

MCP737PRO3



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 MCP737PRO3 hardware. To optimize the performance of this unit, please read through this manual carefully. This manual gives you the information to connect and use MCP737PRO3 panel with Microsoft Flight simulator, P3D, Project Magenta and other add-on software. Even if the MCP737PRO3 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 "Compatibility table" at the MCP737PRO3 product page on the CPflight website.

Note: 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 can be found at CPflight website www.cplight.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@cplight.com if you need to exploit our products in professional or commercial environments.

MCP737PRO3 is a full scale replica of the Boeing 737NG Mode Control Panel, look and functionality are reproduced with high details. MCP737PRO3 is equipped with high new generation quality level components: Grayhill® Optical encoders, ambient light sensor for the display brightness regulation, autothrottle ARM switch with electromagnetic disengage and bank selector knob gives a high fidelity performances and a never seen realism. Our MCP737PRO3 connects directly to the Ethernet using an Ethernet socket on the back of the panel (USB version on request).

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

HARDWARE INSTALLATION

The MCP737PRO3 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 cockpit glare shield. Fixing screws are not provided as depending by the thickness and/or material of your glare shield panel, different screws can be required. We suggest to maintain the accessibility to the back of the MCP located in your glare shield, to allow working to your connections.

CONNECTIONS

The MCP is provided with a universal supply adapter that accepts a voltage of 100 to 240Vac (50/60Hz). Supply adapter and ethernet cable are provided with the MCP, you don't need further hardware to operate.

Sockets for connections are on the back of panel. Beyond the supply and ethernet connectors the MCP737PRO3 have some further sockets, they are provided to allow system expandability. A DIN 5 pole socket "C" is used to link in daisy-chain auxiliary CPflight modules (EFIS selectors, MIP737ICS System, Radios etc).

Close to ethernet socket, there is a small 6-pole terminal block ready for external backlight control, external A/T disengage pushbutton and external TO/GA pushbutton.

Ethernet socket



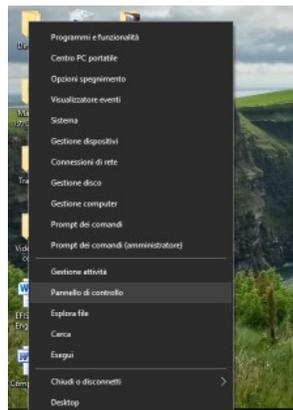
5 pole cable socket

terminal block

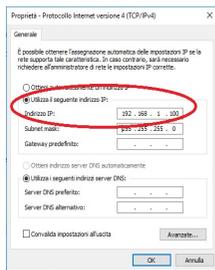
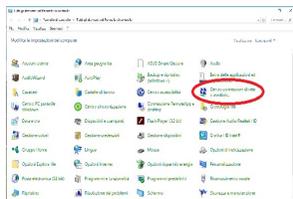
WARNING! Do not attempt to connect anything different from as described in this section; warranty does not cover damages due to incorrect wiring of any external device. The MCP737PRO3 is provided with 6Vdc power supply adapter. Only provided stabilized plug-in power supply adapter must be used; do not attempt to plug in a different adapter because you can damage the MCP. The provided adapter is suitable for 100 to 240 Vac 50/60Hz main supply.

Note: If you do not use MCP for a long time it is recommended to disconnect the power supply.

ETHERNET CONNECTION

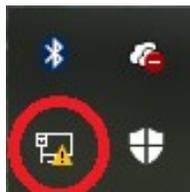


2/3. Click on "Network and Internet" indicated in the red oval and click on " Ethernet" button in the red oval.



STEP 2

If your PC is not connected to any LAN and your MCP is connected directly to the ethernet socket of your PC, please follow these steps:



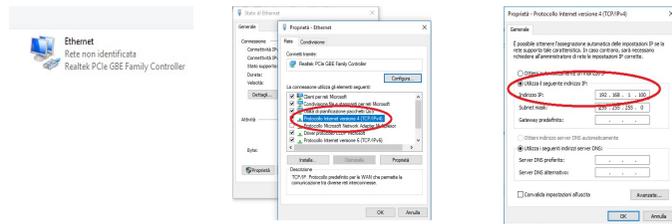
INSTALLATION

As default the MCP has the IP address 192.168.1.40. If your PC is already connected to a "home" LAN through a router probably will be not necessary to set anything. Anyway it would be better to check some Ethernet parameters:

