Oasis OAG

Off-Axis Guider

User Manual

Version 1.0

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https://www.astroasis.com/en
We dedicate to providing high quality products and services for amateurs of astronomical observation and photograph

Content

1. Product introduction

When customers use our filter wheel, they often discuss back focus problem when connecting it with cameras and OAGs from different manufacturers, and find these issues challenging. This ultimately prompted us to develop an OAG, with the initial goal of solving such back focus problems. During the actual development process, we discovered that we could implement even more innovative features in this OAG, thereby delivering some delightful experiences to our users.

This product has the following features:
1. Configurable thickness of 16.5mm, 17.0mm, or 17.5mm
2. Prism position can be precisely adjusted via the helical focuser
3. Compatible with filter wheels from multiple brands
4. Easy light-leakage protection

The Oasis OAG body has a thickness of 12mm. By connecting it with threaded adapter rings available in 4.5mm, 5.0mm, or 5.5mm thicknesses, it can achieve three total overall thicknesses: 16.5mm, 17.0mm, and 17.5mm. This modular design provides flexibility to meet the back focus requirements of various equipment configurations.

There are three sets of threaded adapters for connecting the telescope, with inner threads of M68x1, M54x0.75, and M48x0.75 respectively. Each set includes three adapters with thicknesses of 4.5mm, 5.0mm, and 5.5mm. The OAG kit comes with one set of threaded adapters, and the thread specification can be specified as M68, M54, or M48. Additional threaded adapters can also be ordered as options.

Figure 1-1 shows the M48 adapters of three different thicknesses. Figure 1-2 illustrates the thickness dimensions of the OAG main body when connected with a 4.5mm adapter.

Figure 1-1 M48 Adapters

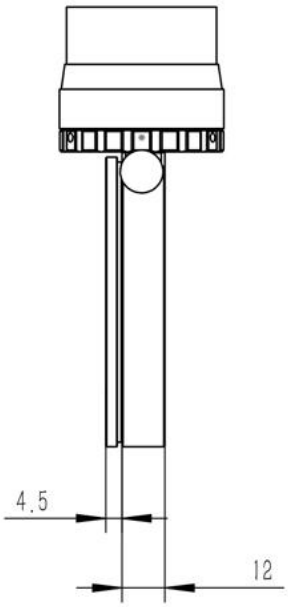

Figure 1-2 Thickness of the OAG Main Body and the Adapter

2. Connection with filter wheel

This product is compatible with Astroasis, Player One, QHY, Touptek and ZWO 1.25”/31mm/36mm/2” filter wheels.

2.1. Connect OAG to a filter wheel directly

The OAG main body can be directly connected to the filter wheel using the M3*12 or M2.5*12 hexagon socket head cap screws which is included in the OAG package, as shown in Figure 2-1.

When connecting to Astroasis, QHY, or Touptek filter wheels, please use M3*12 screws. When connecting to Player One, Touptek or ZWO filter wheels, please use M2.5*12 screws. The positions of the screw holes for connecting to the filter wheels are shown in Figure 2-2.

