

# OVH737FWD\_NG



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 OVH737FWD hardware. To optimize the performance of this unit, please read through this manual carefully. This manual gives you the information to connect and use the OVH737737 panel with Microsoft Flight simulator and supported add-on software. The OVH737FWD support the mainly used 737 software suites for flight simulator ( Prosim737, Project Magenta, PMDG737NGx, iFly737).

*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 informations 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.

The OVH737FWD is a full scale replica of the Boeing 737NG overhead panel, look and functionality are reproduced with high details. The OVH737FWD connect via Ethernet. The hardware is based on printed circuit boards to give a clean and orderly layout; no messy wires or approximately fixed hardware. The gauges, based on stepping motor, are directly integrated on the printed circuit boards and driven by the Main circuit processor.

The OVH737FWD is equipped with high quality level components: high reliability switches with locking lever where required, electromagnetic engine start, yaw damper, wing anti-ice and voice recorder switches.

All the panels and gauges are backlighted, the backlight brightness is adjustable through the "PANEL BRIGHT" knob. All switches and annunciators are functional and interface with the connected software. Like in the real overhead, the annunciators have "push to test" function to check the functionality.

OVH737FWD constitutes the main section and it is the one where you connect the Ethernet cable and the power supply.

## **WARNING!**

The OVH737737 hardware is intended for use in a more complex structure such a simulator. This means that it cannot be considered as a consumer product, but as a system component. The use of the OVH737737 is totally left to the customer liability. In particular it is recommended the maximum attention as regards the installation and fixing of the components to prevent accidents due to falling parts. CPflight disclaims any liability for accidents due to inadequate mounting or connection of the product.

## HARDWARE INSTALLATION

The aluminum back cover is available as an option. This has chosen because in many cases the panel is placed in a build which already arrange a casing that may be different in each case. Where possible, use the CPflight optional back cover as it allows an adequate protection to the OVH737FWD hardware.

To install the OVH737FWD fix the sole backcover in your framework and then the hardware to the cover. When handling the OVH737FWD, never stand the hardware supported by rear protruding (PCB, switch contacts, engine-start switches ecc). If you need to put it temporarily place it vertically against a wall making sure that it can not fall or use the polystyrene of the packaging to put it upside down on a table.

After fixing the back-cover, place the OVH737FWD supporting it through the two holes arranged on the upper side edges so as to hang it. You should perform this step in two person to prevent accidental falls.

After the cable connection (see following) close the panel fixing through the two lower front holes.

If you insert the OVH737FWD hardware in your own building without use the optional back cover, provide an adequate protection to the OVH737FWD hardware so that the accessible parts remain protected from impacts, wetness or anything that might damage the circuitry. The electronic circuit generates some warmth during the functioning. In your framework leave some loophole for the aeration.

## GROUNDING CONSIDERATION

The OVH737 is intended to be inserted in a more complex structure that include other hardware. This involve some carefullness to avoid the equipments will mutually disturb. It is good practice to connect the group of metallic parts all together to the safety ground.

## CONNECTIONS

### OVH737FWD

**WARNING!** The OVH737FWD is provided with 12Vdc 5A power supply adapter. Only the provided stabilized power supply adapter must be used; do not attempt to connect a different adapter as you may irreparably damage the overhead. The provided adapter is suitable for 100 to 240 Vac 50/60Hz main supply.

Sockets for connections are on the back of the main board. The main board is the one where converge all the cables from all other boards and is located in the Electrical panel. Connect there the Ethernet and power supply cables.

The Overhead is provided with a default ip address that can be changed if you need (refer to OVH737FWD\_Manual\_Electrical\_Panel.pdf document for more information).



The power supply adapter have a polarized connector to prevent reverse polarity to the circuit and a retaining clip to avoid accidental disconnection. The DC plug hold spline must be directed to the board closest side (toward the Light panel). To ensure good contact the plug/socket junction is rather hard to insert; hold the board as indicated in the above figure when you press the plug in to prevent board damages. The spline holds the socket when the plug is fully inserted, if you need to disconnect the power for any operation, it is advisable to disconnect the adapter from the Main supply side. In case you need to disconnect the DC

plug from the board, press firmly the spline to extract the plug. In any case, never try to disconnect the plug pulling the cable as you would wrest the wires.

