



# Commonlands

## Optics for Cameras



**2024**

**M12 Lens Catalog**

Find complete documentation and purchase samples at [www.commonlands.com](http://www.commonlands.com)

January 2024

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# How to Find an M12 Lens

commonlands.com/m12-lenses

## Identify A Solution Using Our M12 Lens Finder And Field Of View Calculator

Calculate Field of View by Format, Sensor, or Pixel Count

Field of view and angular resolution for IMX678 a sensor in 3840px \* 2160px output with 7.68mm horizontal, 4.32mm vertical

Product	Focal Length	F#	Resolution	HFoV	VFoV	DFoV	Ang.Res.Center	Ang.Res.Vedge	Ang.Res.Hedge	Max Im.Cir.
CIL216	1.55mm	2.2	12MP	195° (61%)	175°	195° (53%)	14px/°	10px/°	9px/°	4.7mm
CIL237	1.7mm	2.2	8MP	186° (72%)	146°	186° (62%)	15px/°	15px/°	15px/°	5.5mm
CIL239	1.8mm	2	12MP	185° (68%)	147°	185° (59%)	16px/°	13px/°	11px/°	5.2mm
CIL220	1.83mm	2.8	10MP	213° (89%)	135°	213° (77%)	16px/°	16px/°	16px/°	6.8mm
CIL219	1.9mm	2.5	18MP	199° (82%)	133°	199° (72%)	17px/°	16px/°	14px/°	6.3mm
CIL282	2.2mm	1.8	8MP	192° (89%)	116°	192° (77%)	19px/°	18px/°	15px/°	6.8mm
CIL227	2.7mm	2.5	12MP	180°	94°	195° (93%)	24px/°	22px/°	17px/°	8.2mm
CIL027	2.7mm	2.8	12MP	112°	78°	120°	24px/°	37px/°	66px/°	8.9mm
CIL030	3mm	2.1	14MP	110°	74°	119°	26px/°	36px/°	58px/°	9.7mm
CIL231	3.1mm	1.9	16MP	153°	81°	180°	27px/°	25px/°	22px/°	9mm
CIL334	3.5mm	2.2	5MP	135°	72°	159°	31px/°	29px/°	25px/°	9.4mm
CIL339	3.9mm	1.6	10MP	115°	64°	132°	34px/°	34px/°	32px/°	9.7mm
CIL341	4mm	2	10MP	117°	63°	138°	35px/°	33px/°	29px/°	10.5mm
CIL042	4.2mm	1.9	8MP	85°	55°	93°	37px/°	46px/°	65px/°	9.4mm
CIL046	4.4mm	2	9MP	88°	54°	98°	38px/°	43px/°	54px/°	9.4mm

## Calculate Field of View and Angular Resolution

Update the table with field of view values provided by our lenses on any sensor. Distortion included!

Calculate FoV by Sensor Part Number

Calculate FoV by Format

Calculate FoV by Pixel Count

# H Pixels

# V Pixels

# Pixels

Calculate FoV

Use exact sensor output mode details ("by pixel count") for the best results.

Angular resolution only shows if using the Calculate by Sensor PN or Calculate by Pixel Count as the calculation requires pixel pitch.

Prev 1 2 Next

## Use Our FoV Calculator

- Database of >100 image sensors
- Calculation of FoV for all lenses, including distortion for wide-angle and fisheye lenses
- Filters for all-glass, ingress protection, distortion, and more
- Sort based on specification

## Easily Order Samples for Engineering Validation



### Quality Assured

All lenses are inspected at OQC based on our mechanical drawings and specifications



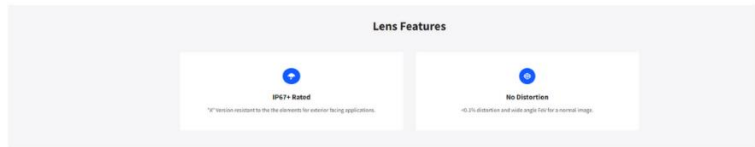
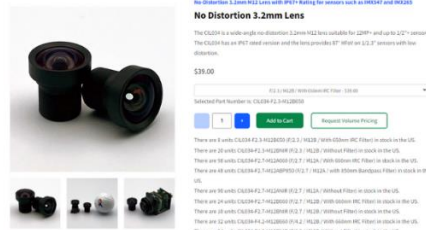
### Next Day Delivery

Recieve your samples overnight across the US or within 1 week worldwide



### Volume Production Ready

Our lenses are ready to make your project succeed, whether 10pcs or 100,000pcs+/yr



### Optical and Mechanical Specification Table

Parameter	Performance Detail
Part Number	OCM12
Formal Type	1/2" S"
FL	3.2mm
F#	2.3, 2.5, or 2.8 (F2.3)
Resolution	F1.3 3.2MP F1.7 2.0MP F2.2 1.0MP
Field of View	87° @ 6.2mm image circle <a href="#">Calculate for your sensor using our FOV Lens Calculator</a>
Image Circle	8.3mm+
Distortion	<math>< 0.1\%</math> Resolution
Weight	5.7g

### Mechanical Variants

Variant	Description
"M12P"	IP67, 800um Lens 3 Surface L, AL001 Cap (Metal), 2.7mm-Back, Cap
"M12S"	No Ingress Protection, 200um AL001, AL001 Cap (Metal), 2.7mm-Back, Cap



