

# VISOR® Robotic

An eye on everything – the vision sensor for robotics applications



The VISOR® Robotic detects the position of the component in a load carrier and transmits the gripping position directly to the robot.



The VISOR® Robotic determines the exact position of the sensor housing. Offset data is used to correct the robot's trajectory.

## HIGHLIGHTS OF VISOR® ROBOTIC

- Compact and lightweight housing for moving or stationary applications
- Calibration methods tailored to the application
- 2D or 3D localisation in robot coordinates
- Simplified setup through 3D gripper point transformation
- Less robot programming when images are captured in diverse positions
- Different hardware versions 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.

VISOR® Robotic – product overview					
	Product variants	Resolution	Focal length	Integrated lighting	Page
V50x-RO-P3-C-2	Professional	2560 x 1936 mono/color	C-Mount	None	120
V20x-RO-A3-xxx	Advanced	1440 x 1080 mono/color	wide	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs	122
V20x-RO-A3-xxx			medium	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs	124
V20x-RO-A3-xxx			narrow	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs	126
V20x-RO-A3-C-2			C-Mount	None	128
V20x-RO-P3-xxx			Professional	1440 x 1080 mono/color	wide
V20x-RO-P3-xxx	medium	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs			132
V20x-RO-P3-xxx	narrow	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs			134
V20x-RO-P3-C-2	C-Mount	None			136
V10-RO-A3-xxx	Advanced	800 x 600 mono	wide	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs	138
V10-RO-A3-xxx			medium	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs	140
V10-RO-A3-xxx			narrow	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs	142
V10-RO-A3-C-2			C-Mount	None	144

<sup>1</sup> Only with monochrome version

# VISOR® V50 Robotic Professional, C-Mount

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

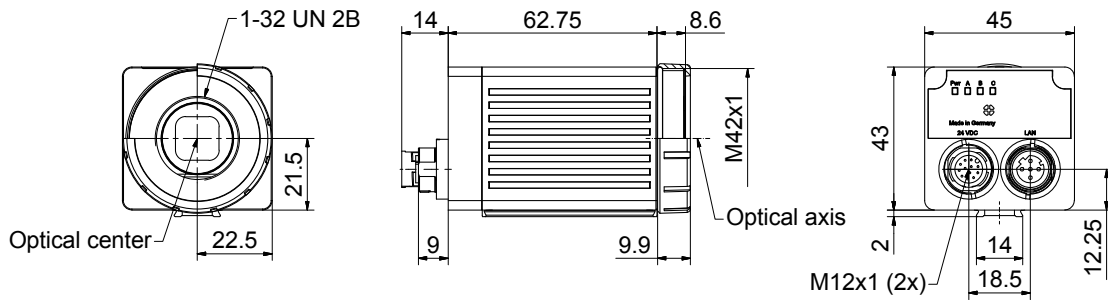


## PRODUCT HIGHLIGHTS

- Calibration methods for robotics applications
- Detectors for position determination
- Result offset 3D for direct gripper point transmission to robot
- Offset of work plane
- Can be used for all common 2D codes (ECC 200 data matrix), common 1D bar codes and OCR

Optical data		Functions	
Resolution	2560 x 1936 Pixel	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/1.8", monochrom / color	Detectors	Position tracking: X/Y and orientation; <b>Pattern matching, contour, 3D contour</b> : teach-in and detection of patterns and contours; <b>Calliper</b> : distance between edges; <b>BLOB, grey threshold, brightness</b> : evaluation of brightness; <b>Contrast</b> : evaluation of contrast
Integrated lens, focal length [mm]	C-Mount		<b>Barcode</b> : reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; <b>Datacode</b> : reading 2D codes: ECC200, QR code, GS1, PDF 417; <b>OCR</b> reading of fonts; <b>Result processing: Text, Math</b> : checking and calculating with results from detectors
Pixel size	2.8 µm x 2.8 µm		
Focus	Manual		
Adjustment range	Dependent on lens		
Integrated illumination	None		
Minimum field of view, X x Y	Dependent on lens		
Target laser	No		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30V DC <sup>2</sup>	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65 <sup>3</sup>
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

<sup>1</sup> Color hardware    <sup>2</sup> max. ripple < 5V<sub>SS</sub>    <sup>3</sup> only with protective casing    <sup>4</sup> 80 % air humidity, noncondensing

**VISOR® vision sensor C-Mount**


153-13555

3



Part number	Article number
LPTVxx-G37.5	651-01006
LPTVxx-25.0	651-01007

	LOC-08-HD-30.5x0,5	LOC-12-HD-27x0,5	LOC-16-HD-27x0,5	LOC-25-HD-27x0,5	LOC-35-HD-27x0,5	LOC-50-HD-27x0,5	LOC-75-HD-34x0,5
<b>Focal length</b>	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
<b>Article number</b>	526-51535	526-51536	526-51537	526-51538	526-51539	526-51540	526-51541

Part number	Article number	Accessories
V50-RO-P3-C-2	635-91040	Connection cables
V50C-RO-P3-C-2	635-91043	Illumination
		Lenses
		Brackets
		Interface accessories
		From Page A-46
		From Page A-33
		From Page A-28
		From Page A-4
		From Page A-53


# VISOR® V20 Robotic Advanced, wide field of view

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

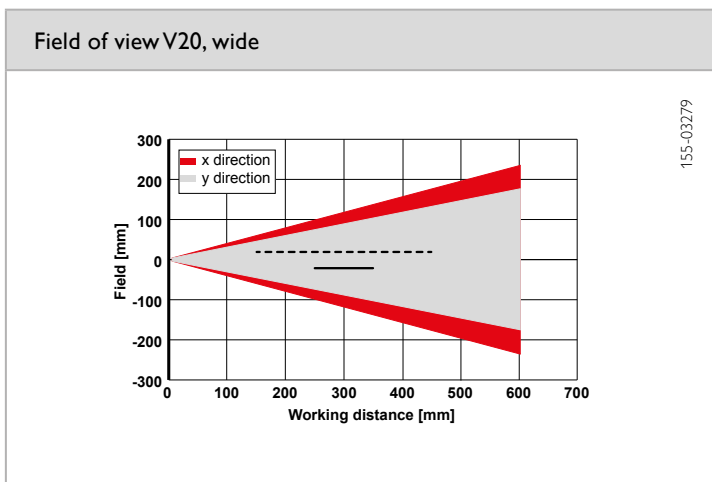
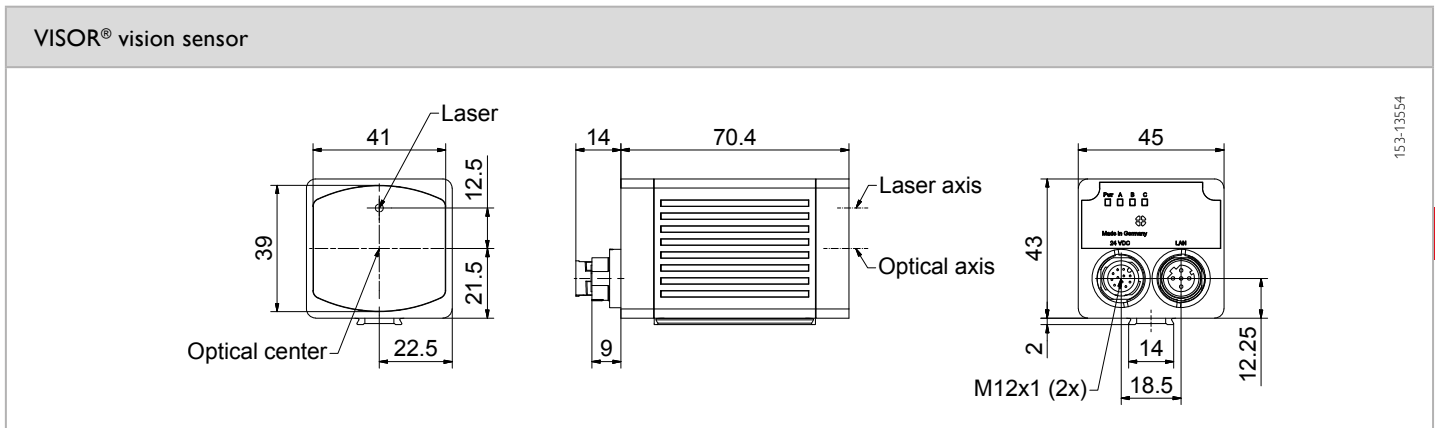