Figure 2-1

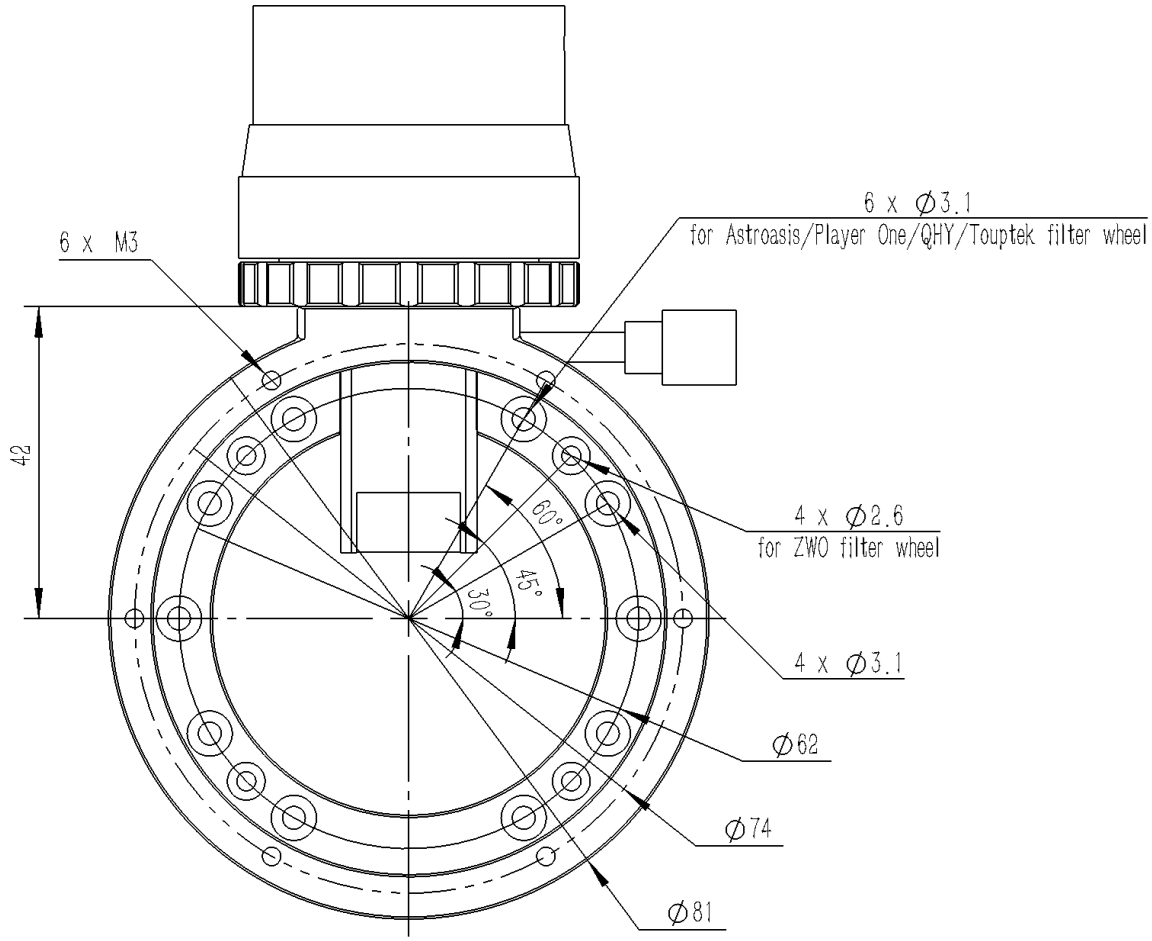

Figure 2-2

Tip: You can finely adjust the depth at which the screws are threaded into the filter wheel housing by using the included M3 or M2.5 washers.

2.2. Add an extender between the OAG and the filter wheel

To accommodate different back focus requirements, this product provides 4mm or 5mm extenders. These extenders can be placed between the OAG main body and the filter wheel. Please note that these extenders are optional accessories and are not included in every OAG package.

The positions of the screw holes on the extenders are shown in Figure 2-3.

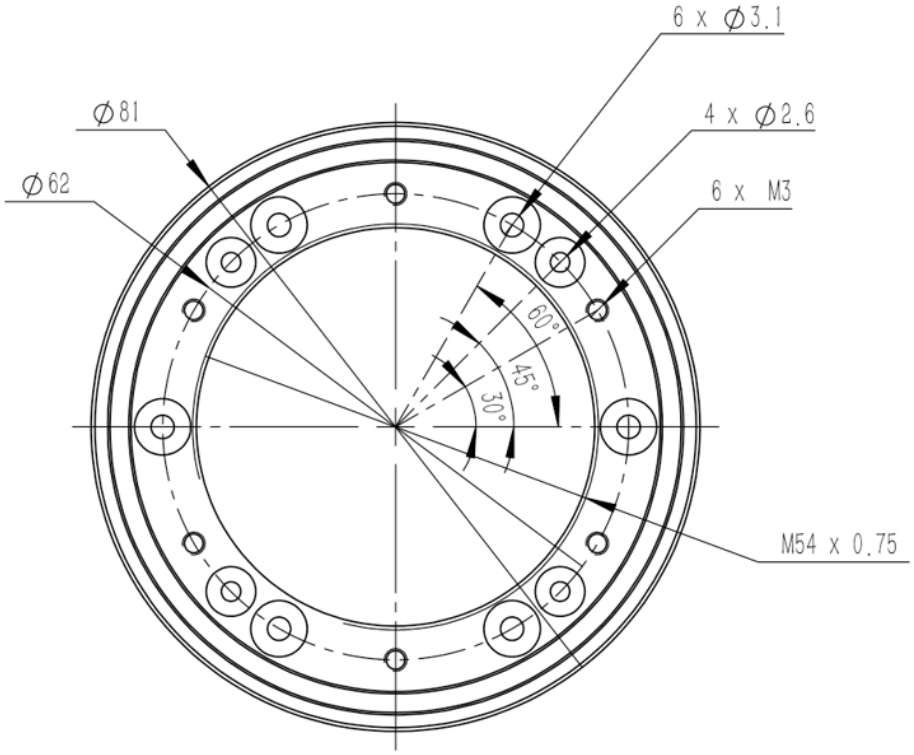

Figure 2-3

The extender features six Φ3.1 and four Φ2.6 countersunk screw through-holes. Align these through-holes with the screw holes on the OAG main body when placing it.