# M12 Lens / S-Mount Lens List

Product	Lens Type	EFL	F#	Resolution	Im.Cir.	TTL	Distortion	IP-rating	Construction	Webpage	Page #
CIL208	Fisheye	0.9mm	2.2	5MP	2.9mm	12.9mm	-6% F- $\Theta$	/	Glass	...com/cil208	7
CIL207	Fisheye	0.8mm	1.9	3MP	4.0mm	14.6mm	+27% F- $\Theta$	IP67	Glass+Plastic	...com/cil207	7
CIL213	Fisheye	1.2mm	2.4	12MP	4.5mm	28.8mm	-9% F- $\Theta$	IP65	Glass	...com/cil213	9
CIL216	Fisheye	1.55mm	2.2	14MP	4.7mm	27.3mm	-11% F- $\Theta$	/	Glass	...com/cil216	9
CIL914	Fisheye	1.4mm	2.4	5MP	4.5mm	13.2mm	-8% F- $\Theta$	IP67	Glass	...com/cil914	7
CIL818	Fisheye	1.8mm	2.0	3MP	5.2mm	12.0mm	-12% F- $\Theta$	IP67	Glass+Plastic	...com/cil818	7
CIL237	Fisheye	1.7mm	2.2	8MP	5.4mm	19.0mm	-5% F- $\Theta$	/	Glass+Plastic	...com/cil237	8
CIL239	Fisheye	1.8mm	2.0	12MP	5.2mm	27.1mm	-13% F- $\Theta$	/	Glass	...com/cil239	9
CIL018	Low Distortion	1.8mm	2.8	8MP	7.0mm	24.5mm	-7% TV	/	Glass+Plastic	...com/cil018	16
CIL220	Fisheye	1.8mm	2.3 / 2.8	4MP / 8MP	6.8mm	15.9mm	0% F- $\Theta$	IP69K	Glass	...com/cil220	8
CIL219	Fisheye	1.9mm	2.5	16MP	6.3mm	21.5mm	-5% F- $\Theta$	IP67	Glass	...com/cil219	9
CIL290	Fisheye	1.9mm	2.2	5MP	5.7mm	12.3mm	-5% F- $\Theta$	IP67	Glass+Plastic	...com/cil290	8
CIL819	Wide-Angle	1.9mm	2.0	5MP	5.9mm	16.0mm	-22% TV	/	Glass+Plastic	...com/cil819	11
CIL821	Wide-Angle	2.1mm	2.4	8MP	6.8mm	15.0mm	+23% F- $\Theta$	/	Glass+Plastic	...com/cil821	11
CIL222	Fisheye	2.2mm	2.0	5MP	6.6mm	16.6mm	-9% F- $\Theta$	IP69K	Glass	...com/cil222	8
CIL023	Low Distortion	2.2mm	2.2	8MP	7.9mm	24.1mm	-6% TV	/	Glass+Plastic	...com/cil023	16
CIL282	Fisheye	2.2mm	1.8	6MP	6.8mm	22.1mm	-8%	IP67	Glass	...com/cil282	10
CIL324	Fisheye	2.4mm	1.9	3MP	7.2mm	22.1mm	-14% F- $\Theta$	IP69K	Glass	...com/cil324	10
CIL825	Wide-Angle	2.5mm	2.4	5MP	7.2mm	15.3mm	-15% TV	/	Glass+Plastic	...com/cil825	11
CIL926	Wide-Angle	2.5mm	2.4	5MP	7.4mm	22.0mm	-1% F- $\Theta$	IP67	Glass	...com/cil926	12
CIL227	Fisheye	2.7mm	2.5	12MP	8.2mm	22.0mm	-11% F- $\Theta$	IP67	Glass	...com/cil227	10
CIL327	Wide-Angle	2.7mm	1.5 / 1.8	3MP / 8MP	7.1mm	22.5mm	-13% F- $\Theta$	IP67	Glass	...com/cil327	12
CIL027	Low Distortion	2.7mm	2.8	12MP	8.9mm	22.6mm	-2% TV	/	Glass+Plastic	...com/cil027	16
CIL329	Wide-Angle	2.8mm	2.0	3MP	7.2mm	17.7mm	-7% F- $\Theta$	IP69K	Glass	...com/cil329	14
CIL330	Wide-Angle	2.9mm	2.6	12MP	8.2mm	22.5mm	-3% F- $\Theta$	IP67	Glass	...com/cil330	12
CIL030	Low Distortion	3.0mm	2.1	12MP	9.4mm	29.6mm	-8% TV	/	Glass+Plastic	...com/cil030	16
CIL231	Fisheye	3.1mm	1.9	16MP	9.0mm	27.8mm	-10% F- $\Theta$	IP67	Glass	...com/cil231	10
CIL034	Low Distortion	3.2mm	2.2 / 2.7 / 4.2	14MP	8.9mm	22.6mm	0% TV	IP67	Glass+Plastic	...com/cil034	17
CIL332	Wide-Angle	3.2mm	1.8	3MP	7.4mm	22.2mm	-18% F- $\Theta$	IP67	Glass	...com/cil332	14

# M12 Lens / S-Mount Lens List

Product	Lens Type	EFL	F#	Resolution	Im.Cir.	TTL	Distortion	IP-rating	Construction	Webpage	Page #
CIL036	Low Distortion	3.3mm	2.2	4MP	7.2mm	16.6mm	<-1% TV	/	Glass+Plastic	...com/cil036	11
CIL335	Wide-Angle	3.5mm	1.8	8MP	8.4mm	23.9mm	-3% F- $\Theta$	/	Glass	...com/cil335	12
CIL333	Wide-Angle	3.5mm	2.0	12MP	8.8mm	22.7mm	-5% F- $\Theta$	/	Glass	...com/cil333	13
CIL336	Wide-Angle	3.6mm	1.9	2MP	7.6mm	18.0mm	-5% F- $\Theta$	IP6K9K	Glass	...com/cil336	14
CIL038	Low Distortion	3.8mm	2.8	12MP	8.2mm	25.4mm	0% TV	/	Glass	...com/cil038	17
CIL341	Wide-Angle	4.0mm	2.0	8MP	9.4mm	30.5mm	-10% F- $\Theta$	IP69K	Glass	...com/cil341	15
CIL042	Low Distortion	4.2mm	1.9	8MP	9.4mm	30.0mm	0% TV	/	Glass+Plastic	...com/cil042	17
CIL043	Low Distortion	4.4mm	3.2	12MP	8.1mm	22.0mm	-1% TV	IP67	Glass+Plastic	...com/cil043	17
CIL343	Wide-Angle	4.4mm	2.3	12MP	8.8mm	22.5mm	-5% F- $\Theta$	IP67	Glass	...com/cil343	13
CIL344	Wide-Angle	4.4mm	1.9 / 2.7	4MP 14MP	11mm	29.8mm	-1% F- $\Theta$	IP69K	Glass	...com/cil344	13
CIL046	Mid-Range	4.4mm	2.0	10MP	9.1mm	30.4mm	-8% TV	/	Glass	...com/cil046	13
CIL948	Wide-Angle	4.8mm	2.0	2MP	7.6mm	18.7mm	-10% TV	IP69K	Glass	...com/cil948	14
CIL358	Wide-Angle	5.8mm	1.9	12MP	9.4mm	29.7mm	-9% F- $\Theta$	IP67	Glass	...com/cil358	15
CIL059	Low Distortion	5.9mm	1.7 / 4.0 / 5.6	8MP	9.3mm	31.3mm	-2% TV	IP67	Glass+Plastic	...com/cil042	19
CIL061	Mid-Range	6.0mm	1.8	3MP	7.6mm	20.6mm	-5% TV	IP69K	Glass	...com/cil061	20
CIL068	Mid-Range	6.8mm	2.5	10MP	9.4mm	31.6mm	<-2% TV	/	Glass	...com/cil068	19
CIL368	Wide-Angle	6.8mm	1.8	8MP	9.4mm	33.0mm	-4% F- $\Theta$	IP69K	Glass	...com/cil368	15
CIL078	Mid-Range	7.8mm	2.0	12MP	9.3mm	34.4mm	<-1% TV	/	Glass	...com/cil078	19
CIL079	Mid-Range	7.9mm	2.0	3MP	7.6mm	24.1mm	-4% TV	IP67	Glass	...com/cil079	20
CIL085	Mid-Range	8.2mm	2.3 / 4.4	12MP	8.8mm	29.9mm	<-1% TV	/	Glass	...com/cil085	19
CIL120	Telephoto	12.2mm	2.2	5MP	8.0mm	26.3mm	-3% TV	IP67	Glass	...com/cil120	20
CIL125	Telephoto	12.5mm	2.4	10MP+	8.2mm	22.9mm	<-1% TV	/	Glass+Plastic	...com/cil125	21
CIL142	Telephoto	14.4mm	2.6 / 4.1 / 5.2	12MP	9.3mm	20.2mm	-1% TV	/	Glass	...com/cil142	21
CIL160	Telephoto	16.0mm	1.9	12MP	9.3mm	22.4mm	<-1% TV	/	Glass	...com/cil160	21
CIL178	Telephoto	17.8mm	2.0	2MP	7.2mm	19.8mm	+1 TV	/	Glass+Plastic	...com/cil178	21
CIL121	Telephoto	21.8mm	2.8 / 5.9	12MP	9.3mm	28.2mm	-1% TV	/	Glass	...com/cil121	22
CIL260	Telephoto	26.0mm	2.0	5MP	8.2mm	33.7mm	<-1% TV	/	Glass	...com/cil260	22
CIL350	Telephoto	35.0mm	2.4	12MP	11.0mm	38.9mm	0% TV	/	Glass	...com/cil350	22
CIL051	Telephoto	50.0mm	2.8	12MP	9.4mm	51.2mm	0% TV	/	Glass	...com/cil051	22

# Fisheye and Wide-Angle Lenses

Fisheye lenses have a maximum field of view greater than 180°.