*Note: If you do not use OVH737FWD for a long time it is recommended to disconnect the power supply. For this reason it is advisable to put a switch on the main power supply. A power strip of those that integrate the main switch and surge-protection will be the optimal solution.*

## YAW-DAMPER, WING ANTI-ICE and VOICE RECORDER SWITCHES

OVH737 comes provided with electromagnetic YAW-DAMPER, WING ANTI-ICE and VOICE RECORDER switches. The switch automatically releases to the “Off” position when required. The release command is sent by the software; the software can put the switch off for different reason depending by the status of aircraft systems (electrical status and so on). If the switch does not stay in the “On” position check aircraft conditions. The YAW-DAMPER, WING ANTI-ICE and VOICE RECORDER switches also can be manually disengaged.

## START SWITCHES

OVH737 comes provided with electromagnetic START SWITCHES. The switch automatically releases to the “Off” position when engine starts. The release command is sent by the software; the software can put the switch off for different reason depending by the status of aircraft systems (electrical status and so on). Once that the switch is moved to GRD position an electromagnet hold the knob in this position and “ONLY” the software can release the switch. If the switch does not stay in the “GRD” position check aircraft conditions.

**WARNING!: The start switch has a locking mechanism, the knob must be pressed to allows the rotation. do not attempt to rotate without push as you can damage the switch. Once the switch is in GRD position “DO NOT TRY FOR ANY REASON” to take back manually the knob in a different position as you can damage the switch mechanism.**

## PUSHBUTTON FOR ANNUNCIATOR TEST

Each annunciator on OVH737FWD panel have a pushbutton that allow you to test the annunciator led indicator like a real overhead.

## GAUGES

OVH737FWD comes provided with all the gauges. The gauge indicator position is driven directly by the PC software. At the switch-off all the gauge come back automatically to their starting position.

## TEST PROGRAM

**IMPORTANT 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 software.**

Installing the CPflight communication driver, an utility to check the overhead hardware functionality will be installed on your PC. This utility named TEST\_OH.EXE allow you to check the hardware functionality independently by the used simulator software. To test the panel with test program is recommended to run this program without FSX or other FSX add-on active.

If the overhead work correctly in test mode it mean that the hardware is fully operating, in this case each incorrect behavior during the flight is attributable to the software that probably does not allow this function due to an incorrect condition. In this case contact the add-on software developer support.

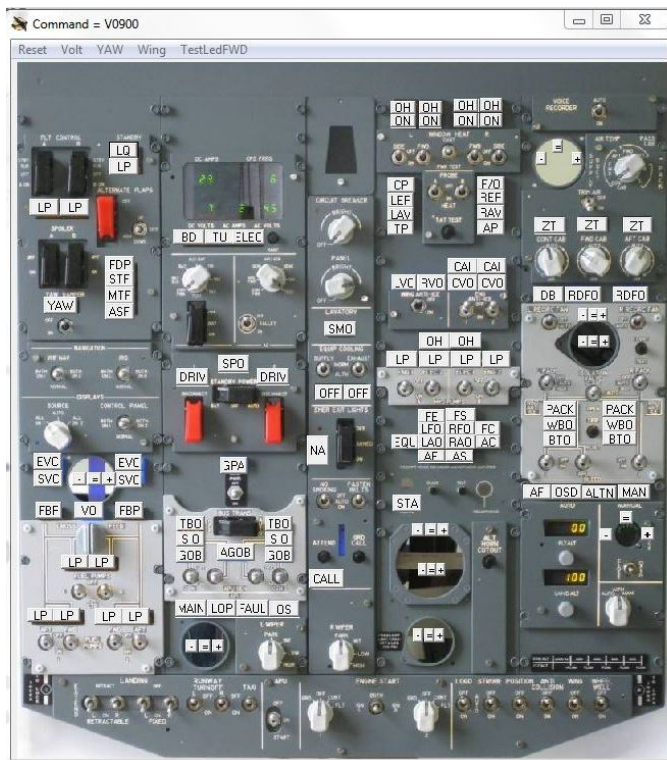
For any doubt about the functionality, before contact cpflight support, is always recommended to check the hardware through the test program.

