

# FX-103SH/103S



## Gen 10.5 Plate FPD Lithography Systems for High-definition Panel Production

By incorporating techniques from both the FX-67S2, which is ideal for the production of small-and-medium-sized high-definition panels, and the FX-86SH2, which excels in the production of TV panels, the FX-103SH/103S is optimized for manufacturing large-sized high-definition panels and achieves a shorter takt time than our conventional Gen 10 lithography system. The FX-103SH achieves a high resolution of 2.2  $\mu\text{m}$ .

### Key Features

#### Multi-lens System

##### Short Takt Time

Incorporating the renewed exposure sequence and calibration sequence of the conventional model, the FX-103SH/103S realizes faster and higher accuracy exposure.

##### High Resolution

The FX-103SH enables a high resolution of 2.2  $\mu\text{m}$  (L/S) and a wide depth of focus.

##### High Overlay Accuracy

The new position measuring system achieves a high overlay accuracy of  $\pm 0.5 \mu\text{m}$ .

##### High Throughput

The FX-103SH/103S achieves a throughput of 480 plates per hour for 65-inch panels, and 322 plates per hour for 75-inch panels.

## Performance

	FX-103SH	FX-103S
Resolution (L/S)	2.2 $\mu\text{m}$ (g+h+i-line)	3.0 $\mu\text{m}$ (g+h+i-line)
Projection magnification	1:1	
Overlay	$\leq \pm 0.5 \mu\text{m}$	
Plate size	2,940 mm $\times$ 3,370 mm	
Takt time	60 s/plate Conditions: 2,940 mm $\times$ 3,370 mm, 4 scans, g+h+i-line, 30 mJ/cm <sup>2</sup>	

	<b>WARNING</b>	TO ENSURE CORRECT USAGE, READ THE CORRESPONDING MANUALS CAREFULLY BEFORE USING YOUR EQUIPMENT.
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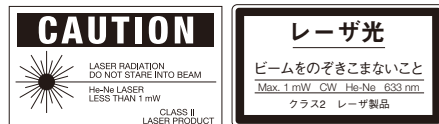
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FPD露光装置総合



# FX

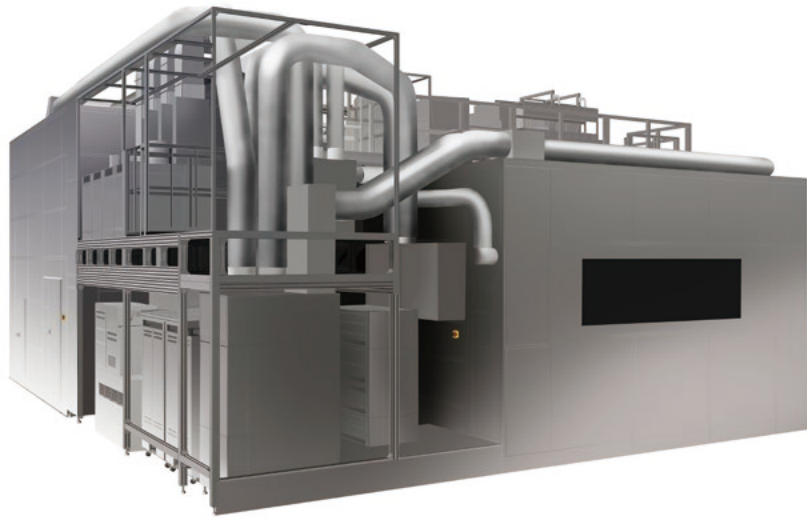
# FPD LITHOGRAPHY SYSTEMS

## 2024-2025

<https://fpd.nikon.com/>



# FX-88S



## Gen 8 Plate FPD Lithography System Delivering a High Resolution of 1.5 μm

The FX-88S incorporates optimized technologies from the FX-68SH/68S, which is ideal for high-definition small-and-medium-sized panel production, and the FX-103SH/103S, which excels in the production of large TV panels. Achieving high overlay accuracy and productivity in addition to high resolution, the FX-88S supports the production of various types of panels.

### Key Features

#### Multi-lens System

The FX-88S features the multi-lens system consisting of multiple projection lenses. This design enables a wide exposure field and excellent resolution.

#### High Resolution

By incorporating the i-line projection lens, which was used by the FX-68SH/68S and is capable of high-volume, high-resolution production of panels, the FX-88S enables a resolution of 1.5 μm (L/S) in Gen 8 plates. The extremely accurate focus correction system achieves excellent line-width uniformity over the entire surface of Gen 8 plates.

#### High Overlay Accuracy

Utilization of the large stage control technique of the FX-103SH/103S and a high-resolution projection lens enables a high overlay accuracy of ±0.4 μm.

#### High Throughput

The entire surface of a Gen 8 plate can be exposed in 4 scans. The stage drive speed is improved by at least 30% compared with conventional models, resulting in a significantly shortened takt time.

#### Flexibly Supports Volume Production of Diverse Panels

The FX-88S is deal for high volume production of panels for high value-added premium displays, including those of smart devices, high-end monitors and large-scale televisions.