When using a 4mm extender, connect the OAG main body to the filter wheel using M3*16 or M2.5*16 hex socket head cap screws, with the screws passing through the through-holes on the extender.

When using a 5mm extender, connect the OAG main body to the filter wheel using M3*16, M2.5*16, M3*18, or M2.5*18 hex socket head cap screws, with the screws passing through the through-holes on the extender.

Tips:

1. You can finely adjust the depth at which the screws are threaded into the filter wheel housing by using the included M3 or M2.5 washers.
2. If you are using a filter wheel with redundant screw holes, such as an Astroasis filter wheel, you can first connect the extender to the filter wheel using countersunk screws through some of the corresponding countersunk holes on the extender. Then, attach the OAG to this assembly.
3. The extender also features six M3 screw holes. If necessary, you can first connect the OAG main body to the extender using screws through the four corresponding Φ3.1 screw through-holes on the OAG main body and four of these M3 holes on the extender. Then, connect this combined assembly to the filter wheel.

3. Adjust the prism position

The most unique and remarkable feature of the Oasis OAG is that its helical focuser can not only be used to focus the guide camera but also to precisely adjust the position of the prism. As we know, most guide cameras have an inner thread of M28.5x0.6 at the front. The Oasis OAG features an outer thread of M28.5x0.6 at the front of the prism mounting post, ingeniously enabling the use of the helical focuser to adjust the prism's position. The usage method is as follows:

1、Screw the front thread of the guide camera onto the thread at the end of the OAG prism post

2、Loosen the prism post locking screw, and tighten the guide camera locking screw on the helical focuser

3、Rotate the dial on the helical focuser to raise or lower the prism position

4、Once the prism is adjusted to the desired position, secure the prism post with the locking screw, and unscrew the connection between the guide camera and the prism post

Figure 3-1 Prism and the Prism Post

Figure 3-2 Prism, Prism Post and the Guide Camera

When rotating the dial on the helical focuser, the position of the guide camera is adjusted, which in turn moves the prism post and the prism together.

The helical focuser has a focusing travel of 6mm, and one full rotation of the dial corresponds to this 6mm travel. The dial is marked with six major divisions: 0, 1, 2, 3, 4, and 5. Thus, for every major division the dial rotates, the prism post moves by 1mm. Each major division is further subdivided into 20 minor divisions, providing a fine adjustment precision of 0.05mm per minor division.

Before starting adjustment, set the helical focuser to its minimum focusing travel. Insert the prism post to its lowest position, where the frontmost edge of the prism is 9mm away from the optical axis center. During adjustment, the exact position of the prism can be precisely calculated based on the number of divisions the dial has rotated.

This adjustment method allows the OAG to be freely and precisely positioned even when it is already assembled with other equipment, such as filter wheels and cameras, onto the telescope—without the need to disassemble any components. This remains true even during nighttime operations, offering significant convenience to enthusiasts. Additionally, the circular structure at the front of the prism post prevents the prism post from accidentally falling out when its locking screw is loosened.

You can view the video on adjusting the prism position using a helical focuser at the following link:
https://youtu.be/gMrPeY30jPA

4. Light-leakage protection

2.1. Light-leakage protection for the screw holes on the main body

To accommodate screw holes of different brands, the OAG main body features redundant screw through-holes. On the side facing the camera, these through-holes are designed as M4 threaded holes, as shown in Figure 4-1. Therefore, when these holes are not in use, you can screw in M4 set screws on the camera-facing side to prevent light leakage, as illustrated in Figure 4-2. When you need to use these screw holes to connect a filter wheel, please remove these set screws first.

