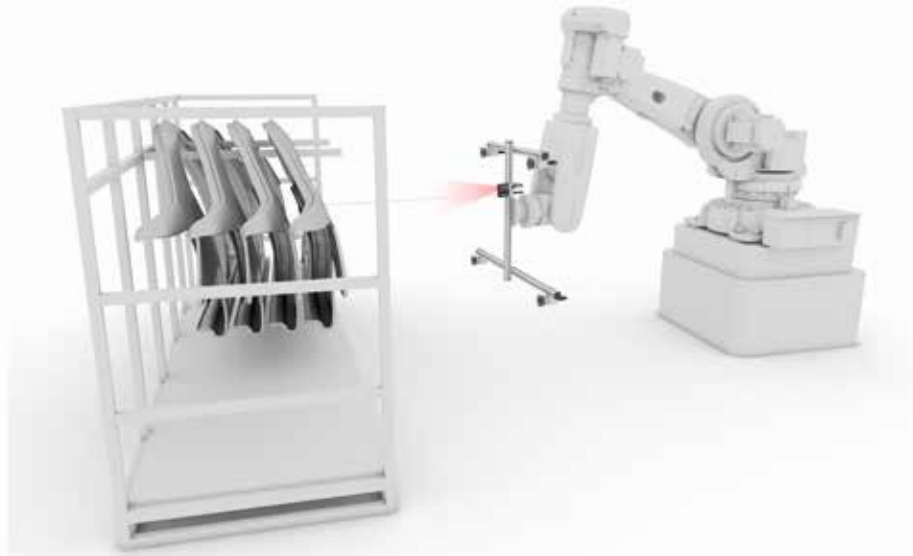
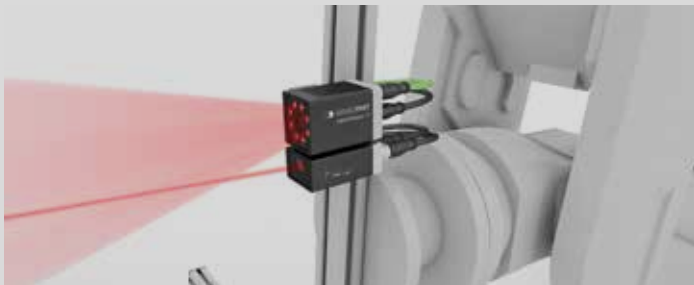


VISOR® Robotic +Z

An eye on everything – the vision sensor for robotics applications



made in Germany



VISOR® V20 Robotic +Z Advanced

Vision sensor with distance measurement for robot guidance. In addition, object checks such as presence and completeness checks as well as measurement tasks can be performed.

Applications

- Robot approach through depth information
- Positioning
- Detecting objects
- Measurement
- Identification

HIGHLIGHTS OF VISOR® ROBOTIC

- Compact and lightweight housing for moving or stationary applications
- Integrated distance measurement enables precise alignment
- Calibration methods tailored to the application
- Target Mark technology provides 3D object poses in no time
- Simplified setup through 3D gripper point transformation
- Less robot programming when images are captured in diverse positions
- Different hardware versions with up to 5 megapixels

Material feed

Feeding systems in a production line are becoming increasingly versatile – in addition to universal load carriers, components can be supplied with utmost flexibility using hopper feeders. Thanks to the VISOR® Robotic, components can be reliably located and gripped with both feed options. When loose components are supplied, the sensor not only checks their position but also inspects the free space around the gripper. The VISOR® determines both sets of information and sends them to the robot controller via one of the integrated and standardised process interfaces. The process is managed on the basis of this information – the object is gripped or the feeder is triggered.

The application can also be flexibly adapted to individual goods carriers without the need for a costly centring device. The VISOR® detects the position and the fill level of the carrier and transmits this information to the robot. If the camera is mounted in a stationary manner, this is cycle-time neutral.

Processing of components

What happens after components have been reliably collected by the gripper? The VISOR® Robotic also supplies important

information for the next work steps, and demonstrates its skills in robot-controlled applications, such as the placing of screws, the mounting of clips or the application of glue. The detection of component positions is carried out effortlessly; this allows the correction of any offset and increases the quality of production. Knowledge of the exact position of a component ensures, for example, the precise insertion of a windscreen. Mechanical effort is reduced, and the production line becomes even more flexible. The VISOR® Robotic concept enables direct communication between the VISOR® and the robot, an additional instance is no longer necessary for many applications.

In many processes, in addition to the position of the component in the level, the distance value may also be important. For example, the approach position can be reached precisely or the current height of the stack of boxes can be easily recorded. With the integrated distance measurement of the VISOR® Robotic +Z, this is now done with one system.

An additional distance sensor can thus be dispensed with. The integration into the application is seamless.