Wide-angle lenses have a maximum field of view between 80° and 180°.

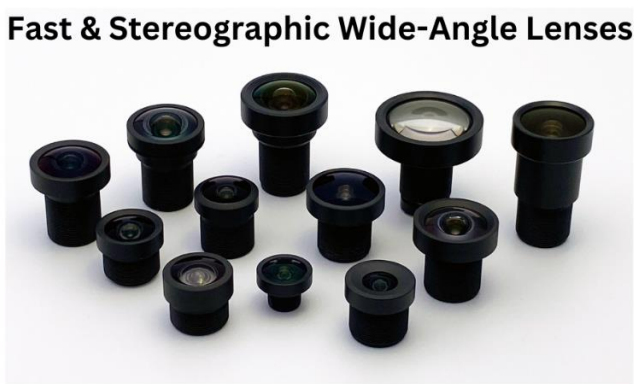
Primary tradeoffs include fill factor, field of view, distortion, F#, and resolution.



**Fisheye Lenses**



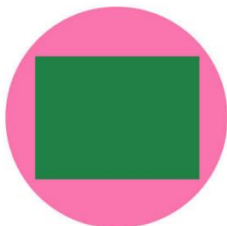
**Low Distortion Wide-Angle Lenses**



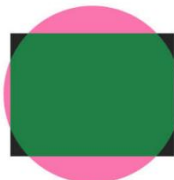
**Fast & Stereographic Wide-Angle Lenses**

## Suggestions for selecting wide-angle lenses:

- Identify the acceptable fill factor.
  - HFoV > 170° or VFoV > 130° will result in partial coverage and/or black corners.
  - A fisheye lens can be a wide-angle lens but not every wide-angle lens is a fisheye.
  
- Calculate field of view with distortion using our calculator [commonlands.com/m12-lenses](https://commonlands.com/m12-lenses).
  
- Establish distortion and F# requirements.
  - Lower distortion requires a higher F# if all other specifications remains equal.
  - HFoV > 125° and VFoV > 105° will result in distortion, regardless of optical design.
  - Our calculator ([commonlands.com/dof-calculator](https://commonlands.com/dof-calculator)) provides relative transmission for different F#s.
  
- Determine environmental constraints.
  - Operating temperature > ~60C usually requires all-glass, which may preclude low distortion lenses for >3MP applications.
  - Outdoor applications without a dome or window are best with an ingress protected lens.



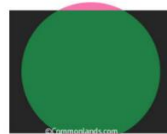
Full Coverage Fisheye  
"Wide Angle" Lens



Partial Coverage Fisheye



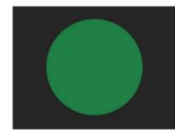
Horizontal Fisheye



Partial Coverage Fisheye



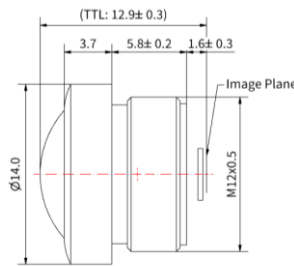
Circular Fisheye



Underfilled Fisheye

# Fisheye Lenses: <15mm Total Track Length

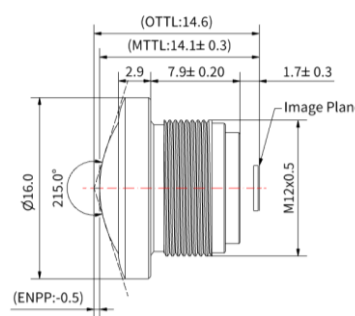
CIL208: 200°@2.9mm Fisheye M12 Lens



Commonlands.com/cil208

Image Circle (Format)	2.9mm
EFL	0.9mm
Field of View	200°@2.9mm
F#	2.0
Resolution	5MP (2.2um)
Distortion	-6% F-Ø
Construction	6G, AL6061

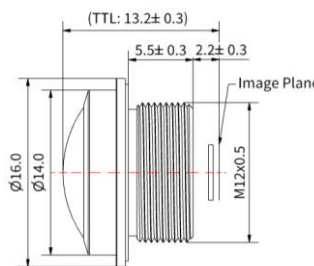
CIL207: 220°@4.0mm Stereographic Fisheye M12 Lens



Commonlands.com/cil207

Image Circle (Format)	4.0mm
EFL	0.8mm
Field of View	220°@4.0mm
F#	1.9
Resolution	3MP (3.0um)
Distortion	+27% F-Ø
Construction	2G4P, AL6061

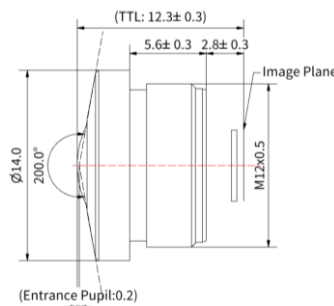
CIL914: 200°@4.5mm Fisheye M12 Lens



Commonlands.com/cil914

Image Circle (Format)	4.5mm
EFL	1.4mm
Field of View	200°@4.5mm
F#	2.4
Resolution	5MP (2.0um)
Distortion	-8% F-Ø
Construction	6G, AL6061

CIL818: 195°@5.2mm Fisheye M12 Lens (M8 Available)



Commonlands.com/cil818

Image Circle (Format)	5.2mm
EFL	1.8mm
Field of View	195°@5.2mm
F#	2.05
Resolution	3MP (3.0um)
Distortion	-12% F-Ø
Construction	2G4P AL6061/PC

Subject to change without notice. Drawings not to scale.

# Fisheye Lenses

CIL237: 194°@5.4mm Fisheye M12 Lens

[Commonlands.com/cil237](http://Commonlands.com/cil237)

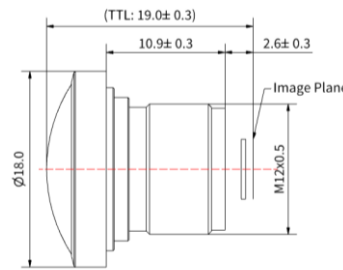


Image Circle (Format)	5.4mm
EFL	1.7mm
Field of View	194°@5.4mm
F#	2.2
Resolution	8MP (1.85um)
Distortion	-2% F-Θ @ 5mm
Construction	4G2P, AL6061

CIL290: 190°@5.7mm Fisheye M12 Lens

[Commonlands.com/cil290](http://Commonlands.com/cil290)

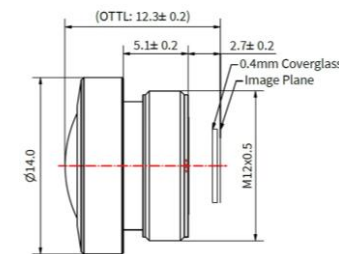


Image Circle (Format)	5.8mm
EFL	1.9mm
Field of View	190°@5.7mm
F#	2.2
Resolution	5MP (2.2um)
Distortion	-9% F-Θ
Construction	2G4P AL6061+PC

CIL220: 215°@6.8mm F-Θ Fisheye M12 Lens

[Commonlands.com/cil220](http://Commonlands.com/cil220)

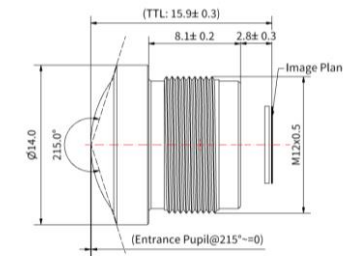


Image Circle (Format)	6.8mm
EFL	1.8mm
Field of View	215°@6.8mm
F#	2.3 / 2.8
Resolution	8MP (1.85um)
Distortion	0% F-Θ
Construction	6G, AL6061

CIL222: 190°@6.6mm Fisheye M12 Lens

[Commonlands.com/cil222](http://Commonlands.com/cil222)

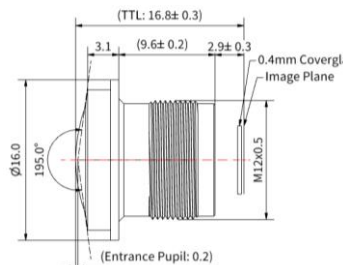


Image Circle (Format)	6.6mm
EFL	2.2mm
Field of View	190°@6.6mm
F#	2.0
Resolution	5MP (2.2um)
Distortion	-9% F-Θ
Construction	6G, AL6061

Subject to change without notice. Drawings not to scale.



