

TOSHIBA

Suggestion for S-mount solution

with S-C mount conversion adaptor ring SCAR

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01

Introduction

Explanation about S-mount & S-mount lens



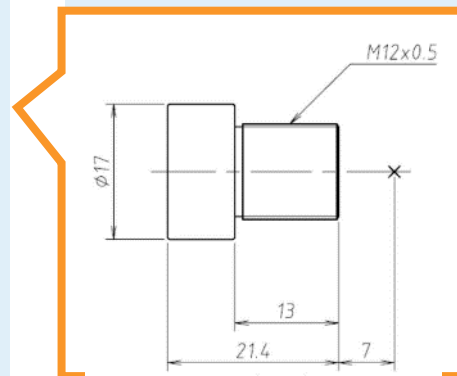
About S-mount & S-mount lens

1 What's S-mount?

- Small size lens mount mainly for board camera etc.
- Mounting screw : M12 x 0.5
- Flange back is not specified as no flange aspect
- Standardize as JIA LE-005
- Lens with narrow thread pitch is applied among several lenses for board camera

2 Advantage of S-mount lens

- Smaller than C-mount lens generally
- Wider variation of focal length. Substantial of fish eye and single focus one
- Comparatively reasonable cost



can be fixed easily by SCAR

3 Disadvantage of S-mount lens

- Most of lenses for board camera have focus and aperture fixed
- Most have dark open F number (about F2~F2.8)
- Disadvantages in optical performance comparing with C-mount
- No flange surface
 - Lens has a risk to contact the sensor as no mechanical stopper
 - Need to consider how to fix the lens after focus setting. (screw or adhesive)

02

Overview of SCAR

Explanation about S-C conversion adaptor of SCAR



SCAR expands application of C-mount camera

For FA·MV

- As S-mount lens is smaller, it can build smaller system than that with C-mount lens.

Closer WD

Smaller installation place

Special effect by super wide angle & fish eye lens



Small

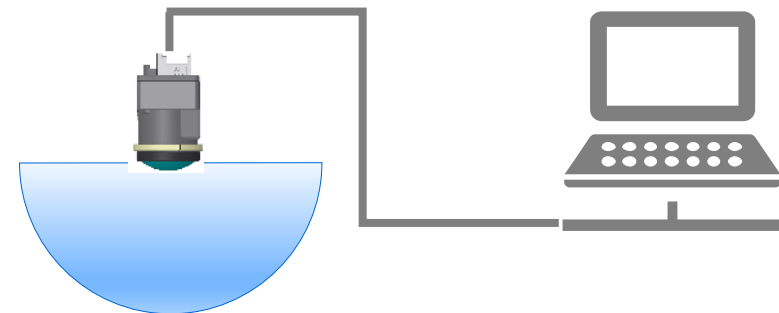


super wide angle-fish eye

For Surveillance·security

- Application of FA-MV camera to surveillance-security (Integrated solution of FA & surveillance)