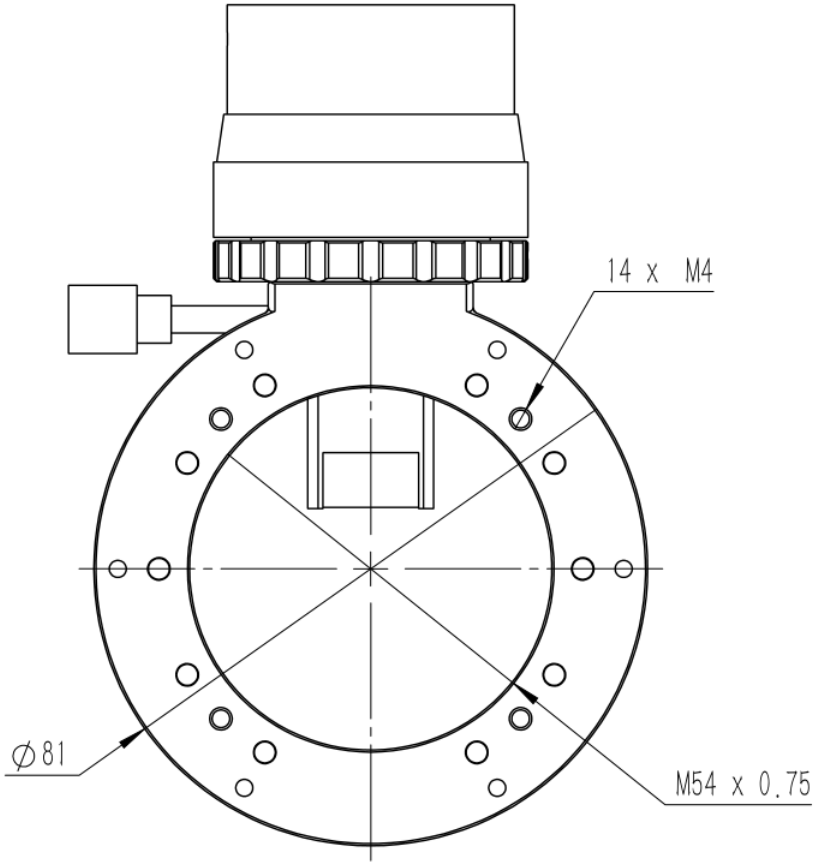

Figure 4-1

Figure 4-2

2.2. Light-leakage protection for the OAG main body and the adapters

The adapter at the front end of the OAG features a recessed groove (as shown in Figure 4-3). This design allows for light-leakage protection between the threaded adapter and the OAG main body by using an O-ring. Please use the included O-ring with an outer diameter of 75mm and a cross-sectional diameter of 1.5mm from the OAG packing list to achieve light-leakage protection, as illustrated in Figure 4-4.

Figure 4-3

Figure 4-4

Tip: For easier installation, you can first connect the adapter to the OAG main body, then place the O-ring into the recessed groove on the adapter to achieve light-leakage protection.

2.3. Light-leakage protection when using an extender

There is a recessed groove with an inner diameter of 71mm and an outer diameter of 76mm on the side of the extender that faces the OAG main body. Before connecting the extender to the OAG body, you can place an O-ring with an outer diameter of 75mm and a cross-sectional diameter of 1.5mm into this recessed groove for light-leakage protection, as shown in Figure 4-5.

Figure 4-5

On the side of the extender that faces the filter wheel, there is a recessed groove with a diameter of 66mm along its perimeter. An O-ring with an outer diameter of 62mm and a cross-sectional diameter of 1.5mm, included within the extender package, can be placed into this groove for light-leakage protection, as shown in Figures 4-6 and 4-7.

Figure 4-6

Figure 4-7

Tip: For easier operation, you can first partially tighten the extender to the filter wheel, then install the O-ring with a 62mm outer diameter.

5. Using a riser to elevate the helical focuser base

In some cases, it may be necessary to raise the helical focuser to avoid interference with external structures.

This can be achieved by placing a riser component (Figure 5-1) between the OAG main body and the helical focuser base. This component is an optional accessory. The riser has a height of 3.2mm, thereby elevating the helical focuser by 3.2mm.

Figure 5-1

The steps for the use of this riser component are as follows:

1、 Use an M1.5 wrench to loosen the M3 screw on the side of the helical focuser mounting base (Figure 5-2). Then, remove the helical focuser from the mounting base, as shown in Figure 5-3. Note: You only need to loosen the M3 screw on the side of the base; there is no need to remove it completely.

Figure 5-2

Figure 5-3

2、 Remove the prism post. You will then see the four countersunk cross-head M2.5*7 screws connecting the mounting base to the OAG main body, as shown in Figure 5-4. Remove these screws to separate the base from the OAG main body, as illustrated in Figure 5-5.

