

# ASI Camera 55mm Back Focus Solution

(2025 Updated Version)

Unlike planetary imaging, deep-sky astrophotography demands extremely high field flatness across the entire image frame. To achieve this, telescope manufacturers typically use two approaches:

## 1. Built-in Field Flattener Design

Some telescopes integrate the field flattener optics directly inside the optical tube. With these systems, once the camera reaches focus, the image field is naturally flattened—no additional adjustment is required. Users of such telescopes don't need to worry about the back focus issue discussed in this article.

## 2. External Field Flattener Design

Other telescopes use a detachable external field flattener. The advantage of this approach is flexibility—the flattener can be removed when doing visual observation or planetary imaging, where a flattener isn't needed and may even introduce unwanted optical effects.



Typically, external field flatteners, reducer–flatteners, and MPCCs are designed with a specified *optimal imaging distance*, known as the **back focus length**. At this precise distance, the optical system delivers the best field correction—most clearly seen as perfectly round, sharp stars all the way to the corners of the image.

Achieving this optimal back focus usually requires a combination of adapters and accessories. That 's exactly what we 're going to explain here.

The good news is that most manufacturers have reached a consensus on a **55mm back focus standard**, mainly to maintain compatibility with DSLR cameras. When a DSLR is connected via its standard adapter ring, the resulting back focus distance is exactly 55mm.

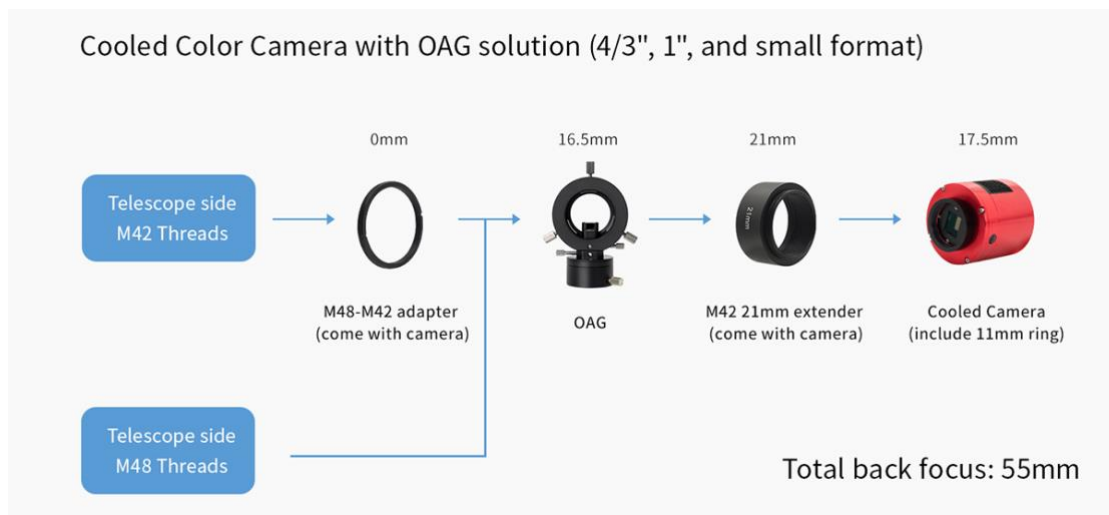
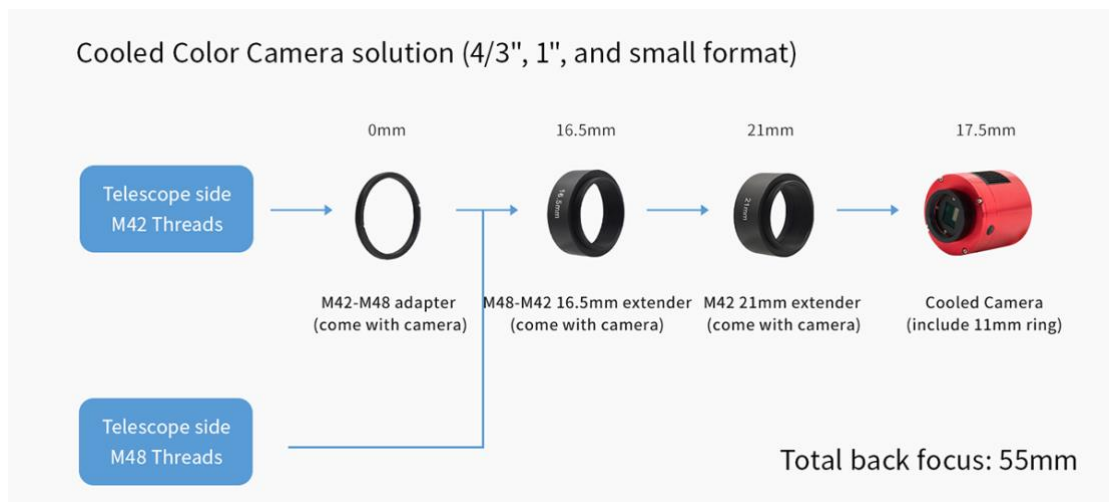
Based on this shared standard, we've designed a full set of matching adapters. Next, let's explore how to achieve the perfect 55mm back focus through different configuration combinations.

# Part 01

## 4/3", 1", and Small-Format Cooled Cameras

Currently, ZWO offers several cooled cameras in the 4/3", 1", and small-format categories, including: **ASI585MC Pro, ASI533MC/MM Pro, ASI294MC/MM Pro, and ASI183MC/MM Pro.**

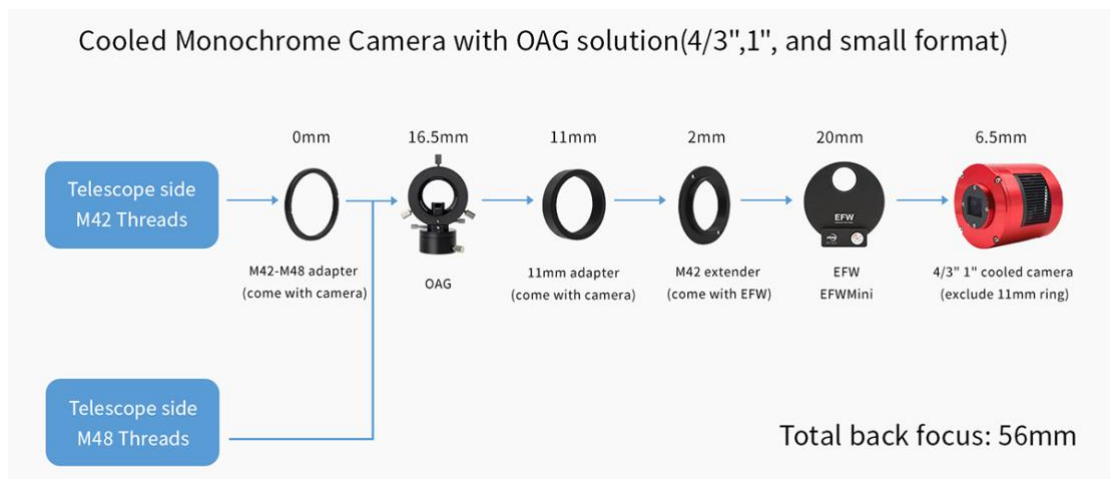
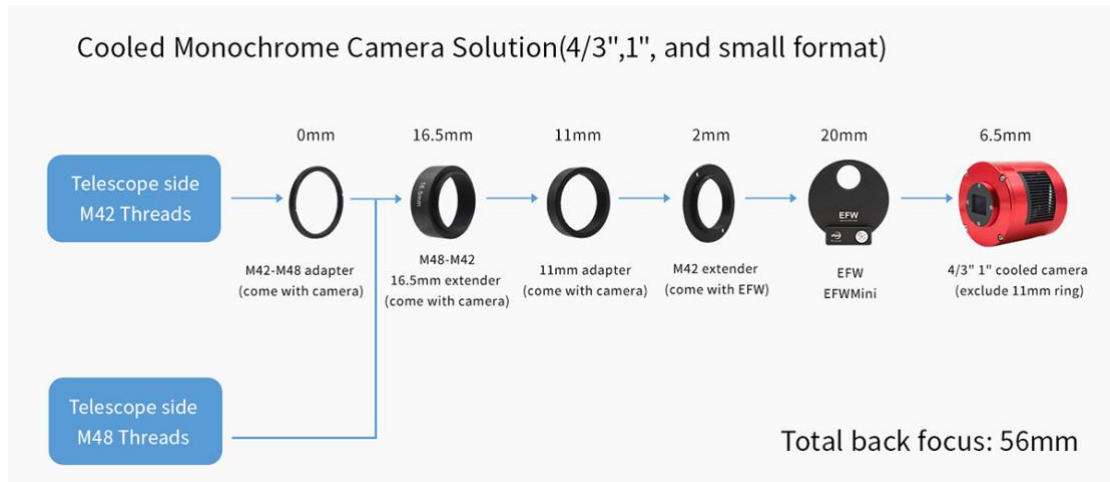
### Cooled Color Cameras



