

## MX 2012-H

### Contactless Wafer Geometry Gauge for 300 mm Silicon Wafers



#### Description

The MX 2012-H is a manually loaded automatic wafer geometry measuring instrument for 300 mm silicon wafers. This equipment is dedicated to control the wafer stress between chipmaking processes. Like on all other E+H wafer geometry instruments, E+H's technology of contactless capacitive distance sensors is applied. The throughput of the equipment is 100 wafers / hour or better.

#### Mechanical Construction

The MX 2012-H combines the following components to a stand-alone solution:

- one tray-loaded E+H wafer geometry station
- personal computer

### Measurement Principle

The wafer geometry station consists of a lower and an upper probe head. Every probe head is based on a one inch thick flat aluminium plate into which 69 capacitive distance sensors are embedded in a radial pattern. Both sensor plates are mounted horizontally, and face-to-face to each other. Measuring the wafers in a horizontal position increases the wafer throughput of the tool.

### Measurement Process

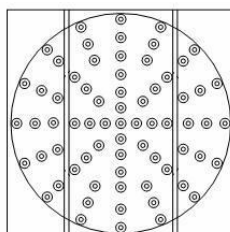
For evaluating the data, E+H's versatile WINDOWS software MXNT is used.

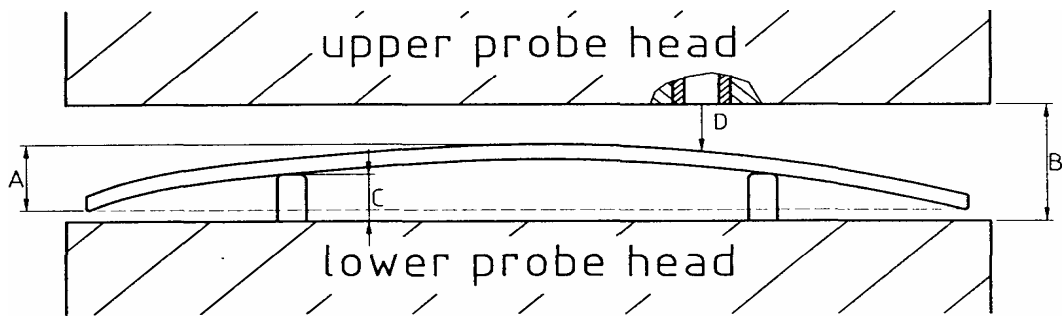
### Technical Specifications

(at temperature of calibration)

Wafer Diameters	300 mm
Measuring Points	69
Warp Range	300 $\mu\text{m}$
Thickness Range	500 to 900 $\mu\text{m}$
Thickness & Warp Range	1000 $\mu\text{m}$
Min. Throughput	100 wafers / h
Sensor Characteristics	
Distance Range	0 to 1725 $\mu\text{m}$
Resolution	0.05 $\mu\text{m}$
Thickness Measurement	
Absolute Accuracy	$\pm 0.5 \mu\text{m}$
TTV Accuracy	$\pm 0.3 \mu\text{m}$
Repeatability (wafer still)	$\pm 0.15 \mu\text{m}$ ( $2 \sigma$ )
Precision (incl. handling)	$\pm 0.15 \mu\text{m}$ ( $1 \sigma$ )
Warp Measurement	
Accuracy	$\pm (5 \mu\text{m} + 5\% \text{ of reading})$
Precision (incl. handling)	$\pm (2 \mu\text{m} + 2\% \text{ of reading})$ ( $1\sigma$ )
Warp according to ASTM, Warp and Bow-bf gravity-corrected	
Measuring Time	max. 14 sec. / wafer
Cycle Times (incl. movements)	max. 24 sec. / wafer

### Probe Head Configuration





Thickness & Warp Range ('A')	1000 $\mu\text{m}$
Total Distance ('B')	2800 $\mu\text{m}$
Resting Point Height ('C')	900 $\mu\text{m}$
max. Distance ('D')	1700 $\mu\text{m}$

**Dimensions**

