



January 9, 2020

**Launch of New [RICOH FL-CC0820-5MX](#) Five Megapixel
8mm Wide-Angle Focal Length FA Lens
~ High-Resolution, High-Contrast images can be acquired
over a Wider Area and at Closer Working Distances ~**

On January 9th, RICOH Industrial Solutions Inc. (President: Hiroshi Takemoto) is launching a new 8mm 5MX lens to expand the line-up of the four existing 2/3" 12, 16, 25 and 35mm 5MX lenses for 5 Megapixel cameras released in 2018-2019.



RICOH FL-CC0820-5MX

The new model provides the widest angle of view of RICOH 5MX lenses, while still providing high resolution images right up to the periphery. (Figure 1)

With the shortest focal length of the existing lineup, this lens has the ability to be incorporated into a narrow installation space and reduces the number of cameras in the system.

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V:6.6

H:8.8

New

W.D. (mm)	FL-CC0820-5MX	FL-CC1218-5MX	FL-CC1618-5MX	FL-CC2518-5MX	FL-CC3524-5MX
	f=8mm F2.0 V x H (mm)	f=12mm F1.8 V x H (mm)	f=16mm F1.8 V x H (mm)	f=25mm F1.8 V x H (mm)	f=35mm F2.4 V x H (mm)
100	89.4 × 119.2	60.9 × 81.2	47.3 × 63.0	24.0 × 32.0	18.6 × 24.8
125	110.1 × 146.8	74.7 × 99.6	57.7 × 76.9	30.6 × 40.8	23.3 × 31.1
150	130.7 × 174.3	88.5 × 118.0	68.1 × 90.8	37.2 × 49.7	28.1 × 37.4
175	151.3 × 201.7	102.3 × 136.4	78.5 × 104.7	43.8 × 58.5	32.8 × 43.6
200	172.0 × 229.3	116.1 × 154.8	88.9 × 118.5	50.4 × 67.3	37.5 × 49.9
225	192.5 × 256.7	129.9 × 173.2	99.2 × 132.3	57.0 × 76.1	42.2 × 56.2
250	213.2 × 284.2	143.6 × 191.5	109.6 × 146.1	63.6 × 84.9	46.9 × 62.5
275	233.8 × 311.7	157.4 × 209.9	119.9 × 159.9	70.3 × 93.7	51.6 × 68.7
300	254.3 × 339.1	171.2 × 228.2	130.3 × 173.7	76.9 × 102.5	56.3 × 75.0
350	295.6 × 394.1	198.7 × 265.0	150.9 × 201.2	90.1 × 120.1	65.7 × 87.5
400	336.7 × 449.0	226.3 × 301.7	171.6 × 228.8	103.3 × 137.7	75.1 × 100.1
450	378.0 × 504.0	253.7 × 338.3	192.3 × 256.3	116.5 × 155.3	84.5 × 112.6
500	419.3 × 559.1	281.3 × 375.1	212.9 × 283.9	129.7 × 172.9	93.9 × 125.1

Figure 1: New 8mm model supports our widest field of view

As well as the previous 12, 16, 25 and 35mm lenses, which have been receiving good reviews, the new 8mm model uses JIA (Japan Industrial Imaging Association) lens standards, that satisfy S Rank* (Best Performance Class) criteria, allowing the lenses to take high resolution, high contrast, sharp images over the entire sensor at all working distances. The introduction of a floating mechanism provides high resolution, high contrast performance over a wide range of imaging distances, from 0.1m to infinity. No matter the imaging distance, this lens will maintain a sharp picture with high performance over the entire area of the screen, meeting machine vision market needs for stable, high inspection/detection precision.

The lens provides a high resolution image right up to the periphery and has low distortion, making it ideal for a variety of applications. Visually inspecting high density printed circuit boards, confirming hairline cracks and other surface defects on sheet metals, checking for missing pixels on LCD monitors, inspecting multiple aspects simultaneously such as the shape, color and surface of food and pharmaceuticals for imperfections and in making detailed inspections of a wide range of objects. Furthermore, this new high-resolution lens can also be used as a visual sensor in any machine's vision system. Even with its' wide viewing angle this lens performs in these various applications superbly, adhering to these features along with all the RICOH 5MX lenses.

The market, that requires high levels of inspection and detection accuracy, is transitioning to higher resolution lenses. By extending our line-up of high-performance 5 Megapixel lenses, we are now able to respond further to the diverse market requirements.

Our goal is to continue developing new products and further expand our business in the Machine Vision market.

< Key Features of the New RICOH FL-CC0820-5MX >

Reducing the number of cameras and saving installation space have been realized, by wide-angle lens design with a focal length of 8 mm.

With the shortest focal length amongst the existing lineup and designed for inspection applications with installation limitations, it still achieves high resolution despite its wide field of view.

1. Reducing the number of cameras:

When installed at the same working distance, it is possible to obtain a wider field of view when compared to lenses with longer focal lengths. For example, with a 125mm working distance, the 8mm lens provides approximately 4 times the field of view (110 x 147mm) compared to a 16mm lens (58 x 78mm). (Figure 2)

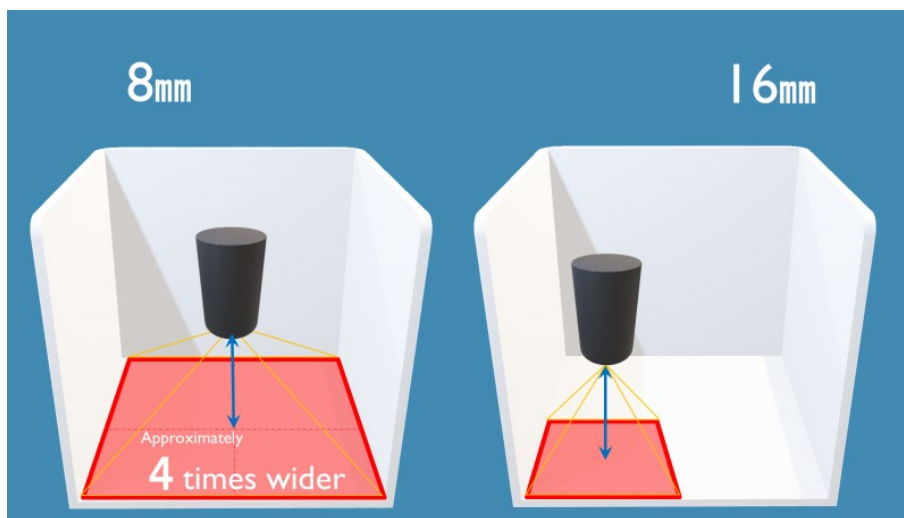


Figure 2: Reducing the number of cameras (Left : 8mm Lens / Right : 16mm Lens)

2. Saving installation space:

Shorten the working distance to objects by utilizing a wide field of view. For example, if the application demands a field of view of 110 x 150mm, a 25mm lens requires a working distance of over 400mm, however, our 8mm lens can obtain the same field of view with only a 125mm working distance. (Figure 3)

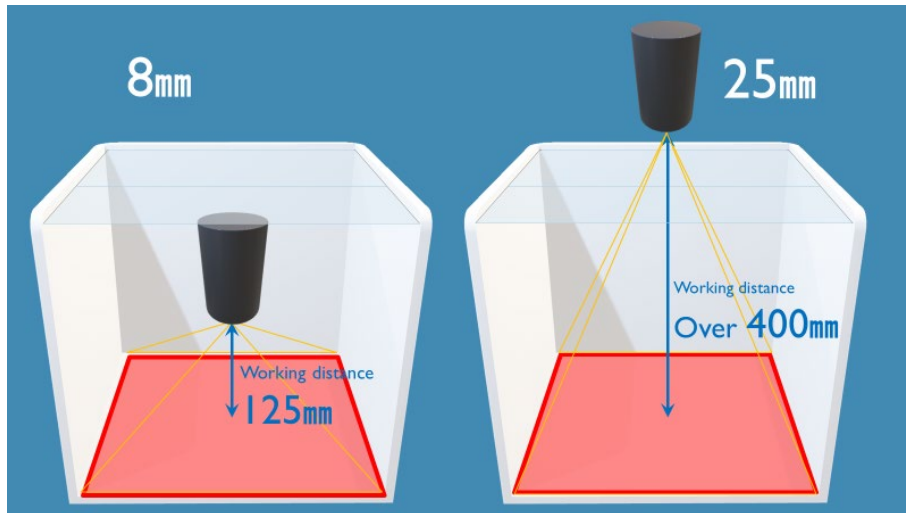


Figure 3: Saving installation space (Left : 8mm Lens / Right : 25mm Lens)