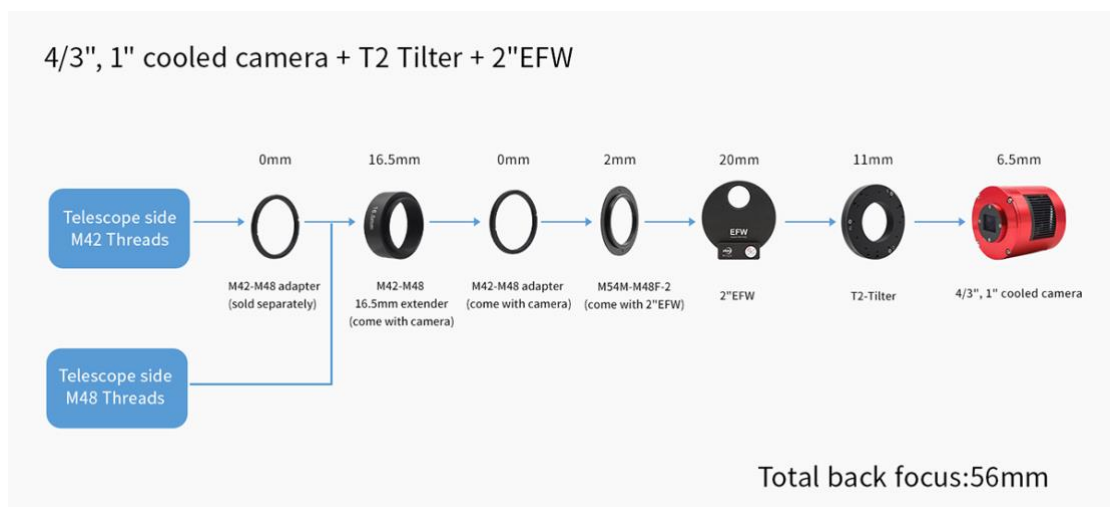
### Cooled Monochrome Cameras

For cooled monochrome cameras, we generally recommend pairing them with an EFW or a filter drawer for optimal performance.

If you're using a 1.25" / 36mm / 31mm EFW, the connection setup is as follows:



If you're using a 2" EFW, the connection setup is as follows:



Note: The back focus: 56mm. The combination T2-M48 (16.5mm) + M48-M42 can be replaced with an M48-M48 (16.5mm) adapter.

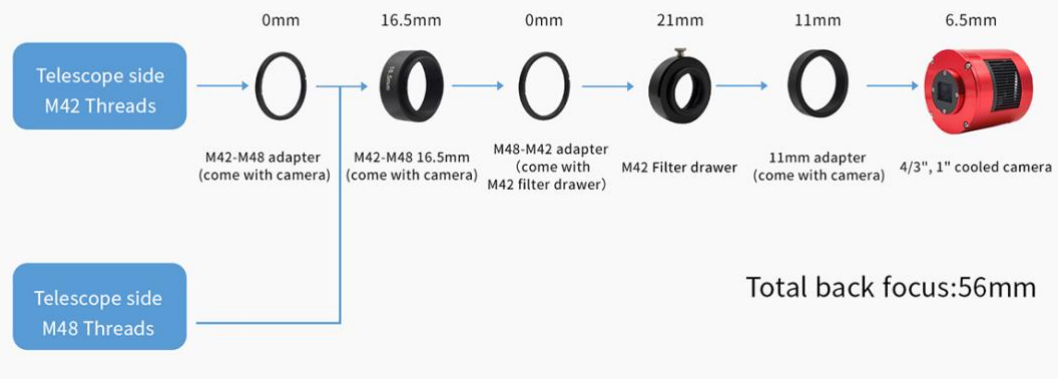
### 4/3", 1" cooled camera + 2" EFW + OAG



Note: The back focus: 56mm; the T2 tilter is sold separately.

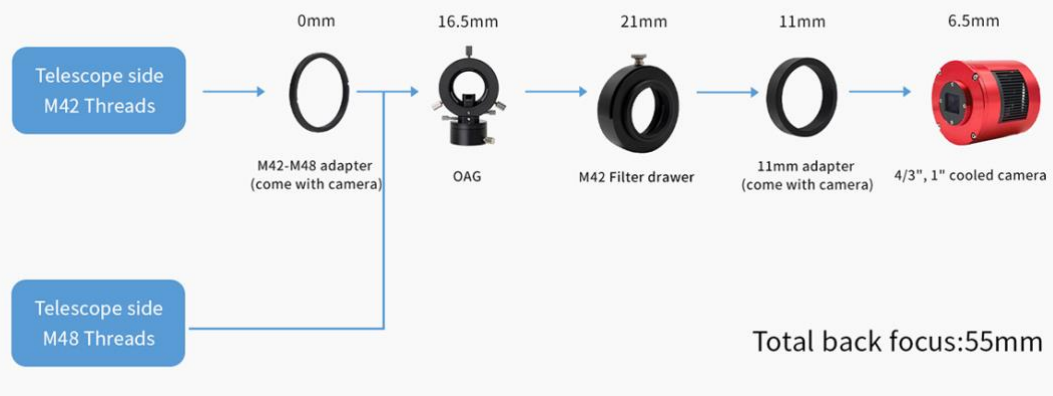
If you are using an M42 filter drawer, the connection setup is as follows:

### 4/3", 1" cooled camera + Filter drawer



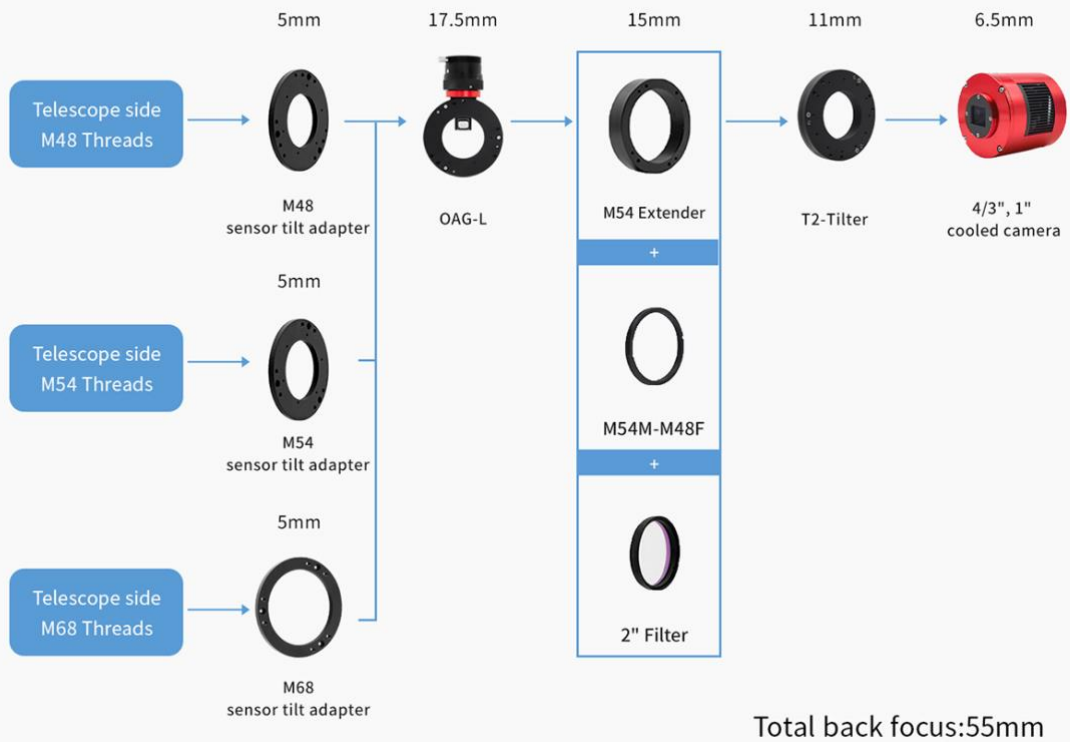
Note: T2-M48 16.5mm + M48-M42 can be replaced with M48-M48 16.5mm.

