

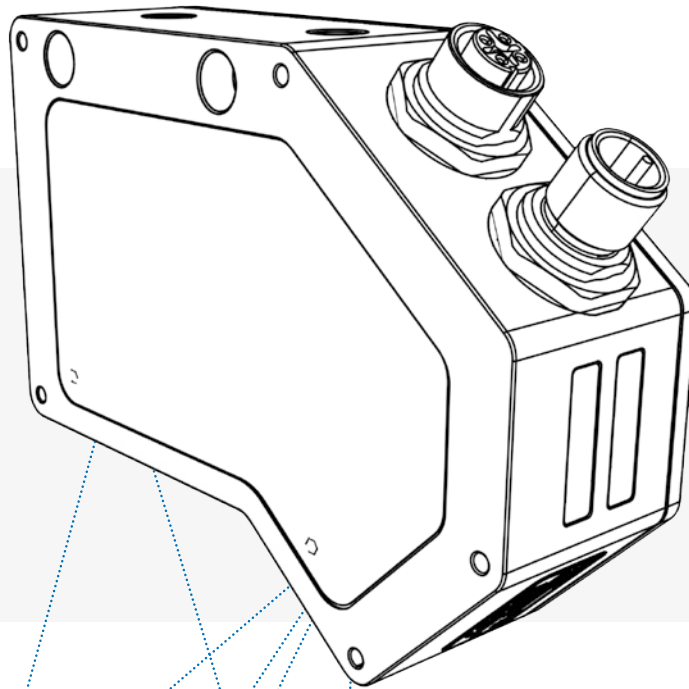
VISION- SCANNER2

Next Level Imaging

AI The logo consists of the letters 'AI' in a bold, black, sans-serif font, followed by a blue circle with a white center.

Simple by Design

THE CONCEPT • VISIONSCANNER2 • AI



VS2-X

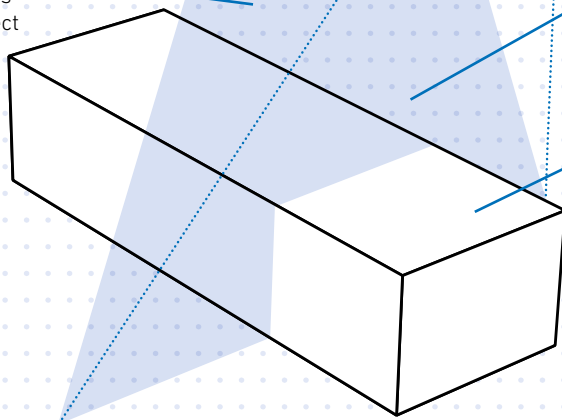
PRINCIPLE OF LASER TRIANGULATION

The VISIONSCANNER2 measures the contours of an object by means of laser triangulation.



1. ACQUISITION

of e.g. corner points or sides of the object



2. MEASURING

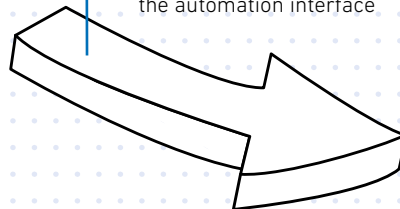
of e.g. positions, width or areas

3. GAUGING

of measurements through setting of tolerances

4. CONTROL

by providing measurement and gauging results to the automation interface



VISION- SCANNER2



AIo VISIONSCANNER2 stands out through a variety of characteristics, from simple up to complex measuring tasks for industrial applications. Those are systematically synchronized to customers needs.