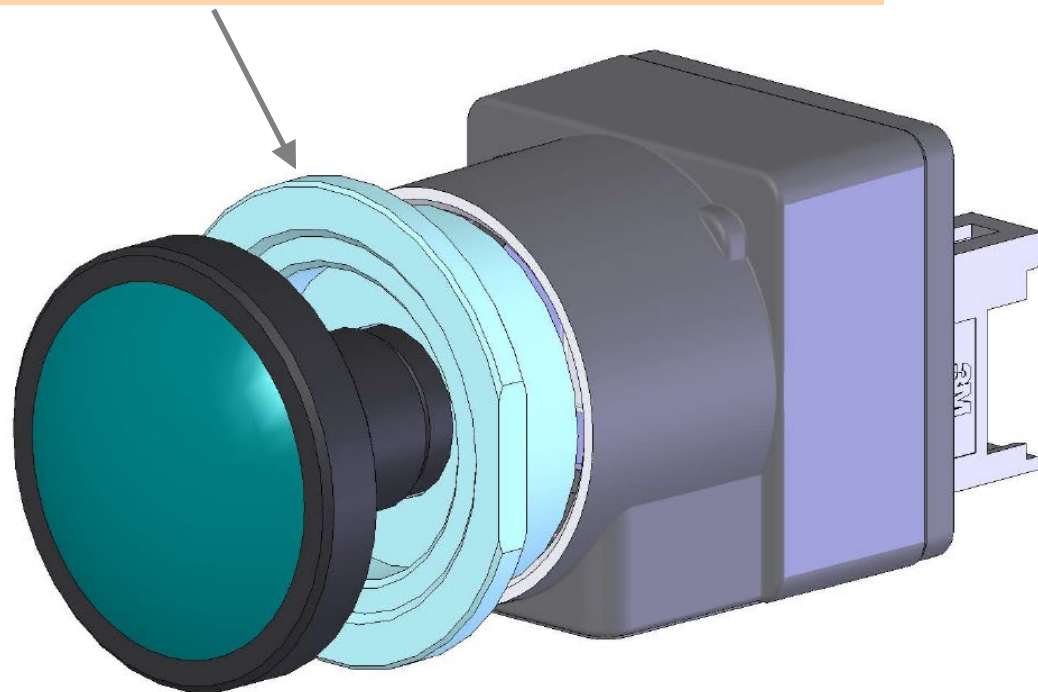
Application of fish eye lens to FA360° system



Structure of SCAR

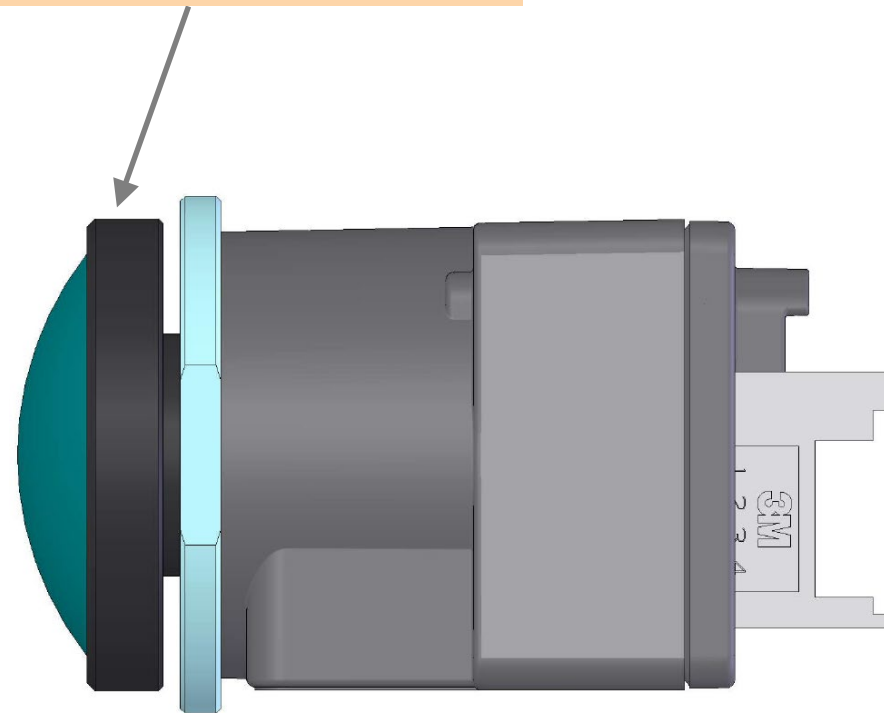
S-C mount conversion adaptor (SCAR)

Lens can be fixed without side screw or adhesive.



S-mount lens

(example : E1222KRY)



* Japanese design registration No. 1642948

03

Solution 1 : 360° Fish eye camera

Explanation about a solution with S-mount lens

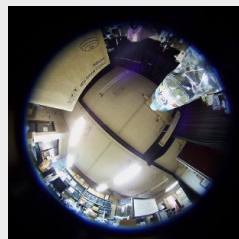


S-mount lens is better for fish eye lens

Small and low cost camera module can be built with S-mount lens.