### 4/3", 1" cooled camera + Filter drawer + OAG



If you are using the OAG-L and require a 15mm extender, **the connection setup is as follows:**

# 4/3", 1" cooled camera + OAG L



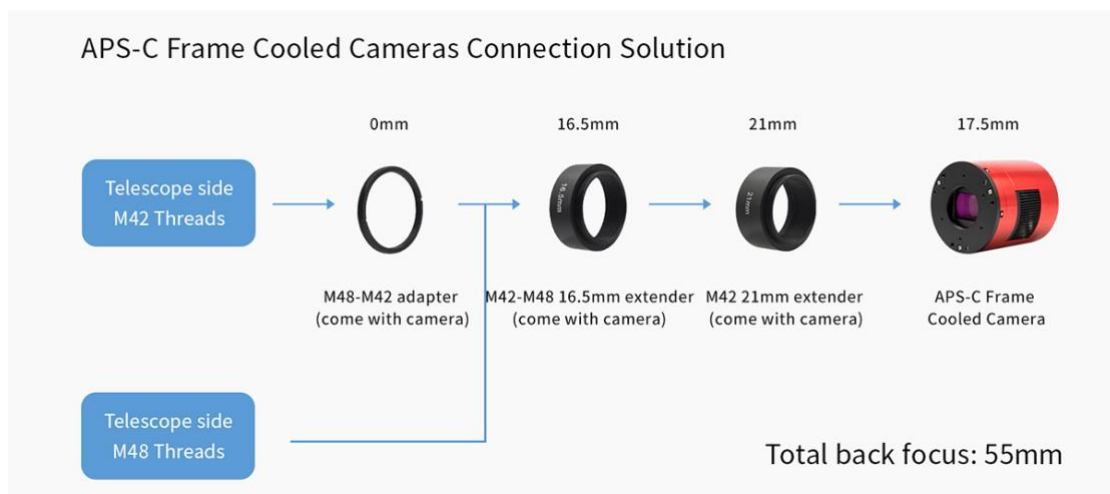
# Part 02

## APS-C Frame Cooled Cameras

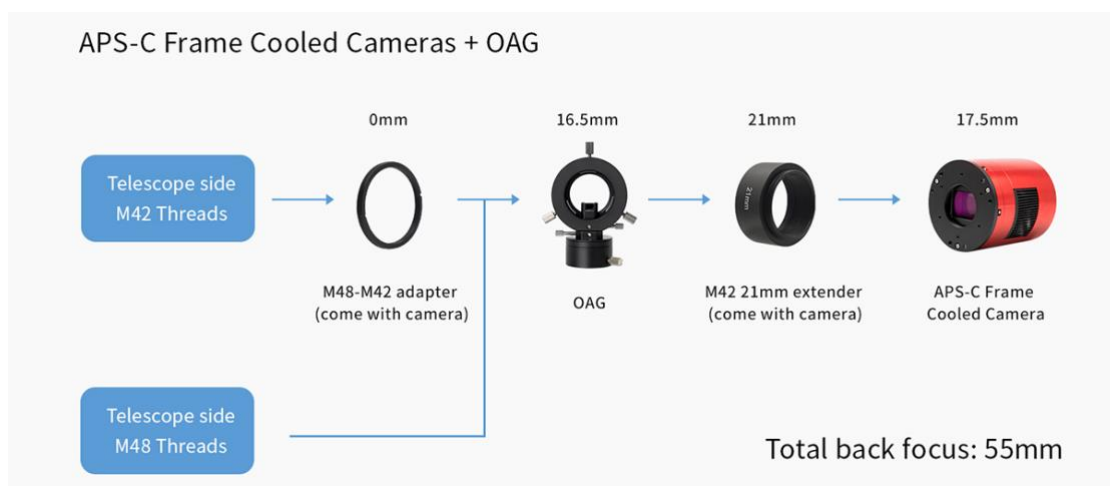
ZWO currently offers several APS-C frame cooled cameras, including ASI2600MC/MM Pro, ASI071MC Pro, and ASI2600MC/MM Duo.

### Cooled Color Cameras

#### APS-C Frame Cooled Cameras Connection Solution



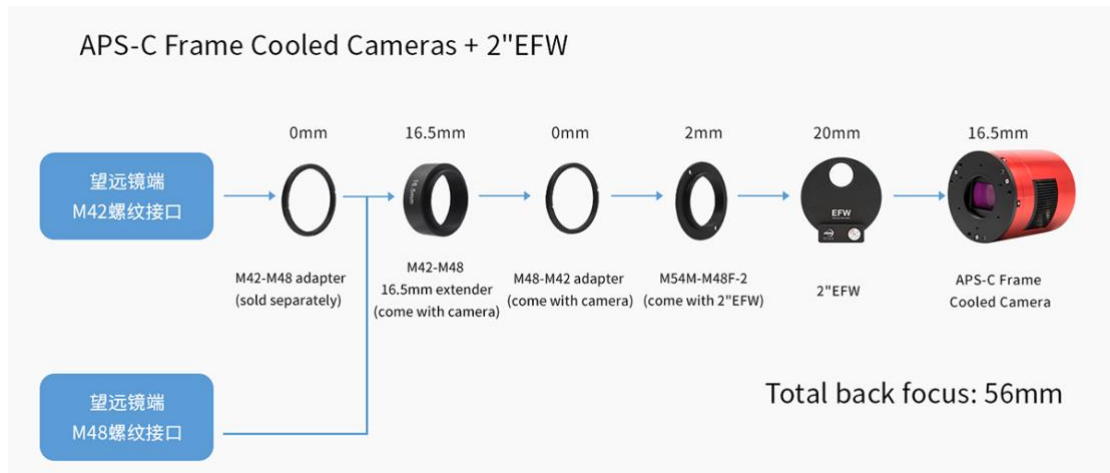
#### APS-C Frame Cooled Cameras + OAG



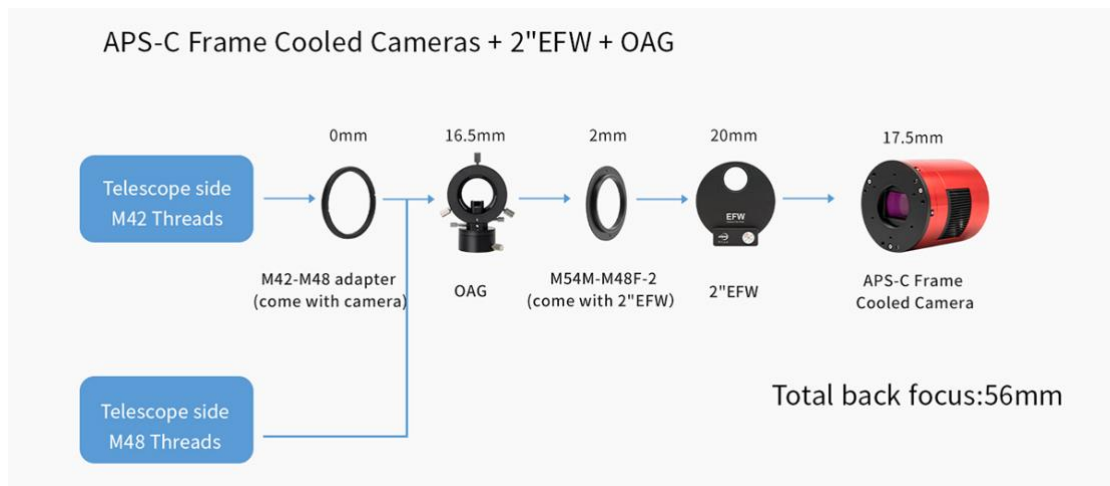
## Cooled Monochrome Cameras

Note: For APS-C frame cooled cameras, ZWO recommend using 2" or 36mm filter wheels or filter drawers. Smaller filters may cause vignetting or frame obstruction.

