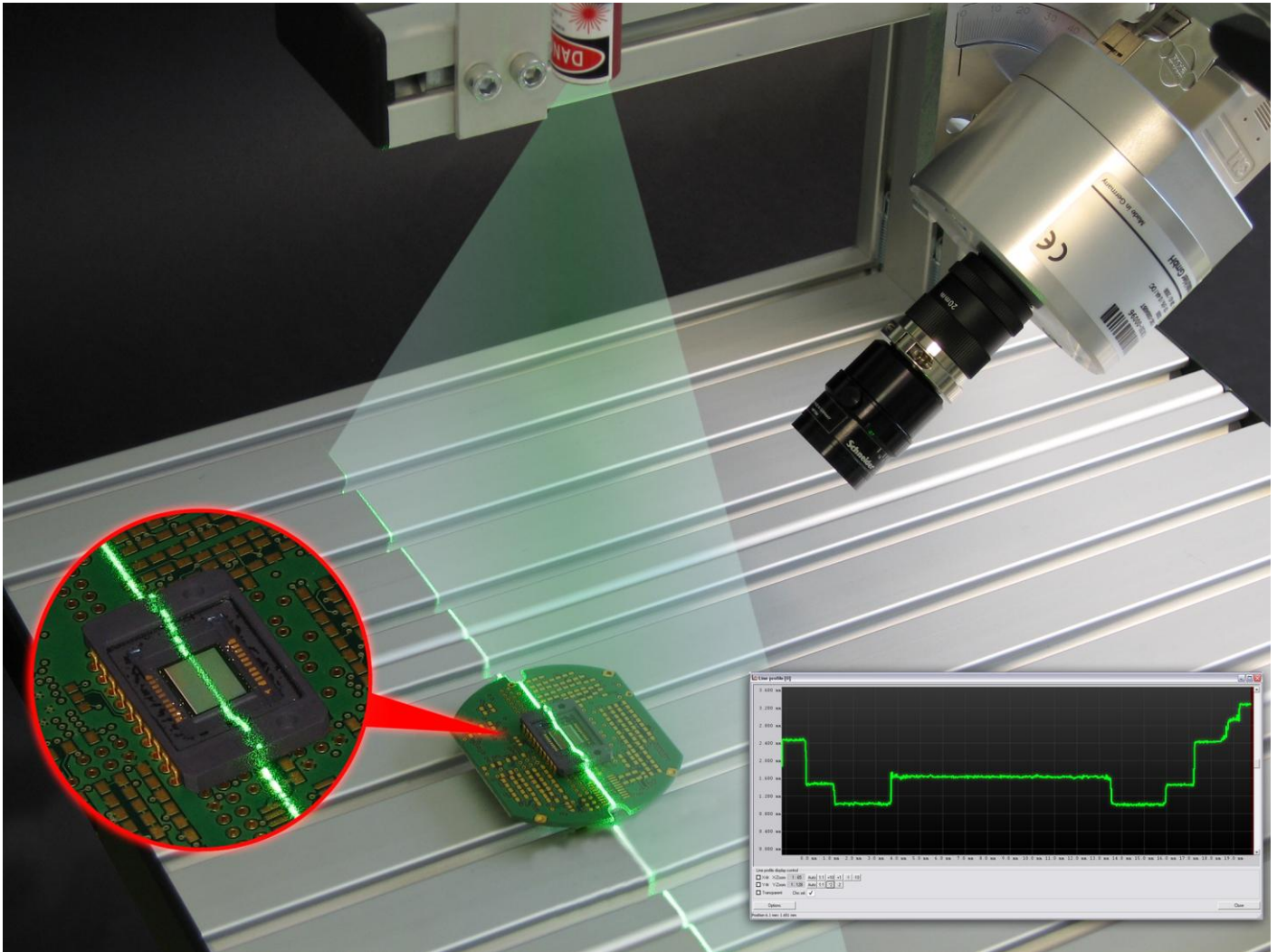


# ZPS-1000

## Fast 2D / 3D Line Profile Sensor



### Features

- 2D / 3D line profile sensor.
- High scan rates from 500 Hz up to 2 kHz (1 kHz at 500 pixels / line).
- Adjustable Z-measuring range.
- Resolution:  $\pm 0.05\%$  of the Z-measuring range.
- Measuring accuracy:  $\pm 0.2\%$  of the Z-measuring range.
- Optional user calibration for linear height data output (32 bit floating point).
- C-Mount lens for flexible use in a wide range of applications.
- SDK for Microsoft Windows operating systems included.

The line profile sensor **ZPS-1000** is a height measuring device based on a very fast Allied Vision Technologies GmbH CMOS camera. It produces height profile data in real-time at high resolution and scan rates of up to 2000 Hz (at about 250 points per profile).

The acquisition of height profiles takes place according to the triangulation principle. A laser line is projected onto an object's surface. The **ZPS-1000** takes the image of the line from a different angle of view. Each image is evaluated directly in hardware and results into one line of data points containing the height information along the laser line profile.

Furthermore, if the object moves during acquisition, the complete 3D surface can be modelled. Due to the fast scan rates of the **ZPS-1000** a high accuracy is achieved.

The field of view can be varied by selecting from various lenses. Also the angle between laser and camera is adjustable, allowing adaptation to a wide range of measuring applications. Recommendations for lenses, line lasers and filters are available.

Output data can be in 16 bit unsigned integer or 32 bit floating point format. If needed, the user can calibrate the **ZPS-1000** to an individual linear output range using one of these data formats.

The data interface to the host computer is Gigabit Ethernet. Due to the camera's low bandwidth needs in triangulation mode, multiple devices may share the same networking infrastructure. This and the widely available standard networking hardware make Gigabit Ethernet a cost effective choice. A further advantage is the ability to span long cable runs of up to 100 m (or several km via glass fibre using a media converter).