## PRODUCT HIGHLIGHTS

- Calibration methods for robotics applications
- Result offset 3D for direct gripper point transmission to robot
- Offset of work plane

Optical data		Functions	
Resolution	1440 x 1080 pixels	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/2.9", monochrome / color	Detectors	Position tracking; X/Y and orientation; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Result processing: Math:</b> checking and calculating with results from detectors
Integrated lens, focal length [mm]	6.5 (wide)		
Pixel size	3.45 µm x 3.45 µm		
Focus	Motorized		
Adjustment range	10 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		
Minimum field of view, X x Y	6 x 4 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30V DC <sup>3</sup>	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> color hardware    <sup>3</sup> max. ripple < 5V<sub>s</sub>    <sup>4</sup> 80 % air humidity, noncondensing



- Increased depth of field
- Normal depth of field

illumination	Part number	Article number	Accessories	
White	V20-RO-A3-W-W-M2-L	632-91064	Connection cables	From Page A-46
Red	V20-RO-A3-R-W-M2-L	632-91067	Illumination	From Page A-33
Infrared	V20-RO-A3-I-W-M2-L	632-91070	Brackets	From Page A-4
White	V20C-RO-A3-W-W-M2-L	632-91074	Interface accessories	From Page A-53


# VISOR® V20 Robotic Advanced, medium field of view

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

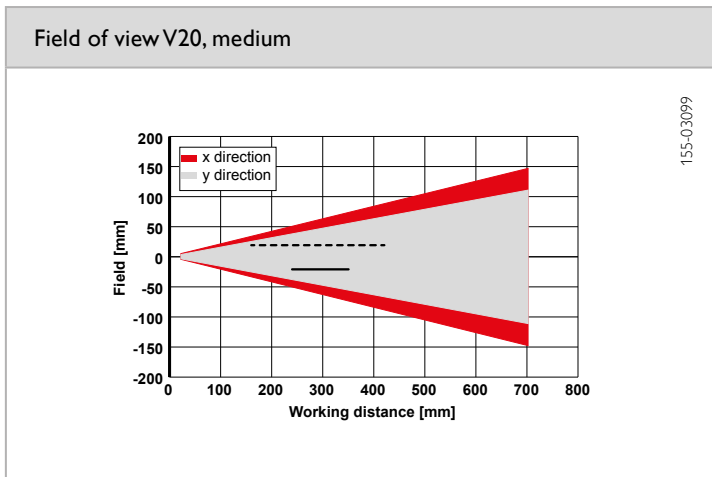
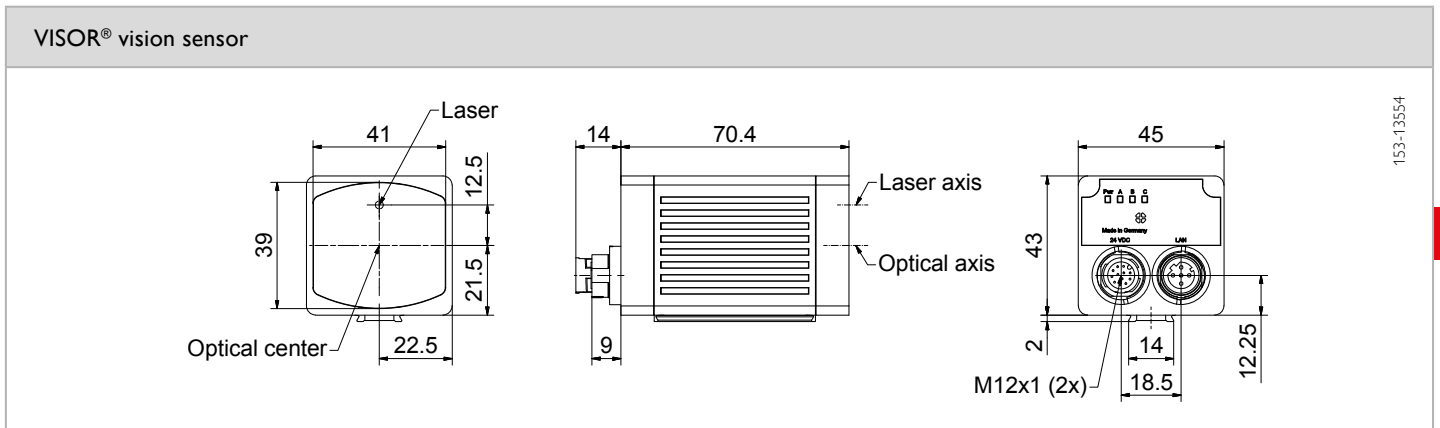


## PRODUCT HIGHLIGHTS

- Calibration methods for robotics applications
- Result offset 3D for direct gripper point transmission to robot
- Offset of work plane

Optical data		Functions	
Resolution	1440 × 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; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Result processing: Math:</b> checking and calculating with results from detectors
Integrated lens, focal length [mm]	12 (medium)		
Pixel size	3.45 μm × 3.45 μm		
Focus	Motorized		
Adjustment range	25 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		
Minimum field of view, X × Y	10 × 8 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>3</sup>	Dimensions	70,4 × 45 × 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> color hardware    <sup>3</sup> max. ripple < 5V<sub>s</sub>    <sup>4</sup> 80 % air humidity, noncondensing



- Increased depth of field
- Normal depth of field

illumination	Part number	Article number	Accessories	
White	V20-RO-A3-W-M-M2-L	632-91065	Connection cables	From Page A-46
Red	V20-RO-A3-R-M-M2-L	632-91068	Illumination	From Page A-33
Infrared	V20-RO-A3-I-M-M2-L	632-91071	Brackets	From Page A-4
White	V20C-RO-A3-W-M-M2-L	632-91075	Interface accessories	From Page A-53