# Fisheye Lenses

CIL213: 230°@4.5mm Fisheye M12 Lens

Commonlands.com/cil213

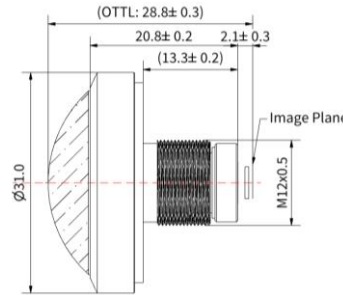


Image Circle (Format)	4.5mm
EFL	1.2mm
Field of View	230°@4.5mm
F#	2.4
Resolution	12MP (1.55um)
Distortion	-9% F-Ø
Construction	10G, AL6061

CIL216: 195°@4.7mm Fisheye M12 Lens

Commonlands.com/cil216

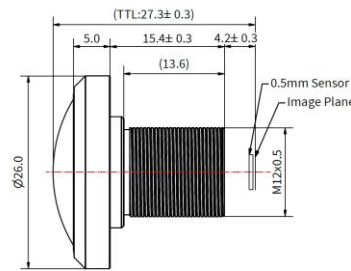


Image Circle (Format)	4.7mm
EFL	1.5mm
Field of View	195°@4.7mm
F#	2.2
Resolution	14MP (1.4um)
Distortion	-11% F-Ø
Construction	Glass, AL6061

CIL239: 186°@5.2mm IR Corrected Fisheye M12 Lens

Commonlands.com/cil239

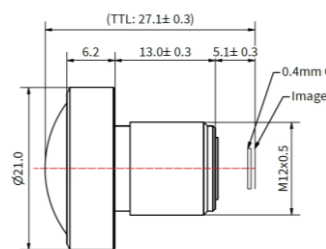


Image Circle (Format)	5.2mm
EFL	1.8mm
Field of View	186°@5.2mm
F#	2.0
Resolution	12MP (1.55um)
Distortion	-13% F-Ø
Construction	Glass, AL6061

CIL219: 200°@6.3mm Fisheye M12 Lens

Commonlands.com/cil219

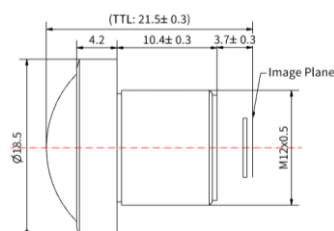
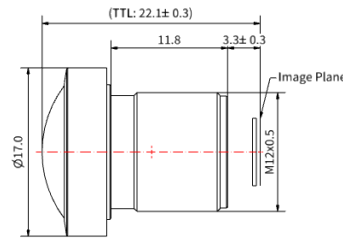


Image Circle (Format)	6.3mm
EFL	1.9mm
Field of View	200°@6.3mm
F#	2.0
Resolution	16MP (1.3um)
Distortion	-5% F-Ø
Construction	5G2MG, AL6061

Subject to change without notice. Drawings not to scale.

# Fisheye Lenses

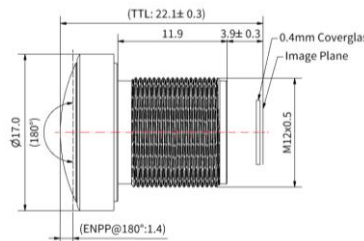
CIL282: 190°@6.8mm Fisheye M12 Lens



Commonlands.com/cil282

Image Circle (Format)	6.8mm
EFL	2.2mm
Field of View	190°@6.8mm
F#	1.8
Resolution	6MP (2.2um)
Distortion	-8% F-Θ
Construction	7G, AL6061

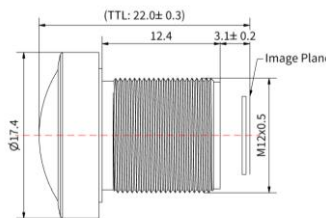
CIL324: 200°@7.2mm Fisheye M12 Lens



Commonlands.com/cil324

Image Circle (Format)	7.2mm
EFL	2.4mm
Field of View	180°@7.2mm
F#	1.9
Resolution	3MP (3.0um)
Distortion	-14% F-Θ
Construction	6G, AL6061

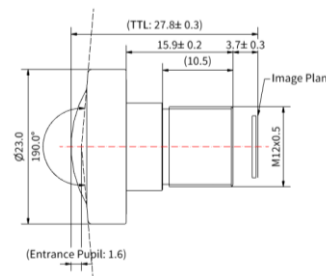
CIL227: 186°@5.2mm IR Corrected Fisheye M12 Lens



Commonlands.com/cil227

Image Circle (Format)	8.2mm
EFL	2.7mm
Field of View	195°@8.2mm
F#	2.5
Resolution	12MP (1.55um)
Distortion	-11% F-Θ
Construction	7G, AL6061

CIL231: 190°@9.1mm Fisheye M12 Lens



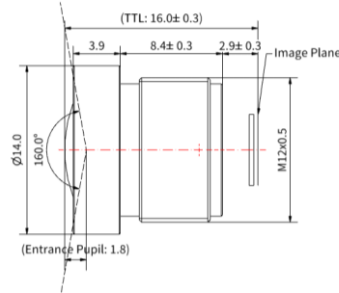
Commonlands.com/cil231

Image Circle (Format)	9.1mm
EFL	3.1mm
Field of View	118°@6.2mm
F#	1.9
Resolution	16MP (1.55um)
Distortion	-10% F-Θ
Construction	9G, AL6061

Subject to change without notice. Drawings not to scale.

# Wide-Angle Lenses: <17mm TTL

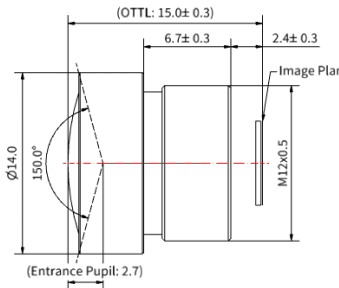
CIL819: 1.9mm Stereographic M12 Lens (M8 Available)



Commonlands.com/cil819

Image Circle (Format)	5.9mm 1/3"
EFL	1.9mm
Field of View	160°@5.9mm
F#	2.0
Resolution	5MP (2.1um)
Distortion	-72% / +13% F-Ø
Construction	5G2P, AL6061

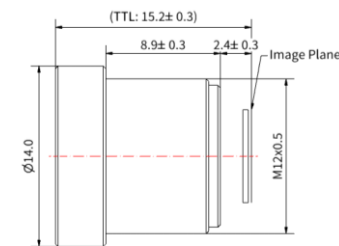
CIL821: 2.1mm Stereographic M12 Lens



Commonlands.com/cil821

Image Circle (Format)	6.8mm 1/2.7"
EFL	2.1mm
Field of View	150°@6.8mm
F#	2.4
Resolution	8MP (1.55um)
Distortion	-55% / +23% F-Ø
Construction	4G2P, AL6061

