OPTO-EDU A63.7190 300000x Critical Dimension Scanning Electron Microscope

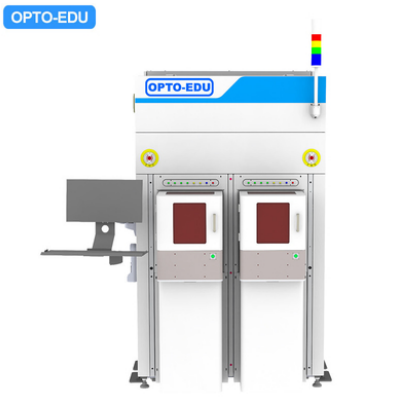
Our Product Introduction

Basic Information

- Place of Origin: China
- Brand Name: CNOEC, OPTO-EDU
- Certification: CE, Rohs
- Model Number: A63.7190
- Minimum Order Quantity: 1 pc
- Price: FOB $1~1000, Depend on Order Quantity
- Packaging Details: Carton Packing, For Export Transportation
- Delivery Time: 5~20 Days
- Payment Terms: T/T, West Union, Paypal
- Supply Ability: 5000 pcs/ Month

Product Specification

- Wafer Size: A63.7190-68: 6/8 Inches
- Resolution: 2.5nm (Acc=800V)
- Accelerating Voltages: 0.5-1.6KV
- Repeatability: Static & Dynamic ±1% Or 3nm(3 Sigma)
- Probe Beam Current: 3~30pA
- Measuring Range: FOV 0.1~2.0μm



Our Product Introduction

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Product Description

Compatible With 6/8 Inch Wafers Size, Magnification 1000x-300000x
Resolution 2.5nm (Acc=800V), Accelerating Voltages 500V--1600V
Repeatability Static & Dynamic ±1% or 3nm(3 Sigma), Probe Beam Current 3~30pA
High-Speed Wafer Transfer System Design Suitable For 3rd-Generation Semiconductor Chips
Advanced Electron Optics Systems And Image Processing, Including Chiller, Dry pump

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A63.7190

Critical Dimension Scanning Electron Microscope (CDSEM), 300000x

A63.7190 Features

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A Critical Dimension Scanning Electron Microscope (CD-SEM) is a specialized SEM used to measure the dimensions of tiny features on semiconductor wafers, photomasks, and other materials. These measurements are crucial for ensuring the accuracy and precision of manufactured electronic devices.

- Compatible With 6/8 Inch Wafers Size, Magnification 1000x-300000x
- Resolution 2.5nm (Acc=800V), Accelerating Voltages 500V--1600V
- Repeatability Static & Dynamic ±1% or 3nm(3 Sigma), Probe Beam Current 3~30pA
- High-Speed Wafer Transfer System Design Suitable For 3rd-Generation Semiconductor Chips
- Advanced Electron Optics Systems And Image Processing, Including Chiller, Dry pump

▶ Key Features

CD-SEMs use a low-energy electron beam and have enhanced magnification calibration to ensure accurate and repeatable measurements. They are designed to measure features like the width, height, and sidewall angles of patterns.

A63.7190 Elaboration

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▶ Purpose

CD-SEMs are essential for metrology in the semiconductor industry, helping to measure the critical dimensions (CDs) of patterns created during lithography and etching processes. CDs refer to the smallest feature sizes that can be reliably produced and measured on a wafer.

▶ Applications

These instruments are used in the manufacturing lines of electronic devices to ensure the dimensional accuracy of the various layers and features that make up a chip. They also play a crucial role in process development and control, helping to identify and correct any issues that may arise during the manufacturing process.

▶ Importance

Without CD-SEMs, modern microelectronics would struggle to achieve the high level of precision and performance that is demanded by the industry. They are indispensable for ensuring the reliability and functionality of modern electronic devices.

