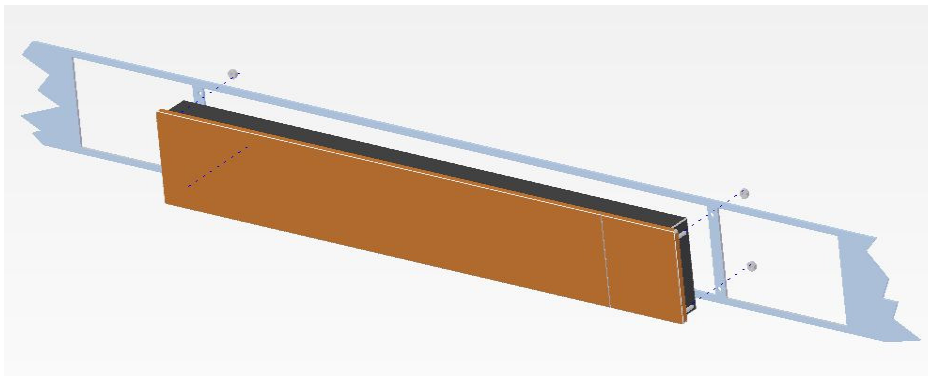
This manual contains the latest information at the time of drafting. Due to the continuous evolving of the product some features could be been modified. Eventual later information's can be found at CPflight website [www.cpflight.com](http://www.cpflight.com)

The CPflight modules are produced to meet requirements from the hobby market. The use of our products in professional or commercial environments is not permitted without approval of the CPflight management; please contact us at [info@cpflight.com](mailto:info@cpflight.com) if you need to exploit our products in professional or commercial environments.

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.

***Note: It is important to know that the hardware have not its own intelligence on board, it establish an interface with the connected software; logics, operating modes and aircraft behavior are managed by the connected software.***

## HARDWARE INSTALLATION



The MCP747 is designed for panel assembly. The MCP747 is intended as a part to be inserted in a cockpit reproduction, CPflight does not produce chassis or other mechanical parts for the cockpit structure, so the panel is intended to be inserted in your own or third parts cockpit glare shield structure. To fix the MCP

cut out your panel according with the dimensions quoted at the last page of this manual. To allow fixing by the integrated screws the bracket structure does not exceed 8mm thickness. Keep the accessibility to the back of the MCP to allows working to the connections and eventual future firmware upgrades (see below).

## CONNECTIONS

Sockets for connections are on the back of panel (Figure 1). Beyond to the supply and USB connectors the MCP747 have some further sockets, they are provided to allow system expandability. A DIN 5 pole socket "C" is used to link auxiliary CPflight modules (EF1747).

## DEVICE SUPPLY

The MCP747 can be directly powered by the USB; the USB port must have 500mA current capability (USB 2.0 or higher) or an HUB with its own power is recommended. A standard 500mA USB can feed the MCP747 + 2 EF1747 (Captain + F/O), If you need to connect further CPflight expansion modules an optional power supply adapter is required; a suitable power supply adapter is available at 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! Only suitable stabilized plug-in power supply adapter must be used; do not attempt to plug in different adapters as you may irreparably damage the MCP. Do not attempt to connect anything different from as described in this manual. Warranty does not cover damages due to incorrect wiring of any external device.**