Figure 5-4

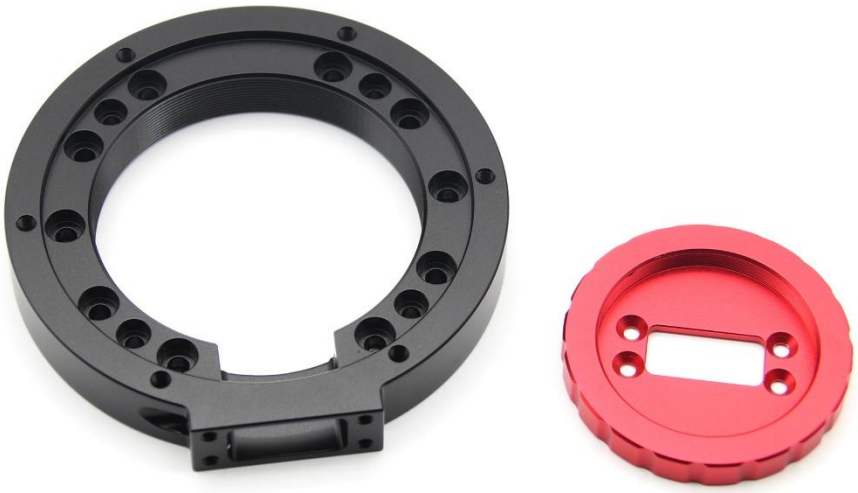

Figure 5-5

3、 Place the riser component between the OAG main body and the mounting base. Then, use four countersunk cross-head M2.5*10 screws to secure the base to the OAG main body. Then, insert the prism post, as shown in Figure 5-6.

Figure 5-6

4、 Screw the helical focuser onto the mounting base. Then, tighten the screw on the side of the base to secure the helical focuser in place, as shown in Figure 5-7.