▶ Shifting Technology

As lithography techniques advance and feature sizes continue to shrink, CD-SEMs are constantly evolving to meet the demands of the industry. New technologies and advancements in CD-SEM are being developed to address the challenges of measuring increasingly complex patterns

A63.7190 Details

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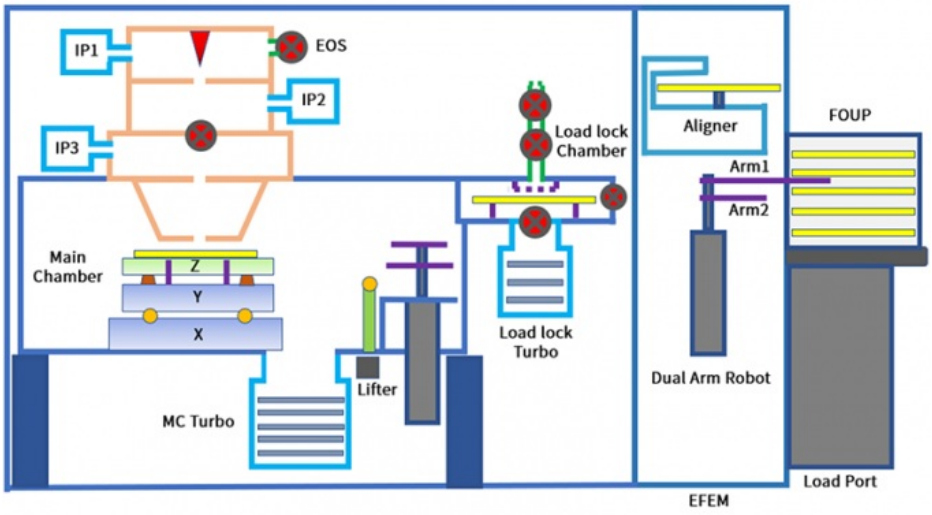
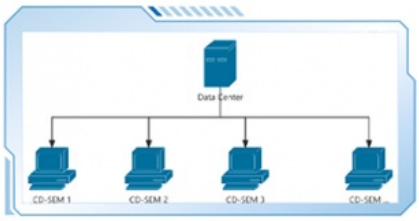
▶ CD-SEM layout



▶ Data Center and Offline Management Software

Data Center

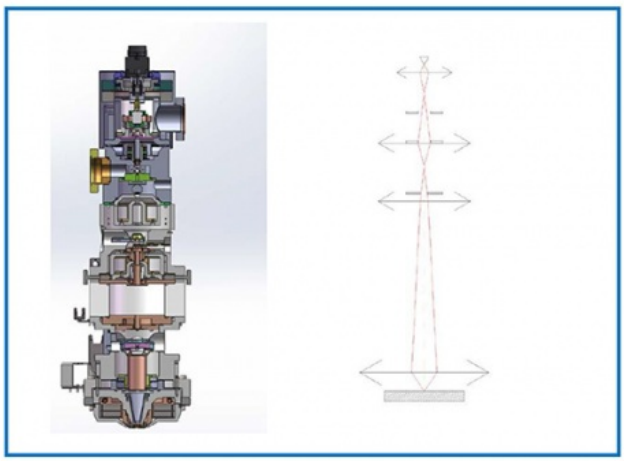
- Centrally manage and distribute CD-SEM machine Recipes
- Surpass the upper limit of CD-SEM machine Recipe quantity.



Offline

- Manual re-inspection of off-line CD-SEM machines
- Add new CD-SEM detection types to achieve off-line measurement,
- Edit and optimize measurement parameters, and compare the measurement results under different conditions.
- Automatically re-measure the off-line Recipes and compare them with the in-line data.

▶ Tech Advantages- EOS Column

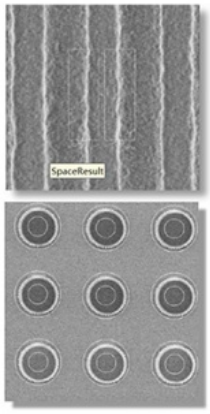


Flexible beam current adjustment, no need to select aperture manually

Multiple cross spots are beneficial for enhancing consistency among different machines

MCP detectors have high signal amplification, fast response speed, and good signal-to-noise(S/N)ratio

▶ Tech Advantages- User Friendly S&E GUI



◉ **Functions**
Lines/Spaces, LER/LWR, Holes, Ellipses, Corner etc.

◉ **Efficient Preprocessing**
longitude and crosswise profile average, noise robust derivate estimation, baseline regression, edge enhancement, small image rotation correction etc. peak to peak distance, max of slope detection etc.

