



3DPIXA

Application Overview

Applications and System Configurations

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Introduction

Using Chromasens 3DPIXA a great variety of different applications can be treated. To obtain optimal performance it is important to select the right camera type. Different camera types show different optical- and height resolution. Depending on the present texture on the object surface the optical resolution and the illumination geometry must be chosen.

General Information

- Texture must be visible in the image to allow for 3D-data calculation
- Object to inspect should be at least 10 x 10 pixels or larger. Correlation window size must be smaller than the object to measure (smallest window typically 7 x 7 pixels)
- Highly reflective materials are very challenging
- Transparent materials are highly challenging
- 3D measurement of scratches is typically not possible. 2d data can be employed here.

Overview

Application / Sample Description	Recommended Optical Resolution	Recommended Illumination Geometry	Comment on Technical Challenges
Precision Milled /Grinded Surfaces	2.5µm, 5µm	Tube Light / OEM	Depending on the surface roughness the texture can be low. Glossy points might cause faulty measurements.
Wafer Inspection	2.5µm, 5µm	Tube Light / OEM	Typically Wafer Inspection is a 2d-application
BGA Height Measurement	2.5µm, 5µm	Tube Light / OEM	On the substrate the contrast is bigger using bright field illumination. Combined illumination or multiple scans could be applied.
Electronic Boards, Components, PCBs	5µm, 15µm	Tube Light	Due to close components occlusions occur in line direction. Glossy points and components can cause false measurements.
PCB Solder Paste Inspection	5µm, 15µm	Tube Light	
Wire Bond Inspection	5µm, 15µm	Tube Light	Horizontal wires cannot be measured. Close vertical wires with big height range cause ambiguity in the measurement. Application specific image post processing could solve most of the problems.
Sealing Surfaces	15µm, 30µm	Tube Light	
Milled surfaces	15µm, 30µm	Tube Light	
Connector Pins	15µm, 30µm	Tube Light / Coaxial	Small objects to measure; use object detection and the <i>rawImageCoordinatesTo3D</i> function.
Wooden Objects	30µm, 70µm	Dark Field	
Tires / Rubber	70µm	Dark Field	Dark materials require high irradiance on the object surface.
Steel Slabs / Raw Steel Objects	70µm, 96µm	Dark Field	Harsh environmental conditions, air conditioned housing might be required.
Food Inspection	70µm, 200µm	Dark Field	
Train Inspection	330µm	OEM	Harsh environmental conditions, air conditioned housing might be required.
Road Inspection	630µm	Dark Field / OEM	Huge amount of continuously acquired data to store and process. Homogenous illumination over the whole FOV. Harsh environmental conditions, air conditioned housing might be required.