## Performance

Resolution (L/S)	解像度 (L/S)	1.5 μm (i-line)
Projection magnification	投影倍率	1:1
Overlay	重ね合わせ精度	≦ ±0.40 μm
Plate size	プレートサイズ	2,290 mm × 2,620 mm
Takt time	タクトタイム	47 s/plate Conditions: 2,200 mm × 2,500 mm, 4 scans, i-line, 30 mJ/cm²

## 第8世代プレートサイズ対応 1.5 μmの高解像度を達成したFPD 露光装置

高精細な中小型パネルの生産に適したFX-68SH/68Sと、大型テレビ用パネルの生産に適したFX-103SH/103Sで培った技術を応用して最適化。高解像度に加え、高い重ね合わせ精度と生産性を実現し、多様なパネルの生産に幅広く対応します。

### 特長

#### マルチレンズシステムを搭載

複数の投影レンズで構成されたマルチレンズシステムを搭載。広い露光領域を確保すると同時に、高解像度を達成。

#### 高解像度

FX-68SH/68Sで高解像での量産実績のある、i線の投影レンズを搭載。第8世代プレートに対し、1.5 μm (L/S)の高解像度露光を実現するとともに、高精度フォーカス補正システムにより、第8世代プレート全面で優れた線幅均一性を達成。

#### 高い重ね合わせ精度

高解像投影レンズとFX-103SH/103Sに搭載した大型ステージ制御技術の採用により、±0.4 μmの高い重ね合わせ精度を実現。

#### 高スループット

4スキャンで、第8世代プレート全面の露光が可能。従来機種と比較して、ステージの駆動速度を30%以上改善し、タクトタイムを大幅に向上。

#### 多様なパネルの量産にフレキシブルに対応

スマートデバイスやハイエンドモニター、大型テレビなどの、高付加価値なプレミアムディスプレイ向けパネルの量産に最適。

# FX-6AS



## Gen 6 Plate FPD Lithography System with the Highest Level of Resolution

The FX-6AS produces leading edge small-and-medium-sized high-definition panels from Gen 6 plates. The newly-developed projection lens enables the highest level of resolution of 1.0 μm using a phase shift mask, improved productivity and high overlay accuracy.

### Key Features

#### Multi-lens System

#### High Resolution

The FX-6AS enables large volume production of panels with a high resolution of 1.0 μm (L/S) using a phase shift mask, while ensuring CD uniformity over the entire surface of Gen 6 plates.

#### High Overlay Accuracy

High overlay accuracy is realized by using a new projection lens with reduced aberration in combination with highly accurate measurement and position control performance.

#### High Throughput

The FX-6AS provides high throughput of 85 plates per hour due to increased illuminance resulting from optimization of the illumination system, while enabling 4-scan on a Gen 6 plate.

#### Stable Exposure Performance

The FX-6AS employs a variety of calibration functions from the previous model, providing stable exposure performance during operation.

# FX-68SH/68S



## Gen 6 Plate FPD Lithography System for Small-and-medium-sized High-definition Panel Production

The FX-68SH/68S produces leading edge small-and-medium-sized high-definition panels from Gen 6 plates. The scanner method enables improved productivity, excellent resolution and high overlay accuracy. The FX-68SH also achieves high productivity and a high resolution of 1.2 μm\*<sup>1</sup>.

### Key Features

#### Multi-lens System

#### High Resolution

The FX-68SH enables the high volume production of panels with a high resolution of 1.2 μm\*<sup>1</sup> (L/S) in Gen 6 plates.

#### High Overlay Accuracy

The new interferometer system realizes high overlay accuracy.

#### High Throughput

With the new projection lens and stage, the FX-68SH/68S achieves a high throughput of 85 plates per hour by enabling 4-scan on a Gen 6 plate.

#### Improved Exposure Performance

The FX-68SH/68S employs a variety of calibration functions developed utilizing our unique technology and provides enhanced exposure performance stability.

## Performance

		FX-6AS	FX-68SH	FX-68S
Resolution (L/S)	解像度 (L/S)	1.0 μm*1 (i-line)	1.2 μm*1 (i-line)	1.5 μm (i-line)
Projection magnification	投影倍率	1:1		
Overlay	重ね合わせ精度	≦ ±0.23 μm	≦ ±0.27 μm	
Plate size	プレートサイズ	1,500 mm × 1,850 mm		
Takt time	タクトタイム	42 s/plate Conditions: 1,500 mm × 1,850 mm, 4 scans, i-line, 30 mJ/cm²		

\*<sup>1</sup> When using a phase shift mask

\*<sup>1</sup> 位相シフトマスク使用時

## 第6世代プレートサイズ対応 高解像度を実現したFPD 露光装置

第6世代プレートによる最先端高精細中小型パネルの生産に対応。新開発の投影レンズを搭載し、位相シフトマスク使用時1.0 μm という最高水準の高解像度と生産性向上、高い重ね合わせ精度を同時に実現しました。

### 特長

#### マルチレンズシステムを搭載

#### 高解像度

第6世代プレート全面において高い線幅均一性を確保しつつ、位相シフトマスク使用時で1.0 μm(L/S)の量産を実現。

#### 高い重ね合わせ精度

実績のある高精度な計測と位置制御性能を継承しつつ、収差を抑えた新開発投影レンズとの組み合わせにより、高い重ね合わせ精度を実現。

#### 高スループット

第6世代プレートで4スキャンを可能とするとともに、照明システムの最適化による照度向上で高スループット(毎時85プレート)を実現。

#### 安定した露光性能

従来機で実績のあるさまざまなキャリブレーション機能を適用し、稼働中の安定した露光性能を実現。