

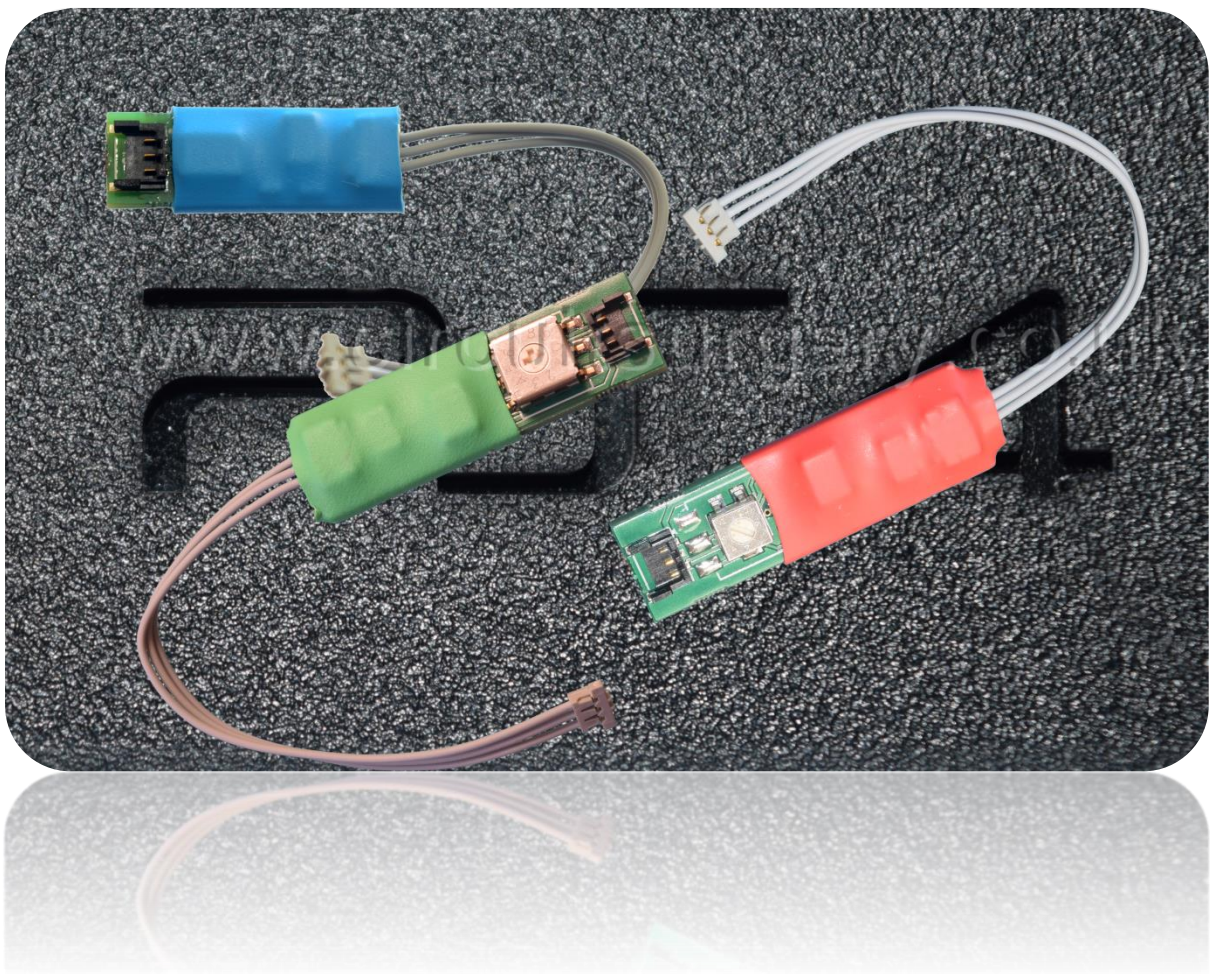
Fan Speed Controller/Accelerator Mods

For the Playstation 4 series of games consoles

User Manual



www.circuitsurgery.com



Description

This is a series of small modules designed to be easily fitted to the your Playstation 4 console to increase the speed of the fan over that demanded by the console itself, and therefore keeps the console running cooler than it would otherwise.

There are currently several different variants of the PS4 in use, and between them there are three different fan connectors.

Early PS4 consoles with model numbers beginning CUH-10... and CUH-11... have a very small, grey connector.

Model numbers CUH-12... , CUH-70... , and CUH-71... (PS4 Pro) which have a larger, white, connector identical to the PS3 consoles.

Model numbers CUH-20... , CUH-21... , and CUH-22... (PS4 Slim) have a third style of connector which is off-white and slightly smaller than the second style.