Figure 5-7

6. Dimension diagrams

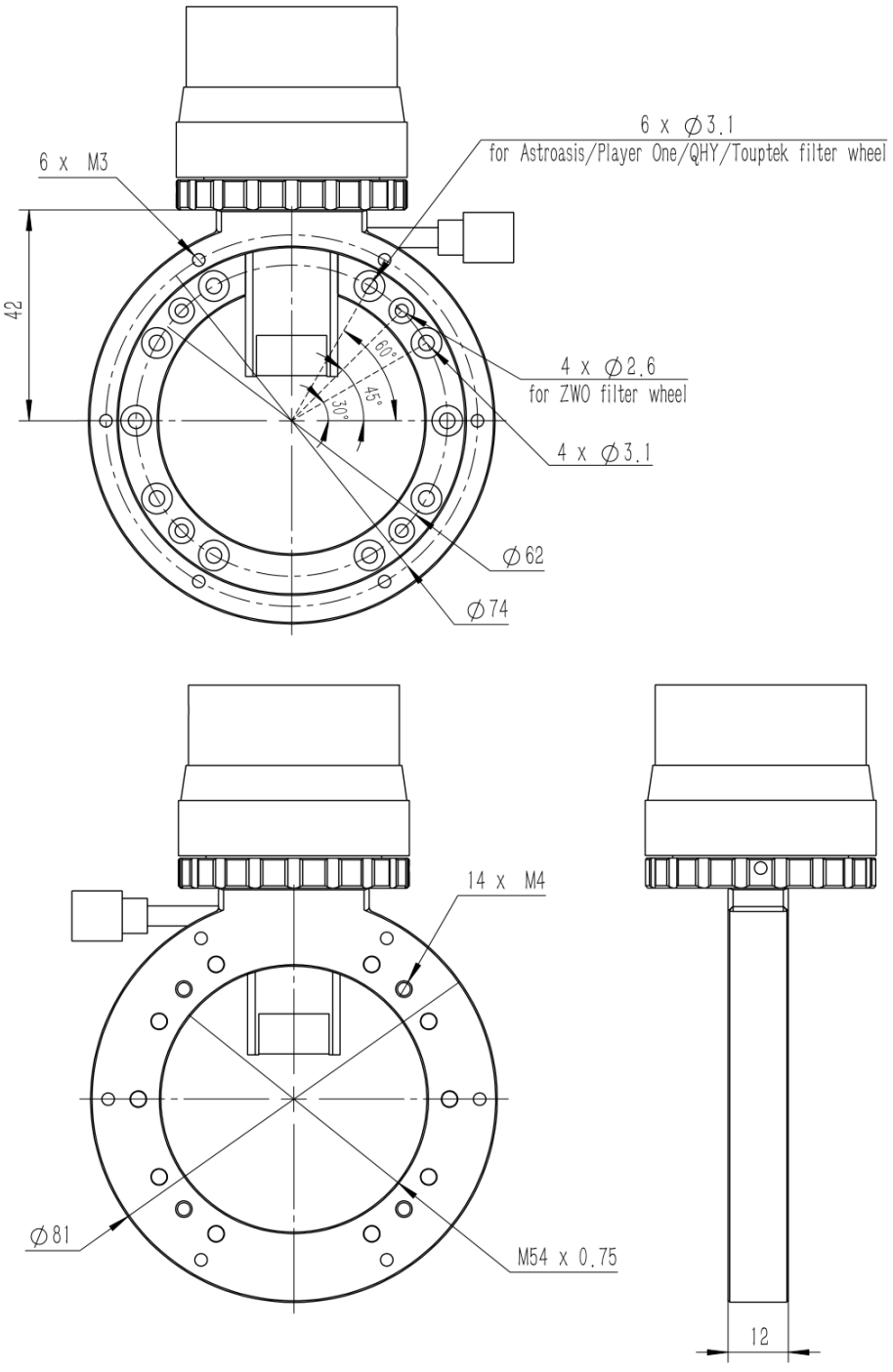

Figure 6-1 OAG Main body

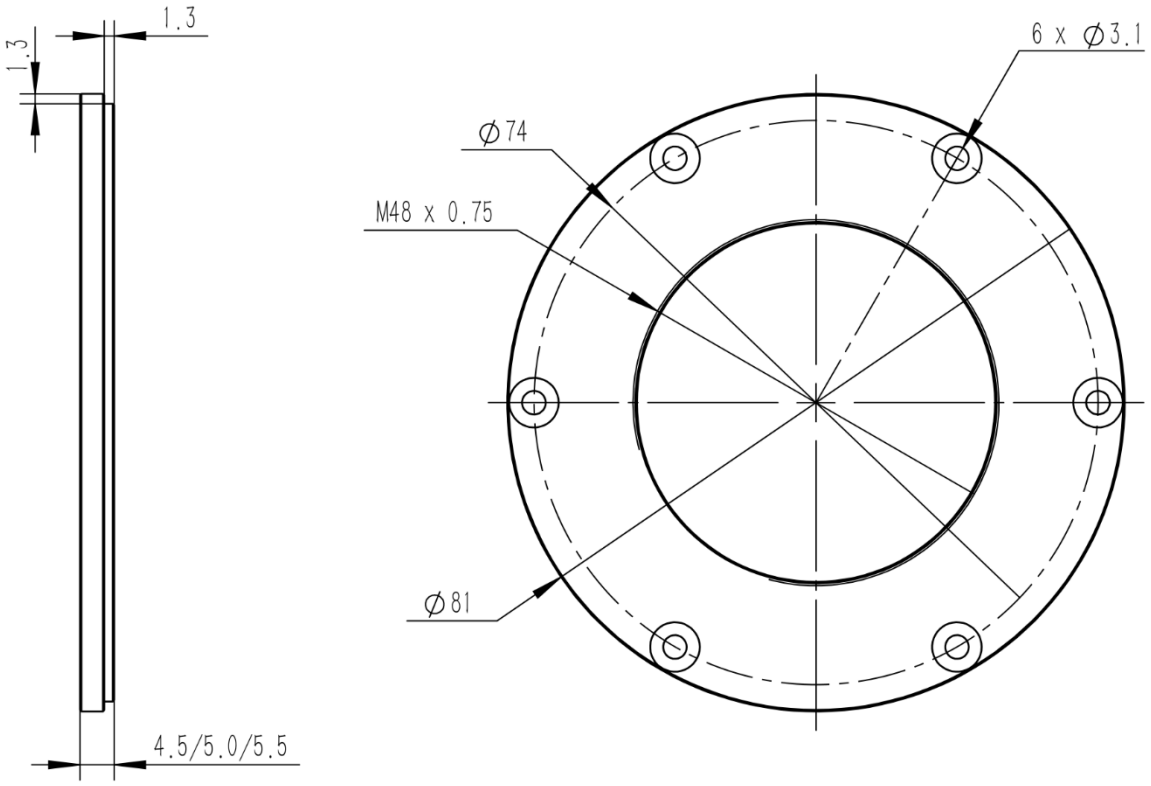