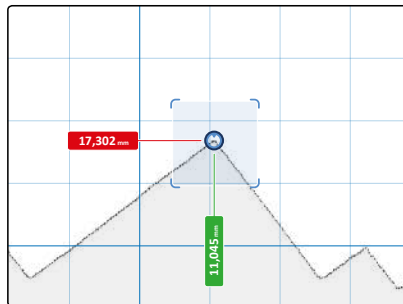
- Compact and robust design
- Fast set up and maintenance within few minutes
- Profile rates up to 200 Hz
- Measurement ranges from 20 to 300 mm
- Resolutions from 0.01 to 0.2 mm
- Robust detection of laser lines especially at
 - difficult environmental conditions
 - complex geometries
 - different material composites
- Measuring in mm due to high precision calibration
- Graphic visualization and configuration of measuring tasks and measured values
- Availability of various useful measuring tools
- Commissioning without needing any programming skills
- Realization of complex measuring tasks
- Component testing without any PC
- Digital inputs and outputs for a simple integration
- Various model configurations for a wide range of applications
- Stand-alone application allows offline setting of parameters
- Simple operation
- Multilingualism
- Support of the 5 most important Industrial Ethernet Standards
- Wide range of interfaces to all common robot types

THE MEASUREMENTS • VISIONSCANNER2 • AI

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

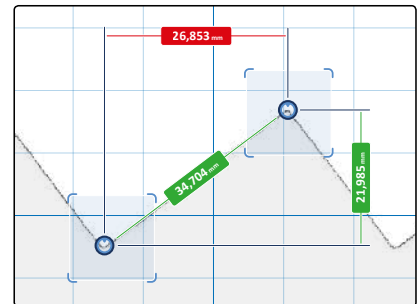
POSITION

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



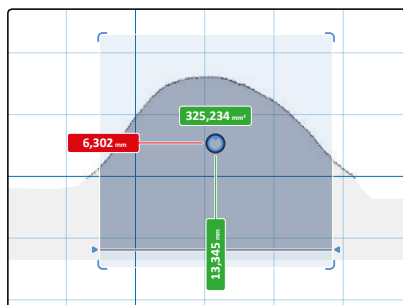
DISTANCE

100 % checks of important dimensions of your product.



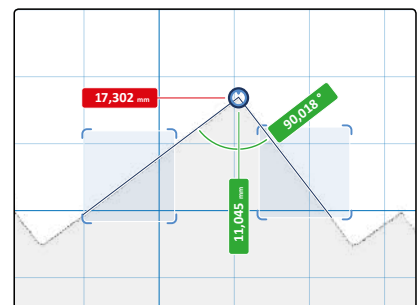
AREA

E.g. regulation of adhesive load during application.