*Note: The test utility only serves to check the hardware functionality, so it has some limitations; do not take it the same way as a simulator software.*



In the above figure the “TEST\_OH” utility main window. This windows allows you to select the section of the hardware for the test. Click on the FWD area to open the OVH737FWD test window

## OVH737FWD HARDWARE TEST



**TEST SWITCHES:** when you run the test program, all the switches (and rotary switches) positions are synchronized. The current switch position is indicated by a red text on the program window. To test a switch, move the switch hardware on the OVH737FWD panel; the text on the corresponding switch will change to indicate the new switch position.

*Note: if you close the OVH737FWD test windows returning to the TEST\_OH main window, when you open it again, all the switch positions will not be displayed. To synchronize the screen click on "Reset" button on the menu bar.*

**ANNUNCIATORS:** Click an annunciator in the test window to turn it on, you will see the same annunciator light-up on the hardware. The two level brightness blue annunciators have two "ON" status, the first click will light at low brightness, the second at high brightness.

If you click on "TestLedFWD" on the menu bar, all the annunciators light ON and OFF sequentially.

**GAUGES:** to check the gauge functionality, click on the screen "-" (minus) sign in correspondence of the gauge that you need to test to set it to the nether position, on the "=" (equal) sign to set it at middle scale and on the "+" (plus) sign to bring it to full scale. The dual needle gauges have two setting buttons group nearby the gauge position.

**DVM:** click on the "Volt" menu bar to light the DVM. The Command set a fixed value (only to check the display functionality).

**YAW-DAMPER, WING ANTI-ICE and VOICE RECORDER SWITCHES:** in addition to the position check (like all the other switches), the automatic disengage function can be tested through the "YAW", "Wing" and "VRec" commands on the menu bar.

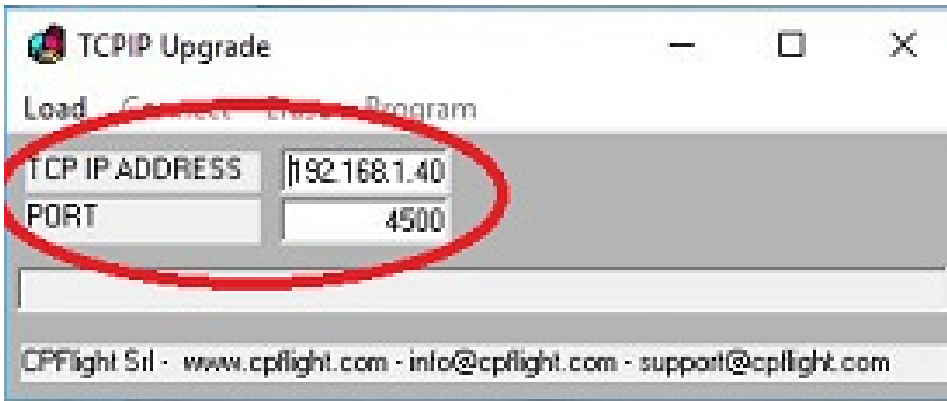
**START SWITCHES:** putting the start switch knob on the "GRD" position, the electromagnetic held system will engage. A "red square" appears on the test program window close to the related knob. Clicking on the red-square symbol the switch it release.

**WARNING!** The start switch has a locking mechanism, the knob must be pressed to allows the rotation. do not attempt to rotate without push as you can damage the switch.

**FIRMWARE UPDATE**

The OVH737FWD 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.

To see the installed firmware revision run the Test Program utility and click the question mark on the menu bar.

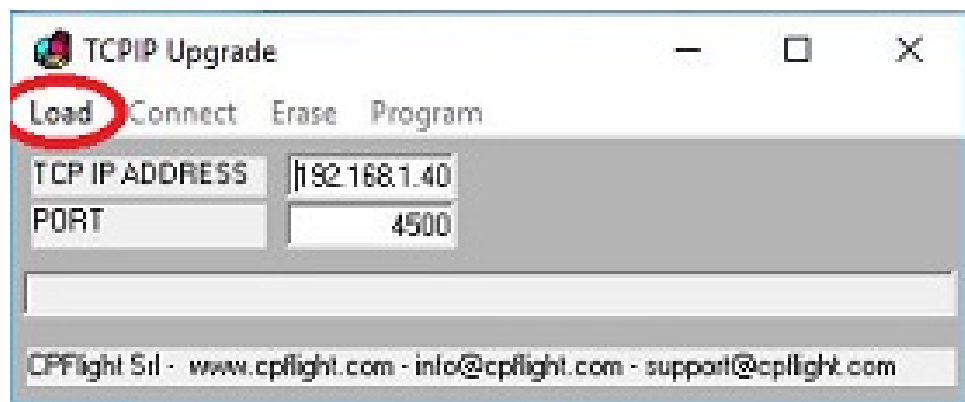


To proceed with the firmware upgrade, activating the bootloader present in the microcontroller’s flash memory, you have to power the OVH737FWD pushing and holding pushed the MAINT button for about 1 second. **The hardware will start in random mode**, so probably you