Fitting

NB – Removal of warranty stickers will, of course, invalidate the warranty on the console!

The following illustrations show the basic version being fitted into a first generation console (CUH-10...). Fitting modules into the different consoles is basically the same, with the differences being that of case removal and the location, and type of, connector. Therefore, to avoid repetition the description of the installation in later consoles will be restricted to the differences between the consoles.

There are numerous teardown instructions and videos online and it seems pointless to duplicate that information. If you require more clarity please feel free to email me (colin@circuitsurgery.com), but you may find it more helpful to search the web for more detailed teardown instructions: there are many excellent video tutorials out there!

CUH-10... , CUH-11... (1st generation PS4)

1. Remove the hard drive cover (The glossy part of the case) by sliding to the left and lifting off.

Note that the yellow wire in the following illustrations is for experimental purposes and is not normally present in Playstation 4 consoles.



2. If present, remove the warranty sticker on the rear of the top half of the case. Remove the exposed screw with a Torx 8 security screwdriver.



3. Again using the Torx screwdriver, remove the two screws on the top and towards the front of the console that are fixing the light bar.



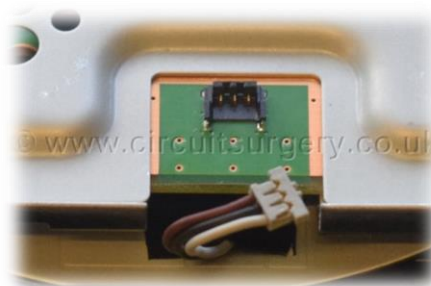
4. With your fingers under the front lip of the top cover, pull outward to release the clips and lift upwards. Then slide towards the back of the case slightly to remove the cover.



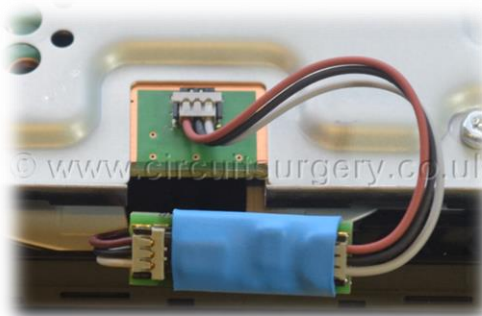
5. You will now have access to the fan connector which is on the right side towards the front of the console.



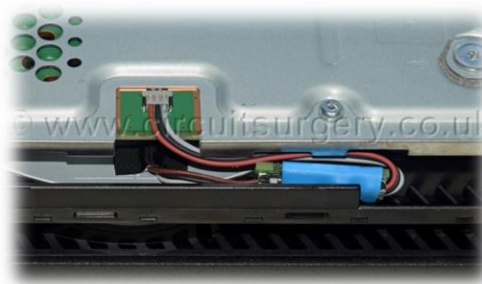
6. To part this connector, simply grip the wires near the connector itself and pull upwards.



7. Now to fit the accelerator module! Line up the connector on the fan wires with the receptacle on the module and press it home. Do the same with the connector on the end of the module's wires and the receptacle on the console. That's it - connected!



8. The best place to put the module is in the space under the metalwork of the console as shown in the photograph below.



9. All that remains is to put the covers back onto the console and try it out. The larger of the two covers is replaced by locating it at the rear over the sockets, lowering the front and then pressing down until it clicks into place. Replace the three screws and the hard drive cover and it's all done and ready to try out.
10. When you switch the console on, make sure you hear the fan spin up. If you don't hear the fan start, turn the console off and check your work. Make sure the connectors are properly mated and that there are no nipped wires. If everything appears to be OK but the fan still will not start, remove the module, restore the fan connector directly to the console and make sure it works. Contact me, colin@circuitsurgery.com for further advice.

CUH12... (2nd generation PS4)

1. Remove the top cover in the same way as for the 1st generation console (above)
2. The location of the fan connector is as shown in this image:



3. Proceed as for the 1st generation console above.

1. Turn the console onto its back, as the bottom cover is to be removed for access to the fan connector.
2. Remove the HDD cover.
3. Take off the warranty sticker, if present, from the rear of the console and remove the single Torx security screw.



4. Remove the bottom half of the shell as follows:
 - a. With the side of the screw you just removed facing you pry up on the two corners that are facing you with your fingers (this may take a bit of force to open up and you will hear a fairly loud click when the bottom cover detaches).
 - b. Remove the bottom cover by sliding it towards the back corners and lifting up.