Our **ZPS-1000** software development kit provides a library containing all functions to control the device. An example program (Microsoft VC++ 6.0 project) demonstrates the use of the library and is a good starting point for your own applications. The library can be used from a wide range of programming languages due to the very common C function calling interface.

All this makes the **ZPS-1000** a fast, compact and versatile OEM device, which can be profitably integrated into many applications.

#### Typical Applications:

- Quality checking of parts in production.
- Control of glue application.
- Quality checking of welds.
- Examination of SMD components.
- Soldering paste cover in assembling machinery.
- Height measuring at mechanical components.
- Rail inspection.
- Improvement of conventional 2D image analysis procedures by additional height information.

### Technical Data

- Scan rates: 500 Hz at 1000 pixels / line,  
1 kHz at 500 pixels / line,  
2 kHz at 250 pixels / line.
- Z-measuring range depending on lens and laser specification.
- Resolution: approx.  $\pm 0.05$  % of the Z-measuring range.
- Accuracy: approx.  $\pm 0.2$  % of the Z measuring range.
- Optimized for green lasers (532 nm).
- External trigger facility (e.g. rotary encoder).
- Data format: 16 bit integer, 32 bit floating point.
- Scale depending on user calibration.
- Data interface: Gigabit Ethernet (ZPS-1000GE), CameraLink Base on request (ZPS-1000CL).
- Power supply: + 12 V (SELV), max. 0.7 A.
- Ambient air temperature: 0 – 40° C.
- C-mount lens connection.
- SDK for Microsoft Windows 2000/XP/Vista/7.
- CE Standard.
- Made in Germany.

### Power and Control Input (15-pin D-SUB Jack)

Pin	Function
1	+12V DC
2	
3	
4	GND
5	
6	
7	RXD (RS232)
8	TXD (RS232)
9	Trigger Input 1 (Opto Coupler)
10	Trigger Input 2 (Opto Coupler)
11	
12	Exposure Output (Opto Coupler)
13	
14	
15	

### Mechanical dimensions:

