

PRODUCT DATASHEET 3D.SurfEyes





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PRODUCT DATASHEET **3D.SurfEyes**Product Line - Sensor Systems



Introduction

3D.SurfEyes is a system that uses a combination of two separate cameras with a defined distance to enable three-dimensional measurements by point triangulation.

This system can be used for feature and object identification, absolute measurement and anomaly checks, as well as presence, assembly progress and completeness monitoring.





Characteristics



Our **3D.SurfEyes** system is generally used to obtain 3-dimensional and color information of a workpiece using image triangulation of two or more camera images. This can be achieved by an overlapping area in the images at the focus point on the surface. Then, with the help of image processing and algorithms, the desired information can be extracted using triangulation, a process where the information from both cameras are combined to get the 3D coordinates of a prominent point seen by both cameras.

When there are no well-defined features on the workpiece, a pattern can be projected onto the workpiece to ensure optimal image processing. By using smart cameras as the main measurement component, the **3D.SurfEyes** system provides a fast and contactless 3D-measurement method, which can be individually adapted to the needed measurement parameters and varying use-cases. This can be done by either altering the spacing of the cameras to change the measurement distance or change the image processing algorithm to aim for other measurement factors.





In general, these systems can be used for component identification and localization, completeness checks, absolute position finding, progress and anomaly checks, as well as for example directly on a robot to navigate the robot movement via visual serving and include online, live robot guidance.

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Available Configurations

The **StereoVison System** allows for many different application fields and therefore has many differing configurations. By defining the spacing between the two cameras used, also the measuring distance is set. Therefore, the **3D.SurfEyes** system is scalable for small or standard sized workpieces and measurement distances, as well as for higher ranges and large-scale workpieces like aircraft fuselages.





Detailed Information on the scalable 3D.SurfEyes System

Clasification	Specification	Descriptrion
Sensor	Dimensions (L x W x H) Weight	"100 x 40 x 40 mm – 1100 x 150 x 270 mm" 0.5 kg – 8 kg
Measurement Ranges	Measurement Distance	100 mm – 2,000 mm
Measurement Volume	Max. Dimensions (L x W x H)	"50 x 50 x 20 mm– 500 x 500 x 200 mm"
Inspection Performance	Cycle Time Resolution	1 s incl. image processing 0.1 mm
Pattern Projector	Required Surface Condition Resolution	Adsorptive to slightly reflective High-Definition
Data	Format Processing	Customizable (raw: colored 3D pointcloud) On chip / FPGA
Further Information	Mounting Positions Certificates	Wall, Ceiling, Robot Atex2 in Development





Detailed Information on the scalable 3D.SurfEyes System

Our **3D.SurfEyes** System is an adjustable StereoVision application for different scales and workpiece sizes. The stationary, self- contained system uses smart cameras to integrate all data processing steps within the system without the need of an external computer. This allows for the scalability of the application to different purposes.



3D.SurfEyes - mini

Can perform measurements in very high resolution and within small measurement distances. These devices are mostly used for inspections of small workpieces. With smaller spacing between the imaging and special smart cameras, the system is able to be used for these parts and still perform detailed measurements. This can be achieved by our specialized image processing algorithms to allow for precise 3D-information gathering even for mini-scaled workpieces.



3D.SurfEyes - midi

Can perform measurements of standard size workpieces. For theses systems, we focus on the accurate measurements (0,1 mm resolution) of workpieces in the day-to-day workplace environment. In this use-case, the camera system can be mounted stationary either on a ceiling or a wall to detect absolute movements, positions and component completeness in a specific area. The midi scaled system can measure objects in a range of 500 - 1200 cm away from the camera.



3D.SurfEyes - maxi

Can perform measurements on a far bigger scale, than with the mini- or midi-scaled systems. The use-case includes measurements in the meter-range, where precision is an important factor. With these maxi systems, stationary StereoVision Cameras can be placed in a workplace environment to ensure absolute position measurements, workpiece presence control and 3D-measurements of large-scale metrology workpieces, like airplane side-shells. By giving precise measurements for these big components, the inspection of various processing steps can be assured to be compliant with the given requirements.







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