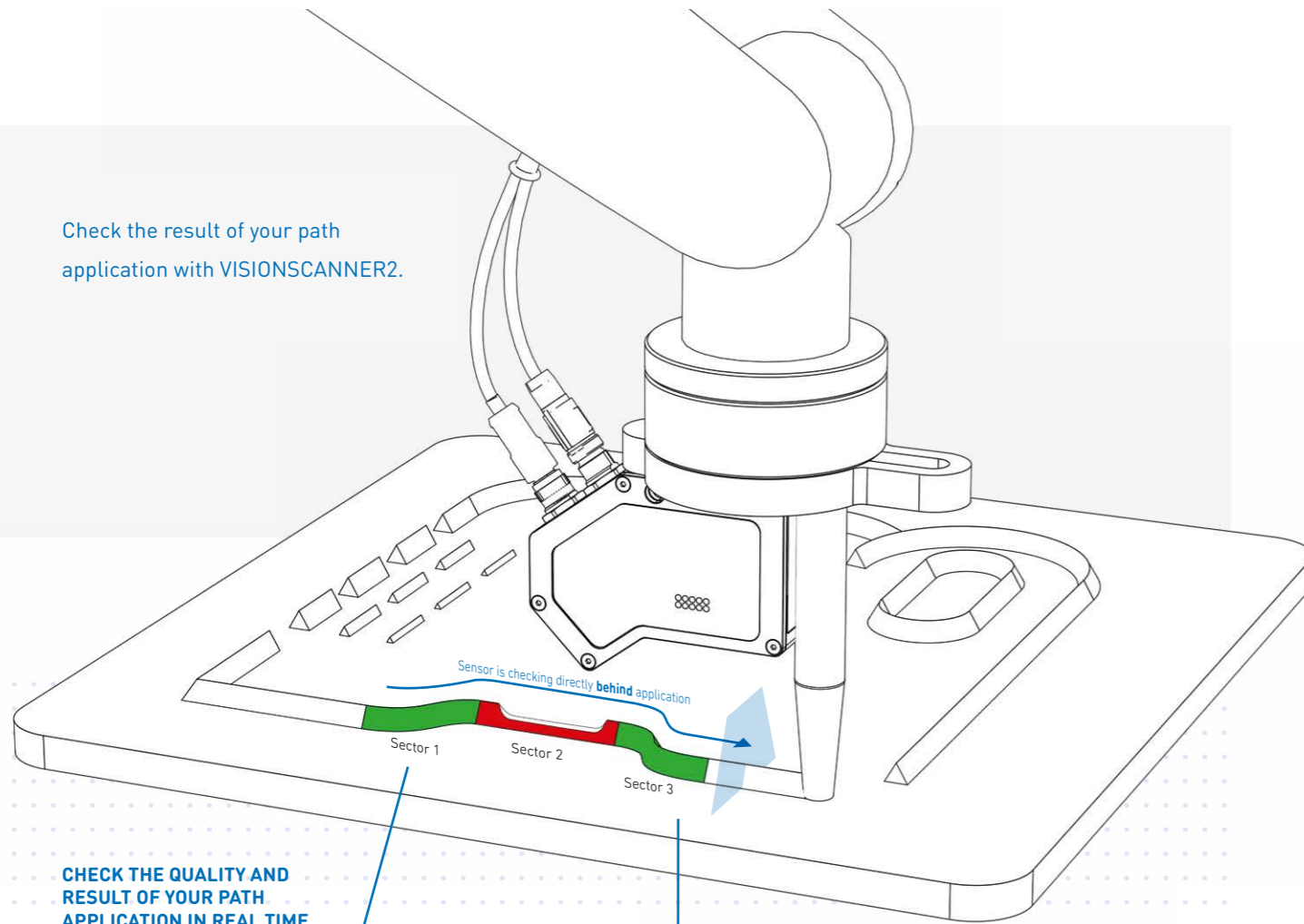# INLINE PROCESS INSPECTION

Robot Vision Systems

AI○

Simple by Design

Check the result of your path application with VISIONSCANNER2.

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.