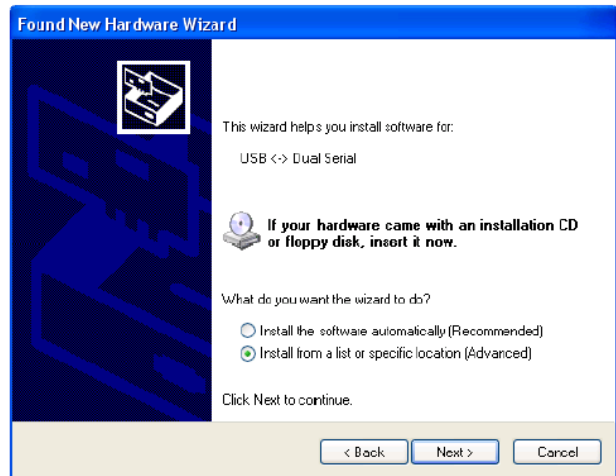
## USB DRIVER INSTALLATION

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

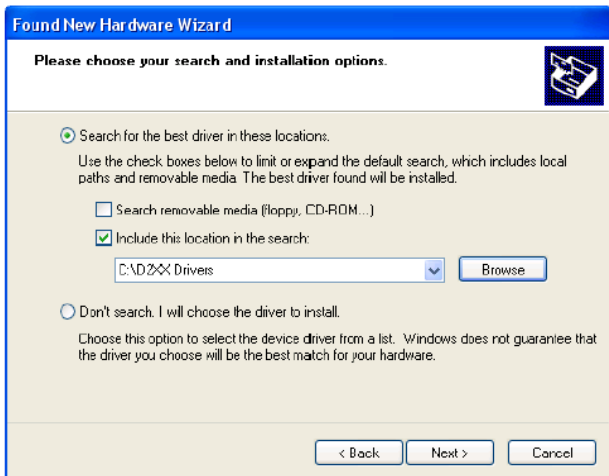
- Download the file "usbdriver.zip" at <http://www.cpflight.com/sito/downloads/downloads.asp>
- Files are in a compressed archive .zip; unzip the files in a temporarily folder...
- Connect the USB cable to the MCP737 USB connector and the other side to a free USB port of your computer... The computer has to be switched on when you connect the MCP for the first time...
- 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 you will ask to connect to Menus Update to search for software select "No, not this time" and click next to continue...



Select "Install from a list or specific location" and click next to continue...



Browse the temporarily folder where you have unzipped the files and click next to continue...



You will be informed that the driver has not been subordinate to Menus Logo testing click "Continue Anyway"...

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

**Important note: Depending by the system you may be required to repeat the driver installation two times.**

During the USB drivers installation the system assign a number to the communication port. 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 use this number in the First set up (se following).

## COMMUNICATION SOFTWARE INSTALLATION

Besides the USB drivers communication software is needed to use the MCP747 with 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 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 at <http://www.cpflight.com/sito/downloads/downloads.asp>
- The file is in a compressed (zip) archive. Extract in a temporary folder and run the exe file to install software (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 doesn't need to register your copy of FSUIPC to use the MCP747 and its expansions, however we suggest to get the fully registration of your FSUIPC copy to exploit all the auxiliary 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 exploit EICAS and LNAV/VNAV functions Project Magenta or other additional software add-on is 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 in where "n" is 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-up the MCP747 run Project Magenta MCP software.

To start the MCP747 with default FS select "Connect" in the FS Add-on menu -> CPflight -> FS-COM. The first time you run FS-COM you will ask to select in the communication port number (Setting COM); set the port number assigned during the USB driver installation (see above).

At the start-up, the MCP747 will show on the "VERT SPD" and "ALT" displays the serial number while the "HDG" display shows the installed Firmware revision.

The MCP turns off command come from the computer when you close the software. If you shut-down the computer without exit the software or a computer block occur, the MCP may stay on or may fail the subsequent turn on. If you find any problem with the MCP start or turn off, it is advisable to reset the unit. To do this, disconnect the USB cable (and power supply adapter if any) from the MCP, wait few seconds and reconnect power.

***Important notes! The MCP can extinguish the displays to simulate a "cold and dark" situation depending by the battery, avionics or other aircraft systems status. Be sure to have the right conditions in the cockpit to have the display turned on. For supported functions please refer to the CPflight website "compatibility" page***

## ON-FLY DISPLAY BRIGHTNESS AND BACKLIGHT REGULATION

When the MCP is normal running (or in test mode using the CPflight test software) you can on-fly set the display and backlight brightness. These functions are not available if the related preferences are settled "On" in the configuration menu (see above "CONFIGURATION MODE" section). To regulate the display brightness hold pushed the "SEL" pushbutton and rotates the HEADING knob; to regulate the backlight brightness hold pushed the "SEL" pushbutton and rotates the SPEED knob. The MCP keep the regulation in its working memory, the last setting are saved in a non-volatile memory at the MCP switch-off (data are not saved if you disconnect the MCP power supply during the normal running).