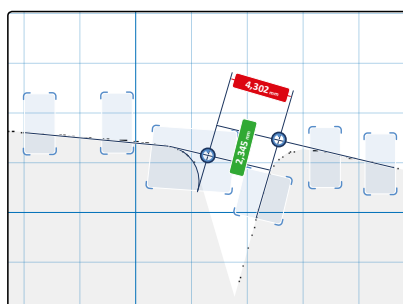
ANGLE

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



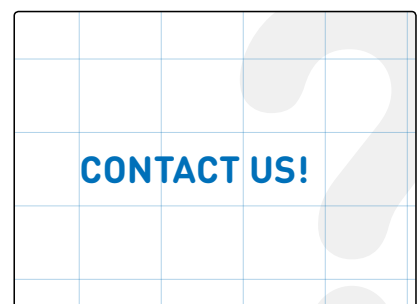
GAP

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

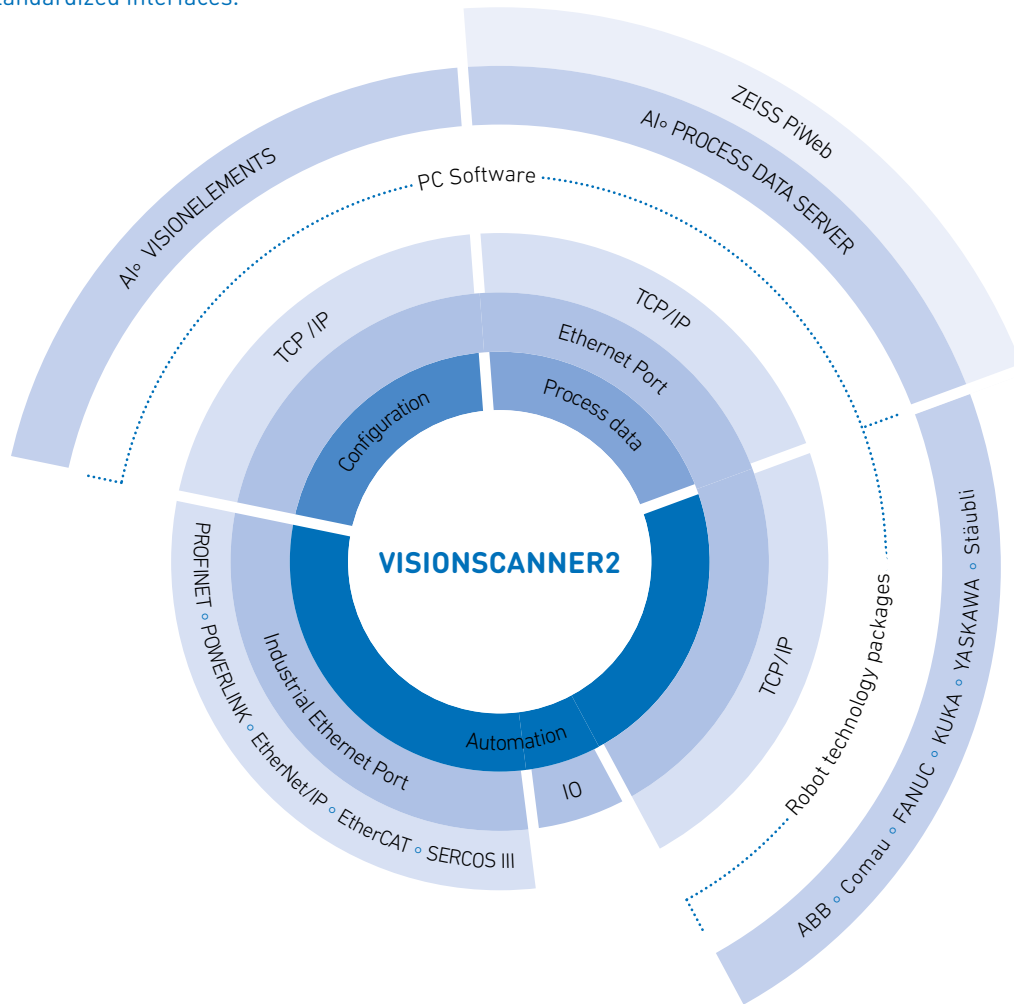


YOUR TASK

We develop customized solutions for your needs.



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



..... 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	CS7, CS8, CS9	-
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

CONFIGURE, VISUALIZE & CONTROL TASKS ◦ VISIONSCANNER2 ◦ AI

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

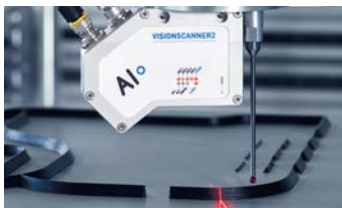
Control and optimize your measuring tasks offline based on saved measuring data.

MEASURING AND CONTROL DATA

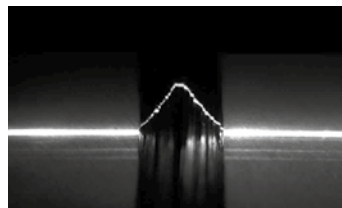
The graphical visualization offers a simple overview over measuring and control data.

DIFFICULT OBJECT PROPERTIES & ENVIRONMENTAL CONDITIONS ◦ VISIONSCANNER2 ◦ AI

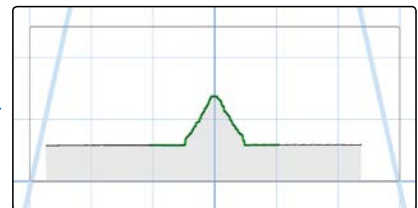
AI◦ VISIONSCANNER2 uses multiple mechanisms to ensure a robust profile reading. Thereby it is perfectly applicable even to difficult measuring tasks in today's production environments.