360° fish eye camera

- Fish eye lens with over 180° view angle performs shooting all around optical axis
- Image processing technology of IMMERSION is well known as a software to view developed all around image.
- S-mount lens supporting IMMERSION is available.



- Fish eye lens for 35 mm SLR and C-mount is available in the market. However, they are in various styles and relatively costly.
- CBC is selling S-mount lenses supporting IMMERSION technology.

Small & IMMERSION supported
S-mount lens is better.

CBC's lens (refer pp. 17-18)

computer

- **L1028KRW (1/2.5 type)**
- **E1222KRY / E122KF3RY (1/1.7 type)**

04

Solution 2 : Camera for positioning

Explanation about a solution with S-mount lens



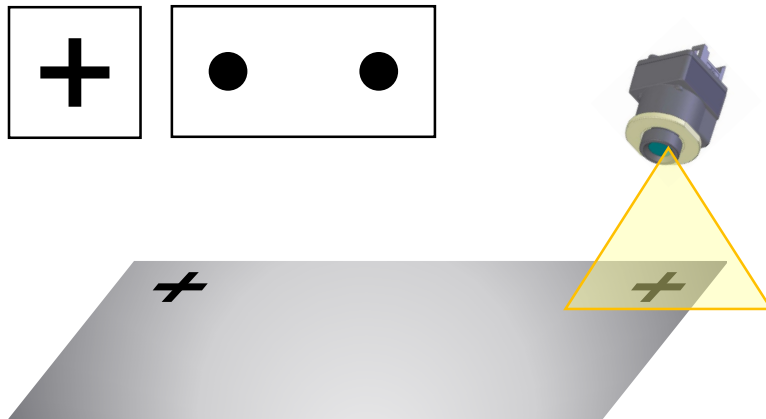
Positioning camera does not require high resolution lens

Small & low cost camera module can be built with S-mount lens

Alignment mark for positioning

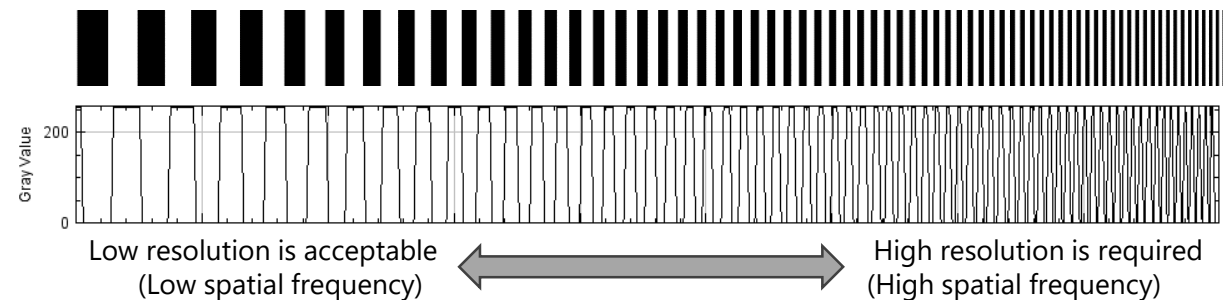
Simple & clear shape for easier image processing 

(mark sample)



- High resolution lens is large and costly as it consists of more lens components
- Shape of alignment mark does not require high lens resolution (detectable even in low frequency)

Small & low cost **S-mount lens is good enough**



05

Solution 3 : Camera for AI-IoT

Explanation about a solution with S-mount lens



Camera for AI does not require high-definition image quality

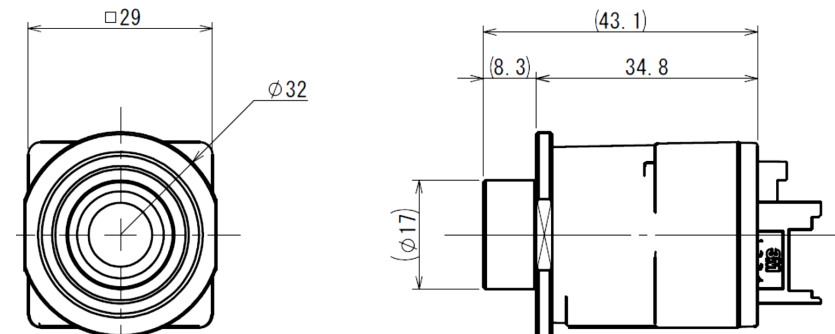
Small & low cost camera can be built with S-mount lens