Figure 6-2 M48 adapters

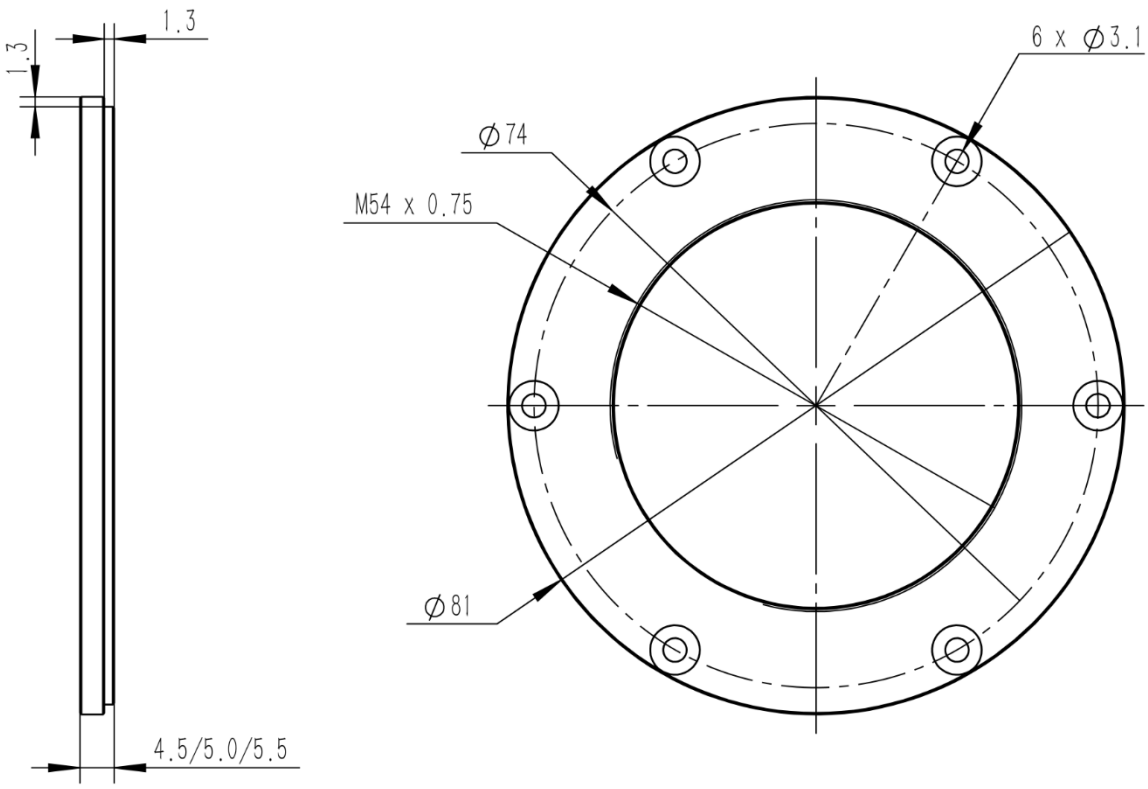

Figure 6-3 M54 adapters

