INLINE
PROCESS INSPECTION
Robot Vision Systems

Simple by Design
Sensor is checking directly behind application

Sector 1  Sector 2  Sector 3

Check the quality and result of your path application in real time. Whether adhesive application or hemming edge: Check the result of your application with VISIONSCANNER2 in real time. Deviations are measured precisely.

The path application can be divided in multiple sectors. Per sector different parameters for checking with pertaining tolerances and limits can be configured. Use the result per sector as criteria for decision making for the following processes (e.g. rework station).

CHECK THE QUALITY AND RESULT OF YOUR PATH APPLICATION IN REAL TIME

Whether adhesive bead, hemming seam or brazed joint, VISIONSCANNER2 is dependably checking the result of your path application real time.

The principle:

Inline process inspection with AI°.

The properties:

- Savings of cycle time through inline measuring.
- 100% checking of your application results.
- Statistics with minimum, maximum and average per sector.
- Useful reports with interface to a data base (Zeiss PiWeb).
- Detection of waste or rework through feedback of overall result per part.
- High diversity for individual parameter setting per sector.
- Possibility for multiple checks simultaneously.
- Secure detection of start and end of application path.
- Small and large radii possible through adjustable sensor optics.

INLINE PROCESS INSPECTION
THE MEASUREMENTS - INLINE PROCESS INSPECTION + AI

AI° VISIONSCANNER2 is being delivered with multiple measuring tools. Thereby it solves most of your measuring tasks already.

POSITION
E.g. increase the positioning accuracy of your production process.

RELATION TWO POINTS
100% checks of important dimensions of your product.

AREA
E.g. regulation of adhesive load during application.

ANGLE
Secure e.g. the quality of your bending process.

GAP
Track e.g. the accuracy of assembling automotive closures into a car body.

YOUR TASK
We develop customized solutions for your needs.

CONTACT US!

The strength of AI° VISIONSCANNER2 is its ability for integration. We offer multiple industrially standardized interfaces.

Robot Manufacturer | Supported Controllers | Mandatory Options
--- | --- | ---
KUKA | KR2, KR4, KRC2, KRC4 | KUKA EtherCAT, KRL, JML
Siemens | S7 | –
FANUC | RJ2B, R30iA, R30iB | SRMG, Siemens User Socket Messaging
ABB | IRC5 | PC-Interface Option 616-1
YASKAWA | DX200 | MotoPlus
Comau | CS5 | PD2 Read/Write on TCP/IP

THE INTERFACES - INLINE PROCESS INSPECTION + AI

AUTOMATION INTERFACE TCP/IP

SOFTWARE PRODUCTS OR SOFTWARE OPTIONS which need to be installed on a robot or PC.

Software products or software options which need to be installed on a robot or PC.
Put your measuring, control or robot guidance task in effect within shortest time. Therefore a fully integrated, graphical user interface is at your disposal. Programming skills are not required. Keep the system under control and use data from a previous period for analysis.

**DIFFICULT OBJECT PROPERTIES & ENVIRONMENTAL CONDITIONS**

AI° VISIONSCANNER2 uses multiple mechanisms to ensure a robust profile reading. Thereby it is perfectly applicable also to difficult measuring tasks in today’s production environments.

1. **BANDPASS FILTER**
   - Reduction of system errors incidence of extraneous light.

2. **ROBUST EXTRACTION OF LASER LINE**
   - Automatic resolution of ambiguity by reflection or scattered light.
   - Extraction of the laser line simultaneously between light and dark lines.

3. **PREPROCESSING OF PROFILES**
   - Morphological filter for elimination of flaw.

4. **DYNAMIC ADJUSTMENT OF LIGHT EXPOSURE**
   - Verification of line intensity in a defined area of the measuring location.
   - Adjustment to optimal illumination also for scanning processes.

**DATABASE OF DEFECT CHARACTERISTICS**

Control and optimize your measuring tasks offline based on saved measuring data.

**MEASURING AND CONTROL DATA**

The graphical visualization offers a simple overview over measuring and control data.

**LIVE VIEW**

Configure your measuring tasks online based on live data.

**GRAPHICAL PARAMETER SETTING**

Fast and precise system configuration through intuitive graphical setting of parameters.

**COMMISSIONING & MAINTENANCE**

Within only few steps AI° VISIONSCANNER2 is fully integrated into the automation environment. Next to simple mechanical and electrical setting, the development has been carried out specifically in regards to network configuration and creation of measuring programs.

1. **MECHANICAL INTEGRATION**
   - For repeatedly accurate mounting, VISIONSCANNER2 is positioned through two centered bushes.

2. **NETWORK CABLE**
   - VISIONSCANNER2 is being configured through network interface, but also connected to the superordinate controls system (PLC) or a robot.

3. **CONTROL CABLE**
   - The sensor is being powered through a control cable. The digital input and output plugs ensure a very simple integration into the automation environment and the trigger inputs and outputs allow for a synchronized set up with multiple sensors.

4. **SERIAL NUMBER**
   - At set up or exchange of the sensor, just select the sensor with its dedicated serial number. The network configuration of the specific sensor is automatically adjusted to preset configuration.

