

# YieldStar S-250D

## Description

The YieldStar S-250D is a standalone metrology tool which allows measurement of on-product overlay and focus using diffraction based overlay (uDBO) and diffraction based focus (DBF) techniques as well as the optional capability to measure ADI CD.

## Technical Specifications

<b>Overlay (uDBO, 10x10 <math>\mu\text{m}^2</math> targets)</b>	
• TMU	$\leq 0.35 \text{ nm}$
• MAM	$\leq 0.35 \text{ sec}$
<b>Focus (DBF)</b>	
• Dynamic precision	$\leq 5 \text{ nm}$
• MAM time	$\leq 0.5 \text{ sec}$
<b>Productivity</b>	
• Throughput (4 wafers, 1000 uDBO points)	> 250 wph scanner equivalent
• Wafer overhead	$\leq 15 \text{ sec}$

## Key Features and Benefits

The YieldStar S-250D enables and supports the following applications:

- BaseLiner MMO
- On-product overlay measurements for monitoring and APC (in conjunction with Overlay Optimizer), using 10x10  $\mu\text{m}$  and 16 x16  $\mu\text{m}$  targets in-die (uDBO) or 30x60  $\mu\text{m}$  targets in scribelane (STOV)
- On-product focus measurements for monitoring and APC (in conjunction with Imaging Optimizer)
- On-product CD ADI measurement is an option for inline measurement of CD

### Increased Sampling

YieldStar S-250D provides increased sampling compared to the S-200C, being 30% faster per uDBO measurement.

### Process Robustness

Diffraction based techniques are, by design, more robust against process variations and marker damage on product wafers, especially at the edge of the wafer. This gives very precise on-product overlay and focus measurements per field needed to calculate more accurate corrections to be applied on the scanners.

The S-250D has 30% better TMU compared to the S-200C which supports more precise measurements resulting in better corrections and better on-product overlay and focus performance of the scanner, supporting 2014-15 customer roadmaps.

### Device Matching

The correlation of DBO measurements to real device overlay is better than that of IBO measurements which is of particular value at tighter on-product overlay requirements.