SET INDIVIDUAL PARAMETERS FOR TOLERANCES AND VERIFICATION PER SECTOR

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).
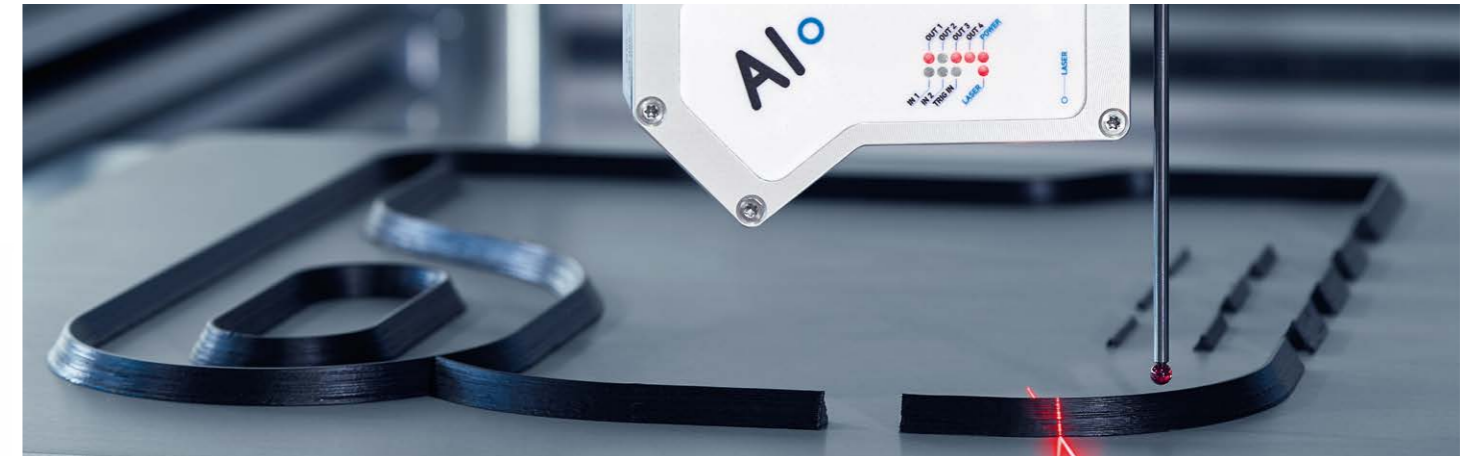
Check your path application through assistance of INLINE PROCESS INSPECTION by AI◦. Whether adhesive bead, hemming seam or brazed joint, VISIONSCANNER2 is dependably checking the result of your path application real time.

◦ 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

AI◦ VISIONSCANNER2 is being delivered with multiple measuring tools. Thereby it solves most of your measuring tasks already.
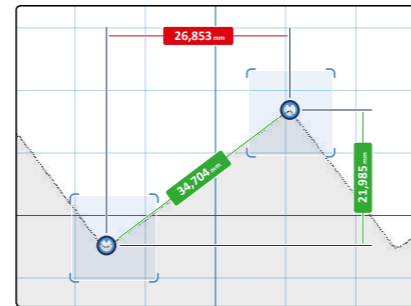
POSITION
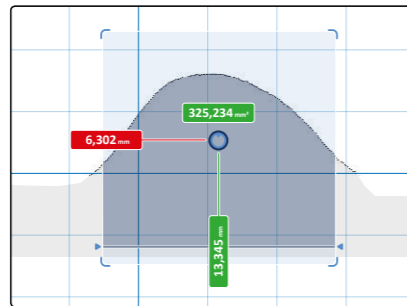E.g. increase the positioning accuracy of your production process.
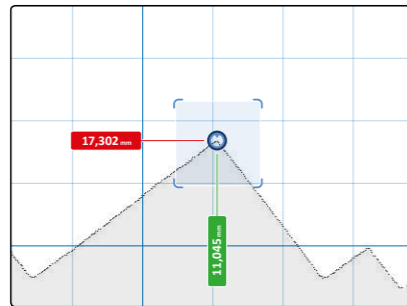
RELATION TWO POINTS
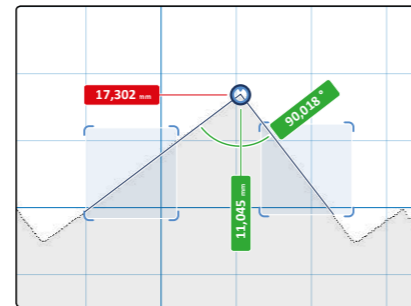100 % checks of important dimensions of your product.

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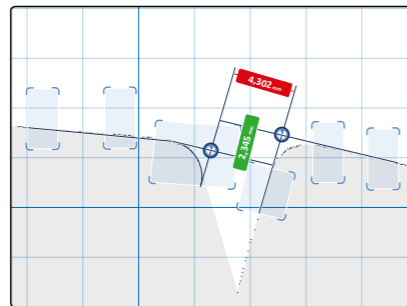E.g. regulation of adhesive load during application.