5. **REFERENCING**
   - One important step during commissioning and exchange of the VISIONSCANNER2 is the referencing of the system. Thus, inaccuracy is equalized through this process. Referencing is mandatory, if VISIONSCANNER2 is set up to measure the position of an object or if multiple sensors are used for one coherent measuring system.

6. **CONFIGURATION**
   - After mechanical and electrical commissioning of the automation environment, measurement tasks can be created. The integrated automation interface can be configured. Now, measuring tasks can be triggered by the superordinate system and measuring and control data can be drawn. Extended feature is the process data interface, which allows for control of the measuring process and specifically the quality of the product being measured.
TECHNICAL DATA

Sensor Technology: CMOS Sensor
Reading speed: up to 500 Hz
Measuring accuracy: ± 0.2 % of measuring field, depending on feature and surface property
Laser: Laser Class 1 at 660 nm
Lifetime laser: 40,000 h (independent from cycle of operation)
Interface: Fast Ethernet 10/100 Mbit, Half-/Full-duplex, Auto negotiation
Power supply: 24 V DC, max. 400 mA

MEASUREMENT RANGE

<table>
<thead>
<tr>
<th>Distance (mm)</th>
<th>Resolution (mm/px)</th>
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<tbody>
<tr>
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FIELD OF VIEW

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<tr>
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<td>0,014</td>
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MEASUREMENT RANGE

- Distance: 40 to 400 mm
- Resolution: 0.01 to 1.00 mm

FIELD OF VIEW

- Start: 60 mm
- Middle: 120 mm
- End: 240 mm

Resolution in px: 1280 x 640, 1280 x 128, 1280 x 256, 1280 x 512, 1280 x 768, 1280 x 1024

READING SPEED

- 1280 x 64: 500 Hz
- 1280 x 128: 336 Hz
- 1280 x 256: 181 Hz
- 1280 x 512: 93 Hz
- 1280 x 768: 63 Hz
- 1280 x 1024: 50 Hz

CONNECTIONS

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<tr>
<th>Pin-No.</th>
<th>Signal</th>
<th>Comment</th>
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<tr>
<td>1</td>
<td>Tx+</td>
<td>Output data Ethernet +</td>
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<tr>
<td>2</td>
<td>Rx+</td>
<td>Input data Ethernet +</td>
</tr>
<tr>
<td>3</td>
<td>Tx-</td>
<td>Output data Ethernet -</td>
</tr>
<tr>
<td>4</td>
<td>Rx-</td>
<td>Input data Ethernet -</td>
</tr>
<tr>
<td>5</td>
<td>Tx+</td>
<td>Output data Ethernet +</td>
</tr>
<tr>
<td>6</td>
<td>Rx+</td>
<td>Input data Ethernet +</td>
</tr>
<tr>
<td>7</td>
<td>GND, 0V</td>
<td>Ground, 0V power supply</td>
</tr>
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</table>

Pin 7 = ground connected

THE TYPES

VS2-RFFAA-PPPWWW-SSE

Camera, Laser, Interface

CAMERA

- Code: Value
- L: 752 x 480 px
- H: 1280 x 1024 px
- U: 2592 x 1944 px

LASER

- P: Code: Value
- 100 mW
- 660 nm

INTERFACE

- Code: Value
- 4-pin: 6-pin
- 8-pin
- Fast Ethernet
- Industrial Ethernet

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THE ADVANTAGES

COMMUNICATIVE
Interface to robot or PLC through Industrial Ethernet, TCP/IP or IO

ROBUST
Automatic adjustment of illumination and reflection compensation of the laser line for extreme conditions

SMART
No PC needed during operation

SIMPLE
Graphic configuration without programming skills

ALLROUNDER
Detection, measuring, verification and control on one device

FUNCTIONAL
User and change management, configuration and fault analysis using PC software VISIONELEMENTS.

POWERFUL
Laser triangulation is possible on almost any surface

SMALL BUT IMPRESSIVE
Suitable for industrial use, compact design

ABOUT AI

AUTOMATION INTERFACE
We know the challenges manufacturing companies have to handle complex production systems to enhance their own competitiveness. Our products offer the highest level of comfort and only need little specialist knowledge by using comfortable interfaces for various robots and control systems.

ADAPTIVE IMAGING
AI° stands out through optimal integration capability as well as highest user friendliness, specifically in regards to the requirements of today’s complex production scenarios. The components can be integrated without special programming skills.

ARTIFICIAL INTELLIGENCE
Thanks to many years of experience in dealing with industrial robots in the automotive industry, we understand the requirements for quality and process optimization in production environments for various products. Therefore, we deliver sensors and pertaining intelligence in an integrated machine vision solution.

ALL INCLUSIVE
We offer various possibilities for our customers, from components to integrated solutions. AI° not only offers high value products, but also services and support for parameter setting and start up, training as well as software programming for your special requirements.

AI° STANDS FOR NEXT LEVEL IMAGING AND ROBOT VISION SYSTEMS OF ENGROTEC SOLUTIONS GMBH.