VISOR® Robotic +Z – product overview					
	Product variants	Resolution	Field of view	Integrated illumination	Page
V20-RO-A3-xxx	Advanced	1440 × 1080 mono	Medium	Red LED	171
V20-RO-P3-xxx	Professional	1440 × 1080 mono	Medium	Red LED	173

VISOR® V20 Robotic +Z Advanced, medium field of view

Vision sensor for object detection, presence check, completeness check, measurement and positioning tasks



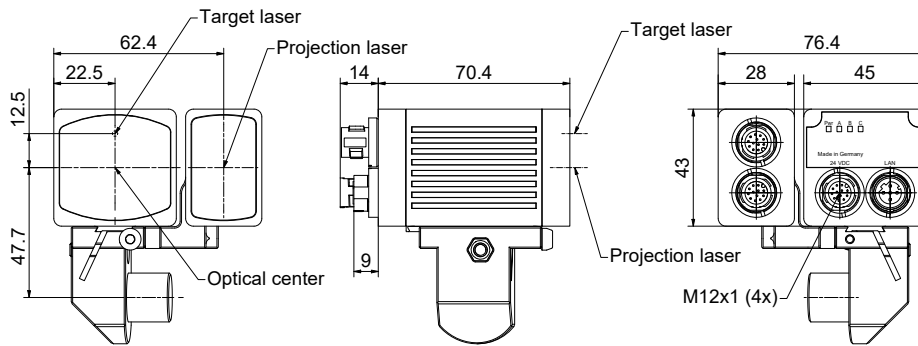
PRODUCT HIGHLIGHTS

- Simple calibration methods for robotics applications
- Integrated distance measurement
- Result offset 3D for direct gripper point transmission to robot
- Easy adjustment of the work plane
- Target Mark technology provides 3D object poses in no time

Optical data		Functions	
Resolution	1440 x 1080 Pixel	Number of jobs/detectors	Max. 255/max. 255
Imaging chip CMOS	1/2.9", monochrome/color	Detectors	Position tracking; X/Y and orientation; Pattern matching, contour: teach-in and detection of patterns and contours; Target Mark 3D: 3D pose determination; Calliper: distance between edges; BLOB, grey threshold, brightness: evaluation of brightness; Contrast: evaluation of contrast; Result processing: - Math: checking and calculating with results from detectors Detector Distance Point: Determination of the distance to a measurement object
Integrated lens, focal length [mm]	12 (medium)		
Pixel size	3.45 µm x 3.45 µm		
Focus	Motorized		
Integrated illumination	Red LED (625 nm)		
Minimum field of view X x Y and operating range	Two-dimensional evaluation: Field of view size and working distance can be calculated with SensoPart's SensoCalc calculator: https://sensocalc.sensopart.com/ Distance measurement: 150 mm ... 2500 mm		
Light spot	Distance for 150 mm: 2 mm x 5 mm Distance for 2500 mm: 5 mm x 6 mm		
Measuring frequency Distance measurement	≤ 100 Hz		
Type of light (IEC 60825-1)	Target Laser: Red, 655 nm, class 1 Projection laser: Red 635 nm, class 2 can be switched off LED: red 630 nm (RG 0, EN 62471)		
Electrical data		Mechanical data	
Operating voltage, +U _B	24 V DC (18 ... 30V DC) ¹	Dimensions	76.4 mm x 45 mm x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	< 14 s	Material, front screen	Plastic
Warm-up time	≤ 20 min	Ambient temperature: operation	0 ... +40 °C ²
Temperature drift	0.01 %/K	Ambient temperature: storage	-20 ... +60 °C ²
Outputs	PNP/NPN (switchable)	Weight	Approx. 490 g
Max. output current (per output)	50 mA, 100 mA (pin 12)	Plug connections	Supply and I/O M12, 12-pin, Ethernet M12, 4-pin
Switching threshold inputs incl. encoder	PNP/NPN High > U _B -1 V/Low < 3V	Vibration resistance	EN 60068-2-6
Input resistance	> 20 kΩ	Shock resistance	EN 60068-2-27
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port		
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs		
Encoder	✓		

