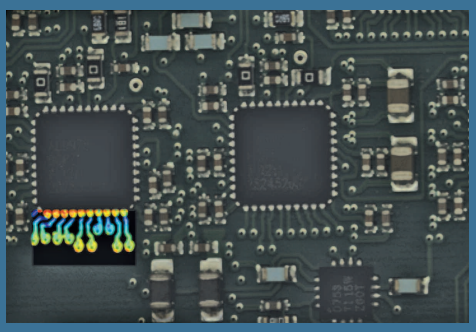
chromasens
Imaging for Professionals

3D - 1 μm height resolution
2D - 5 μm optical resolution



High resolution color image of PCB

Optical Inspection of
Printed Circuit Board (PCB) at 1360cm^2/sec

Automated optical inspection (AOI) imaging components for PCB inspection are critical to ensure quality of bare PCB boards as well as boards with mounted BGA´s, SMD's, IC chips, resistors, capacitors, light emitting diodes, laser markings, solder paste and mounting sockets. High speed imaging is the need of the day to cross check on foreign particles, misalignment of solder and wrong placements. Color imaging supports defect inspection on PCB boards by not only identifying manufacturing defects but also identifying color of mounted components. Furthermore 3D imaging guarantees measurement of critical parts such as solder paste, ball bonding and SMD.

THE CHROMASENS SOLUTION

With several years of professional know-how in light, optics and cameras, Chromasens is the ideal one-stop partner for machine vision components. The 3DPIXA from Chromasens GmbH is ideal for high-mix, low-volume inspection due to its ability to scan components with varying heights in one scan. The 3DPIXA is also ideal for low-mix, high-volume boards due to high speed scanning and ultra-fast GPU based algorithm processing enabling 3D in real-time. A unique API supplied along with the 3DPIXA allows the user to recall the 3D camera functions and integrate in an application environment.

KEY FEATURES

- High resolution 2D and 3D imaging using the same camera
- Scanning speeds up to 1360 cm^2/sec @30µm optical resolution, 5µm height resolution
- Scanning speeds up to 4.38 cm^2/sec @5µm optical resolution, 1µm height resolution
- Excellent repeatability tested in industrial environments
- Ultra-fast real time imaging with smart GPU based processing for 3D data
- Wide variety of scan widths ranging from 35 mm up to 650 mm, also customized versions with larger scanning widths available
- 3D images of low and high components in a single scan
- Special light source with high brightness optimized for inspection of electronics
- Optional integrated darkfield illumination for reading laser markings
- Customized multiple camera solutions

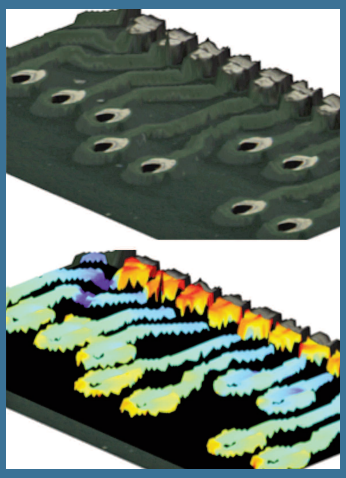
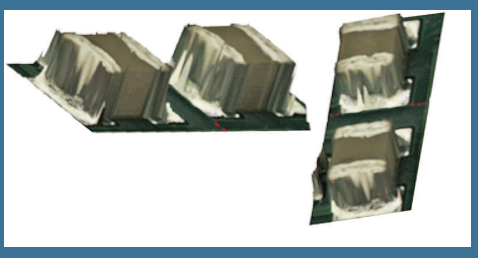


Image 1

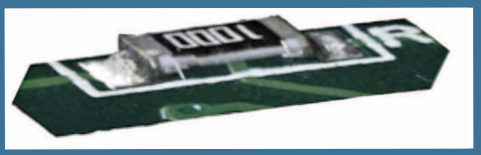
Image 2

Image 1. 3D point cloud representation of hole breakage, line widths, and spacings.