**If you are using a 2" filter wheel, the connection setup is as follows:**

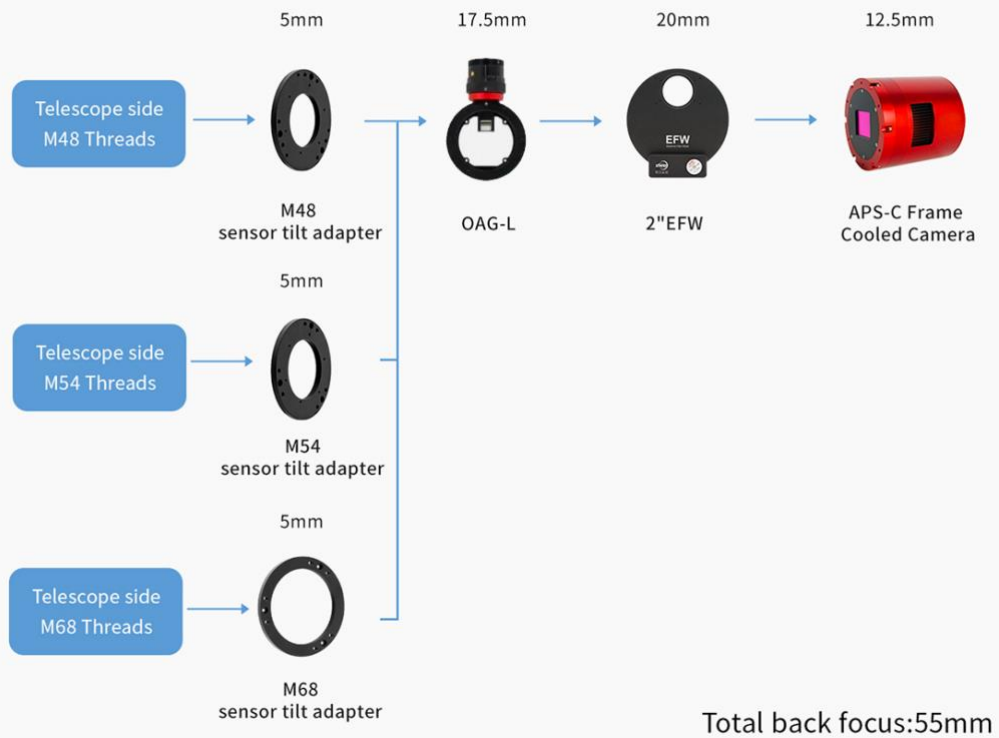


Note: The back focus: 56mm. The combination T2-M48 (16.5mm) + M48-M42 can be replaced with an M48-M48 (16.5mm) adapter.



Note: The back focus: 56mm;

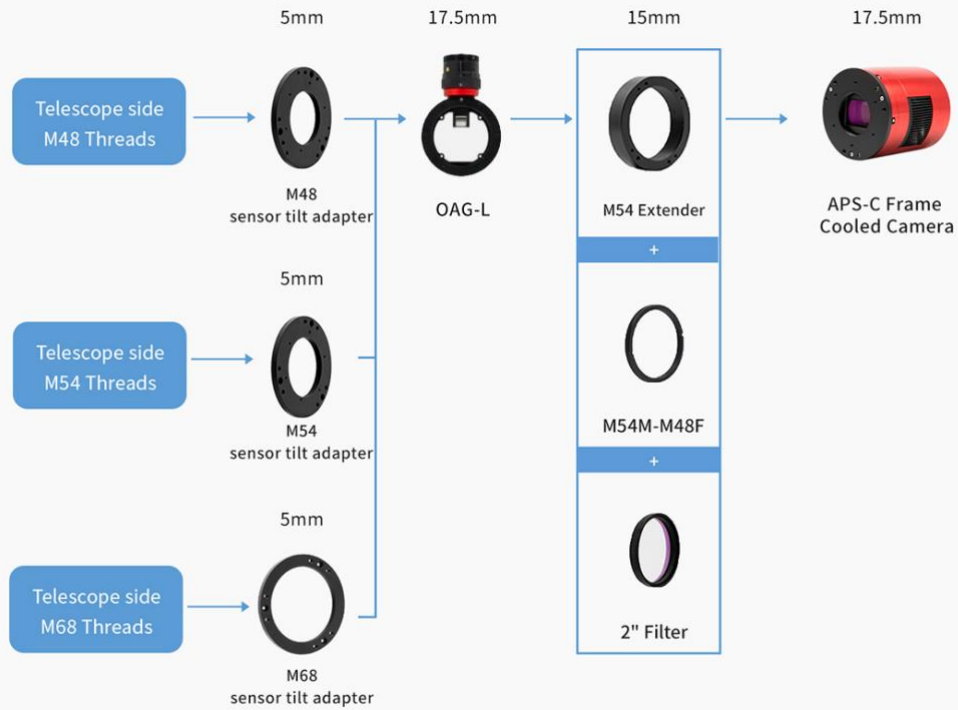
## APS-C Frame Cooled Cameras + OAG L + 2"EFW



Note: This setup requires removing the M42 sensor tilt adapter that comes with the camera. If you have an M68 OAG, it can also be used as a replacement for the OAG-L.