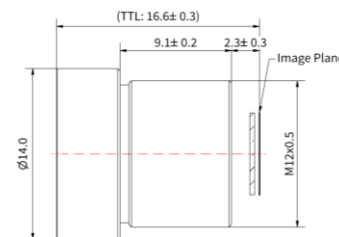
CIL825: 2.5mm Stereographic M12 Lens



Commonlands.com/cil825

Image Circle (Format)	6.8mm 1/2.7"
EFL	2.5mm
Field of View	126°@6.8mm
F#	2.4
Resolution	5MP (2.1um)
Distortion	-30% / +24% F-Ø
Construction	4G2P, AL6061

CIL036: 3.3mm Low Distortion M12 Lens



Commonlands.com/cil036

Image Circle (Format)	7.2mm 1/2.5"
EFL	3.3mm
Field of View	89°@6.4mm
F#	2.2
Resolution	4MP (2.2um)
Distortion	-1.1%
Construction	3G2P, AL6061

Subject to change without notice. Drawings not to scale.

# Wide-Angle Lenses

CIL926: 2.5mm Wide-Angle F-Θ M12 Lens

[Commonlands.com/cil926](http://Commonlands.com/cil926)

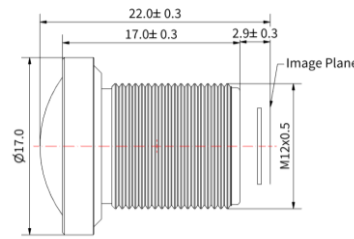


Image Circle (Format)	7.4mm 1/2.5"
EFL	2.5mm
Field of View	172°@7.4mm
F#	2.4
Resolution	5MP (2.2um)
Distortion	-90% / -1% F-Θ
Construction	7G, AL6061

CIL327: 2.7mm Wide-Angle M12 lens

[Commonlands.com/cil327](http://Commonlands.com/cil327)

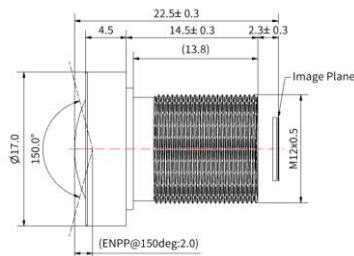


Image Circle (Format)	7.1mm 1/2.6"
EFL	2.7mm
Field of View	150°@6.8mm
F#	1.5 / 1.8
Resolution	8MP (1.62um)
Distortion	-85% / -13% F-Θ
Construction	7G, AL6061

CIL330: 2.9mm Wide-Angle M12 Lens

[Commonlands.com/cil330](http://Commonlands.com/cil330)

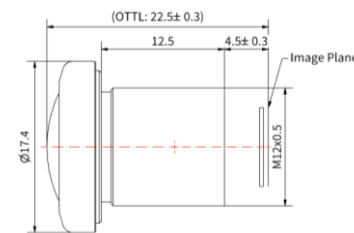


Image Circle (Format)	8.2mm 1/2"
EFL	2.9mm
Field of View	155°@7.8mm
F#	2.6
Resolution	12MP (1.55um)
Distortion	-79% / -3% F-Θ
Construction	8G, AL6061

CIL335: 3.5mm Wide-Angle M12 Lens

[Commonlands.com/cil335](http://Commonlands.com/cil335)

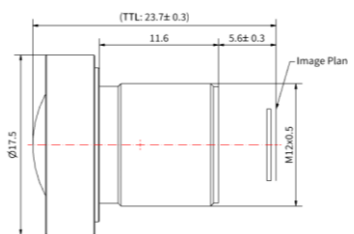


Image Circle (Format)	7.6mm 1/2.4"
EFL	3.5mm
Field of View	128°@7.6mm
F#	1.8
Resolution	8MP (1.62um)
Distortion	-50% / -3% F-Θ
Construction	6G, AL6061

Subject to change without notice. Drawings not to scale.

# Wide-Angle Lenses

## CIL333: 3.5mm Wide-Angle M12 Lens

[Commonlands.com/cil333](https://Commonlands.com/cil333)

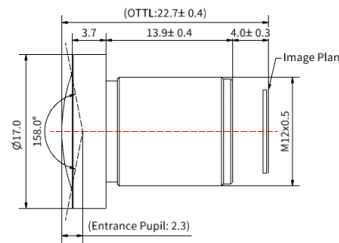


Image Circle (Format)	8.8mm 1/1.8"
EFL	3.5mm
Field of View	136°@8.0mm
F#	2.0
Resolution	12MP (1.55um)
Distortion	-72% / -5% F-Θ
Construction	8G, AL6061

## CIL343: 4.4mm Wide-Angle M12 Lens

[Commonlands.com/cil343](https://Commonlands.com/cil343)

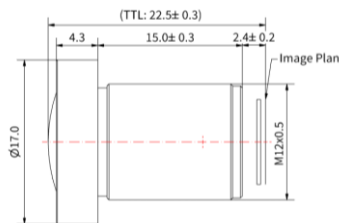


Image Circle (Format)	8.8mm 1/1.8"
EFL	4.4mm
Field of View	150°@6.8mm
F#	2.3
Resolution	12MP (1.55um)
Distortion	-43% / -5% F-Θ
Construction	7G, AL6061

## CIL344: 4.4mm Wide-Angle F-Θ M12 Lens

[Commonlands.com/cil344](https://Commonlands.com/cil344)

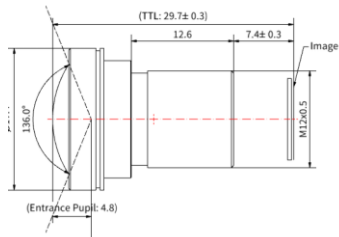


Image Circle (Format)	11mm 1/1.5"
EFL	4.4mm
Field of View	128°@7.6mm
F#	1.9 / 2.7
Resolution	14MP (1.55um)
Distortion	-48% / -1% F-Θ
Construction	7G, AL6061

## CIL046: 4.4mm IR Corrected Wide Angle Low Distortion M12 Lens

[Commonlands.com/cil046](https://Commonlands.com/cil046)

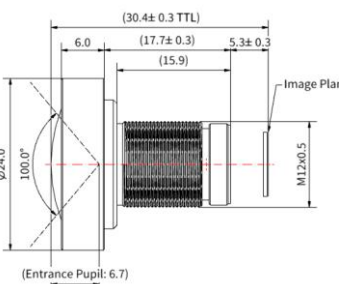


Image Circle (Format)	9.1mm+ 1/1.8"
EFL	4.4mm
Field of View	100°@8.9mm
F#	2.05
Resolution	10MP (2.1um)
Distortion	-14% / +16% F-Θ
Construction	12G, AL6061

Subject to change without notice. Drawings not to scale.