Image 2: Pseudo color representation



3D representation PCB board components



3D images of soldered components

3DPIXA Stereo Line Scan Camera

PRECISION IN HIGH-RESOLUTION 3D AND COLOR

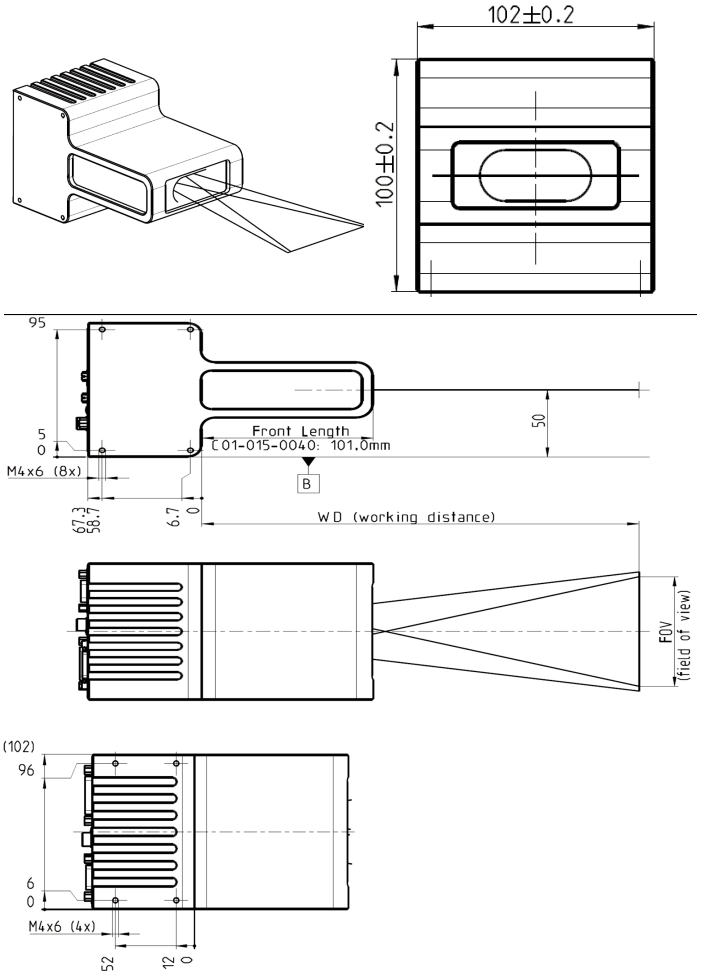
CAMERA SPECIFICATIONS

Camera	Stereo camera with lens factory calibrated
Sensor	Tri-linear CCD scan line
Number of pixels	max. 3500 (Compact) max. 7300 (Dual)
Active pixel size	10 µm x 10 µm
Line rate	up to 21,2 kHz for Compact up to 60 kHz for Dual
Interfaces	CameraLink Medium, Base Power supply External I/O RS 232
Software CS3D	API for calculating 3D data from stereo images on GPU Nvidia graphic boards
Software output	Height map 16 Bit Rectified color image 3x8 Bit 3D point cloud
Additional accessories	Corona II illumination
Supported software	LabView (National Instruments)

**height range and height resolution depends on object surface*

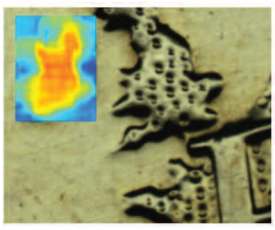
**dual medium/base denoted by "D" e.g. D01-01-0040*

DIMENSIONS (in mm) of "C" Compact Version

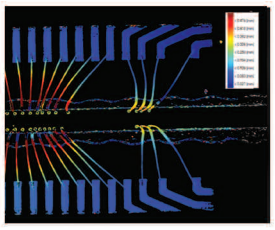


APPLICATIONS

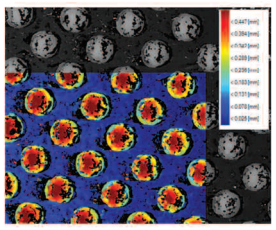
METAL SURFACES



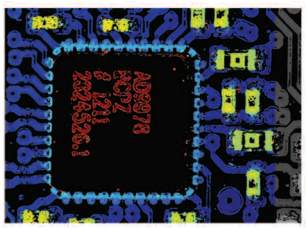
WIRE BONDS



BALL GRID ARRAY



PCB



3DPIXA CONFIGURATIONS

3DPIXA Model CP000470-	Optical Resolution (µm/pixel)	FOV max (mm)	Height Resolution (µm)	Height Range Range min-max (mm)	Working Distance (mm)	Maximum Speed (m/s)
C01-015-0040	15	40	3	1 – 3	125	0.31
C01-030-0105	30	105	7	3 – 10	200	0.63
D01-005-0035	5	35	1	0.2 - 0.5	112	0.1
D01-010-0040	10	40	2	0.5 - 2	150	0.34
D02-030-0210	30	215	4	3 – 10	420	0.63
D02-050-0350	50	360	7	15 - 30	630	1.05
D02-070-0500	70	500	10	15 - 30	840	1.45

* height range and height resolution depends on object surface

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