## CONFIGURATION MODE

MCP747 firmware provides an internal program mode to configure some preferences in the hardware functionality. With the MCP in stand-by (software not running) push and hold the “SEL” pushbutton for more than 1 second; this start the hardware in configuration mode. This is the only way to access to the configuration mode; no PC software program is required to configure the MCP747 hardware. In program mode only some pushbuttons are operating; the IAS/MACH, HDG and VERT SPD displays show the program title and option as following:

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

**SEL** pushbutton (push and hold for more than 1 second): enter the program menu.

**THR** pushbutton: scroll to the next program menu.

**SPD** pushbutton: toggle the preference setting.

**SEL** pushbutton: save changes and exit the program menu.

Settings are saved in a non-volatile memory when you exit the configuration menu and the MCP goes in stand-by. Following a description of the menu available in Configuration Mode:

CONFIGURATION MENU	IAS/MACH display	HDG display	VERT SPD display
<p><b>BACKLIGHT CONTROL:</b> allow to select how to manage the backlight 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).</p>	EbL	Ctrl	I/E
<p><b>FAST INCREMENT:</b> this menu allow setting the fast increment functions to the knobs (excluding V/S). Setting this function to “ON” (default) allows the value increase/decrease to be amplified when knobs are rotated fast to rapidly approach the desired value.</p>	IFF	<i>blank</i>	OFF/On
<p><b>SERIAL NUMBER:</b> This menu shows the device serial. It is a read only location (not modifiable).</p>	Sn	xxx	xxxx
<p><b>FIRMWARE RELEASE:</b> This menu displays the installed firmware release. The number is not modifiable in this menu, but it is updated when you load a new firmware in the MCP internal memory (see “FIRMWARE UPDATE” section).</p>	Rel	<i>blank</i>	xxx
<p><b>COUNTER:</b> This menu show the Hours of MCP running. It is a read only location and is not modifiable.   <i>Note: the “xxxxx” in the above menu act for the total Hours of MCP running from 0 to 99999.</i></p>	Cont	H	xxxxx
<p><b>BATTERY:</b> Setting this function to “OFF” (default) the MCP ignore the Battery and/or Alternator status in the FS variables. Setting this function to “On” the MCP (and connected modules) display remain dark if the FS Battery and/or Alternator status is off.</p>	bAt	<i>blank</i>	OFF/On

## EXPANSIONS

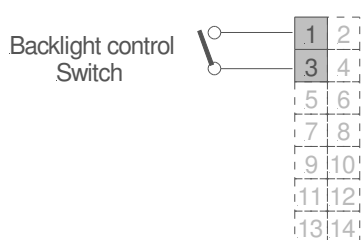
MCP747 comes provided with expansion capability through the DIN 5 pole socket (Figure1 “C”). This allows you to connect and interface CPflight plug&play expansion modules (EFI747). For further information about modules and expansion boards refer to CPflight website. An auxiliary 14 pole connector (Figure1 D) is provided to connect some auxiliary functions (see following):

## AUXILIARY CONNECTIONS

**WARNING! The use of auxiliary connector (Figure1 D) is intended for expertise users. 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 differently by the following indications; warranty does not cover damages due to incorrect wiring of any external device.**

In the below diagrams illustrates the pinout of the 14 pole aux connector; the pinout is referred to the rear view. Available pins are:

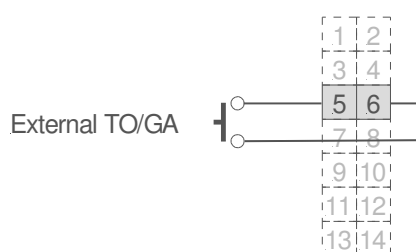
### EXTERNAL BACKLIGHT CONTROL



External backlight control accepts input from steady position switch (ON/OFF). Note that the MCP backlight also affects 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).