# Wide-Angle Lenses: Automotive Grade

## CIL329: 2.8mm Wide-Angle M12 Lens

[Commonlands.com/cil329](http://Commonlands.com/cil329)

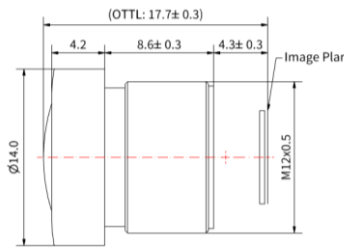


Image Circle (Format)	7.2mm 1/2.5"
EFL	2.8mm
Field of View	150°@6.9mm
F#	2.0
Resolution	3MP (2.1um)
Distortion	-68% / -7% F-Θ
Construction	6G, AL6061

## CIL332: 3.2mm Wide-Angle M12 Lens

[Commonlands.com/cil332](http://Commonlands.com/cil332)

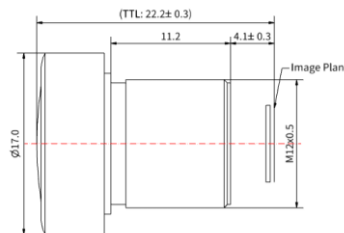


Image Circle (Format)	7.2mm 1/2.4"
EFL	3.2mm
Field of View	129°@6.8mm
F#	1.8
Resolution	3MP (2.1um)
Distortion	-74% / -18% F-Θ
Construction	6G, AL6061

## CIL336: 3.6mm Wide-Angle M12 Lens

[Commonlands.com/cil336](http://Commonlands.com/cil336)

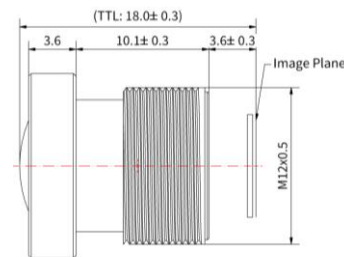


Image Circle (Format)	7.4mm 1/2.4"
EFL	3.6mm
Field of View	110°@6.6mm
F#	1.9
Resolution	2MP (3.0um)
Distortion	-47% / -5% F-Θ
Construction	6G, AL6061

## CIL948: 4.8mm Wide-Angle M12 Lens

[Commonlands.com/cil948](http://Commonlands.com/cil948)

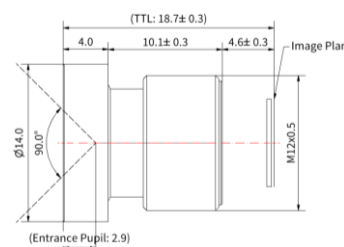


Image Circle (Format)	7.6mm 1/2.4"
EFL	4.8mm
Field of View	88°@7.2mm
F#	2.0
Resolution	2MP (3.0um)
Distortion	-22% / -2% F-Θ
Construction	6G, AL6061

Subject to change without notice. Drawings not to scale.

# Wide-Angle Lenses: 8MP Automotive Grade

## CIL341: 4.0mm Wide-Angle M12 Lens

[Commonlands.com/cil341](http://Commonlands.com/cil341)

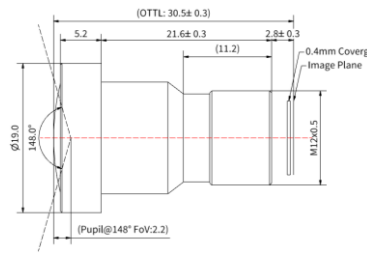


Image Circle (Format)	9.4mm 1/1.7"
EFL	4.0mm
Field of View	124°@8.0mm
F#	2.0
Resolution	8MP (2.1um)
Distortion	-66% / -10% F-Θ
Construction	5G 2MG, AL6061

## CIL358: 5.8mm Wide-Angle M12 Lens

[Commonlands.com/cil358](http://Commonlands.com/cil358)

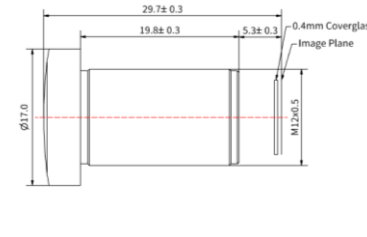


Image Circle (Format)	9.4mm 1/1.7"
EFL	5.8mm
Field of View	102°@9.3mm
F#	1.9
Resolution	12MP (1.85um)
Distortion	-34% / -9% F-Θ
Construction	7G, AL6061

## CIL368: 6.8mm Wide-Angle M12 Lens

[Commonlands.com/cil368](http://Commonlands.com/cil368)

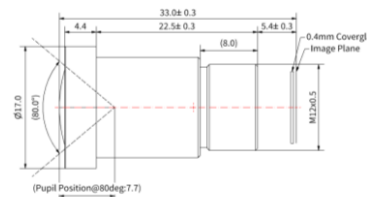


Image Circle (Format)	9.4mm 1/1.7"
EFL	6.8mm
Field of View	69°@8.0mm
F#	1.8
Resolution	8MP (2.1um)
Distortion	-21% / -4% F-Θ
Construction	7G 1MG, AL6061

# Wide-Angle Lenses: Low Distortion

## CIL018: 1.8mm Low Distortion M12 Lens

[Commonlands.com/cil341](http://Commonlands.com/cil341)

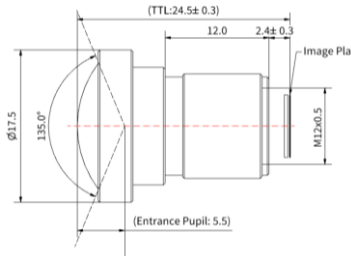


Image Circle (Format)	7.0mm 1/2.6"
EFL	1.8mm
Field of View	134°@7.0mm
F#	2.8
Resolution	8MP (1.62um)
Distortion	-14% / -7% TV
Construction	5G 2P, AL6061

## CIL023: 2.2mm Low Distortion M12 Lens

[Commonlands.com/cil023](http://Commonlands.com/cil023)

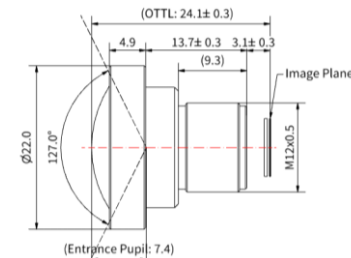


Image Circle (Format)	7.8mm 1/2.3"
EFL	2.2mm
Field of View	121°@7.0mm
F#	2.2
Resolution	8MP (1.85um)
Distortion	-12% / -6% TV
Construction	5G 2P, AL6061

## CIL027: 2.7mm Low Distortion M12 Lens

[Commonlands.com/cil027](http://Commonlands.com/cil027)

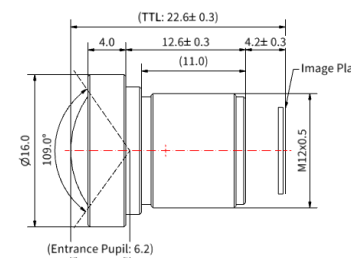


Image Circle (Format)	8.6mm 1/1.8"
EFL	2.7mm
Field of View	114°@8.0mm
F#	2.8
Resolution	12MP (1.55um)
Distortion	-5% / -2% TV
Construction	5G 2P, AL6061

## CIL030: 3.0mm Low Distortion M12 Lens

[Commonlands.com/cil030](http://Commonlands.com/cil030)

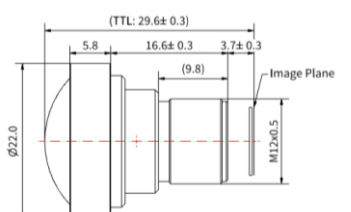


Image Circle (Format)	9.3mm+ 1/1.7"
EFL	3.0mm
Field of View	100°@8.9mm
F#	2.1
Resolution	8MP (2.1um)
Distortion	-15% / -8% TV
Construction	4G 4P, AL6061

Subject to change without notice. Drawings not to scale.