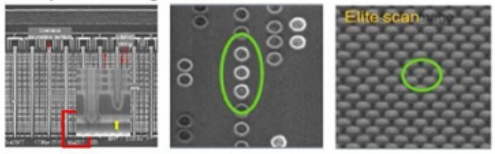
◉ **Advanced Edge Detection Algorithms**
Threshold and Linear Approximation model. Sigmoidal and polynomial Fit, Subpixel Parabolic Peak Fit for leading/trailing edges. Wave matching edge detection. Multi-edge detection

◉ **Can be Added**
-- Unbiased roughness measure by PSD(power spectral density), correlation length and roughness exponent analysis, beyond the conventional3 sigma estimation.
-- Define metrology on layout.
-- Registration of images to layout design.

▶ Tech Advantages-AI Enhanced Defect Detection

OPTO-EDU AIDC

Examples of image effects



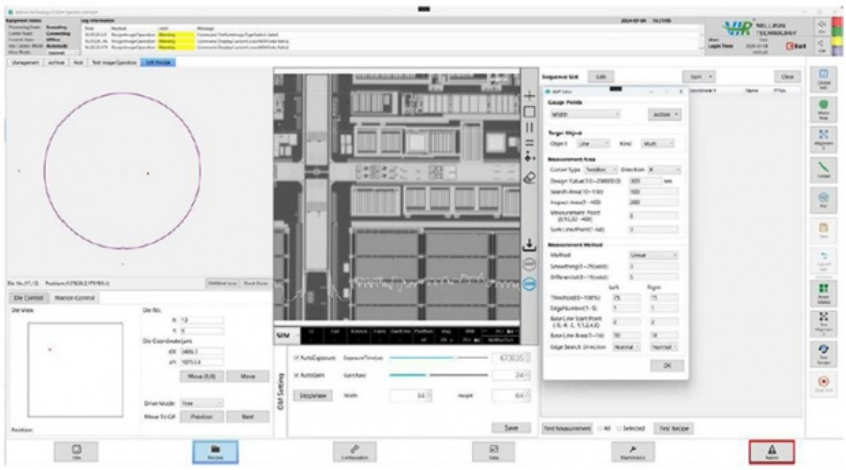
Based on Machine Vision and Deep Learning

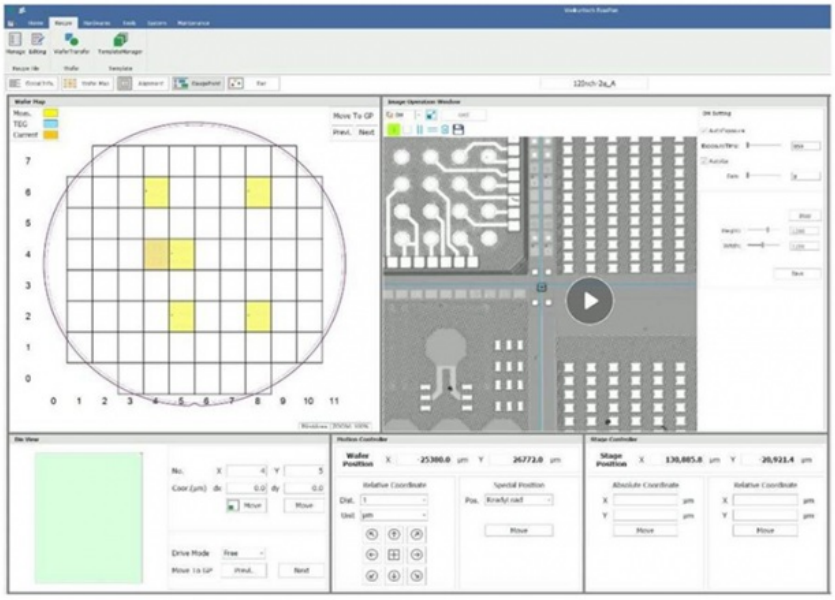
Shorten the development cycle of the defect detection model	Automatic image recognition improves work efficiency	Optimize quality while reducing costs
Iterative model training to achieve continuous index optimization	50+ defect type detection, F-score up to 98%	

Intelligent detection of wafer defects based on machine vision and deep leaning. Compared with the traditional detection technology, which requires manual definition of defect features, the object detection of Opto-Edu Microelectronics AIDC deep learning can realize end-to-end extraction of image features, and automatically locate defects and determine defect categories based on the extracted features.