# VISOR® V20 Robotic Advanced, narrow field of view

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

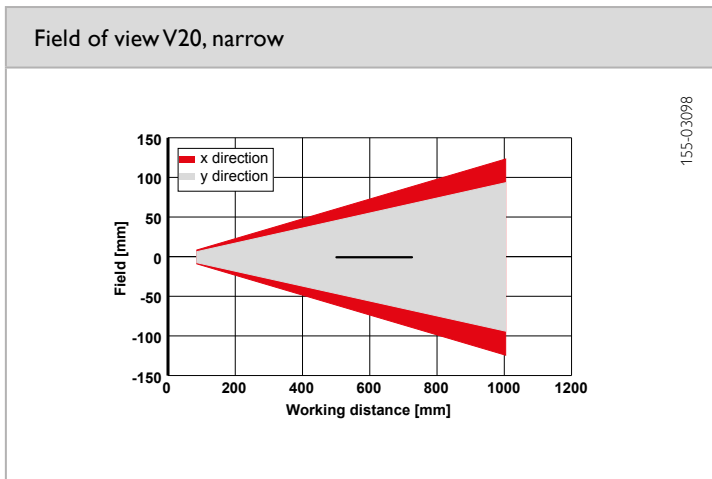
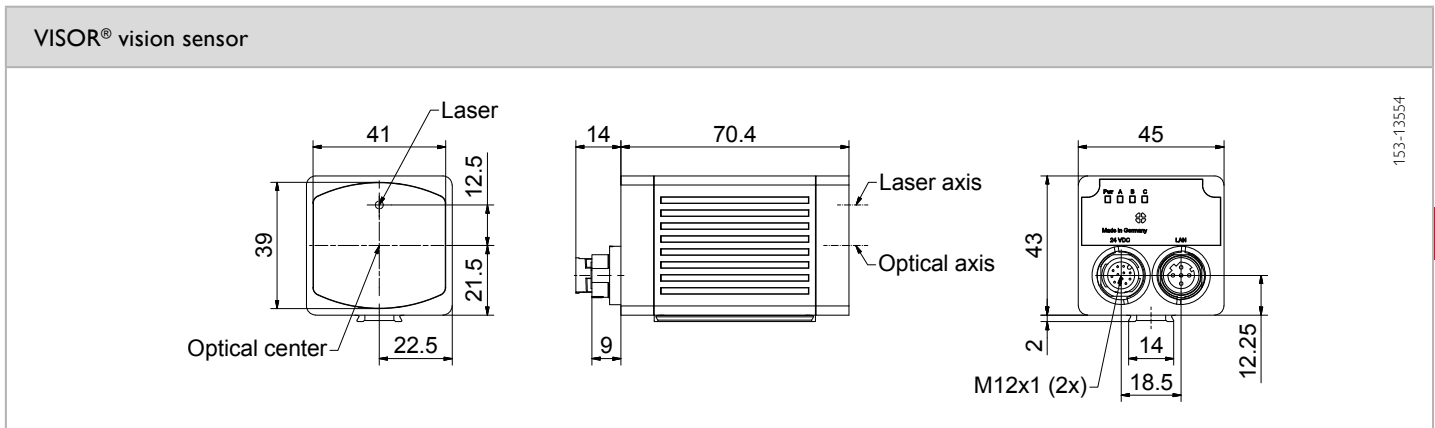


## PRODUCT HIGHLIGHTS

- Calibration methods for robotics applications
- Result offset 3D for direct gripper point transmission to robot
- Offset of work plane

Optical data		Functions	
Resolution	1440 × 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; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Result processing: Math:</b> checking and calculating with results from detectors
Integrated lens, focal length [mm]	20 (narrow)		
Pixel size	3.45 µm × 3.45 µm		
Focus	Motorized		
Adjustment range	100 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		
Minimum field of view, X × Y	18 × 14 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>3</sup>	Dimensions	70,4 × 45 × 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces VISOR® V20-CR-Advanced	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> color hardware    <sup>3</sup> max. ripple < 5V<sub>s</sub>    <sup>4</sup> 80 % air humidity, noncondensing



— Normal depth of field

illumination	Part number	Article number	Accessories	
White	V20-RO-A3-W-N-M2-L	632-91066	Connection cables	From Page A-46
Red	V20-RO-A3-R-N-M2-L	632-91069	Illumination	From Page A-33
Infrared	V20-RO-A3-I-N-M2-L	632-91072	Brackets	From Page A-4
White	V20C-RO-A3-W-N-M2-L	632-91076	Interface accessories	From Page A-53

# VISOR® V20 Robotic Advanced, C-Mount

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



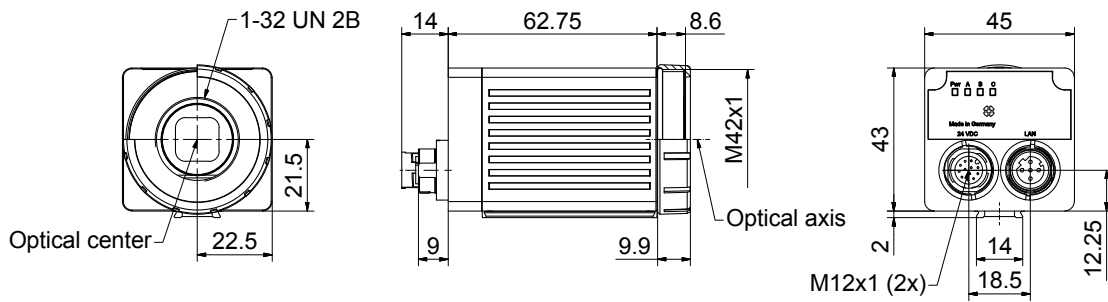
## PRODUCT HIGHLIGHTS

- Calibration methods for robotics applications
- Result offset 3D for direct gripper point transmission to robot
- Offset of work plane

Optical data		Functions	
Resolution	1440 x 1080 pixels	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/2.9", monochrome / color	Detectors	Position tracking; X/Y and orientation; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Result processing: Math:</b> checking and calculating with results from detectors
Integrated lens, focal length [mm]	C-mount		
Pixel size	3,45 µm x 3,45 µm		
Focus	Manual		
Adjustment range	Dependent on lens		
Integrated illumination	None		
Minimum field of view, X x Y	Dependent on lens		
Target laser	No		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30V DC <sup>2</sup>	Dimensions	70,4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65 <sup>3</sup>
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

<sup>1</sup> Color hardware    <sup>2</sup> max. ripple < 5V<sub>SS</sub>    <sup>3</sup> only with protective casing    <sup>4</sup> 80 % air humidity, noncondensing

Vision-Sensor VISOR® C-mount



153-13555

3



Part number	Article number
LPTVxx-G37.5	651-01006
LPTVxx-25.0	651-01007

	LOC-08-HD-30.5x0,5	LOC-12-HD-27x0,5	LOC-16-HD-27x0,5	LOC-25-HD-27x0,5	LOC-35-HD-27x0,5	LOC-50-HD-27x0,5	LOC-75-HD-34x0,5
Focal length	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
Article number	526-51535	526-51536	526-51537	526-51538	526-51539	526-51540	526-51541

Part number	Article number	Accessories	
V20-RO-A3-C-2	632-91073	Connection cables	From Page A-46
V20C-RO-A3-C-2	632-91077	Illumination	From Page A-33
		Lenses	From Page A-28
		Brackets	From Page A-4
		Interface accessories	From Page A-53