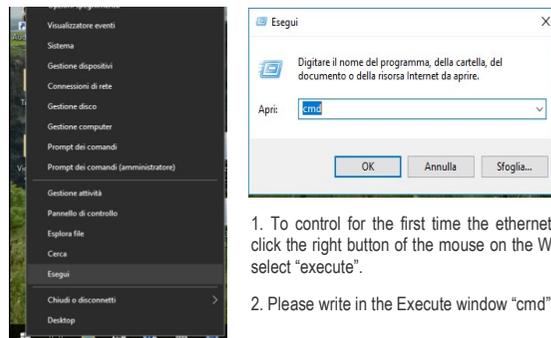
STEP 1

1. Click the right button of the mouse on the Windows symbol. Please select "Control panel".

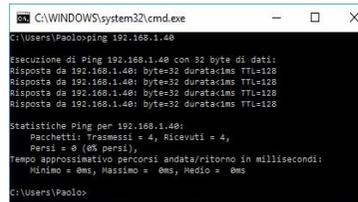
2. Click with the right button of the mouse on the Windows button and select LAN connections and the next screen will appear. Click on Ethernet.
3. Click on "Properties" on the ethernet status window. Please flag on "Internet version 4 protocol (TCP/IPv4) on the red oval.
4. Click on "Properties" and please select manually the address 192.168.1.100 flagging "use following IP address". Selecting subnet mask field the value 255.255.255.0 will be automatically inserted in it. Click on OK to save the changes.



CONTROL ETHERNET CONNECTION



1. To control for the first time the ethernet connection please click the right button of the mouse on the Windows symbol and select "execute".
2. Please write in the Execute window "cmd" and select ok.



3. On the prompt command please write ping and IP address of your MCP. In our example the MCP IP address is 192.168.1.40. If all is ok the number of the transmitted packages will match with the one of the transmitted. Otherwise this means that there is a ethernet connection failure. In this case please contact support@cplight.com.

4. In Ethernet status window click on "Details" button and the system will open the ethernet connection details with the IPv4 address. In our example our IPv4 is 192.168.1.208; in order to have your MCP communicating with your PC is necessary to assign an IP number to your MCP. As default the MCP has the IP address 192.168.1.40. So is not necessary to assign any new IP number. If the two IP addresses would be identical it will be necessary to modify the MCP IP address. How to do it will be explained in the programming section.

COMMUNICATION SOFTWARE INSTALLATION

Note: the communication software allows to use the MCP737PRO3 with default FS aircraft and the most used add-on like e.g. PMDG737NGX, iFly737 etc. To use the MCP737PRO3 with PMDG series please read carefully the related instructions.

To allow to the MCP to communicate with the simulator is necessary to install the driver of the communication that are available on our website in the section "Technical and the software" on the MCP page.

- Please download the file instfsx_xxx.zip or instP3d_xxx.zip (in base on the simulator environment used). Is essential to extract the exe file and install the driver under FSX or P3d folder.
- 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 all Windows OS versions).
- CPflight MCP requires the popular FSUIPC library. If you do not have FSUIPC in your system download it at <http://www.schiratti.com/dowson.html>.

A/T ARM SWITCH

MCP737PRO comes provided with electromagnetic Autothrottle ARM switch. The switch automatically releases to the "Off" position after the landing touchdown or pressing an

external disengage button (see "Expansions" section). The switch release command is sent by the software; the software can switch off the A/T ARM switch also for different reason depending by the status of aircraft systems (fault detected etc.).

If the A/T switch does not stay in the "On" position check aircraft conditions. The A/T ARM switch also can be manually disengaged.

ON-FLY BACKLIGHT REGULATION

When the MCP is normal running (starts with Project Magenta, PMDG or in test mode using the CPflight test software) you can on-fly set backlight brightness. To regulate the backlight brightness hold pushed any pushbutton and rotates in left or right verse the HDG knob. In this case this regulation keep maintained for the all the flight duration and will be lost when you turn off the MCP. To modify and save these parameters permanently please refer to the next section. (Backlight Brightness menu).

CONFIGURATION MODE

MCP737PRO3 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 C/O key 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 MCP737PRO3 hardware. In program mode only some keys are operating; the Left Course, IAS and HDG, ALTITUDE, V/S and Right Course displays show the program title and option to set the parameters.

C/O key (push and hold for more than 1 second): enter the program menu.

N1 key: scroll to the next program menu.

ENCODERS: set the preferences.

C/O key: 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	Course display	IAS display	Others
IP ADDRESS: allow to set the IP address parameters. Use the HDG, ALT, V/S and Right Course knobs to modify (if necessary) the IP address.	iP	Addr	HDG ALT V/S Right Course
SET PORT: allow to modify (if necessary) the port number through ALT knob.	SEt	Port	ALT
BACKLIGHT BRIGHTNESS: this menu allow to modify the backlight brightness through HDG knob.	bL	brIG	HDG (from 0 to 10)
BACKLIGHT CONTROL: This menu allow you to set the backlight control I, E, ICS through HDG knob. I= backlight managed by the simulator E= backlight managed through an external contact ICS= backlight managed through MIP737ICS2 module.	bL	Ctrl	HDG (I,E,ICS)
HOURS COUNTER (read only): This menu show you the MCP running time in hours.	Cnt	Hour	xxx
SERIAL NUMBER (read only): This menu show you the product serial number.	SEr	nbr	HDG, ALT xxx-xxxx
FIRMWARE RELEASE (read only): this menu show you the firmware release.	Fir	rEL	HDG xxx
MAC ADDRESS: allow to set the MAC address parameters. Use the HEADING knob (if necessary) to modify the MAC address.	MAC	Addr	From 0 to 255

EXPANSIONS

MCP737PRO3 comes provided with wide expansion capability through the DIN 5 pole auxiliary socket (Figure1 "C").