Use of image AI analysis (example)

- Inspection in food factory
- Inspection of industrial products
- Medical pattern analysis
- Bill reading for accounting system
- Image classification
- Surveillance system for security
- Face recognition
- Sentiment analysis
- Optical character reading, OCR
- Eye tracking

- With mainly fixed aperture and low cost specifications, S-mount lens is not good for high definition image quality.
- As decision is made with weighted feature point in case of AI, specific high image quality is not required.

Small & low cost **S-mount lens is good enough**



Small size is better in camera for IoT

Small & low cost camera module can be built with S-mount lens

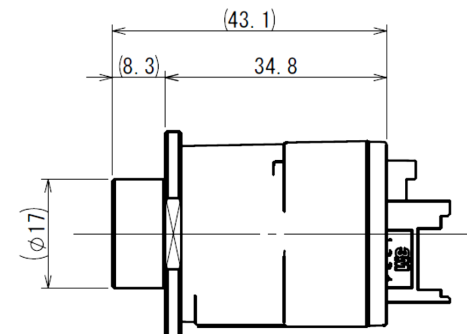
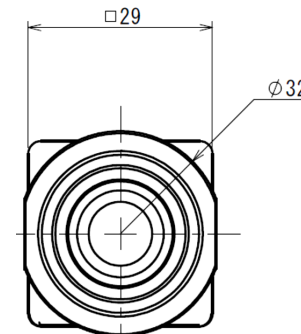
IoT camera

- Camera to detect status of things as data
 - brightness
 - human detection
 - object detection
 - contaminants detection
 - color identification
 - location-displacement detection
- To digitize analogue indication
 - measuring instrument
 - location, existence



- Narrow installation space, reasonable cost & simplicity are required
 - Installation in limited space
 - Low cost
 - Easy operation