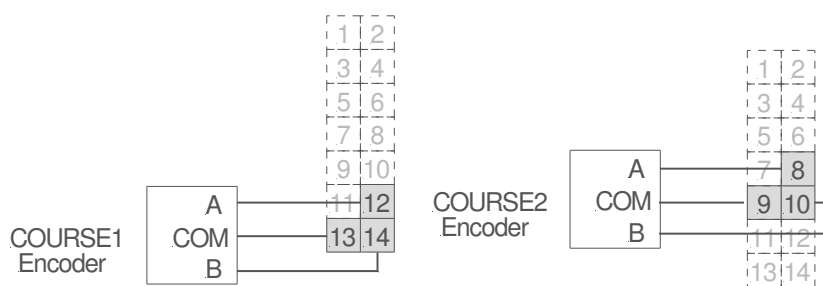
**Important note: when the backlight is controlled through the external control input, it's status it result independent from any other MCP function so, depending by the switch position, the backlight can be ON also if the MCP lie in stand-by mode.**

### EXTERNAL TO/GA



External TO/GA can accept input from a pushbutton. The pushbutton contact must be open in normal condition and close only when pressed, do not connect steady position switches to this input. The TO/GA function engaging it depends by the aircraft condition and situation (managed by the software).

### COURSE AUX INPUT



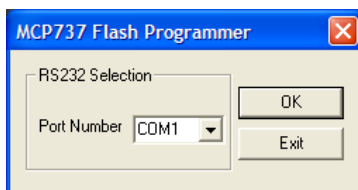
On the 747 the course setting is made by the CDU, so there are not course knobs on the MCP. However the MCP allows the connection of encoders for course setting. The input supports standard mechanical encoders with A and B signals proportionate to phase difference.

## FIRMWARE UPDATE

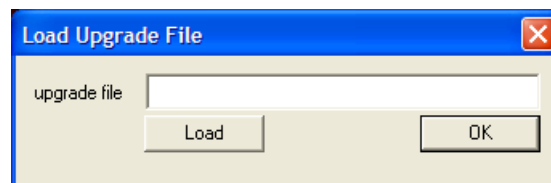
The MCP747 hardware is based on a microprocessor, on this device run a special program called “firmware”. The firmware manages all the hardware functions besides the communication with the computer. The firmware is stored in a “flash” memory, this allows the program to be updated at any time in case of improvements or functions addition. The firmware is available at CPflight website on download page (except the first released version); the revision number is progressive, so a higher number correspond to a latest version. Before to proceed with the upgrade, check the installed firmware revision number. You can see the installed version in configuration mode (see related section) or at the MCP747 startup.

In some circumstances a firmware upgrade may require an updating of the software too (Project Magenta or FS-COM driver), if you encounter any malfunction after a firmware update, check software version and update the software if required. To update the firmware follows these steps:

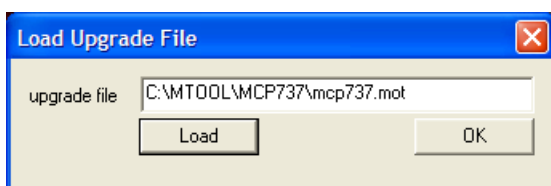
- Download the firmware at: <http://www.cpflight.com/sito/downloads/downloads.asp> ; pay attention to the relation between the firmware and the device as on the download page you may find firmware for different devices or MCP version. The firmware for the MCP747 is named “mcp747fwxxx.zip” (where xxx act 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”)...
- Connect USB to the MCP, a small flash on the backlight indicate that the MCP has started in firmware program mode...
- Close any application on the computer, browse the temporary folder that contain the downloaded firmware and run UPGRADE.EXE program. The following dialog will prompt...



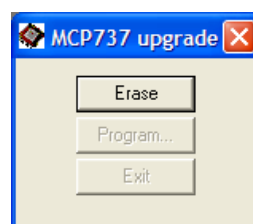
Select the port number assigned during the driver installation (see “driver installation” section) and click on OK...



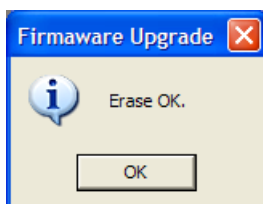
...click on "Load" button and browse the MCP747xxx.mot file (where xxx represent the release number) in the folder where you have extracted the firmware files; select it and proceed...



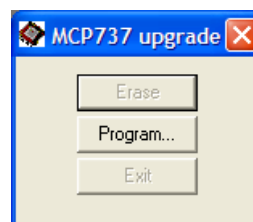
...the file name will be shown into “upgrade file” field click OK to proceed...



