





Filter holder module



1a) 3D printing parts :

The filter holder consists of 2 parts:

• The filter holder itself allows the insertion of different «drawers» depending on the type of filter to be analyzed. It interfaces between the light module and the spectrograph (Alpy or Star'Ex/Sol'Ex). This part is made of the 3 following 3D printing parts. These 3 parts are to be printed in black opaque PETG.

The 3 .stl files can be downloaded from my web page (zipped folder Filter_Holder#1.)



- The various filter drawers:
 - 31,75mm Filter holder
 - 2 inches Filter holder
 - Filter holder for square filter of 50x50mm
 - Filter holder for unmounted 36mm diameter filter

The button can be printed in PLA, the other parts in opaque black PETG. For filter holder with a thread (31.75mm and 2 inches) it is necessary to set the slicer software with layers of 0.1mm or 0.07mm for a better printing of the thread, which takes much more time than a classic printing with layers of 0.2mm er layer.

Other filter doors will be offered according to demand.

The 8 .stl files can be downloaded from my web page (zipped folder Filter_Holder#2.)



1b) Mechanical parts :

For the filter holder :

- 5 screws M4 length 17mm preferably with hollow hexagon
- 5 M4 nuts
- 4 M3 countersunk screws, length 6mm, preferably with hexagonal holes
- 4 nuts M3

For each drawer:

- 1 x M3 brass insert to fix on the drawer knob
- 2 x M2 brass insert
- 2 to 3 M2 brass inserts (if 50x50 square drawer or 36mm drawer)
- 1 M3 screw length 4mm
- · 2 screws M2 length 6mm







Cab'Ex

- 2 to 3 screws M2 length 4mm (if square drawer 50x50 or drawer 36 mm)
- 3 washers M2 (if 36mm drawer)

2) Assembly of the main body :

2.1 Put in place 4 M3 nuts in the filter_holder31 part and fix this part on the main part of the filter holder (filter_holder_main) with 4 M3 countersunk screws.



2.2 Insert 5 M4 nuts into the filter_holder_cover and assemble it with the Filter_Holder_main part with 5 M4 screws.



Inserting the 5 nuts



The filter holder is finished and should look like the picture below.



3) Mounting the filter drawer :

3.1 Common mounting for all filter doors :

On the Button part, attach an M3 insert with a soldering iron. Be careful not to overheat the insert. Then fix the button on the Drawer_support part with an M3 screw.



Attach 2 M2 inserts to each filter_holder module and use 2 M2 screws to assemble the Drawer_support part to this part.





3.2 Mounting the 36mm circular filter holder :

For this filter holder, 3 M2 inserts must be fixed. For its use, we put the 36mm filter in the filter holder, then we cover it with the circular cover by fixing it with 3 M2 screws and 3 washers.



3.3 Mounting the 50 x 50mm square filter holder :

For this filter holder, you have to fix 2 M2 inserts in the support cover. For its use, we put the square filter of 50x50mm in the filter holder, then we cover it with the support cover by fixing it with 2 M2 screws on the side of the filter holder.



Black adhesive felt may be attached to the perimeter of the 36mm circular cover and the square cover to avoid scratching the filter to be analyzed.

Other filter holders can be made according to your needs and can complete the 4 that are proposed here.

*Cab'*Ex

4) Use with the Spectrograph :

This module can be used with an Alpy 600, a Star'Ex or a Sol'Ex spectrograph. The side with the 31.75mm slider is connected to the spectrograph, the other side to the light module.



With an Alpy 600

With a Star'Ex

To make a measurement of bandwidth of a filter, we make a series of spectrum in the following order:

- Filter to be analyzed
- A calibration lamp
- Without the filter (the empty drawer is inserted without filter)
- A calibration lamp
- A set of bias

For processing, it is done with spec INTI designed by Christian Buil and Valérie Desnoux (from V2.0.4) that can be downloaded here : http://www.astrosurf.com/solex/specinti1_en.html

The processing technique is also described on this same link for the Lab'Ex. An example with the spectrum of an old Lumicon UHC filter from 1998.