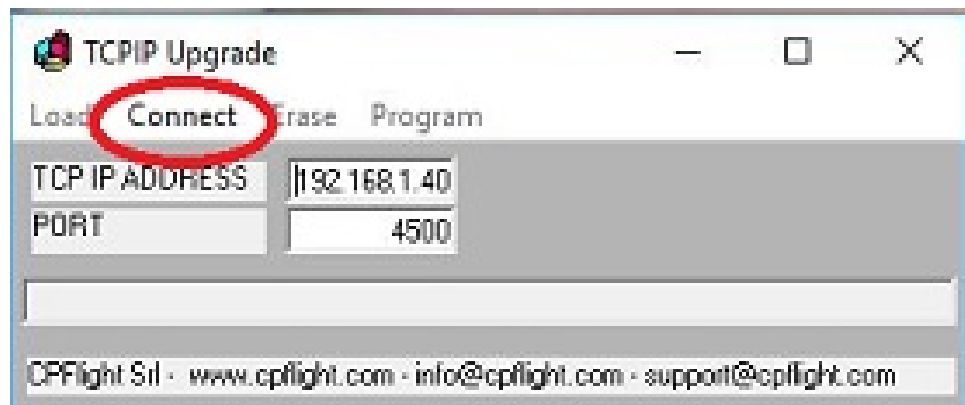
will not see anything on DVM display, or if any, only random characters. Also the backlight could be ON or OFF. In this moment the microcontroller have no control on display, button or annunciators, it only wait a connection for the firmware upgrade.

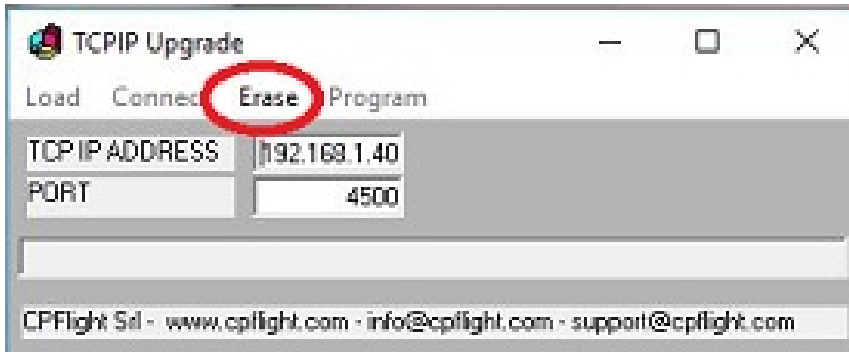
Then please run the program TCPIP\_upgrade.exe and verify that the TCPIP parameters (TCPIP address and port) are the same used normally to communicate with your PC. If not please modify it into the TCP upgrade window program.

Select 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.



Is important to be sure to select an hex extension file. The file will be shown as OVH737\_xxx.hex where xxx will indicate the firmware release. Now, in the program menu bar, select the “Connect” title.





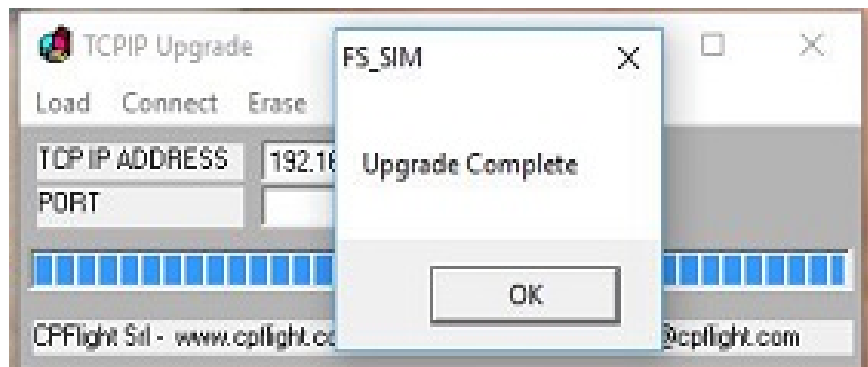
If all is ok, in this menu will activate the "Erase" title. Select "erase" to delete the old firmware and prepare the microcontroller for a new script. The erase operation will take few seconds.