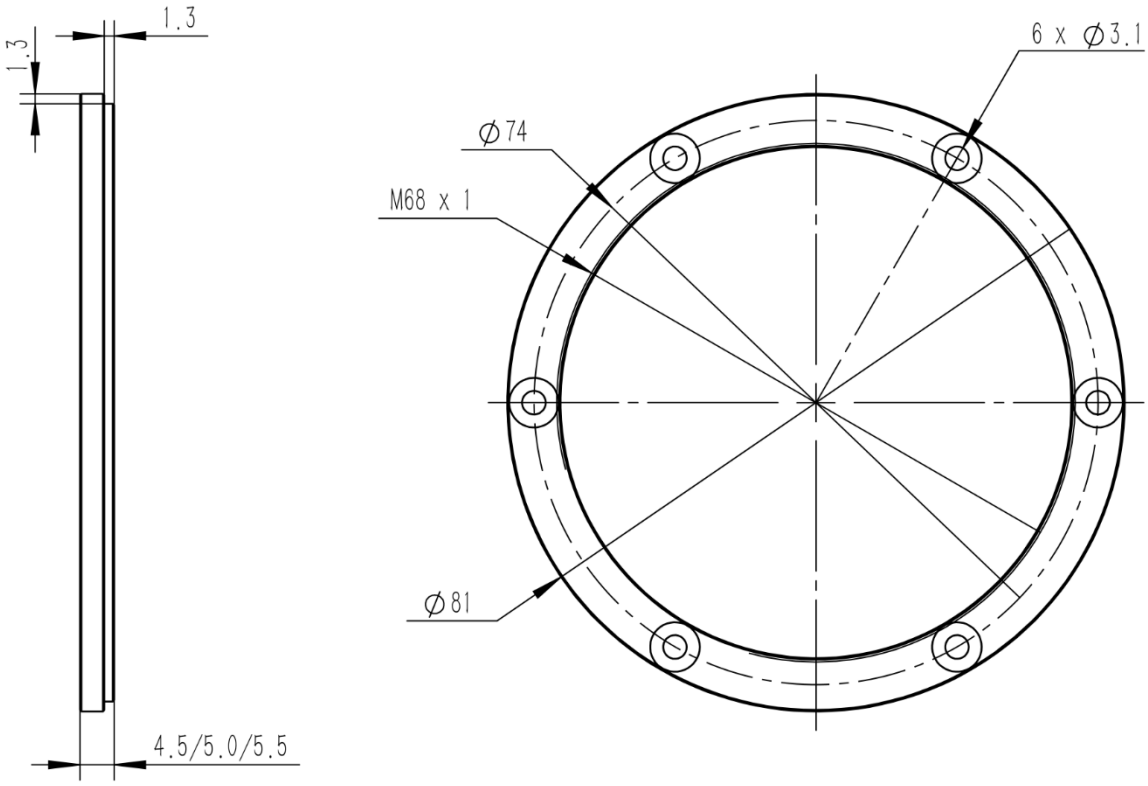

Figure 6-4 M68 adapters

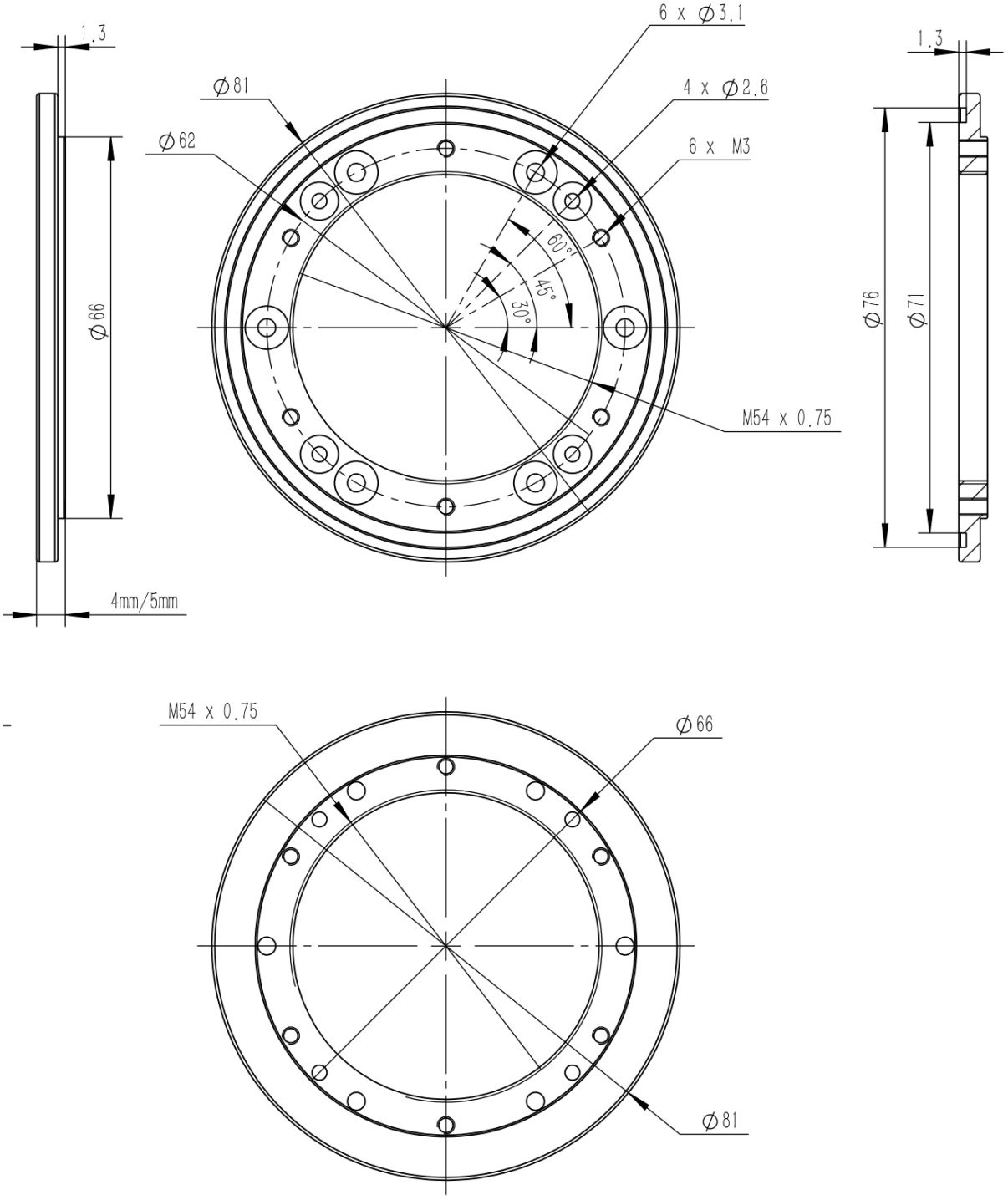

Figure 6-5 4mm/5mm extenders