5. With this half of the shell removed, you will see the fan connector as shown (circled) below.



6. Continue with the installation by removing the fan connector, inserting the controller module in its place and refitting the fan connector into the module.
7. Find a suitable location for the module. This is probably the more difficult process as there is very little free space in the PS4 console!
8. Test and reassemble the console.

1. Turn the console onto its back and remove the hard drive cover.



2. If present, remove the warranty stickers and remove the three screws with a Torx 8 security screwdriver.



3. With your fingers under one of the front corner lips of the bottom cover, pull outward and upwards to “unhook” the cover. Repeat at the other corner. Lift the cover off, and the fan connector (circled) will become accessible.



4. Continue with the installation by removing the fan connector, inserting the controller module in its place and refitting the fan connector into the module.
5. Find a suitable location for the module. This is probably the more difficult process as there is very little free space in the PS4 console!
6. Test and reassemble the console.

Operation

The Basic (Blue/Black) Version



This module requires no user adjustments. It automatically detects the fan speed that the console is asking for, adds 50% and then drives the fan at the resulting speed. The module drives the fan using the same PWM (Pulse Width Modulation) signal that the console uses and so will cause no additional wear on the fan. This is completely transparent and neither the console nor the user will have any indication that this is happening, therefore there will be no impact on gameplay and no likelihood of being banned from the Playstation Network as a result of fitting this module.

Just to be clear of the effect on the fan speed of fitting this mod, see the table below. It shows the speeds in 10% steps for clarity, but the actual increases will be infinitely variable. Note also that the console starts from cold demanding the lowest speed of about 20%.

Demand from Console (% of full speed)	Actual Fan Speed (% of full speed)
20	30
30	45
40	60
50	75
60	90
70	100 (Full Speed)
80	100 (Full Speed)
90	100 (Full Speed)
100 (Full Speed)	100 (Full Speed)

The Variable Controllers (Red / White (Yellow where applicable))

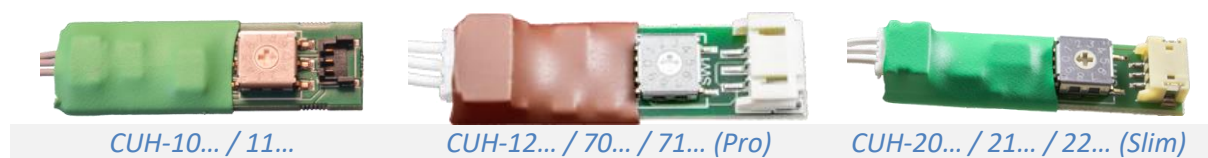


These modules allow the user to adjust the speed of the fan from the speed demanded by the console up to the maximum speed of the fan.

On the red module, adjustment is made by turning the potentiometer on the board using the supplied screwdriver, or any other 2mm flat-bladed driver. The yellow module is adjusted using the control which will have been mounted on the case of the console during the fitting procedure. When fully counter-clockwise, the fan will spin at the rate determined by the console. Turning the control clockwise will continuously and smoothly increase the speed of the fan until it reaches full speed with the control turned fully clockwise.

Note that if the console is already warm, the first part of the rotation will appear to have no effect. This is because the module will not allow the fan to spin more slowly than the console demands.

The Adjustable Accelerator (Green)



This module behaves in the same way as the Basic (Blue) module but with the additional benefit of being able to adjust the amount of acceleration, in 10% steps.

Using the supplied screwdriver (or another suitable miniature 'driver) the switch on the module may be set to one of ten positions. Position 1 will give a 10% increase in speed, position 2 gives 20%, through to position 9, which gives 90% increase - double the speed demanded by the console.

The Externally Variable Controllers (Yellow-Black / Grey-Black)

The modules of the externally variable controllers are fitted in exactly the same way as the modules above, the only difference being the additional steps needed to fit the control potentiometer (see next page).

Externally Variable Controller - Fitting the Control

The pot is designed to fit through a hole 7.5mm diameter with a second locating hole of 3mm diameter (see diagram over the page). Whilst that is the ideal method of fitting, it's not strictly necessary to have both holes if the locating lug is removed from the pot - it's there to ensure the pot doesn't rotate in its fixing.

If you prefer not to drill holes in your console's case, then it's possible to make a small slot somewhere inconspicuous on the edge of the case which the cable may be routed through, and the pot stuck to the outside of the case using glue or double-sided tape. This is not such an attractive way of mounting the pot, but it does have the advantage of ease, and does not leaving an unsightly hole should you remove this mod to sell the console on at a later date.