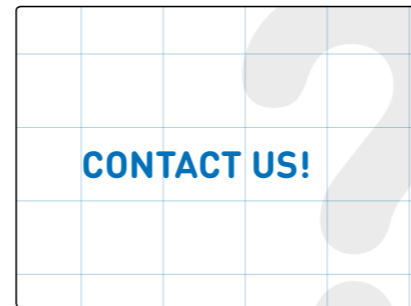**ANGLE**
Secure e.g. the quality of your bending process.

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.

INLINE PROCESS INSPECTION
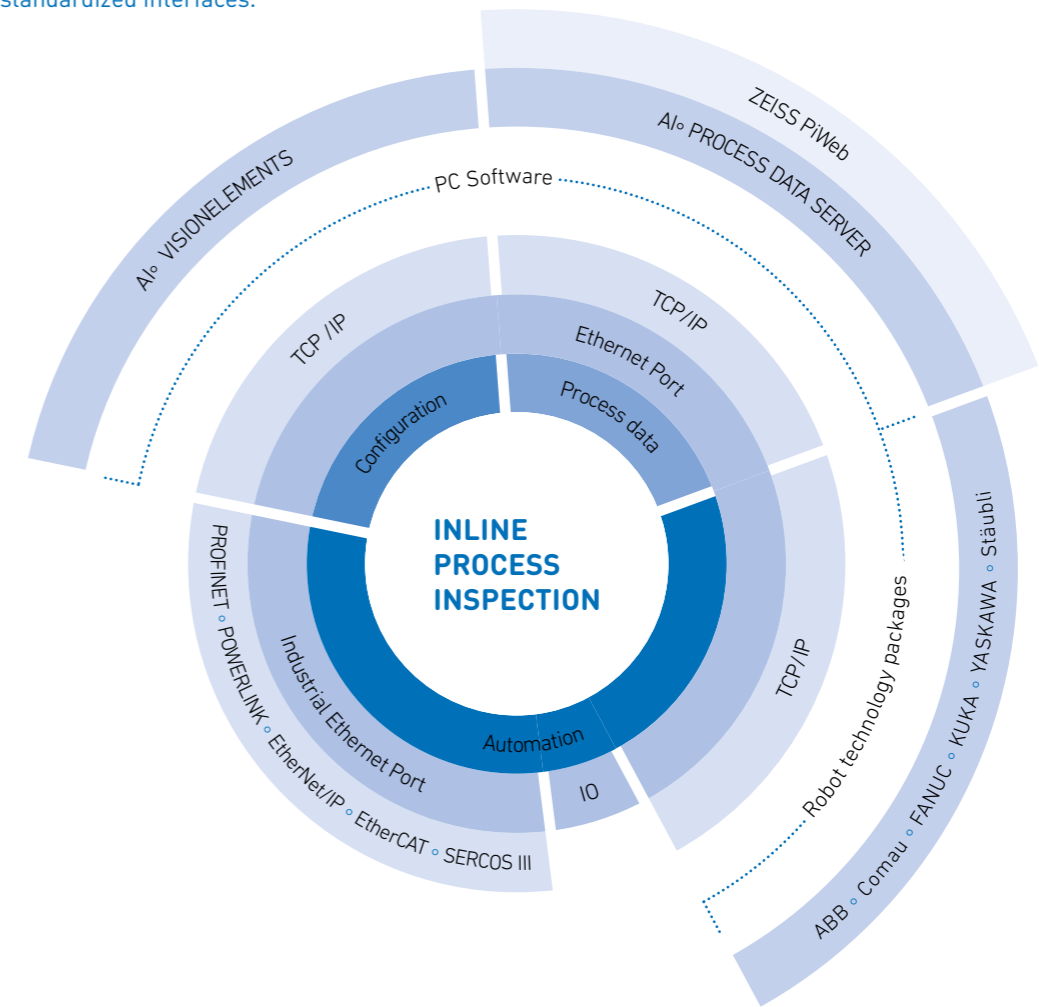
••••• Software products or software options which need to be installed on a robot or PC.