# VISOR® V20 Robotic Professional, wide field of view

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

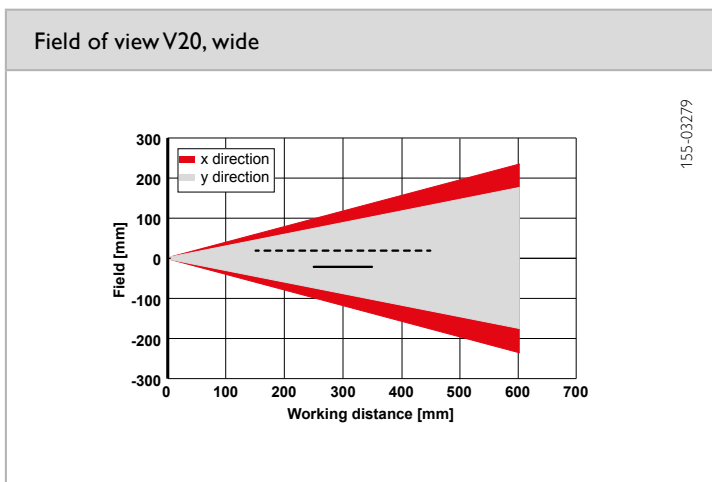
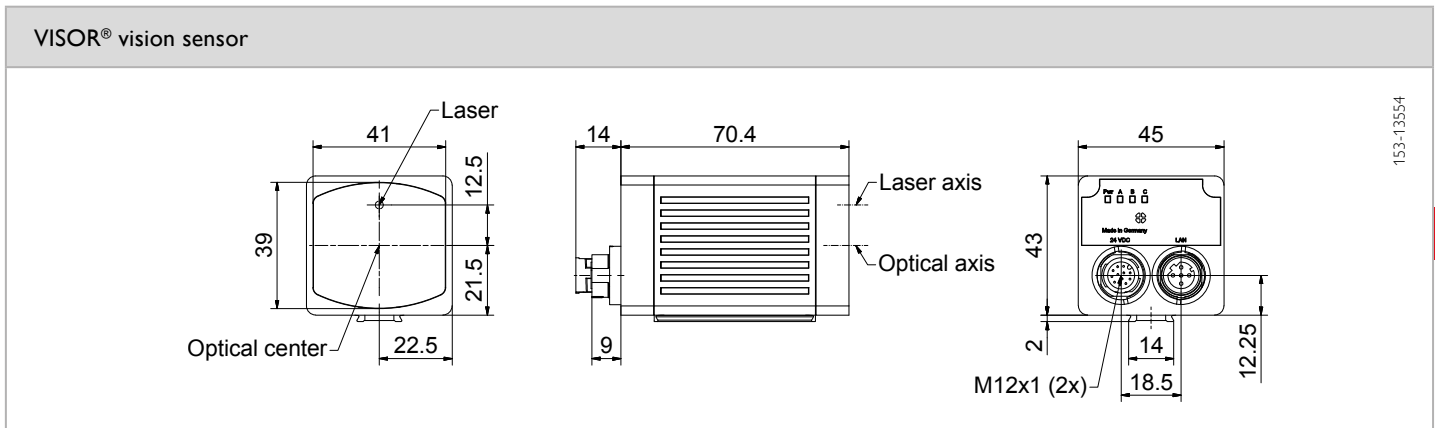


## PRODUCT HIGHLIGHTS

- Calibration methods for robotics applications
- Result offset 3D for direct gripper point transmission to robot
- Offset of work plane
- Gripping space check
- Can be used for all common 2D codes (ECC 200 data matrix), common 1D 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; <b>Pattern matching, contour, 3D contour</b> : teach-in and detection of patterns and contours; <b>Calliper</b> : distance between edges; <b>BLOB, grey threshold, brightness</b> : evaluation of brightness; <b>Contrast</b> : evaluation of contrast; <b>Barcode</b> : reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; <b>Datacode</b> : reading 2D codes: ECC200, QR code, GS1, PDF 417; <b>OCR</b> reading of fonts; <b>Result processing: Text, Math</b> : checking and calculating with results from detectors
Integrated lens, focal length [mm]	6.5 (wide)		
Pixel size	3.45 µm x 3.45 µm		
Focus	Motorized		
Adjustment range	10 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		
Minimum field of view, X x Y	6 x 4 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>3</sup>	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1 V, Low < 3 V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> color hardware    <sup>3</sup> max. ripple < 5V<sub>s</sub>    <sup>4</sup> 80 % air humidity, noncondensing



- Increased depth of field
- Normal depth of field

illumination	Part number	Article number	Accessories	
White	V20-RO-P3-W-W-M2-L	632-91120	Connection cables	From Page A-46
Red	V20-RO-P3-R-W-M2-L	632-91123	Illumination	From Page A-33
Infrared	V20-RO-P3-I-W-M2-L	632-91126	Brackets	From Page A-4
White	V20C-RO-P3-W-W-M2-L	632-91130	Interface accessories	From Page A-53


# VISOR® V20 Robotic Professional, medium field of view

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

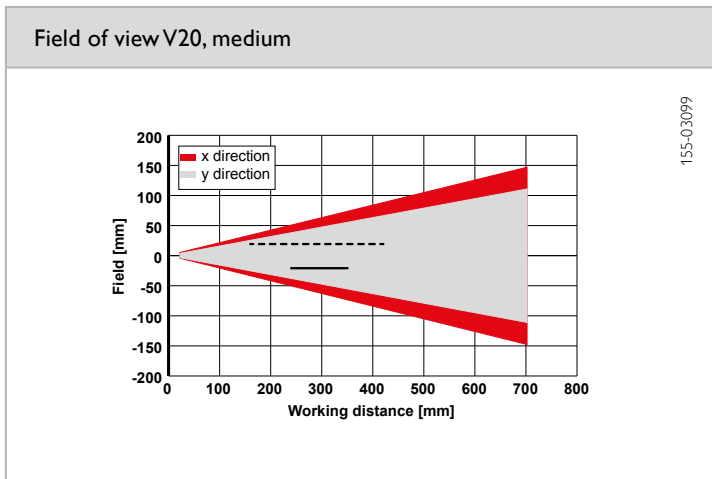
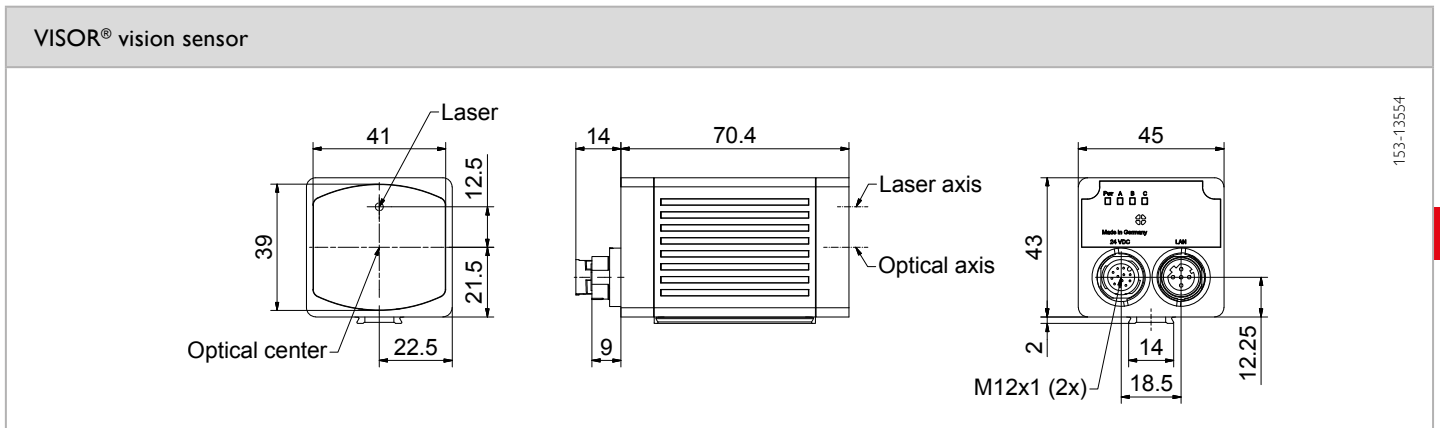


## PRODUCT HIGHLIGHTS

- Calibration methods for robotics applications
- Result offset 3D for direct gripper point transmission to robot
- Offset of work plane
- Gripping space check
- Can be used for all common 2D codes (ECC 200 data matrix), common 1D 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; <b>Pattern matching, contour, 3D contour</b> : teach-in and detection of patterns and contours; <b>Calliper</b> : distance between edges; <b>BLOB, grey threshold, brightness</b> : evaluation of brightness; <b>Contrast</b> : evaluation of contrast; <b>Barcode</b> : reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; <b>Datacode</b> : reading 2D codes: ECC200, QR code, GS1, PDF 417; <b>OCR</b> reading of fonts; <b>Result processing: Text, Math</b> : checking and calculating with results from detectors
Integrated lens, focal length [mm]	12 (medium)		
Pixel size	3.45 µm x 3.45 µm		
Focus	Motorized		
Adjustment range	25 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		
Minimum field of view, X x Y	10 x 8 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>3</sup>	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP / NPN	Weight	Approx. 200 g
Input resistance	High > U <sub>B</sub> -1 V / Low < 3V	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	> 20 kΩ	Vibration resistance	EN 60068-2-6
Inputs/outputs	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Shock resistance	EN 60068-2-27
Encoder	2 inputs, 2 outputs, 6 selectable inputs/outputs		
	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> color hardware    <sup>3</sup> max. ripple < 5V<sub>s</sub>    <sup>4</sup> 80 % air humidity, noncondensing



- Increased depth of field
- Normal depth of field

Illumination	Part number	Article number	Accessories	
White	V20-RO-P3-W-M-M2-L	632-91121	Connection cables	From Page A-46
Red	V20-RO-P3-R-M-M2-L	632-91124	Illumination	From Page A-33
Infrared	V20-RO-P3-I-M-M2-L	632-91127	Brackets	From Page A-4
White	V20C-RO-P3-W-M-M2-L	632-91131	Interface accessories	From Page A-53




# VISOR® V20 Robotic Professional, narrow field of view

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

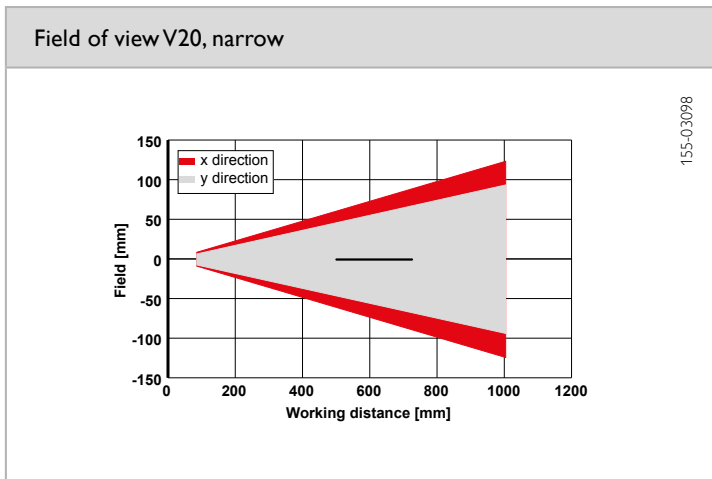
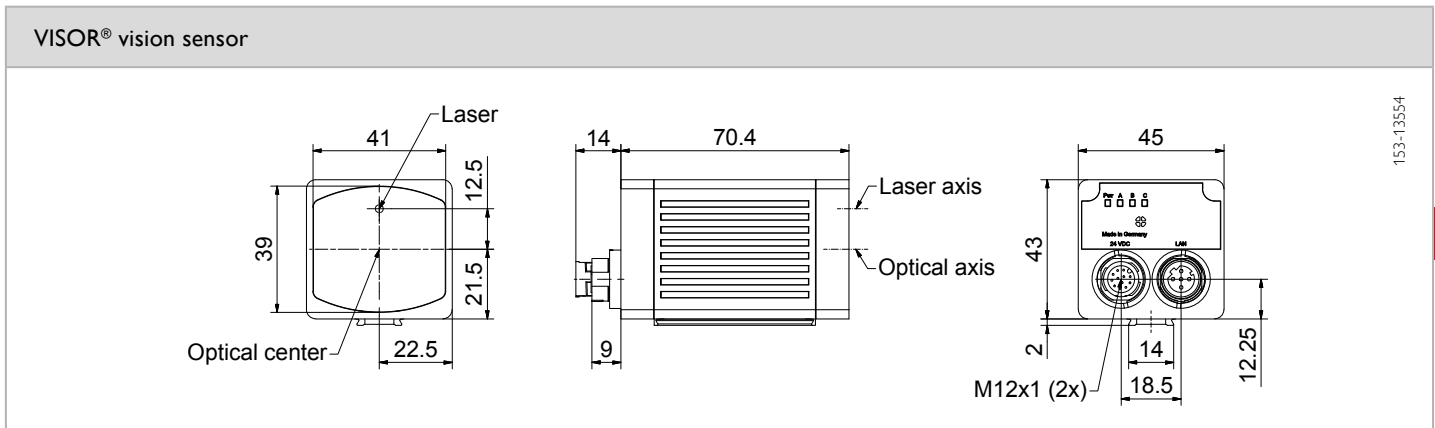


## PRODUCT HIGHLIGHTS

- Calibration methods for robotics applications
- Result offset 3D for direct gripper point transmission to robot
- Offset of work plane
- Gripping space check
- Can be used for all common 2D codes (ECC 200 data matrix), common 1D bar codes and OCR

Optical data		Functions	
Resolution	1440 x 1080 pixels	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/2.9", monochrome / color	Detectors	Position tracking; X/Y and orientation; <b>Pattern matching, contour, 3D contour</b> : teach-in and detection of patterns and contours; <b>Calliper</b> : distance between edges; <b>BLOB, grey threshold, brightness</b> : evaluation of brightness; <b>Contrast</b> : evaluation of contrast; <b>Barcode</b> : reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; <b>Datacode</b> : reading 2D codes: ECC200, QR code, GS1, PDF 417; <b>OCR</b> reading of fonts; <b>Result processing: Text, Math</b> : checking and calculating with results from detectors
Integrated lens, focal length [mm]	20 (narrow)		
Pixel size	3.45 µm x 3.45 µm		
Focus	Motorized		
Adjustment range	100 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		
Minimum field of view, X x Y	18 x 14 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30V DC <sup>3</sup>	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN	Weight	Approx. 200 g
Input resistance	High > U <sub>B</sub> -1V / Low < 3V	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	> 20 kΩ	Vibration resistance	EN 60068-2-6
Inputs/outputs	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Shock resistance	EN 60068-2-27
Encoder	2 inputs, 2 outputs, 6 selectable inputs/outputs		
	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> color hardware    <sup>3</sup> max. ripple < 5V<sub>s</sub>    <sup>4</sup> 80 % air humidity, noncondensing



— Normal depth of field

Illumination	Part number	Article number	Accessories	
White	V20-RO-P3-W-N-M2-L	632-91122	Connection cables	From Page A-46
Red	V20-RO-P3-R-N-M2-L	632-91125	Illumination	From Page A-33
Infrared	V20-RO-P3-I-N-M2-L	632-91128	Brackets	From Page A-4
White	V20C-RO-P3-W-N-M2-L	632-91132	Interface accessories	From Page A-53

# VISOR® V20 Robotic Professional, C-Mount

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



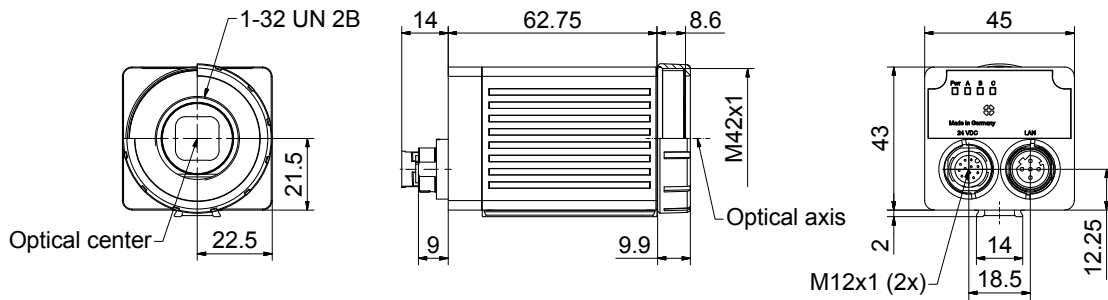
## PRODUCT HIGHLIGHTS

- Calibration methods for robotics applications
- Result offset 3D for direct gripper point transmission to robot
- Offset of work plane
- Gripping space check
- Can be used for all common 2D codes (ECC 200 data matrix), common 1D bar codes and OCR

Optical data		Functions	
Resolution	1440 x 1080 pixels	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/2.9", monochrome / color	Detectors	Position tracking: X/Y and orientation; <b>Pattern matching, contour, 3D contour</b> : teach-in and detection of patterns and contours; <b>Calliper</b> : distance between edges; <b>BLOB, grey threshold, brightness</b> : evaluation of brightness; <b>Contrast</b> : evaluation of contrast
Integrated lens, focal length [mm]	C-mount		<b>Barcode</b> : reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; <b>Datacode</b> : reading 2D codes: ECC200, QR code, GS1, PDF 417; <b>OCR</b> reading of fonts; <b>Result processing: Text, Math</b> : checking and calculating with results from detectors
Pixel size	3.45 µm x 3.45 µm		
Focus	Manual		
Adjustment range	Dependent on lens		
Integrated illumination	None		
Minimum field of view, X x Y	Dependent on lens		
Target laser	No		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30V DC <sup>2</sup>	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65 <sup>3</sup>
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN	Weight	Approx. 200 g
Input resistance	High > U <sub>B</sub> -1V / Low < 3V	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	> 20 kΩ	Vibration resistance	EN 60068-2-6
Inputs/outputs	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Shock resistance	EN 60068-2-27
Encoder	2 inputs, 2 outputs, 6 selectable inputs/outputs		
	✓		

<sup>1</sup> Color hardware    <sup>2</sup> max. ripple < 5V<sub>SS</sub>    <sup>3</sup> only with protective casing    <sup>4</sup> 80 % air humidity, noncondensing

VISOR® vision sensor C-Mount



153-13555

3



Part number	Article number
LPTVxx-G37.5	651-01006
LPTVxx-25.0	651-01007

	LOC-08-HD-30.5x0,5	LOC-12-HD-27x0,5	LOC-16-HD-27x0,5	LOC-25-HD-27x0,5	LOC-35-HD-27x0,5	LOC-50-HD-27x0,5	LOC-75-HD-34x0,5
<b>Focal length</b>	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
<b>Article number</b>	526-51535	526-51536	526-51537	526-51538	526-51539	526-51540	526-51541

Part number	Article number	Accessories
V20-RO-P3-C-2	632-91144	Connection cables
V20C-RO-P3-C-2	635-91133	Illumination
		Lenses
		Brackets
		Interface accessories
		From Page A-46
		From Page A-33
		From Page A-28
		From Page A-4
		From Page A-53


# VISOR® V10 Robotic Advanced, wide field of view

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

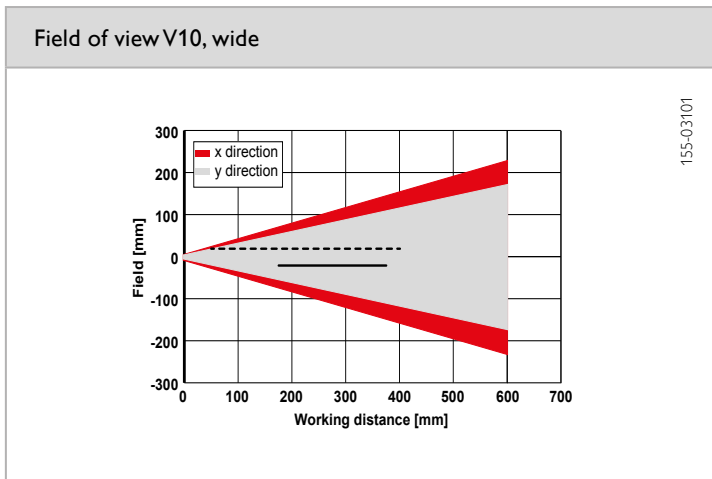
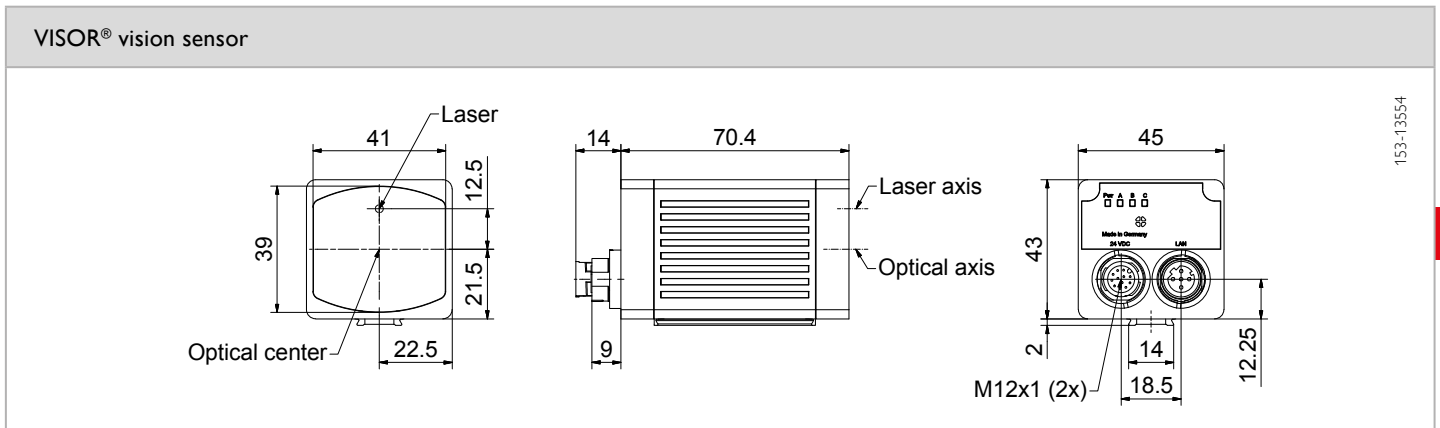


## PRODUCT HIGHLIGHTS

- Calibration methods for robotics applications
- Result offset 3D for direct gripper point transmission to robot
- Offset of work plane

Optical data		Functions	
Resolution	800 × 600 Pixel	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/3.6", monochrome / color	Detectors	Position tracking: X/Y and orientation; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Result processing: Math:</b> checking and calculating with results from detectors
Integrated lens, focal length [mm]	5.2 (wide)		
Pixel size	4.8 μm × 4.8 μm		
Focus	Motorized		
Adjustment range	0 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		
Minimum field of view, X × Y	2 × 1 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>3</sup>	Dimensions	70.4 × 45 × 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> color hardware    <sup>3</sup> max. ripple < 5V<sub>s</sub>    <sup>4</sup> 80 % air humidity, noncondensing



- Increased depth of field
- Normal depth of field

Illumination	Part number	Article number	Accessories	
White	V10-RO-A3-W-W-M2-L	631-91073	Connection cables	From Page A-46
Red	V10-RO-A3-R-W-M2-L	631-91076	Illumination	From Page A-33
Infrared	V10-RO-A3-I-W-M2-L	631-91079	Brackets	From Page A-4
			Interface accessories	From Page A-53


# VISOR® V10 Robotic Advanced, medium field of view

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

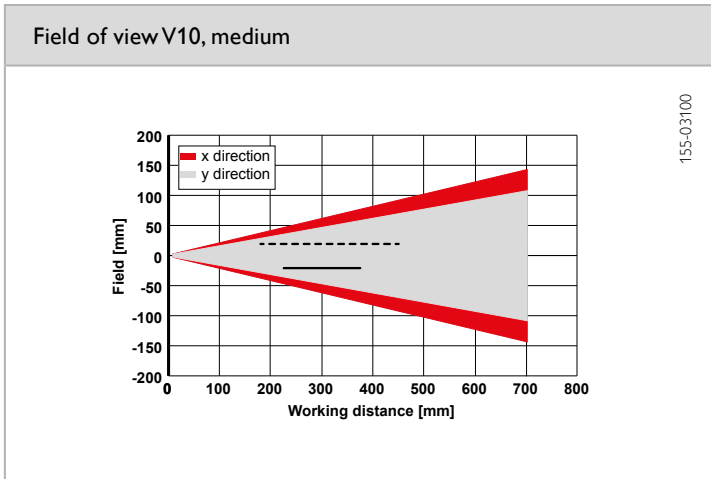
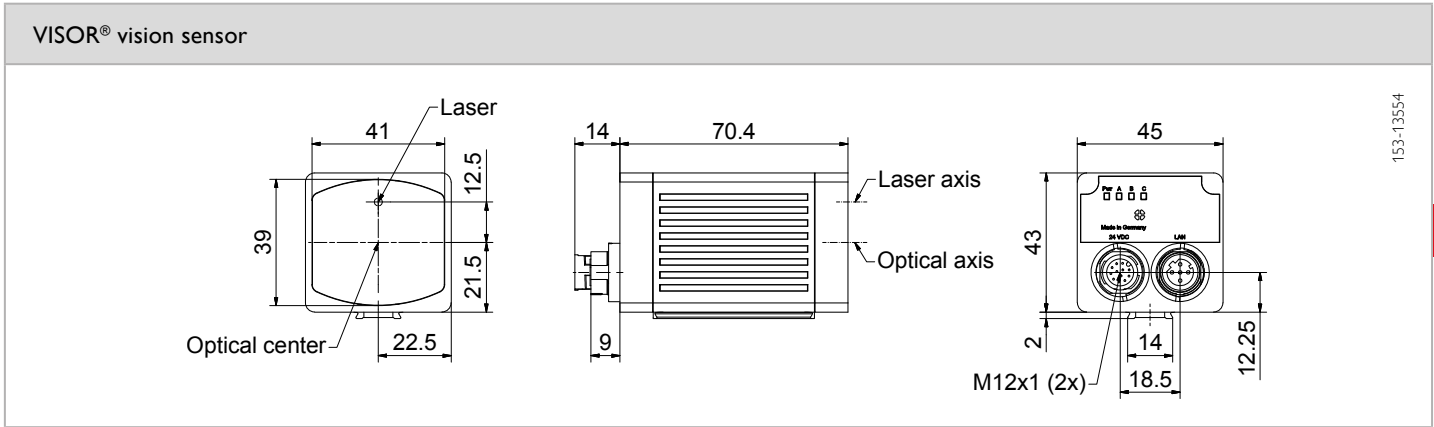


## PRODUCT HIGHLIGHTS

- Calibration methods for robotics applications
- Result offset 3D for direct gripper point transmission to robot
- Offset of work plane

Optical data		Functions	
Resolution	800 x 600 Pixel	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/3.6", monochrome / color	Detectors	Position tracking; X/Y and orientation; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Result processing: Math:</b> checking and calculating with results from detectors
Integrated lens, focal length [mm]	9.6 (medium)		
Pixel size	4.8 µm x 4.8 µm		
Focus	Motorized		
Adjustment range	12 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		
Minimum field of view, X x Y	7 x 3 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>3</sup>	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> color hardware    <sup>3</sup> max. ripple < 5 V<sub>s</sub>    <sup>4</sup> 80 % air humidity, noncondensing



- Increased depth of field
- Normal depth of field

Illumination	Part number	Article number	Accessories	
White	V10-RO-A3-W-M-M2-L	631-91074	Connection cables	From Page A-46
Red	V10-RO-A3-R-M-M2-L	631-91077	Illumination	From Page A-33
Infrared	V10-RO-A3-I-M-M2-L	631-91080	Brackets	From Page A-4
			Interface accessories	From Page A-53




# VISOR® V10 Robotic Advanced, narrow field of view

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

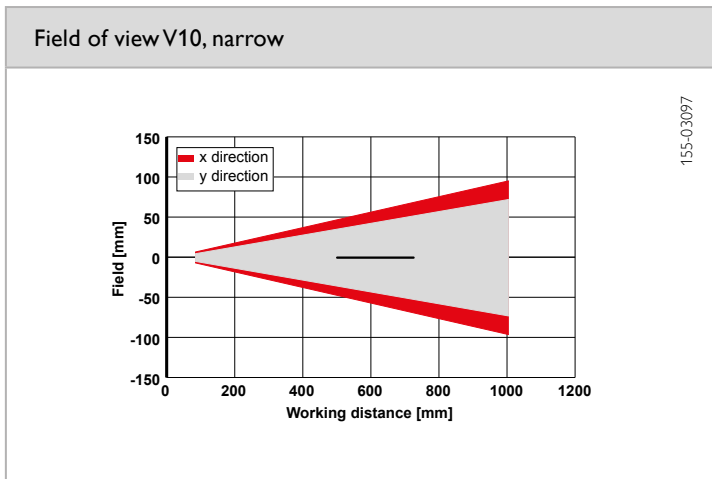
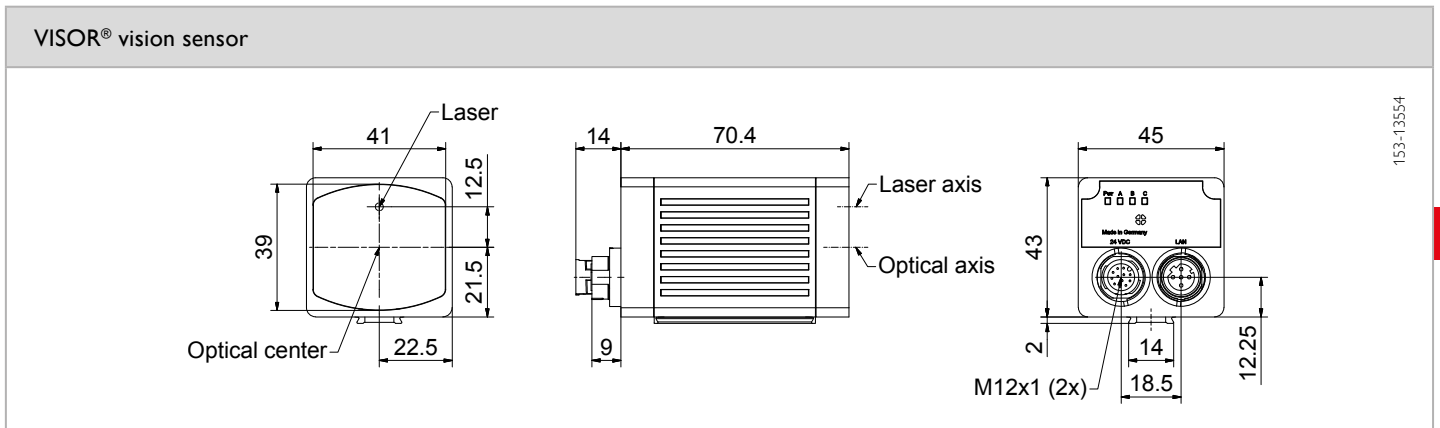


## PRODUCT HIGHLIGHTS

- Calibration methods for robotics applications
- Result offset 3D for direct gripper point transmission to robot
- Offset of work plane

Optical data		Functions	
Resolution	800 x 600 Pixel	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/3.6", monochrome / color	Detectors	Position tracking; X/Y and orientation; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Result processing: Math:</b> checking and calculating with results from detectors
Integrated lens, focal length [mm]	20 (narrow)		
Pixel size	4.8 µm x 4.8 µm		
Focus	Motorized		
Adjustment range	100 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		
Minimum field of view, X x Y	14 x 10 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>3</sup>	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> color hardware    <sup>3</sup> max. ripple < 5 V<sub>s</sub>    <sup>4</sup> 80 % air humidity, noncondensing



— Normal depth of field

Illumination	Part number	Article number	Accessories	
White	V10-RO-A3-W-N-M2-L	631-91075	Connection cables	From Page A-46
Red	V10-RO-A3-R-N-M2-L	631-91078	Illumination	From Page A-33
Infrared	V10-RO-A3-I-N-M2-L	631-91081	Brackets	From Page A-4
			Interface accessories	From Page A-53


# VISOR® V10 Robotic Advanced, C-Mount

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

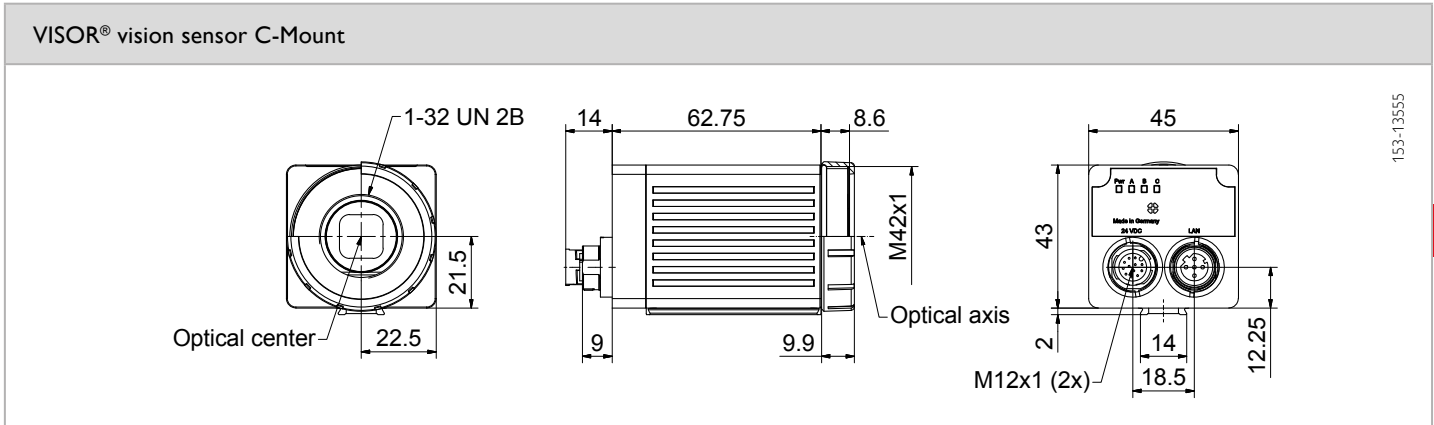


## PRODUCT HIGHLIGHTS

- Calibration methods for robotics applications
- Result offset 3D for direct gripper point transmission to robot
- Offset of work plane

Optical data		Functions	
Resolution	800 x 600 Pixel	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/3.6", monochrome / color	Detectors	Position tracking; X/Y and orientation; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Result processing: Math:</b> checking and calculating with results from detectors
Integrated lens, focal length [mm]	C-mount		
Pixel size	4.8 µm x 4.8 µm		
Focus	Manual		
Adjustment range	Dependent on lens		
Integrated illumination	None		
Minimum field of view, X x Y	Dependent on lens		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>2</sup>	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65 <sup>3</sup>
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

<sup>1</sup> Color hardware    <sup>2</sup> max. ripple < 5V<sub>SS</sub>    <sup>3</sup> only with protective casing    <sup>4</sup> 80 % air humidity, noncondensing



Part number	Article number
LPTVxx-G37.5	651-01006
LPTVxx-25.0	651-01007

	LOC-08-HD-30.5x0,5	LOC-12-HD-27x0,5	LOC-16-HD-27x0,5	LOC-25-HD-27x0,5	LOC-35-HD-27x0,5	LOC-50-HD-27x0,5	LOC-75-HD-34x0,5
Focal length	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
Article number	526-51535	526-51536	526-51537	526-51538	526-51539	526-51540	526-51541

Part number	Article number	Accessories
V10-RO-A3-C-2	631-91082	<ul style="list-style-type: none"> <li>Connection cables</li> <li>Illumination</li> <li>Lenses</li> <li>Brackets</li> <li>Interface accessories</li> </ul>
		<ul style="list-style-type: none"> <li>From Page A-46</li> <li>From Page A-33</li> <li>From Page A-28</li> <li>From Page A-4</li> <li>From Page A-53</li> </ul>