1.



2.



3.

Evaluation

4.

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 noise.

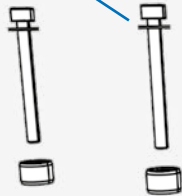
4. DYNAMIC ADJUSTMENT OF LIGHT EXPOSURE

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.

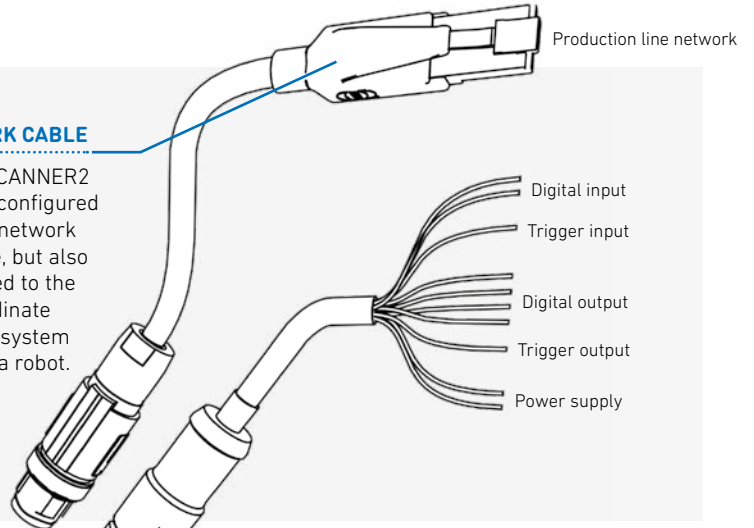
1. MECHANICAL INTEGRATION

For repeatable 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

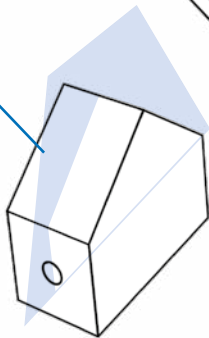
The sensor is being powered through a control cable. The digital input and output plugs ensure a very simple integration into the automation environment and the trigger inputs and outputs allow for a synchronized set up with multiple sensors.

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.

6. REFERENCING

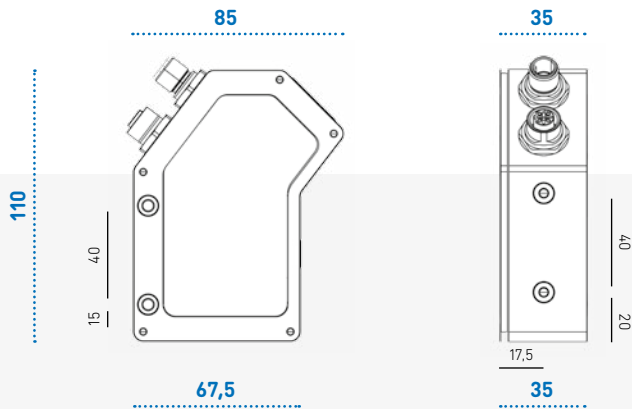
One important step during commissioning and exchange of the VISIONSCANNER2 is the referencing of the system. Thus, inaccuracy is equalized through this process. Referencing is mandatory, if VISIONSCANNER2 is set up to measure the position of an object or if multiple sensors are used for one coherent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



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.

