

GP TOPO-TEST

OPTICAL SURFACE PROFILE SCANNING TOOL FOR SAW MARK DETECTION, FINGER HEIGHT AND PRINTING SCREEN OPENING MEASUREMENT



CONSULTING



CELL TECH



MODULE TECH



INSPECT



SITUATION

For detailed process analysis, exact measurement of height profiles by a contactless method can give valuable information. Knowledge on height and width of printed fingers on a cell, depth and width of saw marks on a wafer, exact measurement of depth and width of laser grooves and width and depth of print screen opening can help optimizing the solar cell process, or hint at problems in the line.

DESCRIPTION

The GP TOPO-TEST is a tool for scanning height profiles on wafers, cells and printing screens. A precision linear unit moves the sample under the sensor while the chromatic sensor scans the sample surface height. The robust and heavy measurement stage ensures high precision measurements.

The sensor measures the sample height with a scanning rate up to 4 kHz, thus enabling fast movement while having a high lateral resolution suited to fulfil the laboratory requirements from DIN V VDE V 0126-18-2-4 "Measurement of the geometrical dimensions on silicon wafers - grooves and steps" at a high speed. With the optional transversal linear unit, several lines as well as diagonals can be scanned automatically.

The software features standard tasks (line scanning, batch line scanning and others) as well as applications specifically programmed for photovoltaic applications like saw mark detection according to established standards, average finger print width, average finger distance, linearity of printed fingers and many more.

The system comes with a sample stage mounted on a linear axis, a vacuum plate for cells and wafers, a chromatic distance sensor, controller, and a Windows PC running the control software with an easy-to-use graphical user interface for measurement control, evaluation, and recipe management.

WAFER



TEXTURE



DIFFUSION



EDGE ISOLATION



AR COATING



GRID

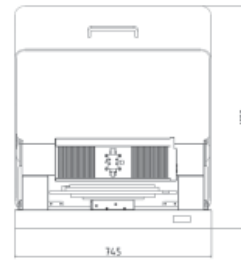
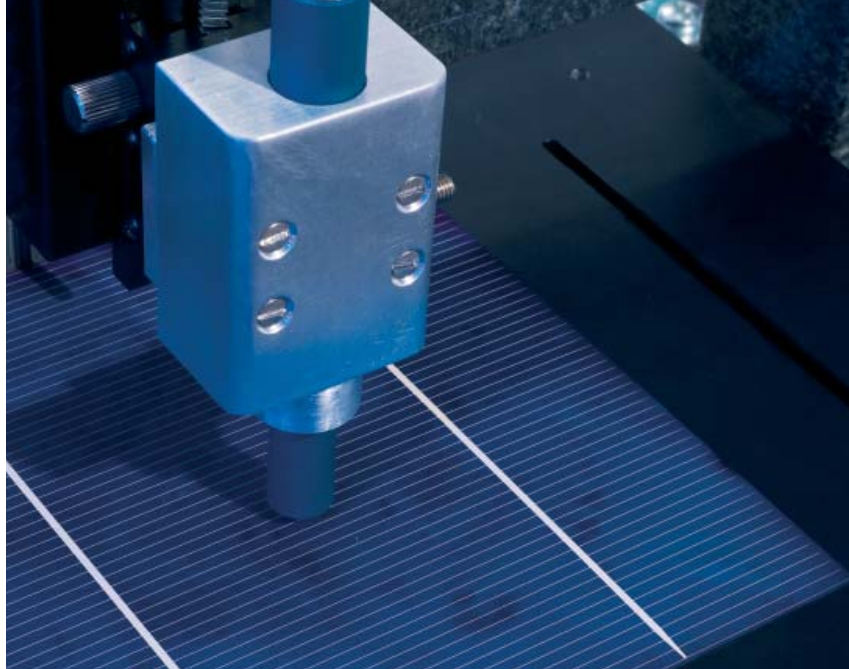


FINAL CLASSIFICATION

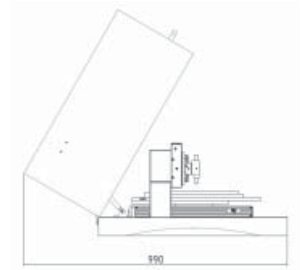


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front view



side view

GP TOPO-TEST scans height profiles on wafers and cells

GP TOPO-TEST

| TOPIC | DESCRIPTION |
|----------------------------------|---|
| Samples to be measured | <ul style="list-style-type: none"> > Wafers at any stage of the process > Solar cells at any stage of the process > Print Screens |
| Sensor type | Chromatic Sensor |
| Measurement Range | 300 µm / optional 600 µm |
| Vertical Sensor resolution | ± 0,01 µm |
| Spot size | 5 µm |
| Scan modes | <ul style="list-style-type: none"> > Line scan > Multi-Line-Scan > Special test modes for printed grids and print screens |
| Scan range | 170 mm |
| Lateral positioning accuracy | ± 0,2 µm |
| Scan speed | up to 20 mm/s (200 points per mm) |
| Measurement accuracy | ± 3 µm @ 10 mm/s |
| System dimensions (W x H x D) | App. 745 mm x 845 mm x 995 mm (w/o PC, screen, etc.) |
| Order Information/Article Number | 04.01.0174 |

Note: some of the mentioned features are optional. Technical details subject to change without prior notice. Only technical specifications in quotations and duty books are binding.

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