¹ Max. ripple < 5 V_s ² 80 % air humidity, noncondensing

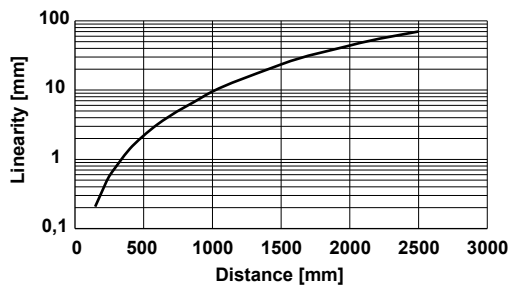
VISOR® vision sensor



153-13685

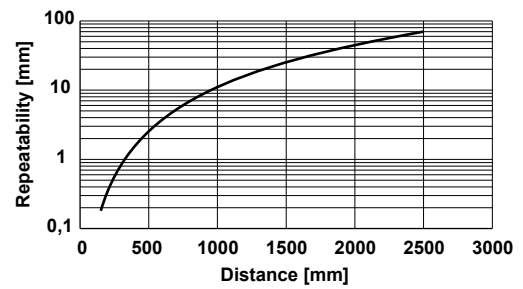
3

Linearity



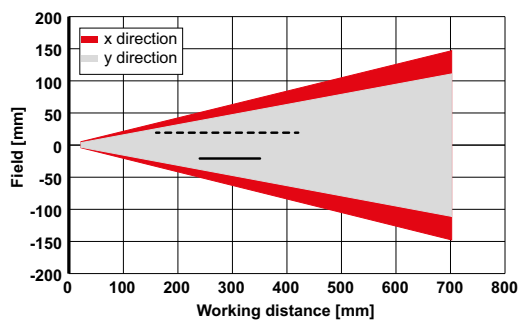
155-03674

Repeatability



155-03673

Field of view V20, medium



155-03099

- Increased depth of field
- Normal depth of field

Illumination	Part number	Article number	Accessories
Red	V20-RO-A3-R-M-M2-AL-P1-40	632-91181	<ul style="list-style-type: none"> Connection cables Illumination Brackets Interface accessories Target Marks
			www.sensopart.com/en/accessories

VISOR® V20 Robotic +Z Professional, medium field of view

Vision sensor for object detection, presence check, completeness check, measurement and positioning tasks

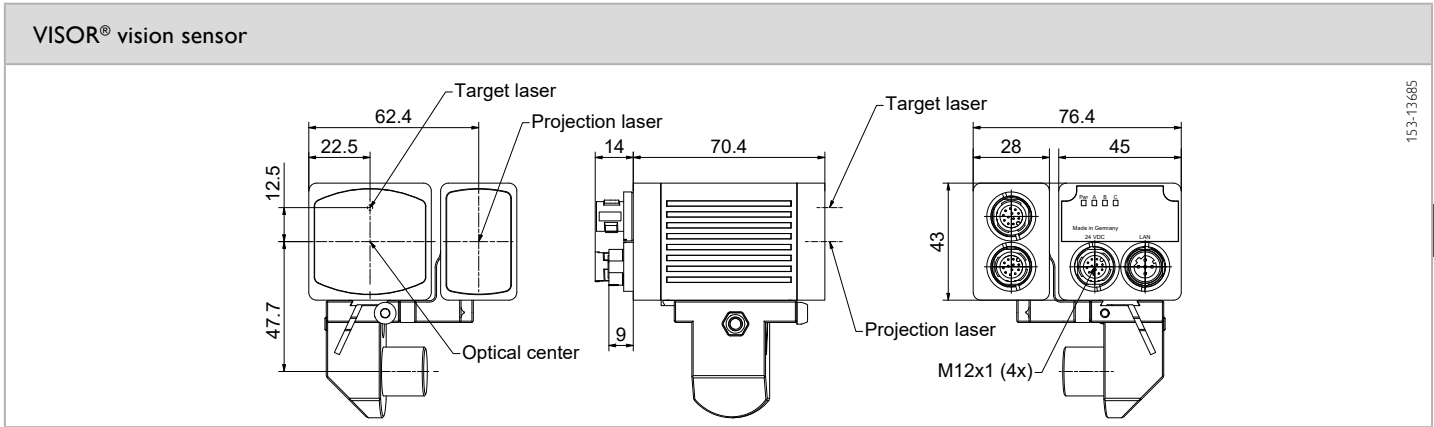


PRODUCT HIGHLIGHTS

- Calibration methods tailored to the application
- Integrated distance measurement
- Result offset 3D for direct gripper point transmission to robot
- Easy adjustment of the work plane
- Target Mark technology provides 3D object poses in no time
- Can be used for all common 2D codes, bar codes and OCR