At the end of this process, always in the program menu bar, will be activated the option "Program". Select now this option.....



.... and it will appear a progress bar that indicates the program progression. This operation will take about two minutes to terminate.

At the end it will appear a window that indicates the end of the programming. Close the upgrade program. The hardware will reset and will restart showing into DVM display the new firmware release.



## MAIN CHARACTERISTICS

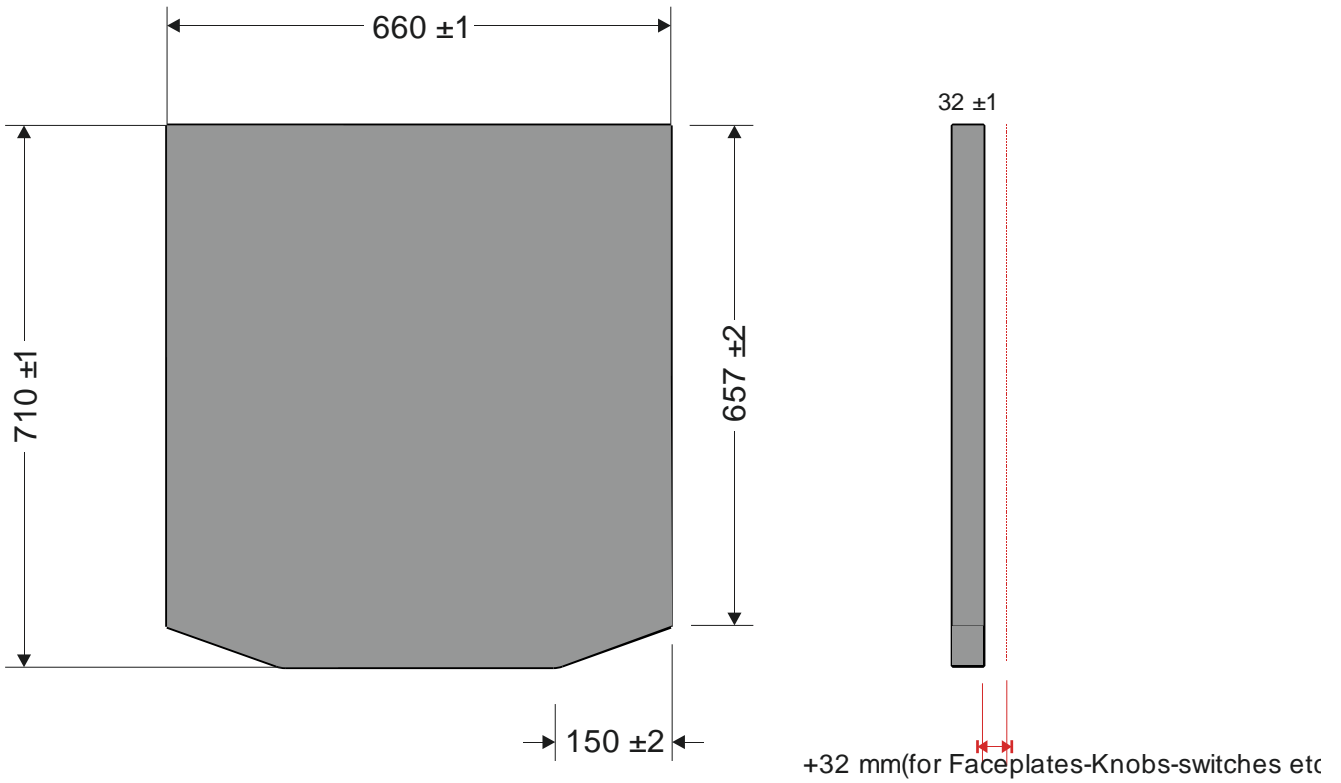
### FWD OVERHEAD:

