

# GP WAF-Q .CAM

INLINE VISION INSPECTION MODULE FOR AS-CUT WAFERS



CONSULTING



CELL TECH



MODULE TECH



INSPECT



WAFER



TEXTURE



DIFFUSION



EDGE ISOLATION



AR COATING

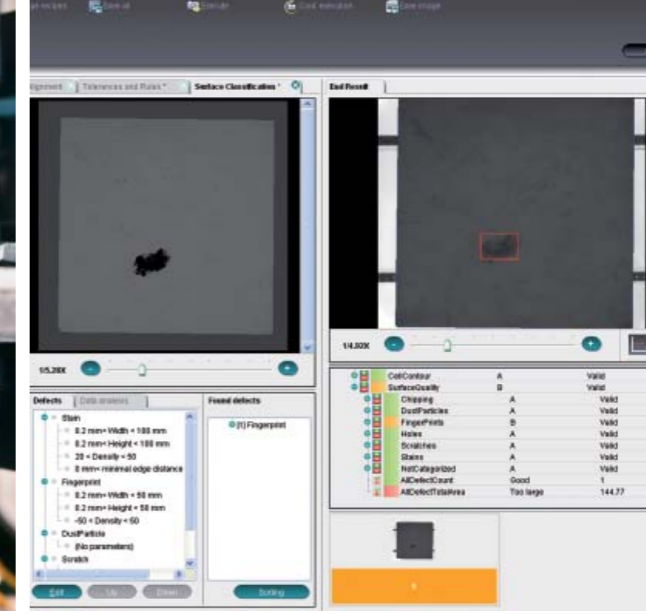
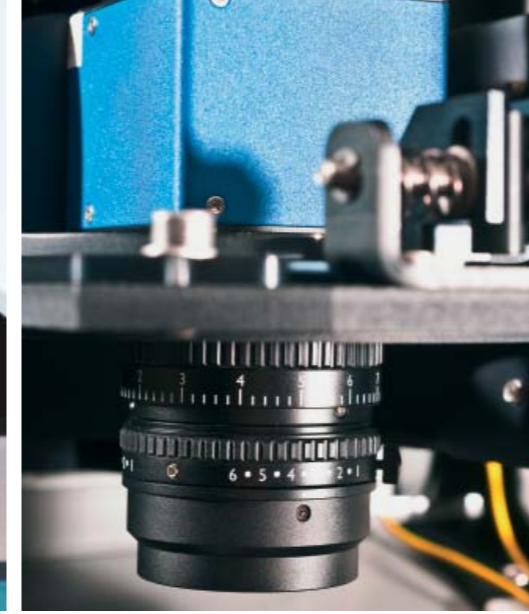


GRID



FINAL CLASSIFICATION





## GP WAF-Q .CAM

SURFACE STAINS OR EDGE INTRUSIONS: FIND ALL DEFECTS ON A BARE WAFER, AND USE ONLY THE BEST MATERIAL FOR YOUR PRODUCTION!

### SITUATION

Wafer cleaning and drying leave water stains on the surface; transport and commissioning can damage the wafer edges. Contour cracks not only tend to make wafers break easier – a damaged contour is a visible defect that no customer likes to have in his high-quality PV module. Last not least, geometrical properties like edge lengths and rectangularity need to be checked before material leaves the wafering production, or enters into a solar cell line.

### DESCRIPTION

The GP WAF-Q is an inline optical inspection system which is designed for checking basic properties of raw wafers, covering geometrical measurements and contour integrity as well as checks for visible surface defects. The GP WAF-Q serves as a quality control instrument for fast feedback and process optimization, and allows for sorting wafers according to geometrical and optical quality.

The development of the GP WAF-Q is fuelled by our long-term experience with solar cell processing and metrology, and valuable input from our customers. Software and hardware are designed to meet the requirements for gigawatt factories and large turn key suppliers.

### SYSTEM FEATURES

Fast and stable algorithms analyze the image, and results for single inspection tasks are written to a database, where they are then used for classification according to the selected classification recipe. The proprietary illumination unit ensures outstanding homogeneity and isotropy of the light. Due to the isotropy of the

FUNCTIONALITY	DESCRIPTION
Samples to be measured	> As-cut mono- and multicrystalline wafers > Square or pseudo square
Wafer size	100 ... 156 mm
Camera model	> 4M / Matrix > Optional 11M / Matrix
Defect resolution	80 µm / 60 µm
Measured features	Edge lengths, rectangularity, diagonals, chamfer lengths and angle, chipping, V-breaks, intrusion length and depth, surface defects
Limiting factors	Position tolerance 3 mm
Stand Still time	25 ms / 25 ms
Minimum cycle time	1 s

illumination, grain boundaries in multi-crystalline silicon are nearly invisible and do not influence the measurement, especially for low contrast-defects.