This allows you to connect and interface CPflight plug&play expansion. For further information about modules refer to CPflight website.

AUXILIARY CONNECTIONS

WARNING! The use of auxiliary connector is intended for expertise users. To use these auxiliary functions it is necessary to connect external pushbuttons and potentiometer. Do not connect anything coming from any external power source or different by the following indications; warranty does not cover damages due to incorrect wiring of any external device.



COM: Common pole for External A/T disengage and TO/GA

AT/DIS: External A/T disengage can accept input from a pushbutton. The pushbutton contact must be open in normal condition and close only when pressed. Releasing the button the contact must return in open condition, do not connect steady position switches (toggles or similar) to this input. When pushing the button the A/T ARM switch disengage independently from any other aircraft system condition.

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 depends by the aircraft condition and situation (managed by the connected software).

EXTERNAL BACKLIGHT CONTROL: External backlight control accepts input from potentiometer or switch. Connecting a potentiometer you can regulate the backlight intensity brightness directly from this input while connecting a switch is possible only to select ON/OFF.

1Kohm to 4.7Kohm 0.5W potentiometer is suitable for a typical setup. To use the external backlight control set the related preference to "E" in the preferences setting (see "CONFIGURATION MENU" section).

Important note: when the backlight is controlled through the external control input, it's status it result independent from any other MCP function.

FIRMWARE UPDATE

The MCP hardware is based on a flash memory microprocessor, on this device has been developed one special program (bootloader) that allows to upgrade the firmware. When you install the CPflight driver in the folder will be also installed a program (TCPIP_upgrade.exe) that has to be used for the upgrade.

Upgrade the microprocessor is a very easy operation and can be done through your ethernet connection.

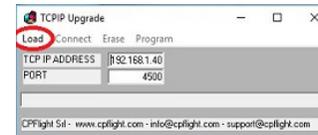
Is necessary to upgrade the firmware time by time, to update new functions that are constantly developed to improve functionality and compatibility with new products. New firmware release are available at CPflight website at MCP737PRO3 page, section technical and documents. Download this zip file and extract the included file into a temporary folder. Please pay attention to the extension of the file: it must be an hex extension.

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 MCP startup.

HOW TO UPGRADE



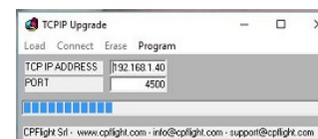
To proceed with the firmware upgrade, activating the bootloader present in the microcontroller's flash memory, you have to power the MCP pushing and holding pushed the CMDA button. Then please run the program TCPIP_upgrade.exe and verify that the TCPIP parameters (TCPIP address and port) are the same used normally to communicate with your PC. If not please modify it into the TCP upgrade window program.



Is important to be sure to select an hex extension file. The file will be shown as MCP737PRO3_xxx.hex where xxx will indicate the firmware release. Now, in the program menu bar, select the "Connect" title.



At the end of this process, always in the program menu bar, will activate the option "Program".

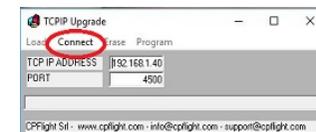


At the end it will appear a window that indicates the end of the programming. Close the upgrade program and disconnect the power supply from the MCP. Connect another time the power supply to verify that in the IAS display window of your MCP will appear the new release number.

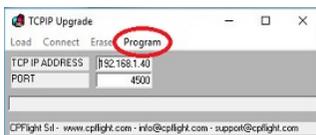
MAIN CHARACTERISTICS

- Warm white high resolution backlighting frontplate.
- DIN 5 pole socket for plug&play CPflight modules interface.
- Green legend backlitged pushbuttons.
- Displays: Altitude, Vertical Speed, Heading, Speed, Left Course and Right Course.
- Display characteristics: LED 7 segments. Digit height: 0,3" (7,6mm)
- Ethernet cable provided and 6Vdc 1A power supply adapter provided
- Grayhill® Optical encoders with over 1 million cycle rated to set: Altitude, Heading, Speed, Left and Right Course and Vertical Speed.
- Knobs: aluminum dust-coated (with symbols on course knobs)
- BANK ANGLE limit selector (10°, 15°, 20°, 25°, 30°)
- Electromagnetic disengage Auto Throttle ARM switch with Green LED indication.
- Toggle switches for Left and Right Flight Director with "MA" Green LED indication.
- Disengage bar and flight director protections
- C/O, Speed and Alt Intervention buttons.
- Ambient light sensor for display brightness regulation.
- External or internal backlight brightness regulation.
- Ethernet 16 bit Flash microcontroller.

At this point click on "Load" menu into TCPIP_upgrade.exe menu bar and select the file that you have already downloaded and extracted into a temporary folder from the site.



If all is ok, in this menu will activate the "Erase" title. At this point select "erase" to delete the old firmware and prepare the microcontroller for a new script. The erase operation will take few seconds.



Please select this title, it will appear a progress bar that indicates the program progression. This operation will take about two minutes to terminate.