< Key Features of RICOH 5MX lenses >

1. Provides high resolution and high contrast images, contributing to high precision and stable image processing.

Right from the center to the periphery, these lenses have a high resolution of over 147 lp/mm. Due to a minimal degradation of resolution right up to the periphery they produce sharp, high contrast images. Therefore, even images on the periphery can be suitable for measurement and inspection. These lenses use JIA (Japan Industrial Imaging Association) high performance class/evaluation standards for high definition camera lenses and satisfy S-Rank* (Best Performance Class) criteria. As entire field 5 Megapixel camera lenses, they capture high resolution, low distortion images not just from the center to the periphery but over the entire image measurement field.

They contribute to shortening the takt time at the factory by providing single frame images with high quality from the center to the periphery.

2. Low distortion reduces the burden of image processing by distortion correction.

Optically designed to reduce distortion, which poses a problem in image measuring and recognition, these lenses keep TV distortion low, making them ideal for capturing low distortion images over the entire image measurement field.

3. Floating focusing mechanism allows the capture of high resolution images at all distances.

The use of the floating mechanism in their focusing systems allows them to capture low-distortion, high resolution images at all distances, from infinity right down to their minimum object distance, demonstrating maximum performance at any magnification.

4. ϕ 33mm compact design, enabling installation into various working environments.

The lenses have a $\phi 33\text{mm}$ compact design ideal for installation with high performance equipment, enhancing production line working efficiency.

< Specification of RICOH 5MX lenses >

New

Model	FL-CC0820-5MX	FL-CC1218-5MX	FL-CC1618-5MX	FL-CC2518-5MX	FL-CC3524-5MX
Resolution	Over 5 Megapixel	Over 5 Megapixel			
Format Size	2/3" format	2/3" format			
Focal Length	8mm	12mm	16mm	25mm	35mm
Maximum Aperture Ratio	1:2.0	1:1.8			1:2.4
Iris Range	2.0~16	1.8~16			2.4~16
Mount	C	C			
Horizontal Angle of View	1/3" format	33.6°	22.7°	17.1°	11.0°
	1/2" format	44.0°	30.0°	22.7°	14.6°
	1/1.8" format	49.0°	33.6°	25.4°	16.4°
	2/3" format	58.5°	40.5°	30.9°	20.0°
Minimum Object Distance	0.1m	0.1m			
Back Focal Length	13.0mm	13.2mm	13.4mm	13.6mm	14.3mm
Filter Size	30.5 P=0.5mm	30.5 P=0.5mm			
Dimensions	$\phi 33 \times 43\text{mm}$	$\phi 33 \times 47\text{mm}$		$\phi 33 \times 50\text{mm}$	$\phi 33 \times 65.5\text{mm}$
Weight	78g	85g	80g	68g	100g

* JIA Technical Report LER-007: Recommended specifications for high definition camera lenses

- Applications (S-Rank): For applications requiring higher resolution over the entire image
- Evaluation Criteria (S-Rank): Resolving spatial frequency corresponding to the Nyquist frequency over the entire image

Relevant Contents

- > [RICOH FL-CC0820-5MX](#)
- > [The reason why Ricoh lenses are chosen](#)

| About Ricoh |

Ricoh is empowering digital workplaces using innovative technologies and services enabling individuals to work smarter. For more than 80 years, Ricoh has been driving innovation and is a leading provider of document management solutions, IT services, communications services, commercial and industrial printing, digital cameras, and industrial systems.

Headquartered in Tokyo, Ricoh Group operates in approximately 200 countries and regions. In the financial year ended March 2019, Ricoh Group had worldwide sales of 2,013 billion yen (approx. 18.1 billion USD).

For further information, please visit www.ricoh.com