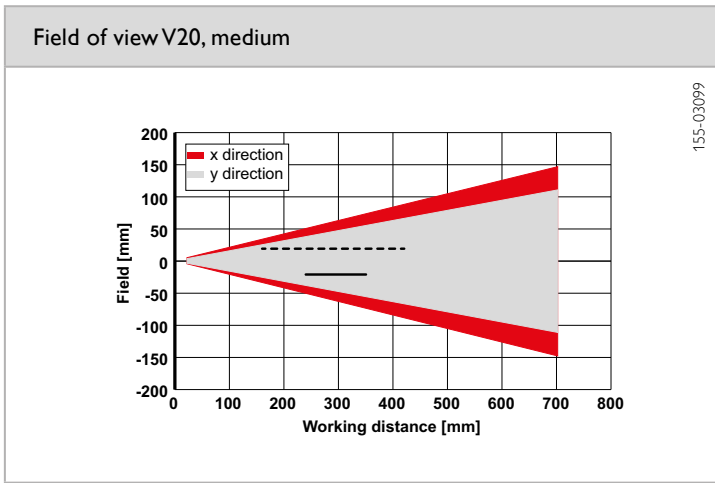
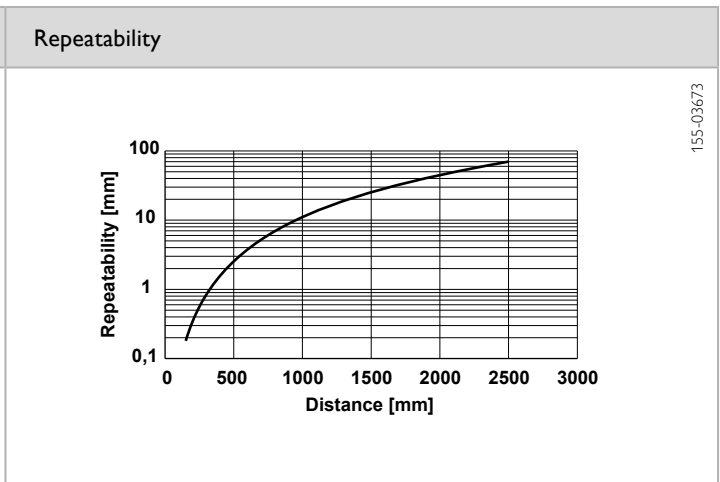
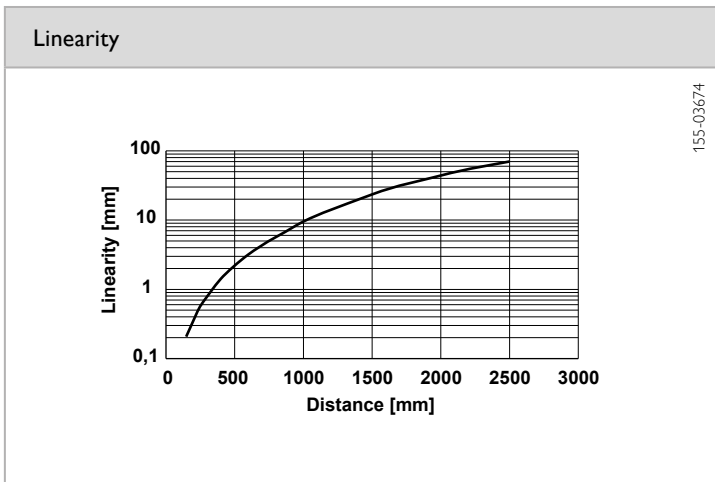
Optical data		Functions	
Resolution	1440 x 1080 Pixel	Number of jobs/detectors	Max. 255/max. 255
Imaging chip CMOS	1/2.9", monochrome/color	Detectors	Position tracking; X/Y and orientation; Pattern matching, contour: teach-in and detection of patterns and contours; Target Mark 3D: 3D pose determination; Calliper: distance between edges; BLOB, grey threshold, brightness: evaluation of brightness; Contrast: evaluation of contrast; Result processing: - Math: checking and calculating with results from detectors Detector Distance Point: Determination of the distance to a measurement object
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Electrical data		Mechanical data	
Operating voltage, +U _B	24 V DC (18 ... 30V DC) ¹	Dimensions	76.4 mm x 45 mm x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	< 14 s	Material, front screen	Plastic
Warm-up time	≤ 20 min	Ambient temperature: operation	0 ... +40 °C ²
Temperature drift	0,01 %/K	Ambient temperature: storage	-20 ... +60 °C ²
Outputs	PNP/NPN (switchable)	Weight	Approx. 490 g
Max. output current (per output)	50 mA, 100 mA (pin 12)	Plug connections	Supply and I/O M12, 12-pin, Ethernet M12, 4-pin
Switching threshold inputs incl. encoder	PNP/NPN High > U _B -1 V/Low < 3V	Vibration resistance	EN 60068-2-6
Input resistance	> 20 kΩ	Shock resistance	EN 60068-2-27
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port		
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs		
Encoder	✓		

¹ Max. ripple < 5 V_s ² 80 % air humidity, noncondensing



153-13685

3



----- Increased depth of field
 ——— Normal depth of field

Illumination	Part number	Article number	Accessories
Red	V20-RO-P3-R-M-M2-AL-P1-40	632-91183	Connection cables Illumination Brackets Interface accessories Target Marks

www.sensopart.com/en/accessories