Small & low cost **S-mount lens is good enough.**



06

Applicable lens

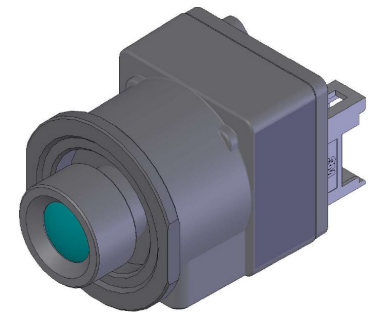
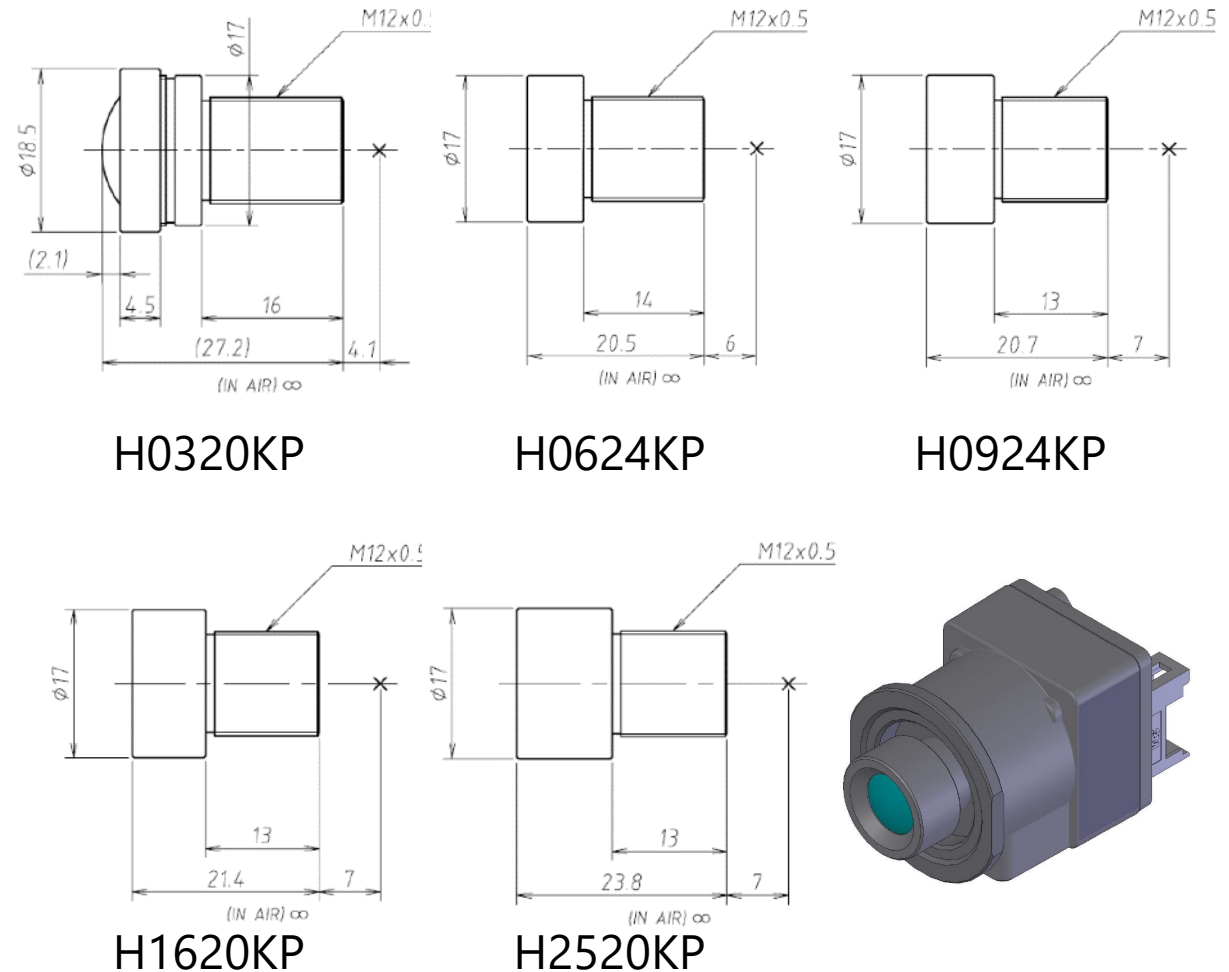
Introduction of S-mount lens for BU camera

This presentation is supported by CBC Corporation



CBC's mega pixel fixed focus board lens (1/2" fixed aperture)

Model No.	Focal Length	F/#
H0320KP	3 mm	2.0
H0624KP	6 mm	2.4
H0924KP	9 mm	2.4
H1620KP	16 mm	2.0
H2520KP	25 mm	2.0



[Note] Please check availability before using above lenses

CBC's mega pixel board lens (360° fish eye lens)

Model No.	Focal Length	F/#	Img Sz
L1028KRW	1.05 mm	2.8	1/2.5 type
E1222KRY	1.2 mm	2.2	1/1.7 type
H1328KP (*)	1.3 mm	2.8	1/2 type
E1628KRY	1.65 mm	2.8	1/1.7 type

(*) H1328KP is made-to-order product

[Note] Please check availability before using above lenses

4K対応 ボードマウントレンズ

<< 参考映像 >>

等距離射影 魚眼レンズ E1628KRY

立体射影 魚眼レンズ E1222KRY

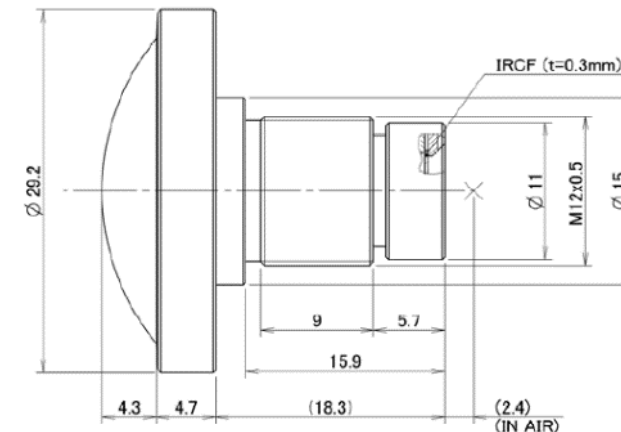
Stereoscopic projection of **E1222KRY** is more convenient than Equidistant projection of E1628KRY because **the marginal part can be seen larger**.