**If you are using the OAG-L and require a 15mm extender, the connection setup is as follows:**

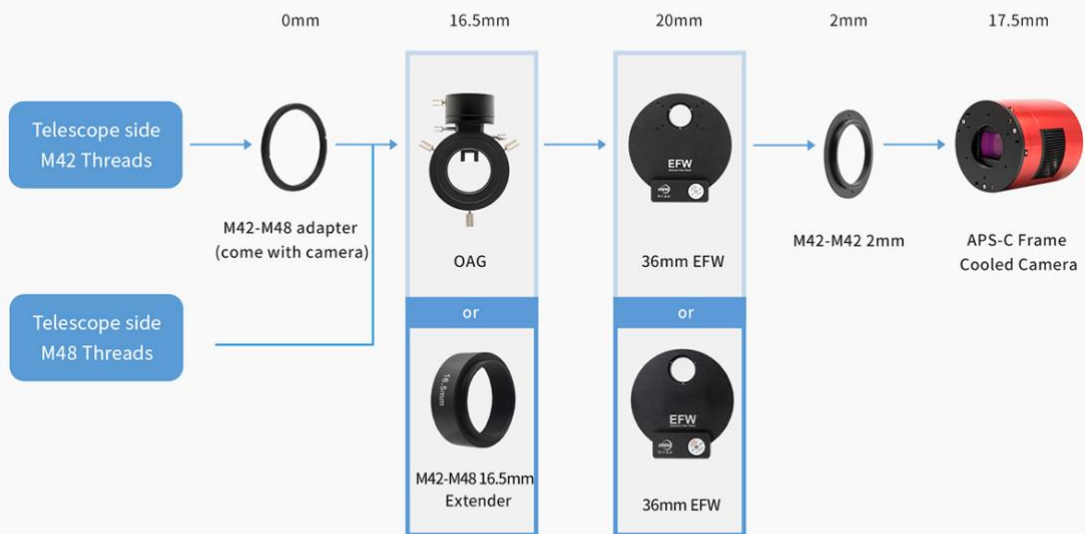
### APS-C Frame Cooled Cameras + OAG L



Total back focus:55mm

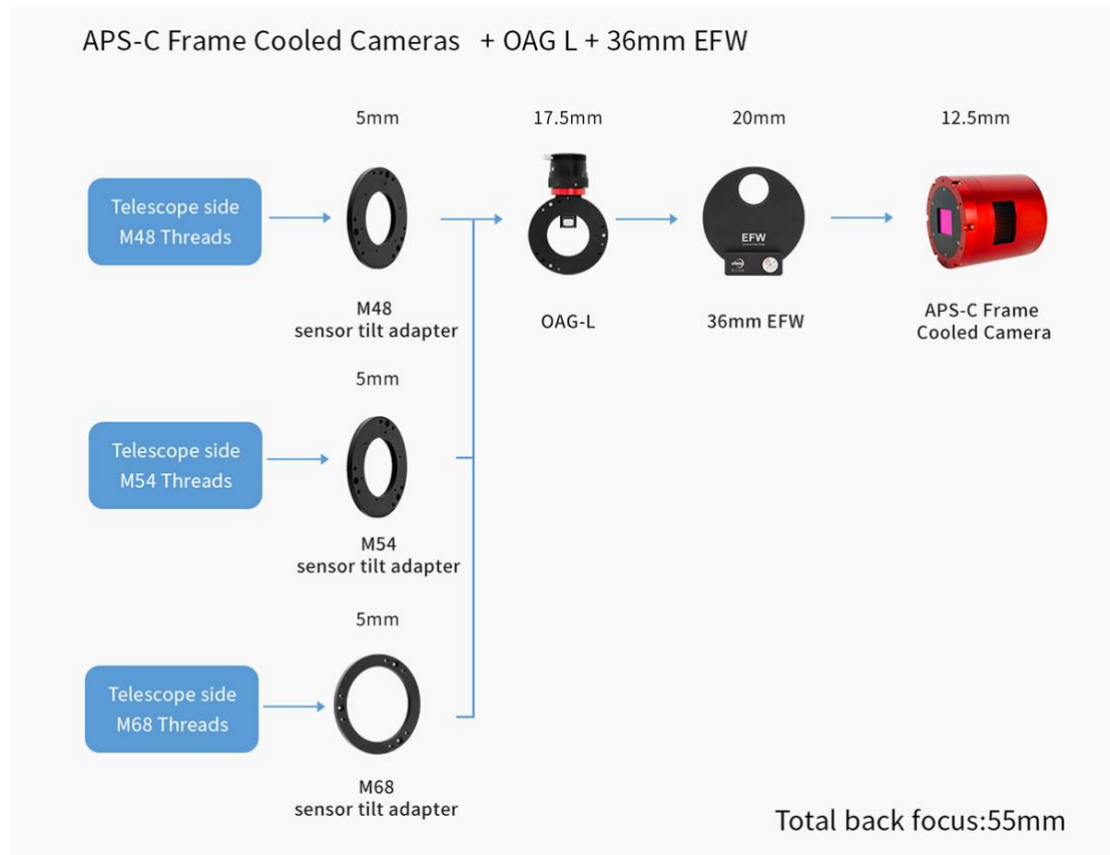
If you are using the 36mm EFW, the connection setup is as follows:

### APS-C Frame Cooled Cameras + 36mm EFW

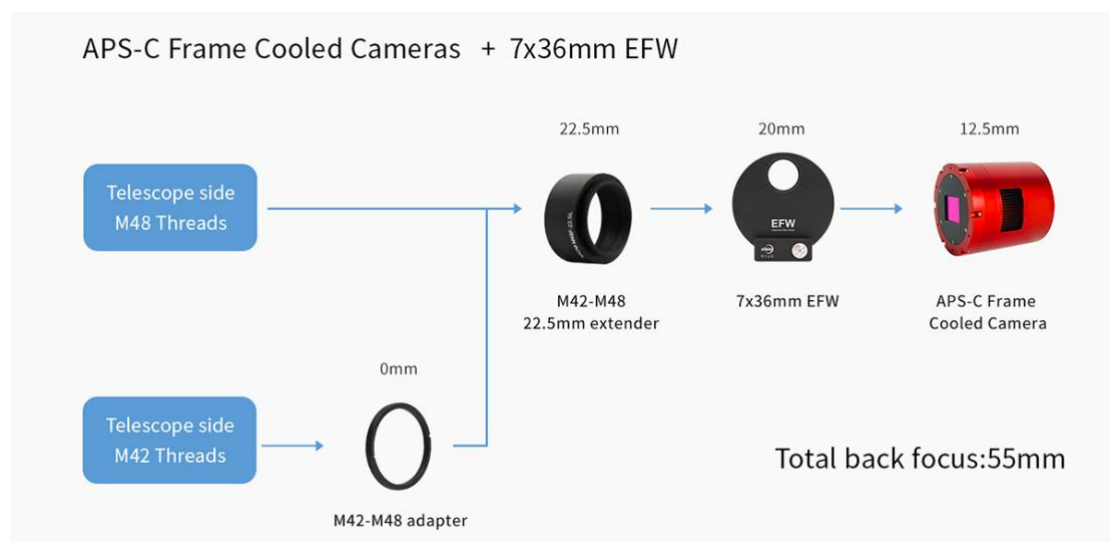


Total back focus:56mm

Note: The T2-T2 2mm adapter can be found in the 36mm EFW package.  
 This configuration is suitable for telescopes with a focal ratio greater than F5.4.

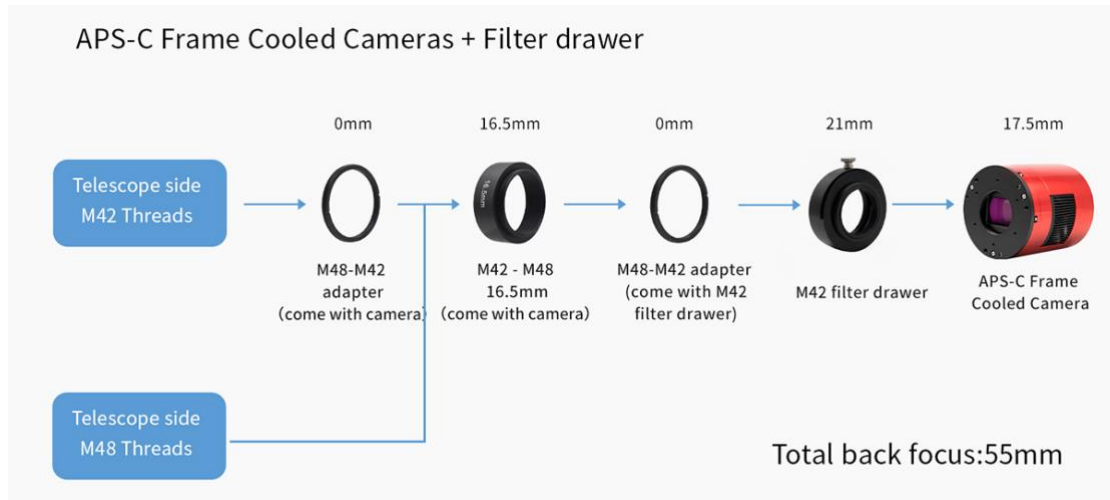


Note: This setup requires removing the M42 sensor tilt adapter that comes with the camera.  
 If you have an M68 OAG, it can also be used as a replacement for the OAG-L.  
 This configuration is suitable for telescopes with a focal ratio greater than F4.8.



Note: This setup requires removing the sensor tilt adapter that comes with the camera.  
 It is only compatible with telescopes featuring an M48 or M42 thread on the telescope side.  
 The M42M-M48F 22.5mm extender needs to be purchased separately.