- Powder coated aluminium frame with original  $\frac{1}{4}$  turn fasteners
- High resolution 6mm backlighting frontplate with dual color (where required)
- Backlight: Warm White high efficiency SMT LED's integrated in the faceplate
- "push to test" function on the annunciators
- SMT LED's based annunciators
- Electromagnetic start switches
- Electromagnetic YAW-DAMPER, WING ANTI-ICE VOICE RECORDER switches
- Stepping motor based gauges
- FLT ALT and LAND ALT displays
- DVM display with green digit.
- Display characteristics: LED 7 segment. Digit height: 0,3" (7,6 mm).
- 2 encoders to set FLT ALT and LAND ALT.
- Encoders characteristics: Half million cycle rated, 32 increment for rotation (with detent).
- High reliability switches with locking lever (where required).
- 16 bit flash microcontroller
- Customer upgradable firmware
- ETHERNET Interface (3mt ethernet cable provided)
- Supply: 12Vdc 5A (supply adapter provided)

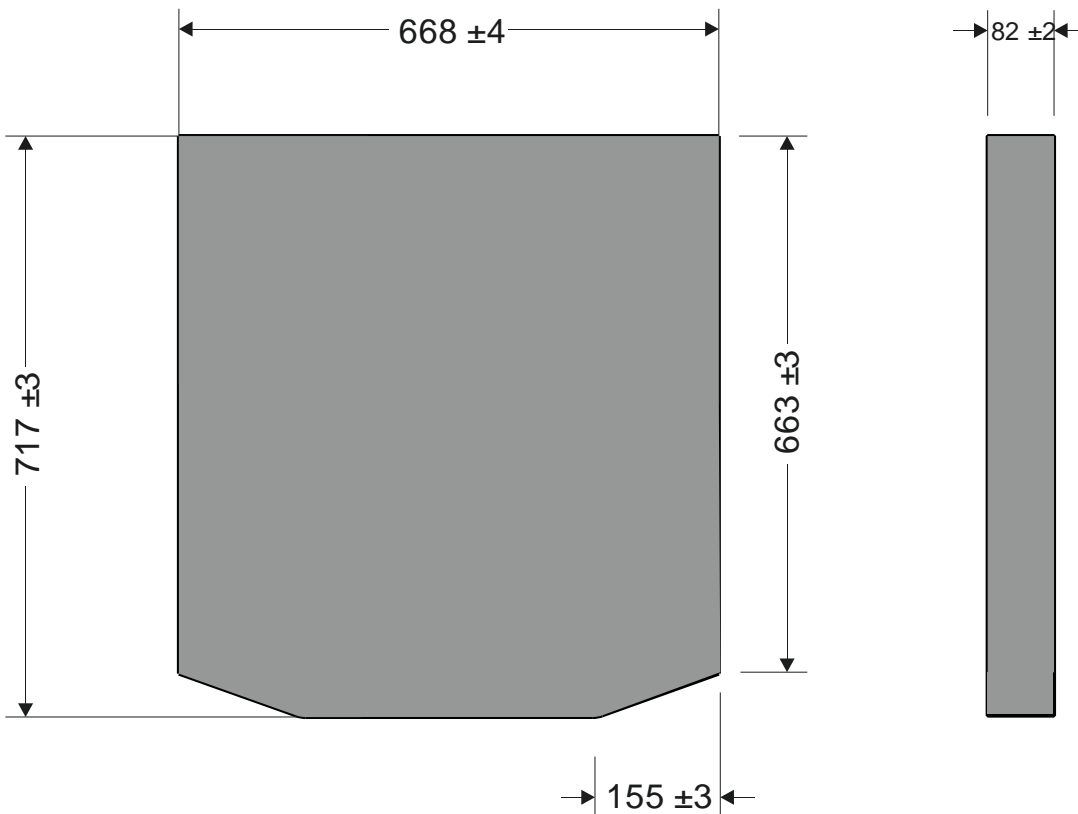


**WEIGHTS AND DIMENSIONS**

Forward overhead (excluding back cover): 10Kg.  
 Forward overhead back cover (option): 4Kg.



OVH737FWD



OVH737FWD - Aluminium back-cover dimensions (optional)

## LINKS

Web site: <http://www.cpflight.com>  
Support: <http://www.cpflight.com/sito/help/mainsupport.asp>  
Email: [info@cpflight.com](mailto:info@cpflight.com)