Fish eye lens with IR cut filter (IRCF)

E1222KF3RY as a 360° fish eye lens with IRCF is **confirmed to be useful** in a camera without optical glass.

Model No.	Focal Length	F/#	Img Sz
E1222KF3RY	1.2 mm	2.2	1/1.7 type

Only above is the standard model with IRCF among CBC's fish eye lenses.



As mechanical back is only 4 mm, the camera to use has to be checked not to have any mechanical interference

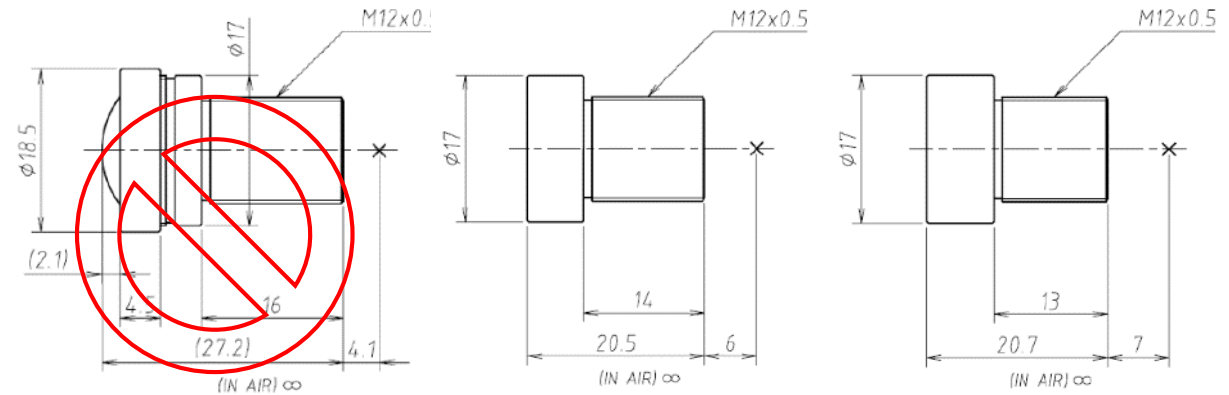
[Note] Please check availability before using above lenses.

CBC's fixed aperture board lens for mega pixel (1/2" fixed aperture)

Model No.	Focal Length	F/#
H0320KP	3 mm	2.0
H0624KP	6 mm	2.4
H0924KP	9 mm	2.4
H1620KP	16 mm	2.0
H2520KP	25 mm	2.0



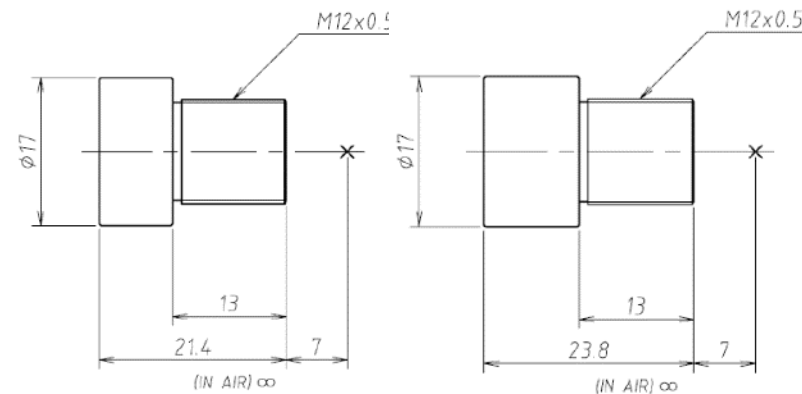
H0320KP cannot be used as lens barrel contacts optical glass.