# Wide-Angle Lenses: Low Distortion

## CIL034: 3.2mm No Distortion M12 Lens

[Commonlands.com/cil034](http://Commonlands.com/cil034)

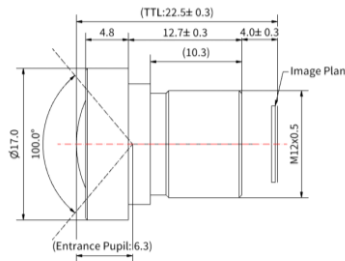


Image Circle (Format)	8.2mm+ 1/1.9"
EFL	3.2mm
Field of View	100°@8.0mm
F#	2.3 / 2.7 / 4.2
Resolution	14MP (1.4um)
Optical Distortion	0%
Construction	4G 2MG, AL6061

## CIL038: 3.8mm No Distortion M12 Lens

[Commonlands.com/cil038](http://Commonlands.com/cil038)

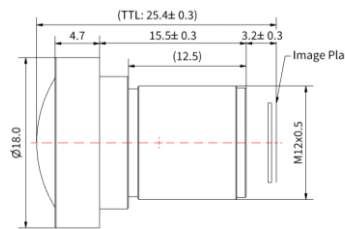


Image Circle (Format)	3.8mm 1/2.3"
EFL	3.8mm
Field of View	82°@6.3mm
F#	2.8
Resolution	12MP (1.55um)
Optical Distortion	-1%
Construction	8G, AL6061

## CIL042: 4.2mm Low Distortion M12 Lens

[Commonlands.com/cil042](http://Commonlands.com/cil042)

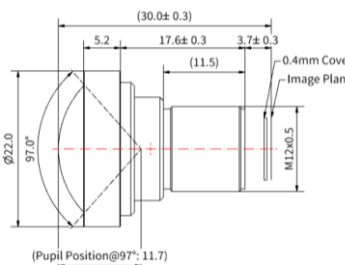


Image Circle (Format)	9.3mm 1/1.7"
EFL	4.2mm
Field of View	88°@8.0mm
F#	1.9
Resolution	8MP (2.1um)
Optical Distortion	-1%
Construction	4G 4P, AL6061

## CIL043: 4.4mm Low Distortion M12 Lens

[Commonlands.com/cil043](http://Commonlands.com/cil043)

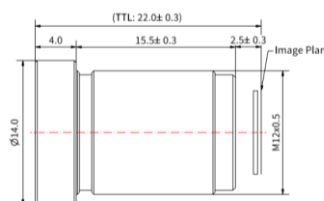


Image Circle (Format)	8.1mm 1/2"
EFL	4.4mm
Field of View	85°@7.9mm
F#	2.05
Resolution	12MP (1.55um)
Optical Distortion	-1%
Construction	4G 2P, AL6061

Subject to change without notice. Drawings not to scale.

# Mid and Telephoto Lenses

Mid-range and telephoto lenses have maximum field of view between 5° and 80°. Primary tradeoffs with these lenses include low light, depth of field, and size.

## Mid-Range

Lenses with moderate field of view provide angular resolution suitable for objects which are 3m-10m away. These lenses provide good depth of field and low light performance while meeting specific scene field of view requirements.



## Telephoto

Lenses with a long effective focal length provide greater angular resolution. These lenses require larger elements to achieve comparable low light performance to shorter focal length lenses. Shallow depth of field must be taken into consideration when designing a system with a telephoto lens.

Related calculator link: [commonlands.com/dof-calculator](https://commonlands.com/dof-calculator)

- This calculator provides the depth of field from focal length, F#, and object distance. Functionality includes depth of focus, relative throughput, and nyquist frequency.

# Mid-Range Lenses: Large Format

## CIL059: 6mm Low Distortion M12 Lens

[Commonlands.com/cil059](http://Commonlands.com/cil059)

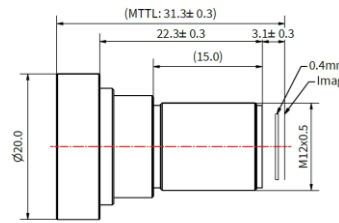


Image Circle (Format)	9.3mm 1/1.7"
EFL	5.9mm
Field of View	70°@8.0mm
F#	1.7 / 4.0 / 5.6
Resolution	8MP (2.1um)
Distortion	-4% / -2% TV
Construction	4G 4P, AL6061

## CIL068: 6.8mm Low Distortion M12 Lens

[Commonlands.com/cil068](http://Commonlands.com/cil068)

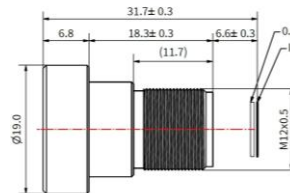


Image Circle (Format)	8.8mm 1/1.8"
EFL	6.8mm
Field of View	62°@8.0mm
F#	2.5
Resolution	10MP (1.85um)
Distortion	-3% / -1.5% TV
Construction	8G, AL6061

## CIL078: 7.8mm Low Distortion M12 Lens

[Commonlands.com/cil078](http://Commonlands.com/cil078)

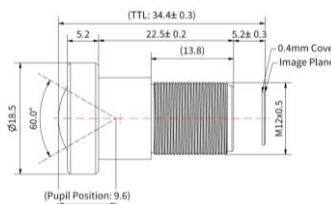


Image Circle (Format)	9.3mm 1/1.7"
EFL	7.8mm
Field of View	60°@8.8mm
F#	2.0
Resolution	12MP (1.85um)
Distortion	-2% / -1% TV
Construction	9G, AL6061

## CIL085: 8.2mm Low Distortion M12 Lens

[Commonlands.com/cil085](http://Commonlands.com/cil085)

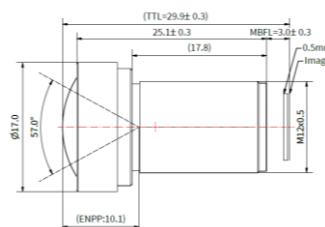


Image Circle (Format)	9.3mm 1/1.7"
EFL	8.2mm
Field of View	57°@8.8mm
F#	2.3 / 4.4
Resolution	12MP (1.85um)
Distortion	-1.5% / -1% TV
Construction	8G, AL6061

Subject to change without notice. Drawings not to scale.

# Mid-Range and Telephoto Lenses: Ingress Protected

## CIL061: 6.0mm Automotive M12 Lens

[Commonlands.com/cil061](http://Commonlands.com/cil061)

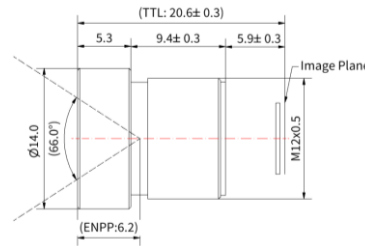


Image Circle (Format)	7.4mm+ 1/2.5"
EFL	6.0mm
Field of View	66°@7.0mm
F#	1.9
Resolution	2MP (3.0um)
Distortion	-8% / -5% TV
Construction	6G, AL6061

## CIL079: 7.9mm Automotive M12 Lens

[Commonlands.com/cil079](http://Commonlands.com/cil079)

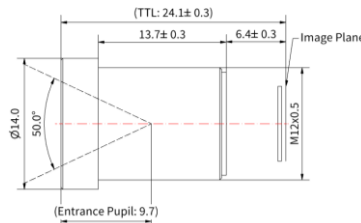


Image Circle (Format)	7.6mm 1/2.3"
EFL	7.9mm
Field of View	44°@6.0mm
F#	2.0
Resolution	3MP (2.1um)
Distortion	-7% / -4% TV
Construction	6G, AL6061

## CIL120: 12.2mm IP67 M12 Lens

[Commonlands.com/cil120](http://Commonlands.com/cil120)

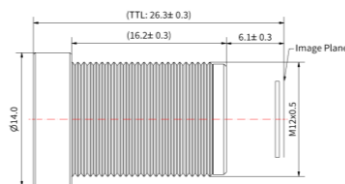
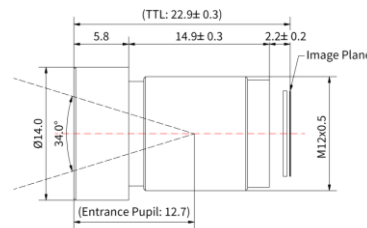


Image Circle (Format)	8.0mm 1/2"
EFL	12.2mm
Field of View	38°@7.8mm
F#	2.2
Resolution	5MP (2.1um)
Distortion	-6% / -3% F-Θ
Construction	5G, AL6061

Subject to change without notice. Drawings not to scale.