If you are using an M42 filter drawer, the connection setup is as follows:



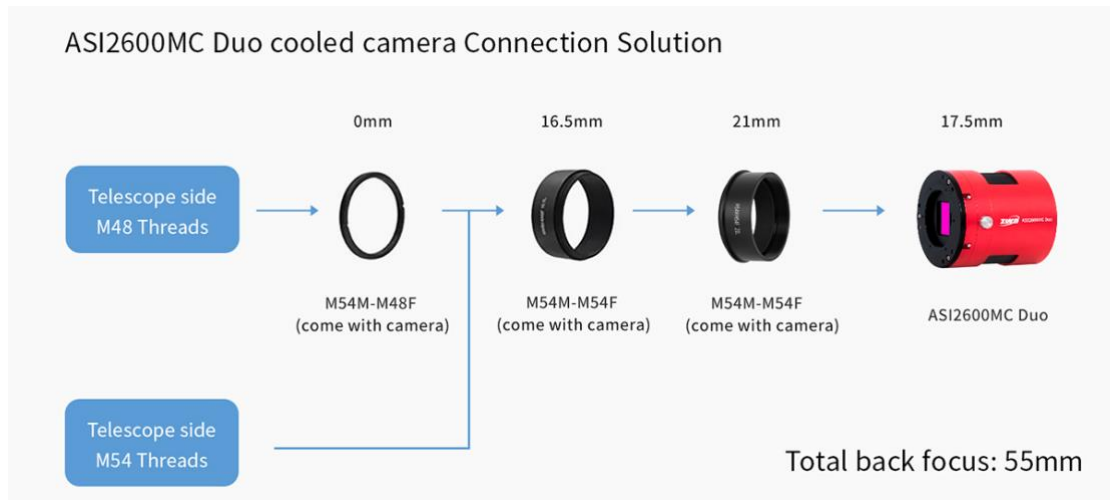
Note: T2-M48 16.5mm + M48-M42 can be replaced with M48-M48 16.5mm.



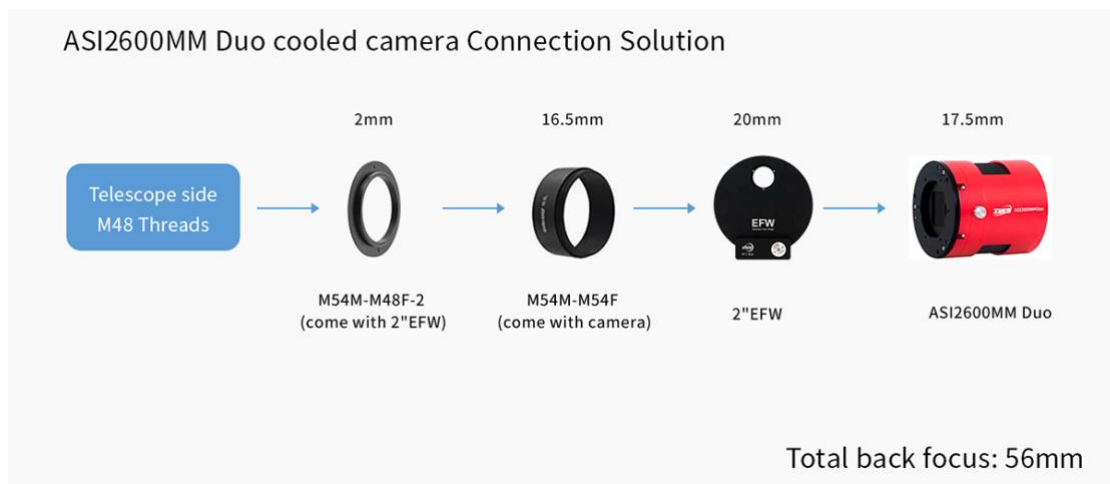
# Part 03

## ASI2600MC Duo

Note: For the ASI2600MC/MM Duo cooled camera, which integrates guiding and imaging in one, the connection setup is as follows:



## ASI2600MM Duo



If you are using an M54 filter drawer, the connection setup is as follows:

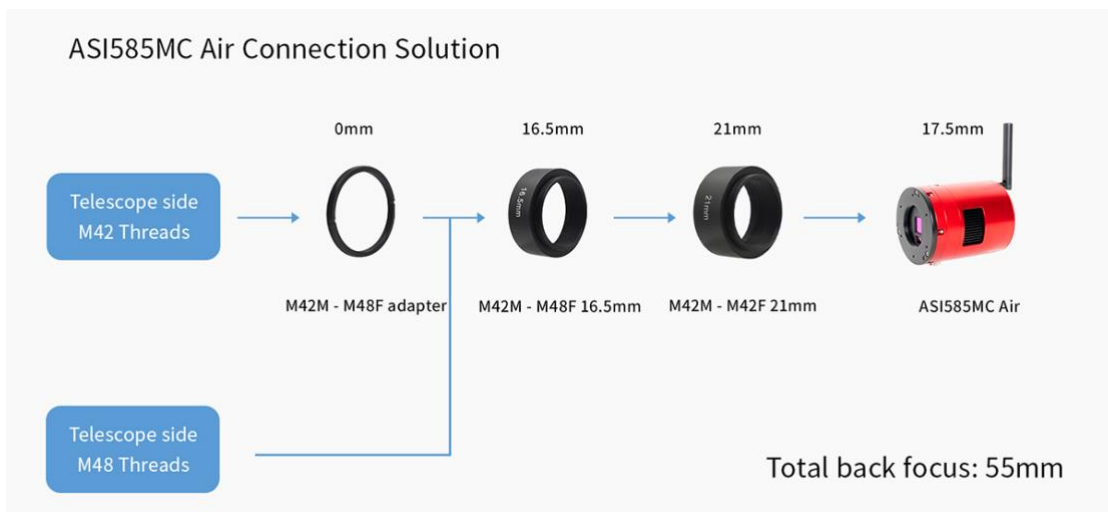


# Part 04

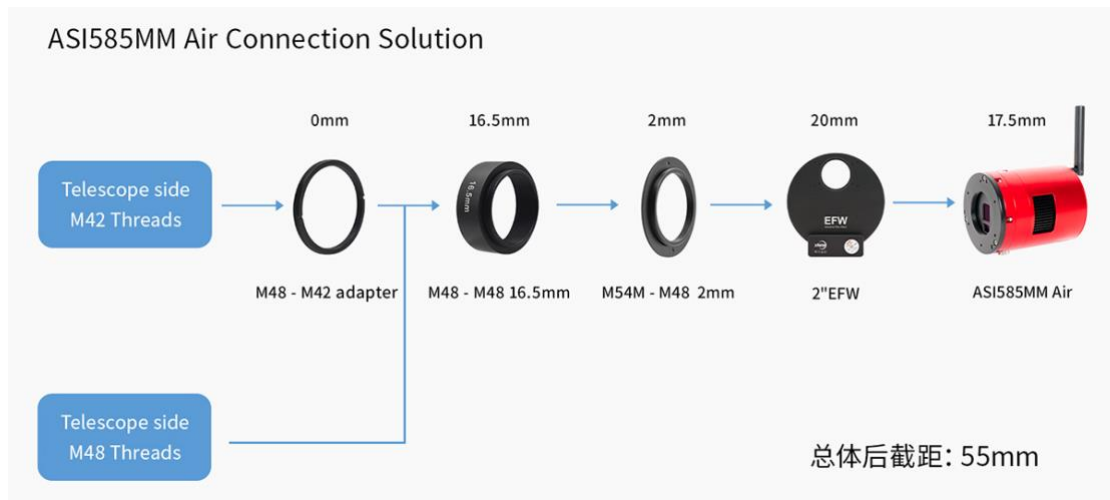
## Wireless Smart Cameras

Currently available wireless smart cameras include ASI585MC Air and ASI2600MM/MC Air.