AUTOMATION INTERFACE TCP/IP ◦ INTERFACE

Robot Manufacturer	Supported Controllers	Mandatory Options
KUKA	KRC2, KRC4, VKRC2, VKRC4	KUKA.Ethernet KRL XML
Stäubli	S7	–
FANUC	RJ3iB, R30iA, R30iB	SKMG Socket Messaging, R648 User Socket Messaging
ABB	IRC5	PC-Interface Option 616-1
YASKAWA	DX200	MotoPlus
Comau	C5G	PDL2 Read/Write on TCP/IP

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.

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.

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.

DIFFICULT OBJECT PROPERTIES & ENVIRONMENTAL CONDITIONS ○ VISIONSCANNER2 ○ AI

AI○ VISIONSCANNER2 uses multiple mechanisms to ensure a robust profile reading. Thereby it is perfectly applicable also to difficult measuring tasks in todays production environments.
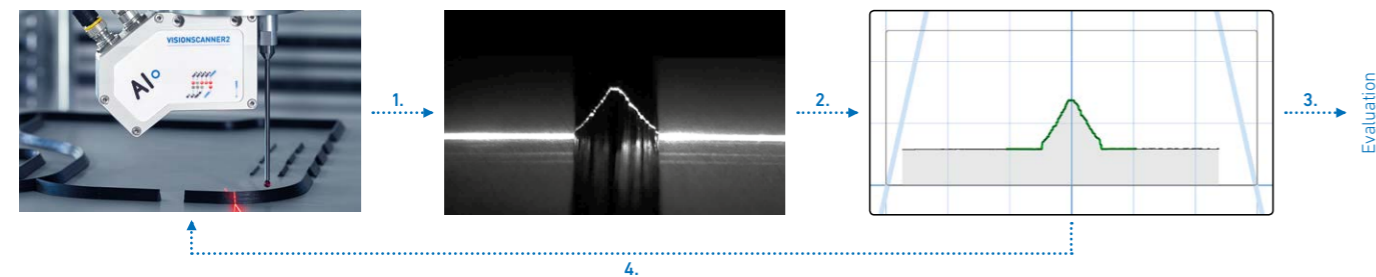
1.
BANDPASS FILTER

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.

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.

Production line network

2.
NETWORK CABLE

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

1.
MECHANICAL INTEGRATION

For repeatedly accurate mounting, VISIONSCANNER2 is positioned through two centered bushes.

Digital input

Trigger input

Digital output

Trigger output

Power supply

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.
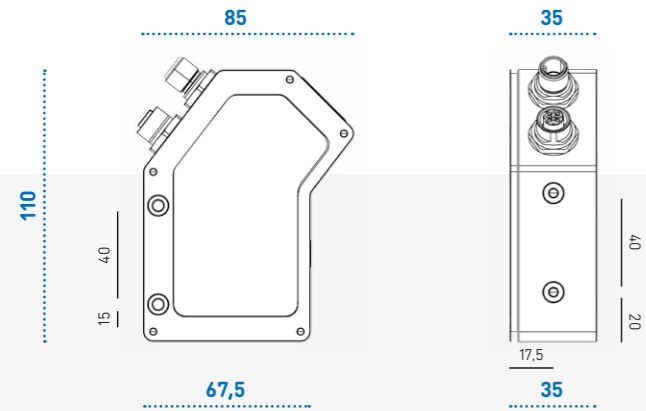
6.
REFERENCING

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 VISION-SCANNER2 is set up to measure the position of an object or if multiple sensors are used for one coherent measuring system.

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.
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.

	85	35
110	40 · 15 · 67,5	40 · 20 · 17,5 · 35

| 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-/Fullduplex, Auto negotiation
Power supply	24 V DC, max. 400 mA

| Size	110 x 85 x 35 mm
Weight	ca. 400 g
Protection class	IP 64
Housing	Aluminium, eloxated
Environmental conditions for warehousing	−20 up to 60 °C, humidity max. 90 %
Environmental conditions during operation	0 up to 55 °C, humidity max. 80 %
Registrations	CE, UL

READING SPEED ◦ TECHNICAL DATA
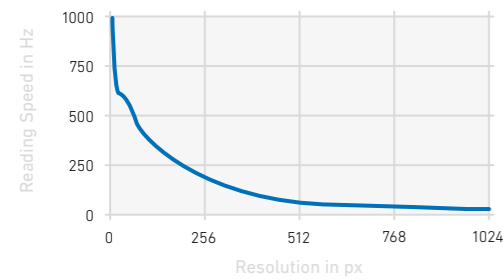
Resolution in px	Reading Speed in Hz
1280 × 64	588
1280 × 128	336
1280 × 256	181
1280 × 512	93
1280 × 768	63
1280 × 1024	50