# Telephoto Lenses

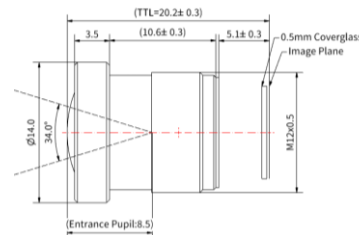
## CIL125: 12.5mm Telephoto M12 Lens



Commonlands.com/cil125

Image Circle (Format)	8.2mm+ 1/2"
EFL	12.5mm
Field of View	124°@8.0mm
F#	2.5 / 8.0
Resolution	12MP (1.55um)
Optical Distortion	-1%
Construction	4G 2P, AL6061

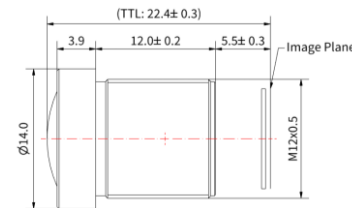
## CIL142: 14.2mm Finite Conjugate M12 Lens



Commonlands.com/cil142

Image Circle (Format)	9.3mm 1/1.7"
EFL	14.2mm
Field of View	27°@7.0mm
F#	2.6 / 4.1 / 5.2
Resolution	12MP (1.85um)
Optical Distortion	-1%
Construction	6G, AL6061

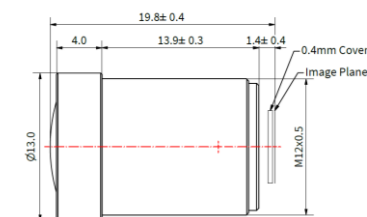
## CIL160: 16.0mm Telephoto M12 Lens



Commonlands.com/cil160

Image Circle (Format)	9.3mm 1/1.7"
EFL	16.0mm
Field of View	28°@8.0mm
F#	1.9
Resolution	12MP (1.85um)
Optical Distortion	-1%
Construction	6G, AL6061

## CIL178: 17.8mm Telephoto M12 Lens



Commonlands.com/cil178

Image Circle (Format)	7.2mm ½.5"
EFL	17.8mm
Field of View	18°@6.0mm
F#	2.0
Resolution	2MP (3.0um)
Optical Distortion	+2%
Construction	2G2P, AL6061

Subject to change without notice. Drawings not to scale.

# Telephoto Lenses

## CIL121: 21.8mm Finite Conjugate M12 Lens

[Commonlands.com/cil121](http://Commonlands.com/cil121)

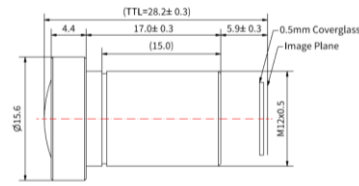


Image Circle (Format)	9.3mm 1/1.7"
EFL	21.8mm
Field of View	23°@8.8mm
F#	2.8 / 5.9
Resolution	12MP (1.85um)
Optical Distortion	<-1%
Construction	6G, AL6061

## CIL260: 26.0mm Telephoto M12 Lens

[Commonlands.com/cil260](http://Commonlands.com/cil260)

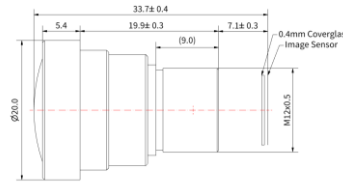


Image Circle (Format)	8.2mm 1/2"
EFL	26.0mm
Field of View	19°@8.0mm
F#	2.0
Resolution	5MP (3um)
Optical Distortion	<-1%
Construction	5G, AL6061

## CIL350: 35.0mm Telephoto M12 Lens

[Commonlands.com/cil350](http://Commonlands.com/cil350)

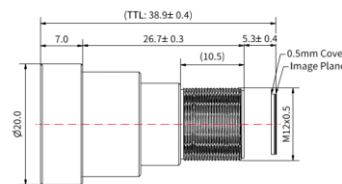


Image Circle (Format)	11mm 2/3"
EFL	35.0mm
Field of View	13°@8.0mm
F#	1.8
Resolution	12MP (2.1um)
Optical Distortion	-0.8%
Construction	All Glass, AL6061

## CIL051: 50mm Telephoto M12 Lens

[Commonlands.com/cil051](http://Commonlands.com/cil051)

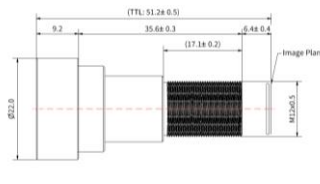


Image Circle (Format)	9.4mm+ 1/1.7"
EFL	50.0mm
Field of View	9°@8.0mm
F#	2.8
Resolution	12MP (1.85um)
Optical Distortion	-0.2%
Construction	All Glass, AL6061

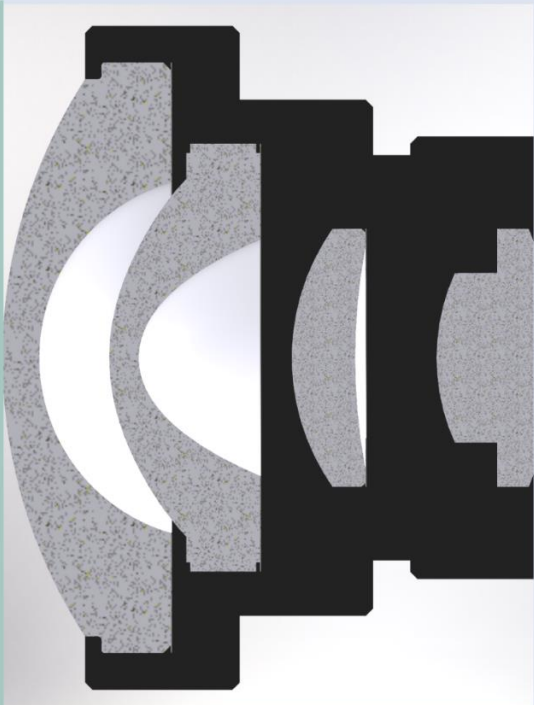
Subject to change without notice. Drawings not to scale.

# OEM Customizations\*



## Pre-Assembly

We'll pre-thread lenses and holders then ship as a single part. This reduces image plane tilt, increases camera assembly throughput, and reduces anodization debris that can land on the sensor.



## ✓ Mechanical

- Outer dimension change
- Active alignment flanges
- Ingress protection
- Hydrophobic coating

## ✓ Optical

- Filters
- Higher F#
- Custom Design

Contact our team at [engineering@commonlands.com](mailto:engineering@commonlands.com) for more details.

\*Starting at 1000pcs/yr. Feasibility is part number and volume dependent.



Commonlands LLC is a US-based provider of cost-effective high-quality optics.

Our team provides:

- Western field application engineering and optical design support
- Accurate specifications, .STP files, mechanical drawings
- Complete quality control for optical, mechanical, and cosmetic
- Next day samples delivered across the US and 3-5 days to EMEA
- Volume production ready with China-based options for >10kpcs



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