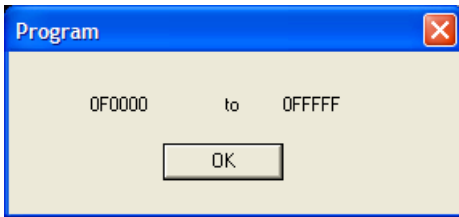
...click on the Erase button to clear the memory for programming...



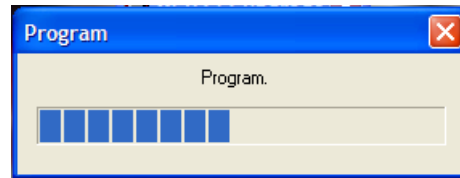
...at the end of erase phase the above dialog will prompt; click OK to proceed...



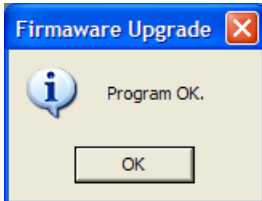
...now click on Program... button...



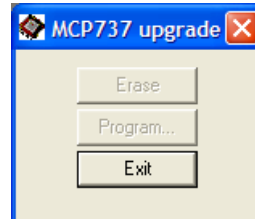
...the program show the info about the memory area to be programmed, click OK...



...the memory programming will take some time, during the programming the MCP backlight will flash...



...at the end of program procedure the above dialog will prompt, click OK to continue...

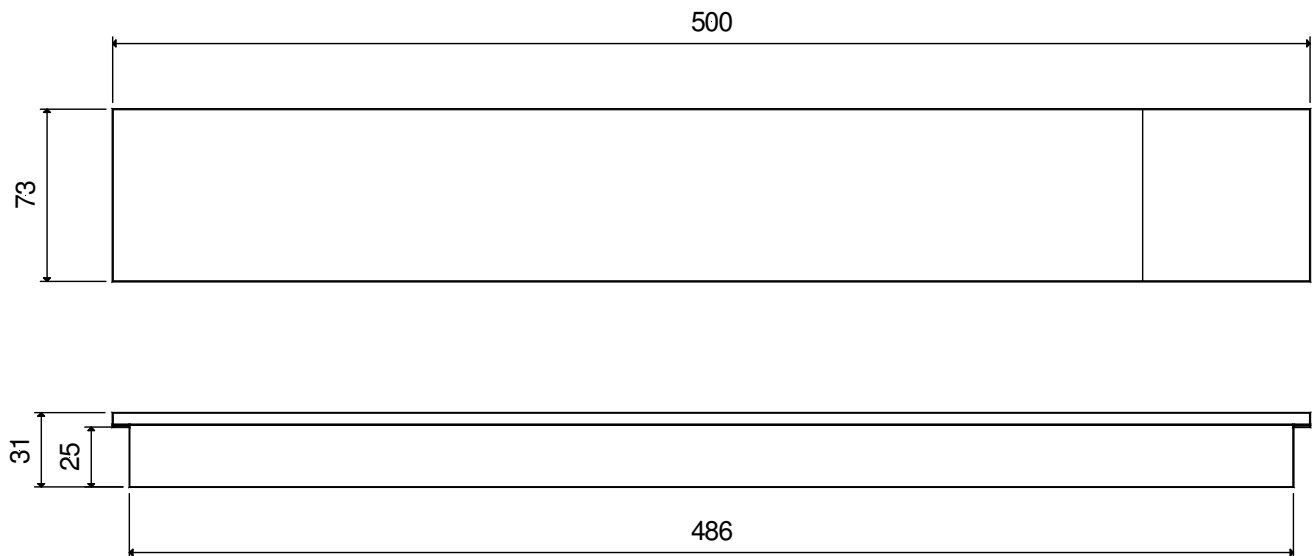


...now click to Exit button and wait until the dialog will close before proceed...

- Firmware has upgraded; disconnect USB from the MCP...
- Remove the two jumpers from the pin...
- Reconnect external modules and expansion board if any...
- Reconnect power adapter (if any) and USB to the MCP, the displays will show the new installed Firmware revision.

### MAIN CHARACTERISTICS

- Engraving backlighting frontplate.
- Backlight color: Warm White
- Engraving back lighted 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 regulation.
- Backlight brightness regulation.
- 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](mailto:info@cpflight.com)

**APPENDIX:**

**PANEL CUT-OUT**

Dimensions are in millimeters.