CONNECTIONS ◦ TECHNICAL DATA
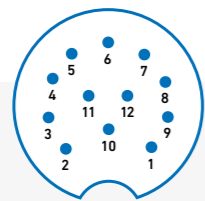
Pin-No.	Signal	Comment			
1	OUT 2	Digital output 2	8	IN 1	Digital input 1
2	TRIG IN	Trigger input	9	+24 V DC	Power supply
3	OUT 1	Digital output 1	10	TRIG OUT	Trigger output
4	OUT 3	Digital output 3	11	+24 V DC	Power supply
5	IN 2	Digital input 2	12	+24 V DC	Power supply
6	OUT 4	Digital output 4			
7	GND, 0 V	Ground, 0 V power supply	shield		Pin 7 = ground connected

For 4 and 8 pin control cable different pin may apply
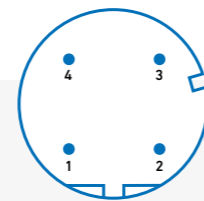
Pin-No.	Signal	Comment
1	Tx +	Output data Ethernet +
2	Rx +	Input data Ethernet +
3	Tx −	Output data Ethernet −
4	Rx −	Input data Ethernet −

VS2-RFFAA-PPPWWW-SSE

CAMERA · LASER · INTERFACE

CAMERA		Code	Value
R	Resolution	L	752 × 480 px
		H	1280 × 1024 px
		U	2592 × 1944 px
F	Focal Distance	06	6 mm
		08	8 mm
		12	12 mm
		16	16 mm
A	Angle of Triangulation	30	30°
		37	37,5°
		45	45°

LASER		Code	Value
P	Power	100	100 mW
W	Wavelength	660	660 nm

INTERFACE		Code	Value
S	Control Cable	04	4-pin
		08	8-pin
		12	12-pin
E	Ethernet Cable	F	Fast Ethernet
		I	Industrial Ethernet

MEASUREMENT RANGE Distance · MEASUREMENT RANGE · FIELD OF VIEW Start · FIELD OF VIEW Middle · FIELD OF VIEW End
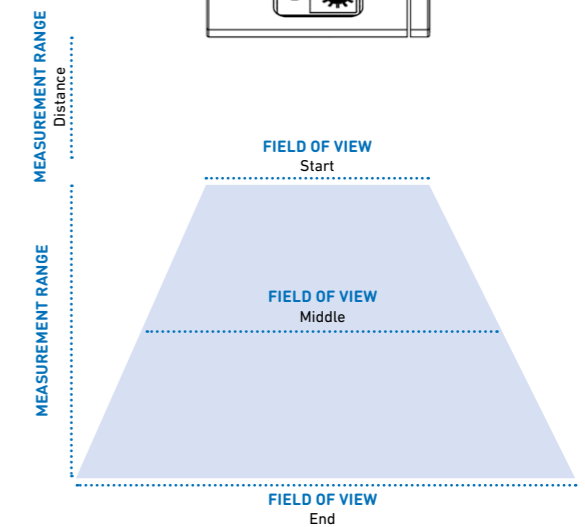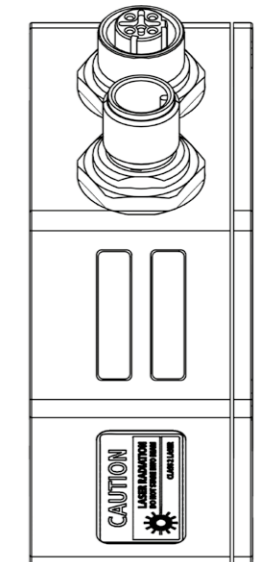
Camera	L0637	H0637	H1237	H1637	U1645
MEASUREMENT RANGE Distance mm	45	25	50	60	48
MEASUREMENT RANGE mm	100	250	75	50	28
FIELD OF VIEW Start mm	60	80	40	30	23
FIELD OF VIEW Middle mm	90	190	58	38	30
FIELD OF VIEW End mm	120	300	75	45	0
MEASUREMENT RANGE Resolution mm / px	0,1	0,15	0,05	0,03	0,01
FIELD OF VIEW Resolution mm / px	0,2	0,25	0,08	0,05	0,014

COMMUNICATIVE

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

ROBUST

Automatic adjustment of illumination
and reflexion 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

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 todays 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.**

AI○