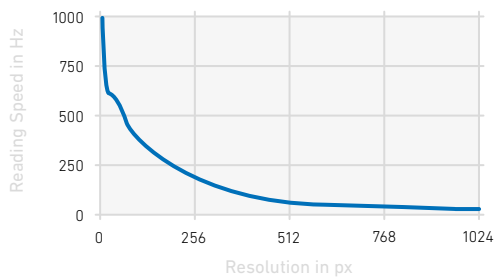
TECHNICAL DATA VISIONSCANNER2 • AI



Sensor Technology	CMOS Sensor
Reading speed	up to 200 Hz
Measuring accuracy	± 0,2% of measuring field, depending on feature and surface property
Laser	Laser Class 2 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	24V DC, max. 400 mA

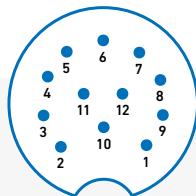
Size	110 x 85 x 35 mm
Weight	ca. 400 g
Protection class	IP 64
Housing	Aluminium, eloxated
Environmental conditions for warehousing	-20 up to 60 °C, humidity max. 90 %
Environmental conditions during operation	0 up to 55 °C, humidity max. 80 %
Registrations	CE, UL

READING SPEED TECHNICAL DATA



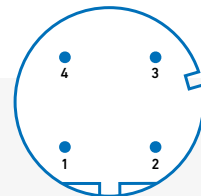
Resolution in px	Reading Speed in Hz
1280 × 64	588
1280 × 128	336
1280 × 256	181
1280 × 512	93
1280 × 768	63
1280 × 1024	50

CONNECTIONS TECHNICAL DATA



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

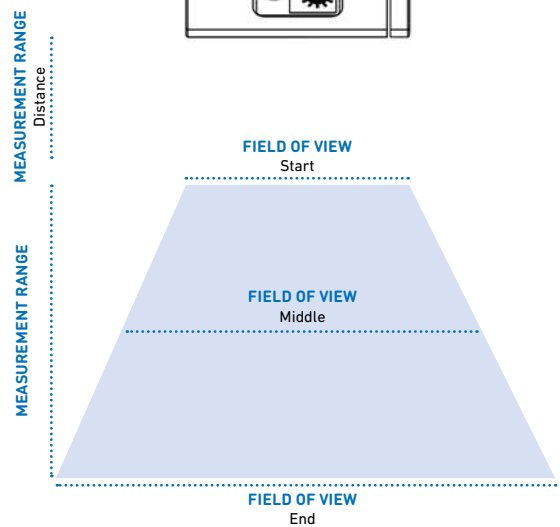
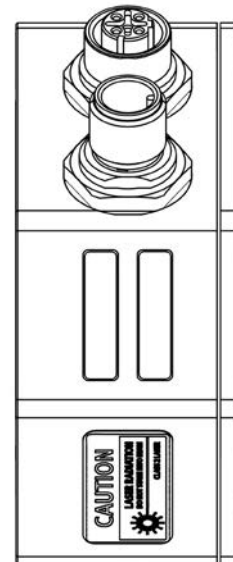
VS2-RFFAA-PPPWW-SSE



CAMERA		Code	Value
R	Resolution	L	752 × 480 px
		H	1280 × 1024 px
		U	2592 × 1944 px
F	Focal Distance	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



MODELL		VS2-H08			VS2-H12			VS2-H16		
		45°	37°	30°	45°	37°	30°	45°	37°	30°
Angle of Triangulation		45°	37°	30°	45°	37°	30°	45°	37°	30°
MEASUREMENT RANGE Distance	mm	26	35	50	38	50	65	45	60	75
MEASUREMENT RANGE	mm	100	145	250	55	75	125	35	50	80
MEASUREMENT RANGE Resolution	mm / px	0,10	0,14	0,25	0,05	0,08	0,12	0,035	0,05	0,08
FIELD OF VIEW Start	mm	55	60	65	35	40	45	27	30	35
FIELD OF VIEW Middle	mm	88	110	158	48	58	78	32	38	50
FIELD OF VIEW End	mm	120	160	250	60	75	110	37	45	65
FIELD OF VIEW Resolution	mm / px	0,07	0,09	0,13	0,04	0,05	0,06	0,025	0,03	0,04

THE ADVANTAGES • VISIONSCANNER2 • AI

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 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.**

AI^o

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