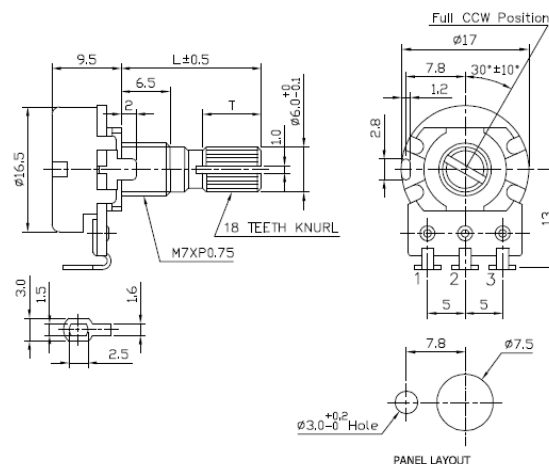
If you decide to fit the pot as designed, then with reference to Figure 1, the first thing that needs to be done is to locate a suitable position within the console with enough space to fit the pot. Make sure that this position has enough clearance all round so that when fitted, neither the body nor the terminals of the pot will come into contact with any internal part of the console when the case is put back together.

Place the self adhesive drilling template on the chosen location on the outer surface of the case. For guidance, the outline of the body of the pot is shown on the template. Carefully mark the centre of both holes using a scribe or similar sharp point. When drilling the holes, do so with a moderate to low drill speed; too high a speed may cause the plastic to melt resulting in an unclean hole.

Once the internals of the console have been replaced into the case, the module can be fitted, the cable routed carefully to the hole and the pot fitted and secured with the nut and washer supplied.

When refitting the top half of the console's shell, be careful not to nip the pot's cable between the plastic mouldings and also make sure that the cable does not cover the case fixing screw holes.

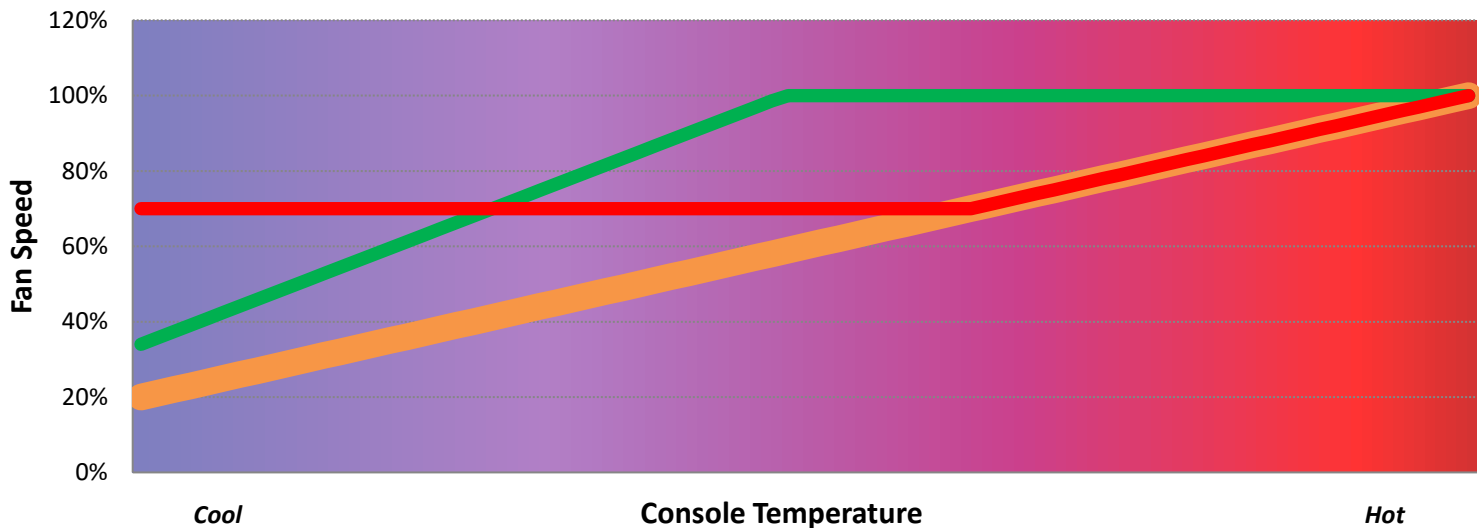
Figure 1: Potentiometer Dimensions



Red (White) and Green (Brown) Modules: A comparison

Below is a graphical representation of the effect of the green and red modules on the speed of the fan. The thick orange line represents the speed of the fan without a module fitted and the green and red lines represent the speed of the fan with the green and red modules (respectively) fitted and the control switch set to position "7" on the green module, or approximately $\frac{3}{4}$ clockwise rotation of the pot on the red module.

Effect of Red (White) and Green (Brown) Modules on Fan Speed



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