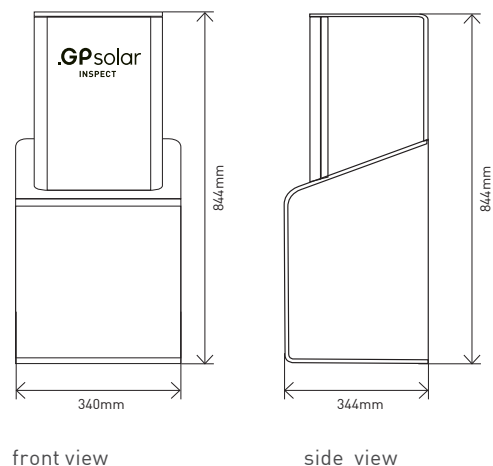
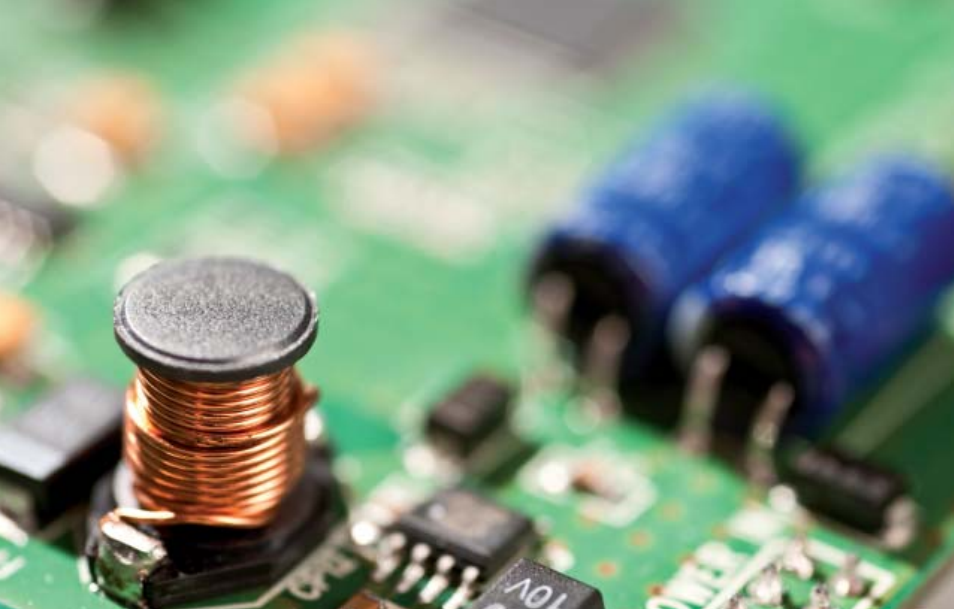
SYSTEM SPECIFICATION	DESCRIPTION
Machine interface (automation)	> Parallel I/O > Parallel I/O (combined with RS232 for WaferID info) > Profibus
Data interface (to factory network or automation)	XML via TCP/IP
Controller PC	> 19" industrial PC models with 4 HU > Optional integrated UPS and RAID
Power Module	19" module for 24V power supply (illumination and camera)
System dimensions (W x H x D)	340 mm x 844 mm x 344 mm

### THE GP WAF-Q HARDWARE ON A GLANCE

- > .Cam matrix camera housing with optimized design for best maintenance access
- > Customized back light solutions for full edge inspection in most transport systems
- > Advanced camera holder
- > 19" Industrial controller PC with optimized air flow for high performance and reliability
- > Integrated UPS and RAID on demand
- > Separate 19" power rack for 12V/24V supply

### SOFTWARE ON A GLANCE

- > Modular software packages, structured in functional tasks - choose between full service or full control
- > Central recipe management and "copy exact"
- > Classification based on fast database access - virtually no limits in classification
- > Classification on a database - test changes offline before going online in production
- > Intuitive graphical user interface
- > Automated calibration routines and self verification
- > Wide range of protocols for automation handshake and MES connectivity



ARTICLE NUMBER	DESCRIPTION
04.11.01	GP WAF-Q .Cam inspection module 4M matrix camera for STOP measurement, 19" controller PC, GP Com Card PIO, GP basic line software package (automation control, statistics functions and classification following predefined recipes)
<b>CAMERA OPTIONS</b>	
04.11.0201	11M matrix camera upgrade
<b>CONTROLLER PC AND HARDWARE OPTIONS</b>	
04.11.0309	GP Com Card Profibus
04.11.0304	19" TFT for GP Vision System
04.11.0305	GP 19" Power Rack 12V/24V
04.11.0306	UPS system (integrated in controller PC)
04.11.0307	RAID-system, hot-plug harddrive (integrated in controller PC)
<b>SOFTWARE OPTIONS</b>	
04.11.0402	GP Soft View Tool .net Visualize results and status of any system anywhere
04.11.0403	GP Calibration Set Vision with calibration mask Configure, check, verify and calibrate your GP WAF-Q
04.11.0408	GP Central Recipe Tool .net Distribute recipes from one system to the other ("copy exact")

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

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