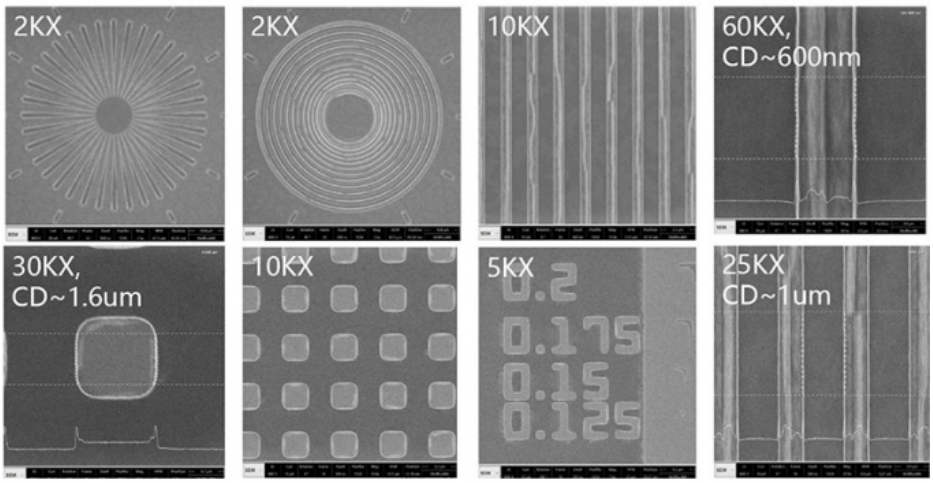
▶ Tech Advantages- User Friendly S&E GUI

Easy Recipe Set-up | **Rich Application Scenarios** | **Follow CIM300 Standard**





▶ Some Patterns On The Standard Wafer



A63.7190 Specification

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A63.7190 Critical Dimension Scanning Electron Microscope (CDSEM)		
Wafer Size	**A63.7190-68**: 6/8 Inches	**A63.7190-12**: 12 Inches
Resolution	2.5nm (Acc=800V)	1.8nm (Acc-800V)
Accelerating Voltages	0.5-1.6KV	0.3-2.0KV

Repeatability	Static & Dynamic ±1% or 3nm(3 Sigma)	Static & Dynamic ±1% or 0.3nm(3 Sigma)
Probe Beam Current	3~30pA	3~40pA
Measuring Range	FOV 0.1~2.0μm	FOV 0.05~2.0μm
Throughput	>20 Wafers/Hour, 1 Point/Chip, 20 Chips/Wafer	>36 Wafers/Hour, 1 Point/Chip, 20 Chips/Wafer
Magnification	1Kx~300Kx	1Kx-500Kx
Stage Accuracy	0.5μm	
Electron Source	Schottky Thermal Field Emitter	

Comparation of Main CDSEM Models on Market					
Specification	Hitachi S8840	Hitachi S9380	Hitachi S9380 II	Opto-Edu A63.7190-68	Opto-Edu A63.7190-12
1. Wafer Size	6inch/8inch	8inch/12inch	8inch/12inch	6inch/8inch	12inch
2. Resolution	5nm (Acc=800V)	2nm (Acc=800V)	2nm (Acc=800V)	2.5nm (Acc=800V)	1.8nm (Acc=800V)
3. Accelerating Voltage	500-1300V	300-1600V	300-1600V	500-1600V	300-2000V
4. Repeatability (static and dynamic)	±1% or 5nm(3 sigma)	±1% or 2nm(3 sigma)	±1% or 2nm(3 sigma)	±1% or 3nm(3 sigma)	±1% or 0.3nm(3 sigma)
5. Ip Range (Probe current)	1-16pA	3-50pA	3-50pA	3-30pA	3-40pA
6. FOV Size	-	50nm-2um	0.05-2um	0.1-2um	0.05-2um
7.Througput	26 wafers/hour, 1point/chip, 5chips/wafer	24 wafers/hour, 1point/chip, 20chips/wafer	24 wafers/hour, 1point/chip, 20chips/wafer	>20wafers/hour, 1point/chip, 20chips/wafer	36 wafers/hour, 1point/chip, 20chips/wafer

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