H0320KP

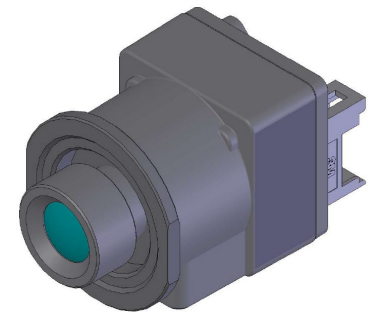
H0624KP

H0924KP







H1620KP

H2520KP



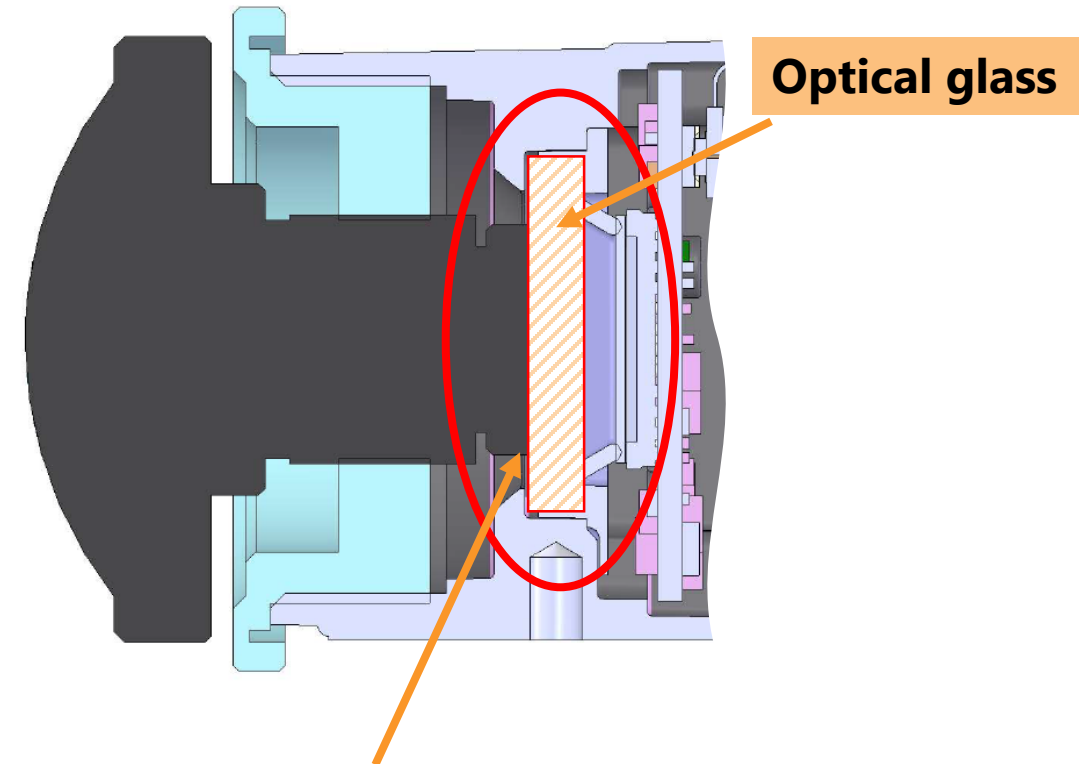
[Note] Please check availability before using above lenses.

CBC's mega pixel board lens (360° fish eye lens)

Model No.	Focal Length	F/#	Img Sz
L1028KRW 	1.05 mm Lens barrel contacts optical glass.	2.8	1/2.5 type
E1222KRY 	1.2 mm Lens barrel contacts optical glass.	2.2	1/1.7 type
H1328KP 	1.3 mm Lens barrel contacts optical glass.	2.8	1/2 type
E1628KRY 	1.65 mm Lens barrel contacts optical glass.	2.8	1/1.7 type



No CBC's 360° fish eye lens cannot be used.



Cannot use because it contacts optical glass as back focus and short mechanical back.

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Thank you