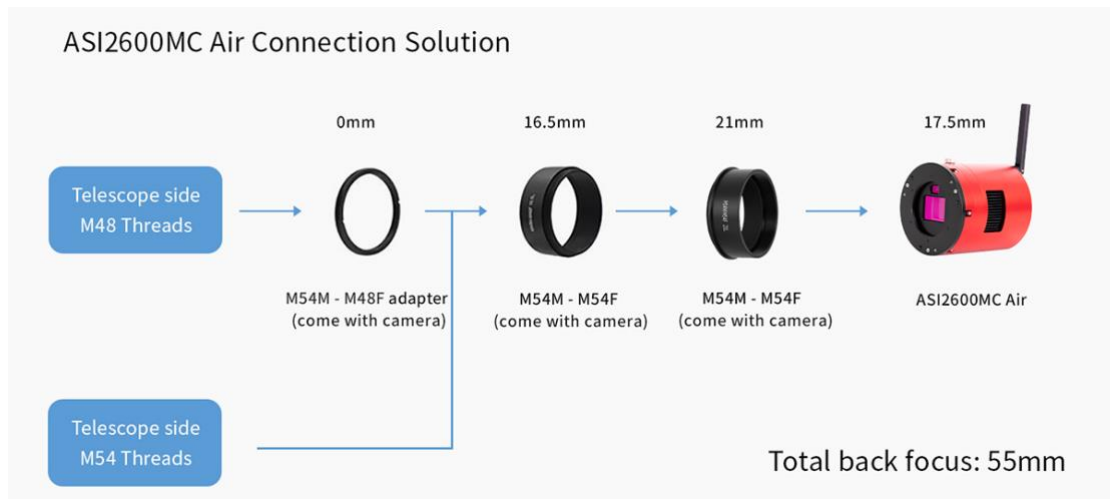
**ASI585MC Air :**



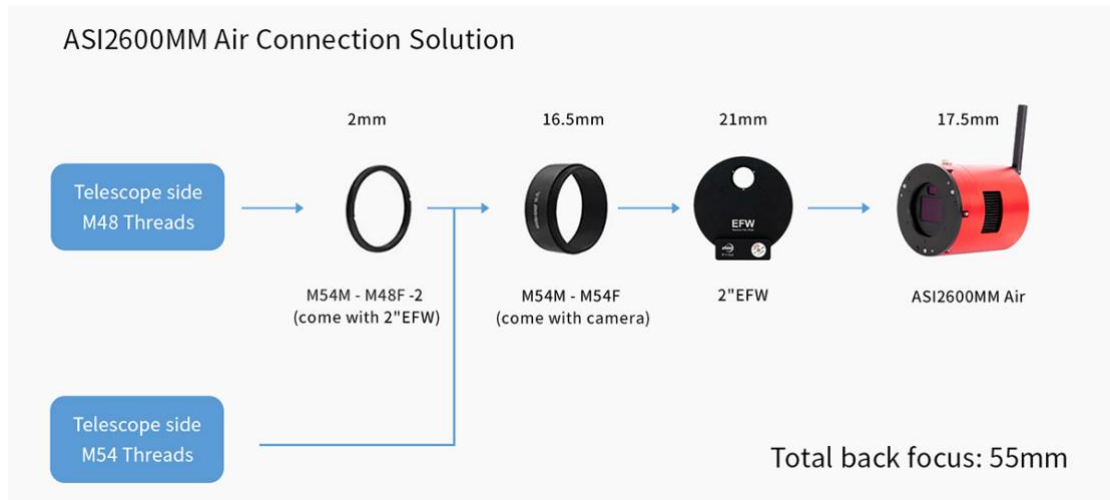
## ASI585MM Air :



## ASI2600MC Air :



## ASI2600MM Air :



# Part 05

## Full Frame Cooled Cameras

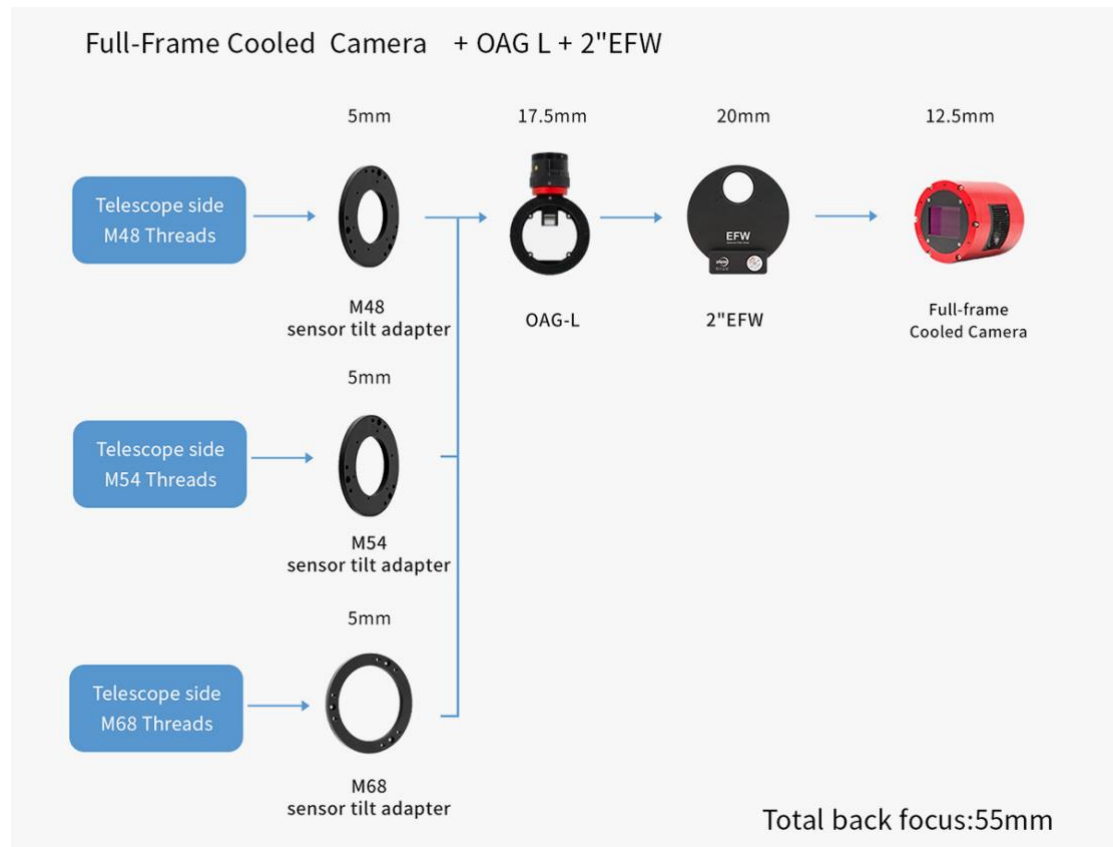
ZWO currently offers the following full-frame cooled cameras: ASI6200MC/MM Pro and ASI2400MC Pro.

## Cooled Color Cameras



## Cooled Monochrome Cameras

Note: For full frame cooled cameras, only 2" EFW or filter drawers are recommended.  
 If you are using a 2" EFW, the connection setup is as follows:



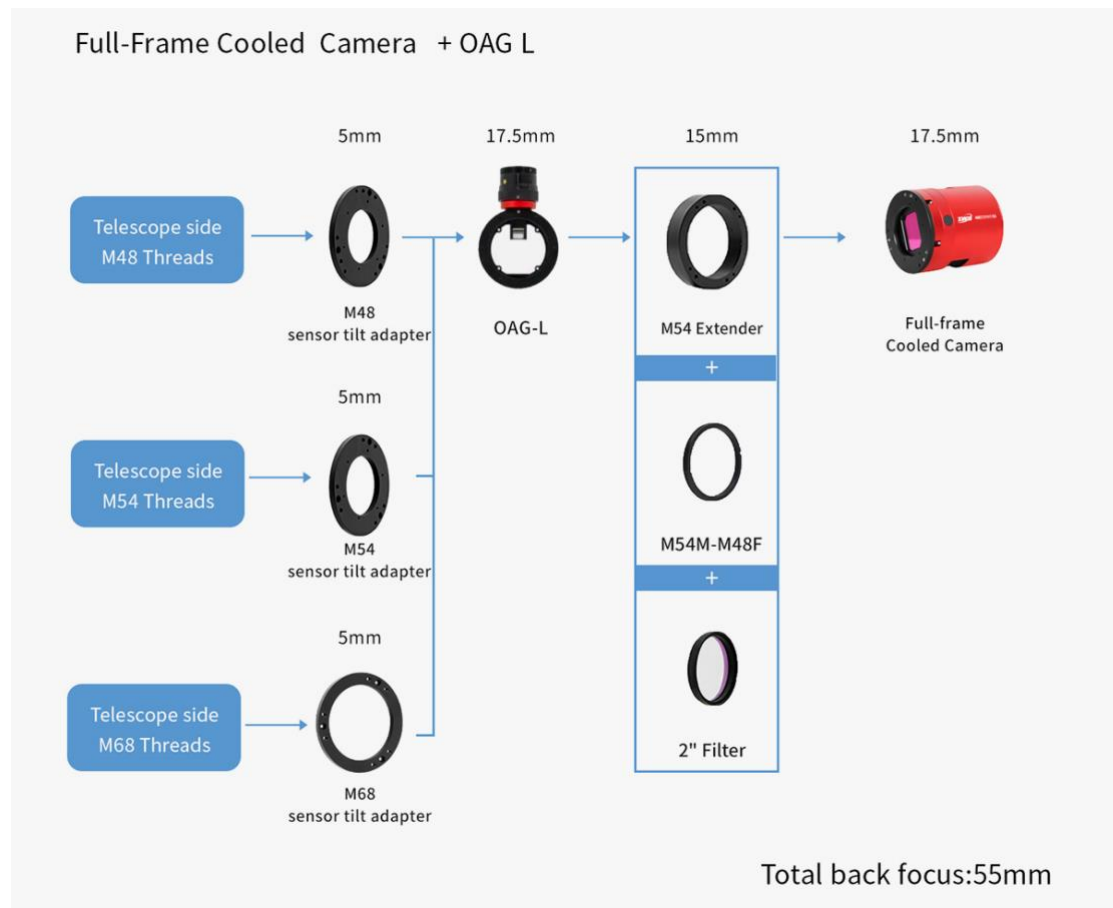
Note: This setup requires removing the M42 sensor tilt adapter that comes with the camera.  
 If you have an M68 OAG, it can also be used as a replacement for the OAG-L.

**If you are using the 7 × 50mm EFW, the connection setup is as follows:**

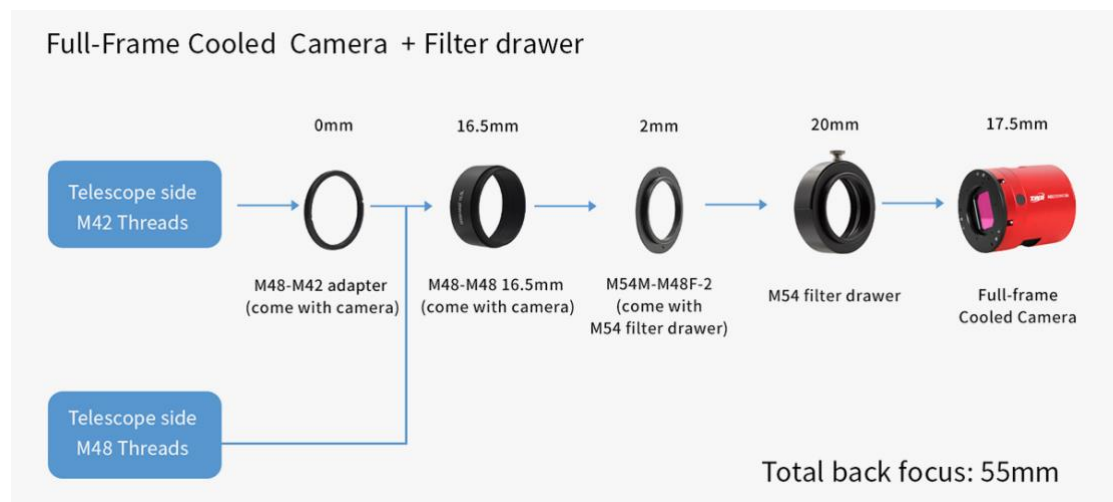


Note: This setup requires removing the sensor tilt adapter that comes with the camera. The 5mm rear sensor tilt adapter needs to be purchased separately.

**If you are using the OAG-L and require a 15mm extender, the connection setup is as follows:**



**If you are using the M54 filter drawer, the connection setup is as follows:**

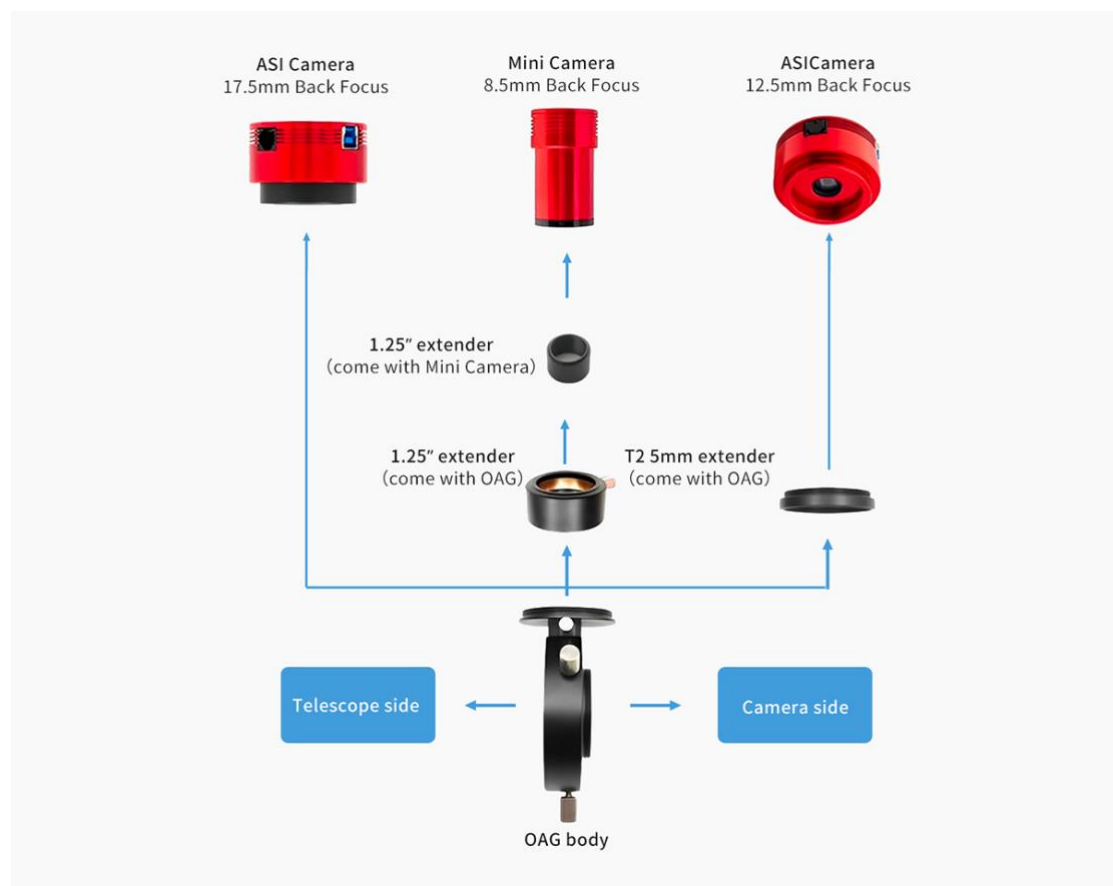


Note: The back focus: 56mm



Note: The M68 OAG has been discontinued.

## OAG Connection Diagram :



Note: The 1.25" extender is optional.

# Part 06

## Medium Format Cooled Camera

ZWO currently offers medium-format cameras, including the ASI461MM Pro.

The connection setup is as follows:

